Choosing Wisely® Recommendations

About Choosing Wisely®

Choosing Wisely® was an initiative of over 80 medical societies and organizations, led by the American Board of Internal Medicine Foundation, that sought to improve health care quality by encouraging dialogue on avoiding unnecessary medical tests, treatments, and procedures.

Participating organizations, including the American Academy of Family Physicians, identified commonly used test and procedures within their specialties that were possibly overused. The resulting clinical guidance was shared and distributed by the Choosing Wisely participants.

The Choosing Wisely campaign began in 2012 and ended in 2023. The Choosing Wisely recommendations are no longer updated by AAFP but are published here for archival purposes. AFP articles refer to relevant Choosing Wisely recommendations that the editors determined to be current at the time of publication

Choosing Wisely Contents

Don't order mold sensitivity testing on patients without clear allergy or asthma symptoms (particularly those with chronic fatigue, arthralgia, cognitive impairments, and affective disorders). For those with allergy or asthma symptoms who have not responded to environmental interventions to reduce allergen exposures, mold sensitivity testing may be performed by an allergist or pulmonologist, but should not routinely be performed in the primary care setting.

Rationale and Comments

Mold can cause sensitization and clinical disease. Skin prick and in vitro tests can effectively identify patients who are sensitized to molds, although this does not always translate to clinical disease. Results of these tests must be interpreted in the context of the patient's clinical presentation. Exposure to dampness and mold can increase the risk of developing asthma in children regardless of their atopic status and increased symptoms of asthma and rhinitis in individuals who already have these conditions. Interventional studies have found that a multifaceted series of interventions aimed at reducing indoor moisture, removing contaminated building materials, and reducing reservoirs (including carpeting and dust) can reduce exposure sufficiently to reduce symptoms in affected individuals. This implies a causal relationship between exposure to fungi and morbidity and provides a rationale for environmental interventions to reduce it.

Sponsoring Organizations

American Academy of Pediatrics Council on Environmental Health

Sources

Expert consensus

References

Portnoy JM, Jara D. Mold allergy revisited. Ann Allergy Asthma Immunol. 2015;114(2):83-89.

489

Don't perform food IgE testing without a history consistent with potential IgE-mediated food allergy.

Rationale and Comments

False or clinically irrelevant positive allergy tests for foods are frequent. Indiscriminate screening results in inappropriate avoidance of foods and wastes healthcare resources. IgE testing for specific foods must be driven by a history of signs or symptoms consistent with an IgE-mediated reaction after eating a particular food. Ordering IgE testing in individuals who do not have a history consistent with or suggestive for food allergy based on history frequently reveals positive tests that are unlikely to be clinically relevant. Testing, when done, should be limited to suspected foods. The diagnostic utility of IgE testing for specific foods is optimal when a history compatible with or suggestive for the diagnosis of food allergy is present. In the absence of a compatible or suggestive history, the pre-test probability for a diagnosis of food allergy is low and a positive skin or in vitro IgE test does not establish a diagnosis of food allergy. Skin testing or serum testing for specific-IgE to food antigens has excellent sensitivity and high negative predictive value, but has low specificity and low positive predictive value. Considering that 50 to 90% of presumed cases of food allergy do not reflect IgE-mediated (allergic) pathogenesis and may instead reflect food intolerance or symptoms not causally associated with food consumption, ordering panels of food tests leads to many incorrectly identified food allergies and inappropriate recommendations to avoid foods that are positive on testing.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

Expert consensus

References

Bernstein IL, Li JT, Bernstein DI, Hamilton R, Spector SL, Tan R, Sicherer S, Golden DB, Khan DA, Nicklas RA, Portnoy JM, Blessing-Moore J, Cox L, Lang DM, Oppenheimer J, Randolph CC, Schuller DE, Tilles SA, Wallace DV, Levetin E, Weber R; American Academy of Allergy, Asthma and Immunology; American College of Allergy, Asthma and Immunology. Allergy diagnostic testing: an updated practice parameter. Ann Allergy Asthma Immunol. 2008 Mar;100(3 Suppl 3):S1–148. NIAID-Sponsored Expert Panel, Boyce JA, Assa'ad A, Burks AW, Jones SM, Sampson HA, Wood RA, Plaut M, Cooper SF, Fenton MJ, Arshad SH, Bahna SL, Beck LA, Byrd-Bredbenner C, Camargo CA Jr, Eichenfield L, Furuta GT, Hanifin JM, Jones C, Kraft M, Levy BD, Lieberman P, Luccioli S, McCall KM, Schneider LC, Simon RA, Simons FE, Teach SJ, Yawn BP, Schwaninger JM. Guidelines for the diagnosis and management of food allergy in the United States: report of the NIAID-sponsored expert panel. J Allergy Clin Immunol. 2010 Dec;126 (6 Suppl):S1–58.

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Don't perform screening panels for food allergies without previous consideration of medical history.

Rationale and Comments

Ordering screening panels (IgE tests) that test for a variety of food allergens without previous consideration of the medical history is not recommended. Sensitization (a positive test) without clinical allergy is common. For example, about 8% of the population tests positive to peanuts but only approximately 1% are truly allergic and exhibit symptoms upon ingestion. When symptoms suggest a food allergy, tests should be selected based on a careful medical history.

Sponsoring Organizations

American Academy of Pediatrics

Sources

American Academy of Pediatrics guidelines

References

Sicherer SH, Wood RA; American Academy of Pediatrics Section on Allergy and Immunology. Allergy testing in childhood: using allergen-specific IgE tests. Pediatrics. 2012 Jan;129(1):193–7.

195

Don't rely on antihistamines as firstline treatment in severe allergic reactions.

Rationale and Comments

Epinephrine is the first-line treatment for anaphylaxis. Data indicate that antihistamines are overused as the first-line treatment of anaphylaxis. By definition, anaphylaxis has cardiovascular and respiratory manifestations, which require treatment with epinephrine. Overuse of antihistamines, which do not treat cardiovascular or respiratory manifestations of anaphylaxis, can delay the effective first-line treatment with epinephrine. Epinephrine should be administered as soon as the diagnosis of anaphylaxis is suspected. Antihistamines are second-line supportive therapy for cutaneous non–life-threatening symptoms (hives), but do not replace epinephrine as the first-line treatment for anaphylaxis. Fatalities during anaphylaxis have been associated with delayed administration of epinephrine.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

American Academy of Allergy, Asthma and Immunology guidelines

References

Lieberman P, Nicklas RA, Oppenheimer J, Kemp SF, Lang DM, Bernstein DI, Bernstein JA, Burks AW, Feldweg AM, Fink JN, Greenberger PA, Golden DB, James JM, Kemp SF, Ledford DK, Lieberman P, Sheffer AL, Bernstein DI, Blessing-Moore J, Cox L, Khan DA, Lang D, Nicklas RA, Oppenheimer J, Portnoy JM, Randolph C, Schuller DE, Spector SL, Tilles S, Wallace D. The diagnosis and management of anaphylaxis practice parameter 2010 update. J Allergy Clin Immunol. 2010 Sep;126(3):477-80.e1–42. Sampson HA, Muñoz-Furlong A, Campbell RL, Adkinson NF Jr, Bock SA, Branum A, Brown SG, Camargo CA Jr, Cydulka R, Galli SJ, Gidudu J, Gruchalla RS, Harlor AD Jr, Hepner DL, Lewis LM, Lieberman PL, Metcalfe DD, O'Connor R, Muraro A, Rudman A, Schmitt C, Scherrer D, Simons FE, Thomas S, Wood JP, Decker WW. Second symposium on the definition and management of anaphylaxis: summary report – Second National Institute of Allergy and Infectious Diseases/ Food Allergy and Anaphylaxis Network symposium. J Allergy Clin Immunol. 2006 Feb;117(2):391–7. Kemp SF, Lockey RF, Simons FE; World Allergy Organization ad hoc Committee on Epinephrine in Anaphylaxis. Epinephrine the drug of choice for anaphylaxis. A statement of the World Allergy Organization. Allergy. 2008 Aug;63(8):1061–70. Cox L, Nelson H, Lockey R, Calabria C, Chacko T, Finegold I, Nelson M, Weber R, Bernstein DI, Blessing-Moore J, Khan DA, Lang DM, Nicklas RA, Oppenheimer J, Portnoy JM, Randolph C, Schuller DE, Spector SL, Tilles S, Wallace D. Allergen immunotherapy: a practice parameter third update. J Allergy Clin Immunol. 2011 Jan;127(1 Suppl):s1–55. Golden DB, Moffitt J, Nicklas RA, Freeman T, Graft DF, Reisman RE, Tracy JM, Bernstein D, Blessing-Moore J, Cox L, Khan DA, Lang DM, Oppenheimer J, Portnoy JM, Randolph C, Schuller DE, Spector SL, Tilles SA, Wallace D; Joint Task Force on Practice Parameters; American Academy of Allergy, Asthma & Immunology (AAAAI); American College of Allergy, Asthma & Immunology (ACAAI); Joint Council of Allergy, Asthma and Immunology. Stinging insect hypersensitivity: a practice parameter update 2011. J Allergy Clin Immunol. 2011 Apr; 127(4):852–4. Clark S, Long AA, Gaeta TJ, Camargo CC. Multicenter study of emergency department visits for insect sting allergies. J Allergy Clin Immunol. 2005;116:643–9.

192

Don't routinely avoid influenza vaccination in egg-allergic patients.

Rationale and Comments

Of the vaccines that may contain egg protein (measles, mumps, rabies, influenza and yellow fever), measles, mumps and rabies vaccines have at most negligible egg protein; consequently no special precautions need to be followed in egg-allergic patients for these vaccines. Studies in egg-allergic patients receiving egg-based inactivated influenza vaccine have not reported reactions; consequently egg-allergic patients should be given either egg-free influenza vaccine or should receive egg-based influenza vaccine with a 30-minute post-vaccine observation period. Egg-allergic patients receiving the yellow fever vaccine should be skin tested with the vaccine and receive the vaccine with a 30-minute observation period if the skin test is negative. If positive, the vaccine may be given in graded doses with appropriate medical observation. Egg protein is present in influenza and yellow fever vaccines and in theory could cause reactions in egg-allergic patients. However, in 27 published studies collectively 4,172 patients with egg allergy received 4,729 doses of egg-based inactivated influenza vaccine with no cases of anaphylaxis, including 513 with severe egg allergy who uneventfully received 597 doses. The Center for Disease Control and Prevention's Advisory Committee on Immunization Practices recommends that egg-allergic persons receive inactivated influenza vaccine as a single dose without prior vaccine skin testing and be observed for 30 minutes afterwards for any possible allergic reaction. If the reaction to the ingestion of eggs was hives only, the vaccine can be administered in a primary care setting, whereas if the reaction to the ingestion of eggs was more severe, the vaccine should be administered in an allergist/ immunologist's office. Two new inactivated influenza vaccine not grown in eggs have been approved for patients 18 years and older: Flucelvax, prepared from virus propagated in cell culture, and Flublok, recombinant hemagglutinin proteins produced in an insect cell line. For egg-allergic patients 18 years of age and older, either egg-based inactivated influenza vaccine can be used with the precautions above or egg-free inactivated influenza vaccine can be used. Measles and mumps vaccines (and Purified Chick Embryo Cell rabies vaccine) are grown in chick embryo fibroblast cultures and contain negligible or no egg protein. Thus, measles, mumps, and rubella and Purified Chick Embryo Cell rabies vaccine can be administered to egg-allergic recipients in the usual manner. Per the Yellow Fever vaccine package insert, egg-allergic recipients should be skin tested with the vaccine prior to administration. If negative, the vaccine can be given in the usual manner, but the patient should be observed for 30 minutes afterward. If the vaccine skin test is positive, the vaccine can be given in graded doses under appropriate medical observation.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

Advisory Committee on Immunization Practices

References

Des Roches A, Paradis L, Gagnon R, Lemire C, Bégin P, Carr S, Chan ES, Paradis J, Frenette L, Ouakki M, Benoît M, De Serres G; PCIRN (Public Health Agency of Canada/Canadian Institutes of Health Research Influenza Research Network). Egg-allergic patients can be safely vaccinated against influenza. J Allergy Clin Immunol. 2012 Nov;130(5):1213–1216. Centers for Disease Control and Prevention (CDC). Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP)–United States, 2012–13 influenza season. MMWR Morb Mortal Wkly Rep. 2012 Aug 17;61(32):613–8. FLUCELVAX (Novartis) Package Insert. 2012. FLUBLOK (Protein Sciences) Package Insert. 2013. American Academy of Pediatrics. Red Book: 2012 report of the Committee on Infectious Diseases. Pickering LK, ed. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012. 936 p. Kelso JM, Greenhawt MJ, Li JT, Nicklas RA, Bernstein DI, Blessing-Moore J, Cox L, Khan D, Lang DM, Oppenheimer J, Portnoy JM, Randolph CR, Schuller DE, Spector SL, Tilles SA, Wallace D. Adverse reactions to vaccines practice parameter 2012 update. J Allergy Clin Immunol. 2012 Jul;130(1):25–43. YF-VAX (Sanofi Pasteur) Package Insert. 2010.

201

Don't routinely do diagnostic testing in patients with chronic urticaria.

Rationale and Comments

In the overwhelming majority of patients with chronic urticaria, a definite etiology is not identified. Limited laboratory testing may be warranted to exclude underlying causes. Targeted laboratory testing based on clinical suspicion is appropriate. Routine extensive testing is neither cost-effective nor associated with improved clinical outcomes. Skin or serum-specific IgE testing for inhalants or foods is not indicated, unless there is a clear history implicating an allergen as a provoking or perpetuating factor for urticaria.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

American Academy of Allergy, Asthma and Immunology guidelines

References

Wanderer AA, et al. The diagnosis and management of urticaria: a practice parameter. Ann Allergy Asthma Immunol. 2000;85:521-44. Tarbox JA, et al. Utility of routine laboratory testing in management of chronic urticaria/ angioedema. Ann Allergy Asthma Immunol. 2011;107:239-43. Bernstein IL, et al. Allergy diagnostic testing: an updated practice parameter. Ann Allergy Asthma Immunol. 2008;100(3 suppl 3):S1-148. Kozel MM, et al. Laboratory tests and identified diagnoses in patients with physical and chronic urticaria and angioedema: A systematic review. J Am Acad Dermatol. 2003;48(3):409-16.

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Don't routinely order low- or iso-osmolar radiocontrast media or pretreat with corticosteroids and antihistamines for patients with a history of seafood allergy, who require radiocontrast media.

Rationale and Comments

Although the exact mechanism for contrast media reactions is unknown, there is no cause and effect connection with seafood allergy. Consequently there is no reason to use more expensive agents or pre-medication before using contrast media in patients with a history of seafood allergy. A prior history of anaphylaxis to contrast media is an indication to use low- or iso-osmolar agents and pretreat with corticosteroids and antihistamines. Patients with a history of seafood allergy are not at elevated risk for anaphylaxis from iodinated contrast media. Similarly, patients who have had anaphylaxis from contrast media should not be told that they are allergic to seafood. Patients with a history of seafood allergy who are labeled as being at greater risk for adverse reaction from contrast infusions experience considerable morbidity from unnecessary precautions, including but not limited to denying them indicated roentgenographic procedures and adverse effects from pretreatment with antihistamine and/or corticosteroid medications. Regardless of whether these patients truly have IgE-mediated allergies to seafood (crustacean), there is no evidence in the medical literature that indicates they are at elevated risk for anaphylaxis from contrast infusion compared with the history-negative general population. In a random telephone survey of 5,529 households with a census of 14,948 individuals, seafood allergy was reported by 3.3% of survey respondents. According to current U.S. population estimates for 2013, this corresponds to 10,395,000 Americans. The mechanism for anaphylaxis to radio-iodinated contrast media relates to the physiochemical properties of these media and is unrelated to its iodine content. Further, although delayed-type hypersensitivity (allergic contact dermatitis) reactions to iodine have rarely been reported, IgE-mediated reactions to iodine have not, and neither type of reaction would be related to IgE-mediated shellfish allergy nor to contrast media reactions. Patients with a history of prior anaphylaxis to contrast media are at elevated risk for anaphylactic reaction with re-exposure to contrast media. Patients with asthma or cardiovascular disease, or who are taking beta blockers, are at increased risk for serious anaphylaxis from radiographic contrast media.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

Expert consensus

References

American Academy of Asthma, Allergy and Immunology. Food allergy: a practice parameter. Ann Allergy Asthma Immunol. 2006 Mar;96:S1–68. Lieberman P, Nicklas RA, Oppenheimer J, Kemp SF, Lang DM. The diagnosis and management of anaphylaxis practice parameter: 2010 update. J Allergy Clin Immunol. 2010 Aug 21;126(3):477–522. Solensky R, Khan DA. Drug allergy: an updated parameter. Ann Allergy Asthma Immunol. 2010 Oct;105(4):259–73. Sicherer S, Munoz-Furlong A, Sampson H. Prevalence of seafood allergy in the United States determined by a random telephone survey. J Allergy Clin Immunol. 2004;114:159–65. Greenberger P. Prophylaxis against repeated radio contrast media reaction in 857 cases. Arch Intern Med. 1985;145:2197–200. Sicherer SH. Risk of severe allergic reactions from the use of potassium iodide for radiation emergencies. J Allergy Clin Immunol. 2004;114:1395–7. Lang DM, Alpern MB, Visintainer PF, Smith ST. Elevated risk for anaphylactoid reaction from radiographic contrast media associated with both beta blocker exposure and cardiovascular disorders. Arch Intern Med. 1993;153:2033–40.

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Don't use skin prick tests or blood tests such as the radioallergosorbent test for the routine evaluation of eczema.

Rationale and Comments

Skin prick tests or blood tests may help identify the causes of allergic reactions, including hives or sneezing after exposure to dust or pollen. However, these tests are not useful for diagnosing dermatitis or eczema. When testing for suspected allergies is deemed necessary in patients with these rashes, it is better to conduct patch testing with ingredients of products that come in contact with the patient's skin.

Sponsoring Organizations

American Academy of Dermatology

Sources

Expert consensus

References

Sidbury R, Tom WL, Bergman JN, Cooper KD, Silverman RA, Berger TG, Chamlin SL, Cohen DE, Cordoro KM, Davis DM, Feldman SR, Hanifin JM, Krol A, Margolis DJ, Paller AS, Schwarzenberger K, Simpson EL, Williams HC, Elmets CA, Block J, Harrod CG, Smith Begolka W, Eichenfield LF. Guidelines of care for the management of atopic dermatitis: Section 4. Prevention of disease flares and use of adjunctive therapies and approaches. J Am Acad Dermatol. 2014 Dec;71(6):1218-33. NIAID-Sponsored Expert Panel, Boyce JA, Assa'ad A, Burks AW, Jones SM, Sampson HA, Wood RA, Plaut M, Cooper SF, Fenton MJ, Arshad SH, Bahna SL, Beck LA, Byrd-Bredbenner C, Camargo CA Jr, Eichenfield L, Furuta GT, Hanifin JM, Jones C, Kraft M, Levy BD, Lieberman P, Luccioli S, McCall KM, Schneider LC, Simon RA, Simons FE, Teach SJ, Yawn BP, Schwaninger JM. Guidelines for the diagnosis and management of food allergy in the United States: report of the NIAID-sponsored expert panel. J Allergy Clin Immunol. 2010 Dec;126(6 Suppl):S1-58.

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Don't overuse non-beta lactam antibiotics in patients with a history of penicillin allergy, without an appropriate evaluation.

See Infectious Disease.

Don't routinely perform sinonasal imaging in patients with symptoms limited to a primary diagnosis of allergic rhinitis alone.

See Otolaryngologic.

Don't use oral antibiotics for treatment of atopic dermatitis unless there is clinical evidence of infection.

See Dermatologic.

Don't recommend chelation except for documented metal intoxication, which has been diagnosed using validated tests in appropriate biological samples.

Rationale and Comments

Chelation does not improve objective outcomes in autism, cardiovascular disease, or neurodegenerative conditions like Alzheimer's disease. Edetate disodium is not U.S. Food and Drug Administration–approved for any condition. Even when used for appropriately diagnosed metal intoxication, chelating drugs may have significant side effects, including dehydration, hypocalcemia, kidney injury, liver enzyme elevations, hypotension, allergic reactions, and essential mineral deficiencies. Inappropriate chelation, which may cost hundreds to thousands of dollars, risks these harms, as well as neurodevelopmental toxicity, teratogenicity, and death.

Sponsoring Organizations

American College of Medical Toxicology |American Academy of Clinical Toxicology

Sources

Expert consensus

References

Nonstandard uses of chelation therapy. Med Lett Drugs Ther. 2010 Sep 20;52(1347):75-6. Kosnett MJ. Chelation for heavy metals (arsenic, lead, and mercury): protective or perilous? Clin Pharmacol Ther. 2010 Sep;88(3):412-5. Nissen SE. Concerns about reliability in the Trial to Assess Chelation Therapy (TACT). JAMA. 2013 Mar 27;309(12):1293-4. Risher JF, Amler SN. Mercury exposure: evaluation and intervention the inappropriate use of chelating agents in the diagnosis and treatment of putative mercury poisoning. Neurotoxicology. 2005 Aug;26(4):691-9. U.S. Food and Drug Administration. FDA warns marketers of unapproved 'chelation' drugs. FDA Consumer Health Information. 2010 October;1.

122

Don't use homeopathic medications, non-vitamin dietary supplements or herbal supplements as treatments for disease or preventive health measures.

Rationale and Comments

Alternative therapies are often assumed safe and effective just because they are "natural." There is a lack of stringent quality control of the ingredients present in many herbal and dietary supplements. Reliable evidence that these products are effective is often lacking, but substantial evidence exists that they may produce harm. Indirect health risks also occur when these products delay or replace more effective forms of treatment or when they compromise the efficacy of conventional medicines.

Sponsoring Organizations

American College of Medical Toxicology |American Academy of Clinical Toxicology

Sources

Expert consensus

References

Woodward KN. The potential impact of the use of the homeopathic and herbal medicines on monitoring the safety of prescription products. Hum Exp Toxicol. 2005;24:219-33. Thompson E, Barron S, Spence D. A preliminary audit investigating remedy reactions including adverse events in routine homeopathic practice. Homeopathy. 2004;93:203-9. De Smet PA. Health risks of herbal remedies. Drug Saf. 1995;13:81-93. Farah MH, Edwards R, Lindquist M, Leon C, Shaw D. International monitoring of adverse health effects associated with herbal medicines. Pharmacoepidemiol Drug Saf. 2000;9(2):105-12. Drew AK, Myers SP. Safety issues in herbal medicine: implications for the health professions. Med J Aust. 1997;166:538-41.

121

Avoid cardiovascular stress testing for patients undergoing low-risk surgery.

Rationale and Comments

Preoperative stress testing does not alter therapy or decision making in patients facing low-risk surgery.

Sponsoring Organizations

Society for Vascular Medicine

Sources

ACC/AHA guidelines

References

Fleisher LA, et al. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. J Am Coll Cardiol. 2007;50:e159-241.

83

Avoid echocardiograms for preoperative/perioperative assessment of patients with no history or symptoms of heart disease.

Rationale and Comments

Perioperative echocardiography is used to clarify signs or symptoms of cardiovascular disease, or to investigate abnormal heart tests. Resting left ventricular function is not a consistent predictor of perioperative ischemic events; even reduced left ventricular systolic function has poor predictive value for perioperative cardiac events.

Sponsoring Organizations

American Society of Echocardiography

Sources

ACC/AHA guidelines

References

Douglas PS, et al. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/ SCCM/SCCT/ SCMR 2011 appropriate use criteria for echocardiography. J Am Soc Echocardiogr. 2011;24:229-67. Fleisher LA, et al. 2009 ACCF/AHA focused update on perioperative beta blockade incorporated into the ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. J Am Coll Cardiol. 2009;54:e13–118. http://content.onlinejacc.org/article.aspx?articleid =1140211.

84

Avoid nonsteroidal anti-inflammatory drugs (NSAIDs) in individuals with hypertension or heart failure or chronic kidney disease of all causes, including diabetes.

The use of NSAIDs, including cyclooxygenase type 2 inhibitors, for the pharmacological treatment of musculoskeletal pain can elevate blood pressure, make antihypertensive drugs less effective, cause fluid retention, and worsen kidney function in these individuals. Other agents such as acetaminophen or tramadol, or short-term use of narcotic analgesics, may be safer than and as effective as NSAIDs.

Sponsoring Organizations

American Society of Nephrology

Sources

National Kidney Foundation Kidney Disease Outcomes Quality Initiative

References

National Kidney Foundation Kidney Disease Outcomes Quality Initiative. KDOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. http://www.kidney.org/professionals/KDOQI/guidelines_ckd/toc.htm. Chronic kidney disease in adults: UK guidelines for identification, management and referral. http://www.renal.org/ckdguide/full/ukckdfull.pdf. Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.pdf. Scottish Intercollegiate Guidelines Network. Management of chronic heart failure. http://www.sign.ac.uk/pdf/sign95.pdf.

36

Avoid prophylactic antibiotics for the treatment of mitral valve prolapse.

Rationale and Comments

Antibiotic prophylaxis is no longer indicated in patients with mitral valve prolapse for prevention of infective endocarditis. The risk of antibiotic-associated adverse effects exceeds the benefit (if any) from prophylactic antibiotic therapy. Limited use of prophylaxis will likely reduce the unwanted selection of antibiotic-resistant strains and their unintended consequences such as Clostridium difficile–associated colitis.

Sponsoring Organizations

Infectious Diseases Society of America

Sources

ACC/AHA guidelines

References

Nishimura RA, Carabello BA, Faxon DP, Freed MD, Lytle BW, O'Gara PT, O'Rourke RA, Shah PM. ACC/AHA 2008 Guideline update on valvular heart disease: focused update on infective endocarditis: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. J Am Coll Cardiol. 2008;52(8):676-85. Gopalakrishnan PP, Shukla SK, Tak T. Infective endocarditis rationale for revised guidelines for antibiotic prophylaxis. Clin Med Res. 2009;7(3):63–8.

257

Avoid transesophageal echocardiography to detect cardiac sources of embolization if a source has been identified and patient management will not change.

Rationale and Comments

Tests whose results will not alter management should not be ordered. Protocol-driven testing can be useful if it serves as a reminder not to omit a test or procedure, but should always be individualized to the particular patient. While transesophageal echocardiography is safe, even the small degree of risk associated with a procedure is not justified if there is no expected clinical benefit.

Sponsoring Organizations

American Society of Echocardiography

Sources

ACC/AHA guidelines

References

Douglas PS, et al. ACCF/ASE/AHA/ASNC/HFSA/HRS/ SCAI/SCCM/SCCT/ SCMR 2011 appropriate use criteria for echocardiography. J Am Soc Echocardiogr. 2011;24:229-67.

10

Avoid using stress echocardiograms on asymptomatic patients who meet "low-risk" scoring criteria for coronary disease.

Rationale and Comments

Stress echocardiography is mostly used in symptomatic patients to assist in the diagnosis of obstructive coronary artery disease. There is very little information on using stress echocardiography in asymptomatic individuals for the purposes of cardiovascular risk assessment, as a stand-alone test or in addition to conventional risk factors.

Sponsoring Organizations

American Society of Echocardiography

Sources

ACC/AHA guidelines

References

Douglas PS, et al. ACCF/ASE/AHA/ASNC/HFSA/HRS/ SCAI/SCCM/SCCT/ SCMR 2011 appropriate use criteria for echocardiography. J Am Soc Echocardiogr. 2011;24:229-67. Gibbons RJ, et al. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina. 2002. http://www.cardiosource.org/~/media/Images/ACC/Science%20and%20Quality/Practice%20Guidelines/s/stable_clean.ashx Greenland P, et al. 2010 ACCF/AHA guideline for assessment of cardiovascular risk in asymptomatic adults. J Am Coll Cardiol. 2010;56:e50-103.

7

Do not routinely order electroencephalogram as part of initial syncope work-up.

Rationale and Comments

Electroencephalogram will be negative in a large portion of patients with epilepsy, and may be positive in patients without epilepsy. False positive electroencephalogram findings commonly lead to unnecessary use of antiepileptic drugs and may delay the syncope diagnosis and treatment. Electroencephalogram are most helpful in specific situations when there is high pre-test probability for epilepsy based on history and exam, and clinical presentation.

Sponsoring Organizations

American Epilepsy Society

Sources

Expert consensus

References

https://www.nice.org.uk/donotdo/do-not-routinely-use-electroencephalogram-eeg-in-the-investigation-of-transient-loss-of-consciousness-tloc. Angus-Leppan. Diagnosing epilepsy in neurology clinics: a prospective study. Seizure 2008;17(5):431-6. Josephson CB, Rahey S, Sadler RM. Neurocardiogenic syncope: frequency and consequences of its misdiagnosis as epilepsy. Canadian Journal of Neurological Sciences. 2007;34(2):221-224. Chowdhury FA, Nashef L, Elwes RDC. Misdiagnosis in epilepsy: A review and recognition of diagnostic uncertainty. Eur J Neurol 2008;15(10): 1034-1042. Fowle AJ, Binnie CD. Uses and abuses of the EEG in epilepsy. Epilepsia 2000; 41 Suppl 3:10-18. Van Donselaar CA, Stroink H, Arts WF; Dutch Study Group of Epilepsy in Childhood. How confident are we of the diagnosis of epilepsy? Epilepsia. 2006;47 Suppl 1:9-13.

375

Don't initiate an outpatient hypertension workup in asymptomatic pediatric patients prior to repeating the blood pressure measurement.

Rationale and Comments

Blood pressures in children need to be taken in accordance with standard methodology prior to the diagnosis of hypertension in order to decrease the number of false positive readings that are often seen in pediatric patients. Methodology should include assessment of blood pressure in the upper extremity, by manual auscultation, with an appropriate-sized cuff. National Heart, Lung, and Blood Institute and AAP guidelines recommend repeating blood pressures x 3 at the same visit and at two additional visits to document persistent blood pressure elevation prior to initiating a workup for pediatric hypertension due to the possibility of falsely elevated blood pressure readings in children, as the prevalence of elevated blood pressures decreases significantly on repeated measures.

Sponsoring Organizations

American Academy of Pediatrics – Section on Nephrology and the American Society of Pediatric Nephrology

Sources

National Heart, Lung and Blood Institute guidelines

References

Sun J, Steffen LM, Ma C, Liang Y, Xi B. Definition of pediatric hypertension: are blood pressure measurements on three separate occasions necessary? Hypertens Res. 2017;40(5):496-503. NHLBI guidelines 2012 https://www.nhlbi.nih.gov/files/docs/peds_guidelines_sum.pdf National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents. The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. Pediatrics. 2004;114(2 suppl 4th report):555-576.

362

Don't initiate antihypertensive treatment in individuals ≥ 60 years of age for systolic blood pressure < 150 mm Hg or diastolic blood pressure < 90 mm Hg.

Rationale and Comments

There is strong evidence for the treatment of hypertension in older adults. Achieving a goal systolic blood pressure of 150 mm Hg reduces stroke incidence, all-cause mortality, and heart failure. Target systolic and diastolic blood pressure levels should be set cautiously, however, as data do not suggest benefit in treating more aggressively to a goal systolic blood pressure of < 140 mm Hg in the general population ≥ 60 years of age. Furthermore, moderate- or high-intensity treatment of hypertension has been associated with an increased risk of serious fall injury in older adults.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Eighth Joint National Committee guideline

References

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267

Don't initiate routine evaluation of carotid artery disease prior to cardiac surgery in the absence of symptoms or other high-risk criteria.

Rationale and Comments

Studies show that the presence of asymptomatic carotid disease in patients undergoing cardiac surgery does not justify preoperative screening in more than the subgroup of "high-risk" patients. Carotid stenosis with symptoms (stroke or transient ischemic attacks) is a known risk for cardiovascular accident and appropriate for preoperative testing. High-risk patients have been defined as patients with left main coronary disease, peripheral artery disease, hypertension, smoking, diabetes mellitus, or age older than 65 years due to a higher rate of asymptomatic carotid stenosis in these patients. The presence a carotid bruit does not equate to an increased risk of stroke after cardiac surgery. Patients with carotid stenosis have a higher rate of cerebrovascular complications after cardiac surgery, but there is no evidence that prophylactic or concomitant carotid surgery decreases this rate of complications in asymptomatic patients. Although controversial, the cumulative risk of carotid surgery and cardiac surgery, either sequentially or concomitantly, may exceed the benefit in asymptomatic patients.

Sponsoring Organizations

Society of Thoracic Surgeons

Sources

ACC/AHA guidelines

References

Hillis LD, et al. 2011 ACCF/AHA guideline for coronary artery bypass graft surgery. Circulation. 2011;124(23):e652-e735. Stansby G, et al. Asymptomatic carotid disease and cardiac surgery consensus. Angiology. 2011;62:457-60. Tarakji KG, et al. Temporal onset, risk factors, and outcomes associated with stroke after coronary artery bypass grafting. JAMA. 2011;305:381-90. Naylor AR, et al. Stroke after cardiac surgery and its association with asymptomatic carotid disease: An updated systematic review and meta-analysis. Eur J Vasc Endovasc Surg. 2011;41:607-24. Cournot M, et al. Accuracy of the screening physical examination to identify subclinical atherosclerosis and peripheral arterial disease in asymptomatic subjects. J Vasc Surg. 2007;46:1215-21. Ratchford EV, et all. Carotid bruit for detection of hemodynamically significant carotid stenosis: the Northern Manhattan Study. Neurol Res. 2009;31:748-52.

86

Don't leave an implantable cardioverter-defibrillator activated when it is inconsistent with the patient/family goals of care.

Rationale and Comments

In about a quarter of patients with implantable cardioverter-defibrillators, the defibrillator fires within weeks preceding death. For patients with advanced irreversible diseases, defibrillator shocks rarely prevent death, may be painful to patients, and are distressing to caregivers/family members. Currently there are no formal practice protocols to address deactivation; fewer than 10% of hospices have official policies. Advance care planning discussions should include the option of deactivating the implantable cardioverter-defibrillator when it no longer supports the patient's goals.

Sponsoring Organizations

American Academy of Hospice and Palliative Medicine

Sources

Expert consensus

References

Berger JT. The ethics of deactivating implanted cardioverter defibrillators. Ann Intern Med. 2005;142:631-34. Goldstein N, et al. Brief communication: management of implantable cardioverter-defibrillators in hospice: A nationwide survey. Ann Intern Med. 2010;152(5):296-9. Goldstein NE, et al. Management of implantable cardioverter defibrillators in end-of-life care. Ann Intern Med. 2004;141(11):835-8. Russo, J. Deactivation of ICDs at the end of life: A systematic review of clinical practices and provider and patient attitudes. Am J Nurs. 2011;111(10):26-35.

13

Don't obtain baseline diagnostic cardiac testing (transthoracic/esophageal echocardiography) or cardiac stress testing in asymptomatic stable patients with known cardiac disease (e.g., coronary artery disease, valvular disease) undergoing low or moderate risk noncardiac surgery.

Rationale and Comments

Advances in cardiovascular medical management, particularly the introduction of perioperative beta-blockade and improvements in surgical and anesthetic techniques, have significantly decreased operative morbidity and mortality rates in noncardiac surgery. Surgical outcomes continue to improve causing the mortality rate of major surgeries to be low and the need for revascularization minimal. Consequently, the role of preoperative cardiac stress testing has been reduced to the identification of extremely high-risk patients, for instance, those with significant left main disease for which preoperative revascularization would be beneficial regardless of the impending procedure. In other words, testing may be appropriate if the results would change management prior to surgery, could change the decision of the patient to undergo surgery, or change the type of procedure that the surgeon will perform.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

American Society of Anesthesiologists guidelines

References

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, Pasternak LR, Arens JF, Caplan RA, Connis RT, Fleisher LA, Flowerdew R, Gold BS, Mayhew JF, Nickinovich DG, Rice LJ, Roizen MF, Twersky RS. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Anesthesiology. 2012 Mar;116(3):522-38. Miller AL, Beckman JA. (2013). Which patient should have a preoperative cardiac evaluation (stress test)? In: Fleisher L. Evidence-based practice of anesthesiology (3rd ed., pp. 61–70). Philadelphia (PA): Elsevier Saunders. Schiefermueller J, Myerson S, Handa Al. Preoperative assessment and perioperative management of cardiovascular risk. Angiology. 2013;64(2):146-50. Sheffield KM, McAdams PS, Benarroch-Gampel J, Goodwin JS, Boyd CA, Zhang D, Riall TS. Overuse of preoperative cardiac stress testing in medicare patients undergoing elective noncardiac surgery. Ann Surg. 2013;257(1):73-80. Almanaseer Y, Mukherjee D, Kline-Rogers EM, Kesterson SK, Sonnad SS, Roges B, Smith D, Furney S, Ernst R, McCort J, Eagle KA. Implementation of the ACC/AHA guidelines for preoperative cardiac risk assessment in a general medicine preoperative clinic: improving efficiency and preserving outcomes. Cardiology. 2005;103(1):24-9. Cinello M, Nucifora G, Bertolissi M, Badano LP, Fresco C, Gonano N, Fioretti PM. American College of Cardiology/American Heart Association perioperative assessment guidelines for noncardiac surgery reduces cardiologic resource utilization preserving favorable outcome. J Cardiovasc Med. 2007;8(11):882-8. Augoustides JG, Neuman MD, Al-Ghofaily L, Silvay G. Preoperative cardiac risk assessment for noncardiac surgery: defining costs and risks. J Cardiothorac Vasc Anesth. 2013;27(2):395-9. Falcone RA, Nass C, Jermyn R, Hale CM, Stierer T, Jones CE, Walters GK, Fleisher LA. The value of preoperative pharmacologic stress testing before vascular surgery using ACC/AHA guidelines: a prospective randomized trial. J Cardiothorac Vasc Anesth. 2003;17(6):694-8. Poldermans D, Boersma E. Beta-blocker therapy in noncardiac surgery. N Engl J Med. 2005;353:412-4.

131

Don't order an echocardiogram for the routine evaluation of pediatric chest pain in the absence of a concerning history or ECG abnormalities.

Rationale and Comments

Chest pain is a common presenting symptom in pediatrics but is rarely life-threatening, and the vast majority of cases are not cardiac in origin. Therefore, the addition of an echocardiogram only adds diagnostic value in very limited circumstances and increases the cost of care. If the patient has a concerning personal history (exertional chest pain with an abnormal ECG) or family history of sudden or unexplained death or cardiomyopathy or ECG abnormalities, consultation with a pediatric cardiologist is generally recommended prior to obtaining an echocardiogram. Therefore, it is important to obtain a complete personal and family history,* physical examination, and screening ECG, if the treating physician feels that the chest pain is cardiac in nature, prior to proceeding with cardiac consultation and echocardiography. (*Family history should assess specifically for the following types of cardiovascular diseases: connective tissue disorders; cardiomyopathies; arrhythmias, including need for pacemaker or defibrillator implantation; storage diseases; sudden unexplained death; premature cardiovascular disease prior to the age of 50 years.)

Sponsoring Organizations

American Academy of Pediatrics – Section on Cardiology and Cardiac Surgery

Sources

Expert consensus

References

Campbell RM, et al. ACC/AAP/AHA/ASE/HRS/SCAI/SCCT/SCMR/SOPE 2014 appropriate use criteria for initial transthoracic echocardiography in outpatient pediatric cardiology: a report of the American College of Cardiology Appropriate Use Criteria Task Force, American Academy of Pediatrics, American Heart Association, American Society of Echocardiography, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Pediatric Echocardiography. J Am Coll Cardiol. 2014;64(19):2039-2060. Friedman KG, et al. Management of pediatric chest pain using a standardized assessment and management plan. Pediatrics. 2011;128(2):239-245. Chamberlain RC, et al. Evaluating appropriate use of pediatric echocardiograms for chest pain in outpatient clinics. J Am Soc Echocardiogr. 2017;30(7):708-713. Nguyen T, et al. Application of the pediatric appropriate use criteria for chest pain. J Pediatr. 2017;185:124-128.

453, 455

Don't order continuous telemetry monitoring outside of the intensive care unit without using a protocol that governs continuation.

Rationale and Comments

Telemetric monitoring is of limited utility or measurable benefit in low-risk cardiac chest pain patients with normal electrocardiogram. Published guidelines provide clear indications for the use of telemetric monitoring in patients, which are contingent upon frequency, severity, duration, and conditions under which the symptoms occur. Inappropriate use of telemetric monitoring is likely to increase cost of care and produce false positives potentially resulting in errors in patient management.

Sponsoring Organizations

Society of Hospital Medicine (Adult)

Sources

ACC/AHA guidelines

References

Drew BJ, et al. Practice standards for electrocardiographic monitoring in hospital settings. Circulation. 2004;110:2721-46. Crawford MH, et al. ACC/AHA guidelines for ambulatory electrocardiography. Circulation. 1999;100:886-93. Snider A, et al. Is telemetry monitoring necessary in low-risk suspected acute chest pain syndromes? Chest. 2002;122:517-23. Marshaleen N, et al. Is telemetry overused? Is it as helpful as thought? Cleve Clin J Med. 2009;368-72. Adams HP Jr, et al. Guidelines for the early management of adults with ischemic stroke. Stroke. 2007;38(5):1655-711.

11

Don't order coronary artery calcium scoring for preoperative evaluation for any surgery, irrespective of patient risk.

Rationale and Comments

No evidence exists to support the diagnostic or prognostic potential of coronary artery calcium scoring in individuals in the preoperative setting. This practice may add costs and confound professional guideline-based evaluations.

Sponsoring Organizations

Society of Cardiovascular Computed Tomography

Sources

ACC/AHA guidelines

References

Fleisher LA, et al. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. Circulation. 2007;116(17):e418–99.

85

Don't order creatine kinase or creatine kinase-myocardial band (CK-MB) in suspected acute coronary syndrome or acute myocardial infarction.

Rationale and Comments

According to published guidelines, cardiac troponin is the lab test of choice to diagnose acute coronary syndrome or acute myocardial infarction. Troponin is highly sensitive for acute myocardial infarction and more specific than CK-MB; CK-MB yields no incremental diagnostic value even in patients with chronic kidney disease. Guidelines also support the use of cardiac troponin over CK-MB for diagnosing reinfarction.

Sponsoring Organizations

Society of Hospital Medicine – Adult Hospital Medicine

Sources

ACCF/AHA guidelines

References

Anderson JL, Adams CD, Antman EM, et al. 2012 ACCF/AHA focused update incorporated into the ACCF/AHA 2007 guidelines for the management of patients with unstable angina/non-ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines [published correction appears in J Am Coll Cardiol. 2013;62(11):1040-1]. J Am Coll Cardiol. 2013;61(23):e179-e347.
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Thygesen K, Alpert JS, White HD, et al. Universal definition of myocardial infarction. Circulation. 2007;116(22):2634-2653.
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513

Don't order follow-up or serial echocardiograms for surveillance after a finding of trace valvular regurgitation on an initial echocardiogram.

Rationale and Comments

Trace mitral, tricuspid, and pulmonic regurgitation can be detected in 70% to 90% of normal individuals and has no adverse clinical implications. The clinical significance of a small amount of aortic regurgitation with an otherwise normal echocardiographic study is unknown.

Sponsoring Organizations

American Society of Echocardiography

Sources

ACC/AHA guidelines

References

Douglas PS, et al. ACCF/ASE/AHA/ASNC/HFSA/HRS/ SCAI/SCCM/SCCT/ SCMR 2011 appropriate use criteria for echocardiography. J Am Soc Echocardiogr. 2011;24:229-67. Bonow RO, et al. 2008 focused update incorporated into the ACC/AHA 2006 guidelines for the management of patients with valvular heart disease. J Am Coll Cardiol. 2008;52:e1-142.

9

Don't order troponins for the routine evaluation of pediatric chest pain in the absence of a concerning history or ECG abnormalities.

Rationale and Comments

Troponin-I levels are a valuable tool for the assessment of adult patients who present with chest pain. However, these levels are not as useful in the pediatric population. Troponin levels in the great majority of pediatric patients presenting with chest pain are normal. Furthermore, troponin levels have not been shown to reliably correlate with disease severity or prognosis in many cardiac diseases known to cause chest pain in pediatric patients. However, in a few circumstances, such as a family history of very early cardiovascular disease or a history suggestive of myocarditis/ pericarditis, consideration of troponin levels is reasonable. Therefore, do not order troponin levels for the routine evaluation of pediatric chest pain in the absence of a concerning history or ECG abnormalities.

Sponsoring Organizations

American Academy of Pediatrics – Section on Cardiology and Cardiac Surgery

Sources

Expert consensus

References

Brown JL, Hirsh DA, Mahle WT. Use of troponin as a screen for chest pain in the pediatric emergency department. Pediatr Cardiol. 2012;33(2):337-342. Liesemer K, Casper TC, Korgenski K, Shaji SC. Use and misuse of serum troponin assays in pediatric practice. Am J Cardiol. 2012;110(2): 284-289.

451

Don't perform cardiac imaging as a preoperative assessment in patients scheduled to undergo low- or intermediate-risk noncardiac surgery.

Rationale and Comments

Noninvasive testing is not useful for patients undergoing low-risk noncardiac surgery or with no cardiac symptoms or clinical risk factors undergoing intermediate-risk noncardiac surgery. These types of testing do not change the patient's clinical management or outcomes and will result in increased costs. Therefore, it is not appropriate to perform cardiac imaging procedures for noncardiac surgery risk assessment in patients with no cardiac symptoms, clinical risk factors, or who have moderate to good functional capacity.

Sponsoring Organizations

American Society of Nuclear Cardiology

Sources

ACC/AHA guidelines

References

Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. J Am Coll Cardiol. 2009;53:2201-29. Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF. ACC/ AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American College of Cardiology/ American Heart Association Task force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). J Am Coll Cardiol. 2007;50:e159-242.

166

Don't perform cardiac imaging for patients who are at low risk.

Rationale and Comments

Chest pain patients at low risk of cardiac death and myocardial infarction (based on history, physical exam, electrocardiograms, and cardiac biomarkers) do not merit stress radionuclide myocardial perfusion imaging or stress echocardiography as an initial testing strategy if they have a normal electrocardiogram (without baseline ST-abnormalities, left ventricular hypertrophy, pre-excitation, bundle branch block, intraventricular conduction delay, paced rhythm or on digoxin therapy) and are able to exercise.

Sponsoring Organizations

American Society of Nuclear Cardiology

Sources

ACC/AHA guidelines

References

Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. J Am Coll Cardiol. 2009;53:2201-29. Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/ SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. J Am Coll Cardiol. 2010;56:1864-94. Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, Chavey WE II, Fesmire FM, Hochman JS, Levin TN, Lincoff AM, Peterson ED, Theroux P, Wenger NK, Wright RS. ACC/AHA 2007 guidelines for the management of patients with unstable angina/non-ST-elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients with Unstable Angina/Non-ST-Elevation Myocardial Infarction): developed in collaboration with the American College of Emergency Physicians, American College of Physicians, Society for Academic Emergency Medicine, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. J Am Coll Cardiol. 2007;50:e1-157.

165

Don't perform coronary cardiovascular magnetic resonance (CMR) in the initial evaluation of asymptomatic patients.

Rationale and Comments

Coronary CMR has not been well established for the evaluation of coronary atherosclerosis. Coronary CMR is primarily indicated for detecting and characterizing anomalous coronary arteries.

Sponsoring Organizations

Society for Cardiovascular Magnetic Resonance

Sources

American College of Radiology Appropriateness Criteria

References

Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. J Am Coll Cardiol. 2006 Oct 3;48(7):1475–97. American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. J Am Coll Radiol. 2006 Oct;3(10):751–71. Pennell DJ, Sechtem UP, Higgins CB, Manning WJ, Pohost GM, Rademakers FE, van Rossum AC, Shaw LJ, Yucel EK. Clinical indications for cardiovascular magnetic resonance (CMR): Consensus Panel report. J Cardiovasc Magn Reson. 2004;6(4):727–65.

174

Don't perform routine annual stress testing after coronary artery revascularization.

Rationale and Comments

Routine annual stress testing in patients without symptoms does not usually change management. This practice may lead to unnecessary testing without any proven impact on patient management.

Sponsoring Organizations

Society of Nuclear Medicine and Molecular Imaging

Sources

ACC/AHA/ACR guidelines

References

Hendel RC, et al. ACCF/ASNC/ACR/AHA/ASE/SCCT/ SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging. J Am Coll Cardiol. 2009;53:2201-29.

12

Don't perform stress cardiac imaging or advanced noninvasive imaging in the initial evaluation of patients without cardiac symptoms unless high-risk markers are present.

Rationale and Comments

Asymptomatic, low-risk patients account for up to 45% of unnecessary "screening." Testing should be performed only when the following findings are present: diabetes in patients older than 40 years; peripheral arterial disease; or greater than 2% yearly risk of coronary heart disease events.

Sponsoring Organizations

American College of Cardiology

Sources

ACC/AHA guidelines

References

Hendel RC, et al. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging. J Am Coll Cardiol. 2009;53:2201-29. Taylor AJ, et al. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography. J Am Coll Cardiol. 2010;56:1864-94. Douglas PS, et al. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography. J Am Coll Cardiol. 2011;57(9):1126-66. Hendel RC, et al. Role of radionuclide myocardial perfusion imaging for asymptomatic individuals. J Nucl Cardiol. 2011;18:3-15.

3

Don't perform stress cardiac imaging or coronary angiography in patients without cardiac symptoms unless high-risk markers are present.

Rationale and Comments

Asymptomatic, low-risk patients account for up to 45% of inappropriate stress testing. Testing should be performed only when the following findings are present: diabetes in patients older than 40 years, peripheral arterial disease, and greater than 2% yearly coronary heart disease event rate.

Sponsoring Organizations

American Society of Nuclear Cardiology

Sources

ACC/AHA guidelines

References

Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. J Am Coll Cardiol. 2009;53:2201-29. Hendel RC, Abbott BG, Bateman TM, et al. Role of radionuclide myocardial perfusion imaging for asymptomatic individuals. J Nucl Cardiol. 2011;18:3-15.

164

Don't perform stress cardiovascular magnetic resonance (CMR) as a preoperative assessment in patients scheduled to undergo low-risk, noncardiac surgery.

Rationale and Comments

Stress testing has not been shown to be useful in patients undergoing low-risk surgery. Therefore, stress CMR in these patients will not improve outcomes and will increase cost.

Sponsoring Organizations

Society for Cardiovascular Magnetic Resonance

Sources

ACC/AHA guidelines

References

Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. J Am Coll Cardiol. 2006 Oct 3;48(7):1475–97. American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. J Am Coll Radiol. 2006 Oct;3(10):751–71. Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Antman EM, Buller CE, Creager MA, Ettinger SM, Faxon DP, Fuster V, Halperin JL, Hiratzka LF, Hunt SA, Lytle BW, Nishimura R, Ornato JP, Page RL, Riegel B, Tarkington LG, Yancy CW. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. J Am Coll Cardiol. 2007 Oct 23;50(17):1707–32.

172

Don't perform stress cardiovascular magnetic resonance (CMR) in patients with acute chest pain and high probability of coronary artery disease.

Rationale and Comments

Stress testing can increase risk and delay therapy in patients with acute chest pain and markers of high risk, such as ST segment elevation and/or positive cardiac enzymes. After initial evaluation and therapy, non-stress CMR may aid in diagnosing ischemic or nonischemic myocardial injury.

Sponsoring Organizations

Society for Cardiovascular Magnetic Resonance

Sources

American College of Radiology Appropriateness Criteria

References

Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. J Am Coll Cardiol. 2006 Oct 3;48(7):1475–97. American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. J Am Coll Radiol. 2006 Oct;3(10):751–71. Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, Chavey WE 2nd, Fesmire FM, Hochman JS, Levin TN, Lincoff AM, Peterson ED, Theroux P, Wenger NK, Wright RS, Smith SC Jr. 2011 ACCF/AHA Focused Update Incorporated Into the ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina/Non-ST-Elevation Myocardial Infarction. Circulation. 2011 May 10;123(18):e426–579.

Don't perform stress cardiovascular magnetic resonance (CMR) in the initial evaluation of chest pain patients with low pretest probability of coronary artery disease.

Rationale and Comments

There are lower cost stress tests available for the initial evaluation of low-risk chest pain patients, particularly when they have a normal electrocardiogram and can exercise. Stress CMR can be valuable in evaluating intermediate-risk patients with abnormal electrocardiograms or who cannot exercise, or when initial test results are equivocal.

Sponsoring Organizations

Society for Cardiovascular Magnetic Resonance

American College of Radiology Appropriateness Criteria

References

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Don't repeat echocardiograms in stable, asymptomatic patients with a murmur/click, where a previous exam revealed no significant pathology.

Rationale and Comments

Repeat imaging to address the same question, when no pathology has been previously found and there has been no clinical change in the patient's condition, is not indicated.

Sponsoring Organizations

American Society of Echocardiography

Sources

ACC/AHA guidelines

Douglas PS, et al. ACCF/ASE/AHA/ASNC/HFSA/HRS/ SCAI/SCCM/SCCT/ SCMR 2011 appropriate use criteria for echocardiography. J Am Soc Echocardiogr. 2011;24:229-67.

Don't routinely order expanded lipid panels (particle sizing, nuclear magnetic resonance) as screening tests for cardiovascular disease.

Rationale and Comments

A standard lipid profile includes total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, and triglycerides. These lipids are carried within lipoprotein particles that are heterogeneous in size, density, charge, core lipid composition, specific apolipoproteins, and function. A variety of lipoprotein assays have been developed that subfractionate lipoprotein particles according to some of these properties such as size, density or charge. However, selection of these lipoprotein assays for improving assessment of risk of cardiovascular disease and guiding lipid-lowering therapies should be on an individualized basis for intermediate- to high-risk patients only. They are not indicated for population based cardiovascular risk screening. Research evaluating the frequency and correlates of repeat lipid testing in patients with coronary heart disease demonstrates that individuals with low-density lipoprotein cholesterol levels of less than 100 mg/dL had no additional benefit from the intensification of lipid-lowering therapies. Understanding the frequency and correlates of redundant lipid testing could identify areas for quality improvement initiatives aimed at improving the efficiency of cholesterol care in patients with coronary heart disease. Millions of U.S. adults are at increased arteriosclerotic cardiovascular disease risk—some because they have had an arteriosclerotic cardiovascular disease event, others because of arteriosclerotic cardiovascular disease risk factors. Adherence to healthy lifestyle behaviors, control of blood pressure and diabetes, and avoidance of smoking are recommended for all adults. Statin therapy should be used to reduce arteriosclerotic cardiovascular disease risk in individuals likely to have a clear net benefit (those with clinical arteriosclerotic cardiovascular disease) or in primary prevention for adults with low-density lipoprotein cholesterol levels over 190 mg/dL, those aged 40 to 75 years with diabetes, and those with a 10-year arteriosclerotic cardiovascular disease risk of 7.5% without diabetes. A clinician–patient discussion that considers potential arteriosclerotic cardiovascular disease risk reduction, adverse effects, and patient preferences is needed to decide whether to initiate statin therapy, especially in lower-risk primary prevention.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Mark McConnell, John R. Downes, Chester B. Good. Decrease the incentives to order lipid panels. JAMA Intern Med. 2014; 174(3):473. doi:10.1001/jamainternmed,2013.12872. Stone NJ, Robinson JG, Lichtenstein AH, Goff DC, et al. Treatment of blood cholesterol to reduce atherosclerotic cardiovascular disease risk in adults: synopsis of the 2013 American College of Cardiology/American Heart Association Cholesterol Guideline. Ann Intern Med. 2014; 160: 339-343. Stone NJ, Robinson JG, Lichtenstein AH, BaireyMerz CN, et al. 2013 ACA/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Accessed September 11, 2014. Sulkes D, Brown BG, Krauss RM, Segrest JP, et al. The editor's roundtable: expanded versus standard lipid panels in assessing and managing cardiovascular risk. The American Journal of Cardiology, 15 March 2008; 101(6): 828-842. Virani SS, Woodard LD, Wang D, Chitwood SS, et al. Correlates of repeat lipid testing in patients with coronary heart disease. JAMA Intern Med. 2013; 12 Aug:173(15):1439-44.

316

Don't test for myoglobin or creatine kinase MB in the diagnosis of acute myocardial infarction. Instead, use troponin I or T.

Rationale and Comments

Unlike creatine kinase MB and myoglobin, the release of troponin I or T is specific to cardiac injury. Troponin is released before creatine kinase MB and appears in the blood as early as, if not earlier than, myoglobin after acute myocardial infarction. Approximately 30% of patients experiencing chest discomfort at rest with a normal creatine kinase MB will be diagnosed with acute myocardial infarction when evaluated using troponins. Single-point troponin measurements equate to infarct size for the determination of the acute myocardial infarction severity. Accordingly, there is much support for relying solely on troponin and discontinuing the use of creatine kinase MB and other markers.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Thygesen K, Alpert JS, White HD; Joint ESC/ACCF/AHA/WHF Task Force for the Redefinition of Myocardial Infarction, Jaffe AS, Apple FS, Galvani M, Katus HA, Newby LK, Ravkilde J, Chaitman B, Clemmensen PM, Dellborg M, Hod H, Porela P, Underwood R, Bax JJ, Beller GA, Bonow R, Van der Wall EE, Bassand JP, Wijns W, Ferguson TB, Steg PG, Uretsky BF, Williams DO, Armstrong PW, Antman EM, Fox KA, Hamm CW, Ohman EM, Simoons ML, Poole-Wilson PA, Gurfinkel EP, Lopez-Sendon JL, Pais P, Mendis S, Zhu JR, Wallentin LC, Fernández-Avilés F, Fox KM, Parkhomenko AN, Priori SG, Tendera M, Voipio-Pulkki LM, Vahanian A, Camm AJ, De Caterina R, Dean V, Dickstein K, Filippatos G, Funck-Brentano C, Hellemans I, Kristensen SD, McGregor K, Sechtem U, Silber S, Tendera M, Widimsky P, Zamorano JL, Morais J, Brener S, Harrington R, Morrow D, Lim M, Martinez-Rios MA, Steinhubl S, Levine GN, Gibler WB, Goff D, Tubaro M, Dudek D, Al-Attar N. Universal definition of myocardial infarction. Circulation. 2007 Nov 27;116(22):2634-53. Eggers KM, Oldgren J, Nordenskjöld A, Lindahl B. Diagnostic value of serial measurement of cardiac markers in patients with chest pain: limited value of adding myoglobin to troponin I for exclusion of myocardial infarction. Am Heart J. 2004;148(4):574-81. Macrae AR, Kavsak PA, Lustig V, Bhargava R, Vandersluis R, Palomaki GE, Yerna MJ, Jaffe AS. Assessing the requirement for the 6-hour interval between specimens in the American Heart Association Classification of Myocardial Infarction in Epidemiology and Clinical Research Studies. Clin Chem. 2006;52(5):812-8. Kavsak PA, Macrae AR, Newman AM, Lustig V, Palomaki GE, Ko DT, Tu JV, Jaffe AS. Effects of contemporary troponin assay sensitivity on the utility of the early markers myoglobin and CKMB isoforms in evaluating patients with possible acute myocardial infarction. Clin Chem Acta. 2007;380(1-2):213-6. Saenger AK, Jaffe AS. Requiem for a heavyweight: the demise of the creatine kinase-MB. Circulation. 2008;118(21):2200-6. Reichlin T. Hochholzer W, Bassetti S, Steuer S, Stelzig C, Hartwiger S, Biedert S, Schaub N, Buerge C, Potocki M, Noveanu M, Breidthardt T, Twerenbold R, Winkler K, Bingisser R, Mueller C. Early diagnosis of myocardial infarction with sensitive cardiac troponin assays. N Engl J Med. 2009;361(9):858-67.

246

Don't use coronary artery calcium scoring for patients with known coronary artery disease (CAD) (including stents and bypass grafts).

Rationale and Comments

Coronary artery calcium scoring is used for evaluation of individuals without known CAD and offers limited incremental prognostic value for individuals with known CAD, such as those with stents and bypass grafts.

Sponsoring Organizations

Society of Cardiovascular Computed Tomography

Sources

ACC/AHA guidelines

References

Budoff MJ, et al. Assessment of coronary artery disease by cardiac computed tomography. Circulation. 2006;114(16): 1761-91. Greenland P, et al. ACCF/AHA 2007 clinical expert consensus document on coronary artery calcium scoring by computed tomography in global cardiovascular risk assessment and in evaluation of patients with chest pain. J Amer Coll Cardiol. 2007;49(3):378-402.

6

Don't use coronary CT angiography in high-risk emergency department patients presenting with acute chest pain. note: Risk defined by the Thrombolysis In Myocardial Infarction risk score for unstable angina/ acute coronary syndromes.

Rationale and Comments

To date, randomized control trials evaluating use of coronary CT angiography for individuals presenting with acute chest pain in the emergency department have been limited to low- or low-intermediate–risk individuals.

Sponsoring Organizations

Society of Cardiovascular Computed Tomography

Sources

Randomized controlled trials

References

Goldstein JA, et al. The CT-STAT (Coronary Computed Tomographic Angiography for Systematic Triage of Acute Chest Pain Patients to Treatment) trial. J Amer Coll Cardiol. 2011;58(14):1414-22. Hoffmann U, et al. Coronary CT angiography versus standard evaluation in acute chest pain. N Engl J Med. 2012;367(4):299-308. Litt HI, et al. CT angiography for s afe discharge of patients with possible acute coronary syndromes. N Engl J Med. 2012;366(15):1393-403.

15

Don't use interventions (including surgical bypass, angiogram, angioplasty or stent) as a first line of treatment for most patients with intermittent claudication.

Rationale and Comments

A trial of smoking cessation, risk factor modification, diet and exercise, as well as pharmacologic treatment should be attempted before any procedures. When indicated, the type of intervention (surgery or angioplasty) depends on several factors. Intermittent claudication can vary due to several factors. The lifetime incidence of amputation in a patient with claudication is less than 5% with appropriate risk factor modification. Procedures for claudication are usually not limb-saving, but, rather, lifestyle-improving. However, interventions are not without risks, including worsening the patient's perfusion, and should be reserved until a trial of conservative management has been attempted. Many people will actually realize an increase in their walking distance and pain threshold with exercise therapy. In cases in which the claudication limits a person's ability to carry out normal daily functions, it is appropriate to intervene. Depending on the characteristics of the occlusive process, and patient comorbidities, the best option for treatment may be either surgical or endovascular.

Rationale and Comments

Society for Vascular Surgery

Sources

Expert consensus

References

Adam DJ, Beard JD, Cleveland T, Bell J, Bradbury AW, Forbes JF, Fowkes FG, Gillepsie I, Ruckley CV, Raab G, Storkey H; BASIL trial participants. Bypass versus angioplasty in severe ischaemia of the leg (BASIL): multicentre, randomised controlled trial. Lancet. 2005;366(9501):1925-34. Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG; TASC II Working Group. Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II). J Vasc Surg. 2007;45 Suppl S:S5-67.

236

Patients who have no cardiac history and good functional status do not require preoperative stress testing prior to noncardiac thoracic surgery.

Rationale and Comments

Functional status has been shown to be reliable for prediction of perioperative and long-term cardiac events. In highly functional asymptomatic patients, management is rarely changed by preoperative stress testing. It is therefore appropriate to proceed with the planned surgery without it. Preoperative stress testing should be reserved for patients with significant clinical risk factors for cardiac complications such as history, symptom, or signs of ischemic heart disease, heart failure, cerebrovascular disease, diabetes mellitus, or peripheral vascular disease. It may also be appropriate to perform preoperative cardiac testing on patients with a low functional status (unable to carry out anything more than minor physical activity) since inactivity in these patients may mask otherwise significant cardiac disease.

Rationale and Comments

Society of Thoracic Surgeons

Sources

ACC/AHA, ESC guidelines

References

Fleisher LA, et al. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for non-cardiac surgery. Circulation. 2007;116:e418-99. Poldermans D, et al. Guidelines for preoperative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery. Eur Heart J. 2009;30:2769-812. Brunelli A, et al. Recalibration of the revised cardiac risk index in lung resection candidates. Ann Thorac Surg. 2010;90:199-203. Wijeysundera DN, et al. Non-invasive cardiac stress testing before elective major non-cardiac surgery: population based cohort study. BMJ. 2010;340:b5526.

82

Use methods to reduce radiation exposure in cardiac imaging, whenever possible, including not performing such tests when limited benefits are likely.

Rationale and Comments

The key step to reduce or eliminate radiation exposure is appropriate selection of any test or procedure for a specific person, in keeping with medical society recommendations, such as appropriate use criteria. Health care providers should incorporate new methodologies in cardiac imaging to reduce patient exposure to radiation while maintaining high-quality test results.

Rationale and Comments

American Society of Nuclear Cardiology

Sources

ACC/AHA guidelines

References

Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. J Am Coll Cardiol. 2009;53:2201-29. Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. J Am Coll Cardiol. 2010;56:1864-94. Cerqueira MD, Allman KC, Ficaro EP, Hansen CL, Nichols KJ, Thompson RC, Van Decker WA, Yakovlevitch M. ASNC information statement: Recommendations for reducing radiation exposure in myocardial perfusion imaging. J Nucl Cardiol. 2010;17:709-18. Douglas PS, Carr JJ, Cerqueira MD, Cummings JE, Gerber TC, Mukherjee D, Taylor AJ. Developing an action plan for patient radiation safety in adult cardiovascular medicine: proceedings from the Duke University Clinical Research Institute/American College of Cardiology Foundation/American Heart Association Think Tank held on February 28, 2011. J Am Coll Cardiol. 2012;59:In Press. (Published online March 22, 2012.)

167

Don't use plasma catecholamines to evaluate a patient for pheochromocytoma or paraganglioma. Instead, use plasma free metanephrines or urinary fractionated metanephrines.

See Endocrinologic.

Don't request routinely extended incubation of blood cultures in suspected endocarditis.

See Infectious Disease.

Don't screen for renal artery stenosis in patients without resistant hypertension and with normal renal function, even if known atherosclerosis is present.

See Nephrologic.

Don't order a screening ECG prior to initiation of attention-deficit/hyperactivity disorder therapy in asymptomatic, otherwise healthy pediatric patients with no personal or family history of cardiac disease.

See Pediatric.

Avoid use of ultrasound for routine surveillance of carotid arteries in the asymptomatic healthy population at any time.

See Preventive Medicine.

Don't order annual electrocardiography or any other cardiac screening for asymptomatic, low-risk patients.

See Preventive Medicine.

Don't order coronary artery calcium scoring for screening purposes on low-risk asymptomatic individuals except for those with a family history of premature coronary artery disease.

See Preventive Medicine.

Don't routinely order coronary CT angiography for screening asymptomatic individuals.

See Preventive Medicine.

Don't take a multi-vitamin, vitamin E, or beta-carotene to prevent cardiovascular disease or cancer.

See Preventive Medicine.

Don't routinely order a screening ECG as part of a sports preparticipation examination in asymptomatic, otherwise healthy patients with no personal or family history of cardiac disease.

See Sports Medicine.

Avoid the use of combination topical steroid antifungals for tinea corporis, Candida skin infections, and diaper dermatitis.

Rationale and Comments

Although combination topical antifungal/corticosteroids have been approved for the treatment of tinea corporis, candidiasis, and diaper dermatitis, we recommend against use of these agents. Many providers are unaware that the combination products contain a relatively high-potency topical steroid. For treatment of tinea corporis, the application of a topical antifungal agent alone is recommended. If symptoms such as severe pruritus require concomitant application of a topical steroid, a separate low-potency agent can be prescribed, allowing for a tapering course that should be limited to less than two weeks. A separate topical antifungal cream can be continued longer until the infection is cleared. This will reduce the risk of systemic absorption of the topical steroid. Combination products are often used for treatment of diaper dermatitis. In most patients, diaper dermatitis is an irritant contact dermatitis from stool that will usually respond to barrier diaper creams/ointments alone. Combination products, if applied with every diaper change, can result in skin atrophy, striae, and systemic absorption of the relatively high-potency topical steroids. It is instead recommended that barrier products be applied with every diaper change in this circumstance and a second low-potency topical steroid be applied as needed, no more than twice a day and tapered as soon as the dermatitis is under control. Combination products are also often expensive and not covered by pharmacy plans.

Sponsoring Organizations

American Academy of Pediatrics – Section on Dermatology

Sources

Expert consensus

References

Wheat CM, et al. Current trends in the use of two combination antifungal/corticosteroid creams. J Pediatr. 2017;186:192-195. Cohen B. Differential diagnosis of diaper dermatitis. Clin Pediatr (Phila). 2017;56(5_suppl):16S-22S. Alston SJ, et al. Persistent and recurrent tinea corporis in children treated with combination antifungal/corticosteroid agents. Pediatrics. 2003;111(1):201-203.

471

Avoid the use of systemic (oral or injected) corticosteroids in most cases of atopic dermatitis.

Rationale and Comments

Although systemic corticosteroids can lead to rapid clearing of disease and improvement in pruritus, many short- and long-term adverse effects limit their use, including significant growth retardation, adrenal suppression in more than 90%, and rebound flaring and/or worsening of disease at the time of corticosteroid discontinuation. Atopic dermatitis treatment guidance put forth by the American Academy of Dermatology specifically advises against the use of systemic steroids in children with atopic dermatitis, with few exceptions. In general, atopic dermatitis can be adequately controlled with good skin care practices and topical prescription therapies. In patients who have recalcitrant disease, phototherapy and/or steroid-sparing systemic agents may be required for adequate control. Systemic corticosteroids should only be prescribed for severe flares once all other treatment options have been exhausted and should be limited to a short course for the purpose of bridging to a steroid-sparing agent.

Sponsoring Organizations

American Academy of Pediatrics – Section on Dermatology

Sources

Systematic review

References

Proudfoot LE, et al.; European Dermato-Epidemiology Network (EDEN). The European TREatment of severe Atopic eczema in children Taskforce (TREAT) survey. Br J Dermatol. 2013;169(4):901-909. Drucker AM, et al. Use of systemic corticosteroids for atopic dermatitis: International Eczema Council consensus statement. Br J Dermatol. 2018;178(3):768-775. Yu SH, et al. A systematic review of the safety and efficacy of systemic corticosteroids in atopic dermatitis. J Am Acad Dermatol. 2018;78(4):733-740. Sidbury R, et al. Guidelines of care for the management of atopic dermatitis: section 3. Management and treatment with phototherapy and systemic agents. J Am Acad Dermatol. 2014;71(2):327-349. Tollefson MM, et al.; American Academy of Pediatrics, Section on Dermatology. Atopic dermatitis: skin-directed management. Pediatrics. 2014;134(6):e1735-e1744.

472

Don't prescribe oral antifungal therapy for suspected nail fungus without confirmation of fungal infection.

Rationale and Comments

About half of nails with suspected fungus do not have a fungal infection. Because other nail conditions, such as nail dystrophies, may look similar in appearance, it is important to ensure accurate diagnosis of nail disease before beginning treatment. By confirming a fungal infection, patients are not inappropriately at risk for the side effects of antifungal therapy, and nail disease is correctly treated.

Sponsoring Organizations

American Academy of Dermatology

Sources

Expert consensus

References

Roberts DT, Taylor WD, Boyle J; British Association of Dermatologists. Guidelines for treatment of onychomycosis. Br J Dermatol. 2003 Mar;148(3):402-10. Mehregan DR, Gee SL. The cost effectiveness of testing for onychomycosis versus empiric treatment of onychodystrophies with oral antifungal agents. Cutis. 1999 Dec;64(6):407-10.

148

Don't routinely drain non-painful fluid-filled breast cysts.

Rationale and Comments

Breast cysts are common. They are harmless fluid filled sacs. If an ultrasound (sonogram) confirms that a breast mass is a simple cyst, it does not need to be drained unless it is bothersome to the patient or if there are concerns it could be something other than a cyst or has complex characteristics.

Sponsoring Organizations

American Society of Breast Surgeons – Benign Breast Disease

Sources

Expert consensus

References

Amin AL, Purdy AC, Mattingly JD, Kong AL, Termuhlen PM. Benign breast disease. Surg Clin North Am. 2013;93:299-308. Berg WA, Sechtin AG, Marques H, Zhang Z. Cystic breast masses and the ACRIN 6666 experience. Radiol Clin North Am. 2010;48:931-987. Sanders LM, Lacz NL, Lara J. 16 year experience with aspiration of noncomplex breast cysts: cytology results with focus on positive cases. Breast J. 2012;18:443-452.

358

Don't routinely order laboratory tests for associated autoimmune diseases in patients with vitiligo in the absence of signs and/or symptoms of the diseases in question.

Rationale and Comments

Vitiligo is a depigmenting disorder believed to have an autoimmune origin. It is well established that patients with nonsegmental vitiligo have an increased risk of other autoimmune conditions, with subclinical hypothyroidism being the most common. There is also a higher risk of having antithyroid antibodies. Other autoimmune conditions have been associated with vitiligo but less commonly. Recognizing the risk of associated autoimmune conditions has led physicians to screen patients with vitiligo for other diseases. There is no convincing evidence that extensive workups in the absence of specific clinical suspicion improves outcomes for patients, and may in fact beget additional costs and harms. Although many studies suggest ordering these tests, it is based largely on the increased cosegregation of vitiligo and thyroid disease and not on improved outcomes from having identified an abnormal laboratory test result. Therefore, thyroid function testing including screening for thyroid autoimmunity or hypothyroidism is only indicated for clinical findings such as goiter, slow growth and hypothyroid symptoms, or a strong family history of thyroid disease

Sponsoring Organizations

American Academy of Pediatrics – Section on Dermatology

Sources

Expert consensus

References

Alvarez Casano M, et al. Review of the natural course of subclinical hypothyroidism and study of its costs. Endocrinol Diabetes Nutr. 2019;66(9):550-554. Gawkrodger DJ, et al. Guideline for the diagnosis and management of vitiligo. Br J Dermatol. 2008;159(5):1052-1076. Gill L, et al. Comorbid autoimmune diseases in patients with vitiligo: a cross-sectional study. J Am Acad Dermatol. 2016;74(2):295-302. Sawicki J, et al. Vitiligo and associated autoimmune disease: retrospective review of 300 patients. J Cutan Med Surg. 2012;16(4):261-266. Yuan J, et al. The prevalence of thyroid disorders in patients with vitiligo: a systematic review and meta-analysis. Front Endocrinol (Lausanne). 2019;9:803.

469

Don't routinely order laboratory tests for patients with alopecia areata in the absence of signs and/or symptoms of the diseases in question.

Rationale and Comments

Alopecia areata is a hair loss disorder believed to have an autoimmune origin. It is well established that patients with alopecia areata have an increased risk of other autoimmune conditions, with thyroid disease being the most common. As in the case of vitiligo, it is more common to find thyroid autoantibodies or subclinical hypothyroidism than overt thyroid disease, unless there are clinically suspicious findings. Patients identified as having subclinical hypothyroidism are not currently treated and may even have resolution of the abnormal TSH. Recognizing the risk of associated autoimmune disease has led physicians over time to screen patients with alopecia areata for other diseases. There is no convincing evidence that extensive workups in the absence of specific clinical suspicion improves outcomes for patients, and may in fact beget additional costs, including follow-up for patients screening positive, as well as harms. Although many studies suggest ordering these tests, this is based largely on the increased cosegregation of alopecia areata and thyroid disease and not on improved management strategies or outcomes from having identified an abnormal laboratory test result. Therefore, thyroid function testing, including screening for thyroid autoimmune disease or hypothyroidism, is only indicated for clinical findings such as goiter, slow growth and hypothyroid symptoms, or a strong family history of thyroid disease.

Sponsoring Organizations

American Academy of Pediatrics – Section on Dermatology

Sources

Expert consensus

References

Patel D, et al. Screening guidelines for thyroid function in children with alopecia areata. JAMA Dermatol. 2017;153(12):1307-1310. Kinoshita-Ise M; et al. Chronological association between alopecia areata and autoimmune thyroid disease: a systematic review and meta-analysis. J Dermatol 2019;46(8):702-709.

470

Don't routinely prescribe antibiotics for inflamed epidermal cysts.

Rationale and Comments

The overwhelming majority of red and swollen epidermal cysts are inflamed but not infected. It is important to confirm infection before treating these cysts with antibiotics. Appropriate treatments for inflamed epidermal cysts include incision and drainage or an injection of corticosteroid directly into the cyst.

Sponsoring Organizations

American Academy of Dermatology

Sources

IDSA guideline

References

Liu C, Bayer A, Cosgrove SE, Daum RS, Fridkin SK, Gorwitz RJ, Kaplan SL, Karchmer AW, Levine DP, Murray BE, J Rybak M, Talan DA, Chambers HF; Infectious Diseases Society of America. Clinical practice guidelines by the Infectious Diseases Society of America for the treatment of methicillin-resistant Staphylococcus aureus infections in adults and children. Clin Infect Dis. 2011 Feb 1;52(3):e18-55. Diven DG, Dozier SE, Meyer DJ, Smith EB. Bacteriology of inflamed and uninflamed epidermal inclusion cysts. Arch Dermatol. 1998 Jan;134(1):49-51.

288

Don't treat tinea capitis with topical medications only.

Rationale and Comments

Tinea capitis, a dermatophyte infection of the hair shafts of the scalp, is treated with antifungal agents. Topical treatments cannot penetrate the hair shaft itself, which is where the infection lies; thus, monotherapy with topical medications is insufficient to effectively treat the infection. This insufficient treatment can lead to increased health care costs resulting from multiple visits and the prescribing of ineffective medications. For this reason, when tinea capitis is suspected or is diagnosed, systemic treatment is warranted, most commonly with off-label griseofulvin or terbinafine. Terbinafine is effective for most types of tinea capitis and is less expensive than griseofulvin with improved compliance because of a shorter required course of treatment. Topical treatments such as ketoconazole shampoo and selenium sulfide shampoo may be used adjunctively to decrease carriage of viable spores, thus possibly decreasing the time to cure and decreasing shedding of the organism, which decreases risk of transmission of infection to other individuals.

Sponsoring Organizations

American Academy of Pediatrics – Section on Dermatology

Sources

Expert consensus

References

Kakourou T, et al.; European Society for Pediatric Dermatology. Guidelines for the management of tinea capitis in children. Pediatr Dermatol. 2010;27(3):226-228. Chan YC, et al. New treatments for tinea capitis. Curr Opin Infect Dis. 2004;17(2):97-103. Coulibaly O, et al. A double-blind randomized placebo-controlled clinical trial of squalamine ointment for tinea capitis treatment. Mycopathologia. 2015;179(3-4):187-193.

468

Don't use antibiotic therapy for stasis dermatitis of lower extremities.

Rationale and Comments

Stasis dermatitis is commonly treated with antibiotic therapy, which may be a result of misdiagnosis or lack of awareness of the pathophysiology of the disease. The standard of care for the treatment of stasis dermatitis affecting lower extremities is a combination of leg elevation and compression. Elevation of the affected area accelerates improvements by promoting gravity drainage of edema and inflammatory substances. The routine use of oral antibiotics does not improve healing rates and may result in unnecessary hospitalization, increased health care costs, and potential for patient harm.

Sponsoring Organizations

Infectious Diseases Society of America

Sources

Infectious Diseases Society of America guidelines

References

Stevens DL, Bisno AL, Chambers HF, Dellinger EP, Goldstein EJ, Gorbach SL, Hirschmann JV, Kaplan SL, Montoya JG, Wade JC. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. Clin Infect Dis. 2014;59(2):147-59. Collins L, Seraj S. Diagnosis and treatment of venous ulcers. Am Fam Physician. 2010;81(8):989-96.

255

Don't use oral antibiotics for treatment of atopic dermatitis unless there is clinical evidence of infection.

Rationale and Comments

The presence of high numbers of the Staphylococcus aureus (staph) bacteria on the skin of children and adults with atopic dermatitis is common. It is widely believed that staph bacteria may play a role in causing skin inflammation, but the routine use of oral antibiotic therapy to decrease the amount of bacteria on the skin has not been definitively shown to reduce the signs, symptoms (e.g., redness, itch), or severity of atopic dermatitis. In addition, if oral antibiotics are used when there is not an infection, it may lead to the development of antibiotic resistance. The use of oral antibiotics also can cause side effects, including hypersensitivity reactions, including exaggerated immune responses such as allergic reactions. Although it can be difficult to determine the presence of a skin infection in atopic dermatitis patients, oral antibiotics should only be used to treat patients with evidence of bacterial infection in conjunction with other standard and appropriate treatments for atopic dermatitis.

Sponsoring Organizations

American Academy of Dermatology

Sources

Cochrane Database of Systematic Reviews

References

Bath-Hextall JF, Birnie AJ, Ravenscroft JC, Williams JC. Interventions to reduce Staphylococcus aureus in the management of atopic eczema: an updated Cochrane review. Br J Dermatol. 2010;163:12-26.

149

Don't use systemic (oral or injected) corticosteroids as a long-term treatment for dermatitis.

Rationale and Comments

The potential complications of long-term treatment with oral or injected corticosteroids outweigh the potential benefits. Although the short-term use of systemic corticosteroids is sometimes appropriate to provide relief of severe symptoms, long-term treatment could cause serious short- and long-term adverse effects in both children and adults. In extreme cases that have failed to respond to other appropriate treatments, the benefits of systemic corticosteroids must be weighed against these potentially serious risks.

Sponsoring Organizations

American Academy of Dermatology

Sources

Expert consensus

References

Sidbury R, Davis DM, Cohen DE, Cordoro KM, Berger TG, Bergman JN, Chamlin SL, Cooper KD, Feldman SR, Hanifin JM, Krol A, Margolis DJ, Paller AS, Schwarzenberger K, Silverman RA, Simpson EL, Tom WL, Williams HC, Elmets CA, Block J, Harrod CG, Begolka WS, Eichenfield LF; American Academy of Dermatology. Guidelines of care for the management of atopic dermatitis: section 3. Management and treatment with phototherapy and systemic agents. J Am Acad Dermatol. 2014 Aug;71(2):327-49. Diepgen TL, Andersen KE, Chosidow O, Coenraads PJ, Elsner P, English J, Fartasch M, Gimenez-Arnau A, Nixon R, Sasseville D, Agner T. Guidelines for diagnosis, prevention and treatment of hand eczema. J Dtsch Dermatol Ges. 2015 Jan;13(1):e1-22. Usatine RP, Riojas M. Diagnosis and management of contact dermatitis. Am Fam Physician. 2010 Aug 1;82(3):249-55. Krejci-Manwaring J, McCarty MA, Camacho F, Manuel J, Hartle J, Fleischer A Jr, Feldman SR. Topical tacrolimus 0.1% improves symptoms of hand dermatitis in patients treated with a prednisone taper. J Drugs Dermatol. 2008 Jul;7(7):643-6.

285

Don't use skin prick tests or blood tests such as the radioallergosorbent test for the routine evaluation of eczema.

See Allergy and Immunologic.

Don't culture or treat clinically uninfected lower extremity wounds with systemic antibiotics.

See Infectious Disease.

Don't routinely use antibiotics to treat bilateral swelling and redness of the lower leg unless there is clear evidence of infection.

See Infectious Disease.

Avoid antibiotics and wound cultures in emergency department patients with uncomplicated skin and soft tissue abscesses after successful incision and drainage and with adequate medical follow-up.

Rationale and Comments

Skin and soft tissue infections are a frequent reason for visiting an emergency department. Some infections, called abscesses, become walled off and form pus under the skin. Opening and draining an abscess is the appropriate treatment; antibiotics offer no benefit. Even in abscesses caused by methicillin-resistant Staphylococcus aureus, appropriately selected antibiotics offer no benefit if the abscess has been adequately drained and the patient has a well-functioning immune system. Additionally, culture of the drainage is not needed as the result will not routinely change treatment.

Sponsoring Organizations

American College of Emergency Physicians

Sources

Randomized controlled trials

References

Baumann BM, Russo CJ, Pavlik D, Cassidy-Smith T, Brown N, Sacchetti A, Capano-Wehrle LM, Mistry RD. Management of pediatric skin abscesses in pediatric, general academic and community emergency departments. West J Emerg Med. 2011May;12(2):159-67. Duong M, Markwell S, Peter J, Barenkamp S. Randomized, controlled trial of antibiotics in the management of community-acquired skin abscesses in the pediatric patient. Ann Emerg Med. 2010 May;55(5):401-7. Llera JL, Levy RC. Treatment of cutaneous abscess: a double-blind clinical study. Ann Emerg Med. 1985;14:15-9. Niska R, Bhuiya F, Xu J. National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary. National health statistics reports. Hyattsville, [MD]: National Center for Health Statistics. 2010. 31 p. Report no.: 26.

137

Avoid CT of the head in asymptomatic adult patients in the emergency department with syncope, insignificant trauma, and a normal neurological evaluation.

Rationale and Comments

Syncope (passing out or fainting) or near syncope (lightheadedness or almost passing out) is a common reason for visiting an emergency department and most episodes are not serious. Many tests may be ordered to identify the cause of such episodes. However, diagnostic tests for syncope should not be routinely ordered, and the decision to order any tests should be guided by information obtained from the patient's history or physical examination. CT scans of the brain are frequently ordered for this problem to look for bleeding or strokes, but published research has confirmed that abnormalities are rarely found. CT scans are expensive, and may unnecessarily expose patients to radiation. If a head injury is associated with a syncopal episode (fainting spell), then a CT scan of the brain may be indicated. In addition, if there were symptoms of a stroke (i.e., headache, garbled speech, weakness in one arm or leg, trouble walking, or confusion) before or after a syncopal episode, a CT scan may be indicated. However, in the absence of head injury or signs of a stroke, a CT scan of the brain should not be routinely ordered.

Sponsoring Organizations

American College of Emergency Physicians

Sources

Cohort studies

References

Gallagher EJ. Hospitalization for fainting: high stakes, low yield. Ann Emerg Med. 1997 Apr;29(4):540-2. Pires LA, Ganji JR, Jarandila R, Steele R. Diagnostic patterns and temporal trends in the evaluation of adult patients hospitalized with syncope. Arch Intern Med. 2001Aug 13-27;161:1889-95. Giglio P, Bednarczyk EM, Weiss K, Bakshi R. Syncope and head CT scans in the emergency department. Emerg Radiol. 2005 Dec;12(1-2):44-6. Shukla GJ. Cardiology patient page. Syncope. Circulation. 2006Apr 25;113(16):e715-7. Grossman SA, Fischer C, Bar JL, Lipsitz LA, Mottley L, Sands K, Thompson S, Zimetbaum P, Shapiro NI. The yield of head CT in syncope: a pilot study. Intern Emerg Med. 2007 Mar;2(1):46-9. Mendu ML, McAvay G, Lampert R, Stoehr J, Tinetti ME. Yield of diagnostic tests in evaluating syncopal episodes in older patients. Arch Intern Med. 2009 Jul 27;169(14):1299-305.

222

Avoid CT scans of the head in emergency department patients with minor head injury who are at low risk based on validated decision rules.

Rationale and Comments

Minor head injury is a common reason for visiting an emergency department. The majority of minor head injuries do not lead to injuries such as skull fractures or bleeding in the brain that need to be diagnosed by a CT scan. As CT scans expose patients to ionizing radiation, increasing patients' lifetime risk of cancer, they should only be performed on patients at risk for significant injuries. Physicians can safely identify patients with minor head injury in whom it is safe to not perform an immediate head CT by performing a thorough history and physical examination following evidence-based guidelines. This approach has been proven safe and effective at reducing the use of CT scans in large clinical trials. In children, clinical observation in the emergency department is recommended for some patients with minor head injury prior to deciding whether to perform a CT scan.

Sponsoring Organizations

American College of Emergency Physicians

Sources

ACEP/CDC guidelines

References

Jagoda AS, Bazarian JJ, Bruns JJ, Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic brain injury in the acute setting. Ann Emerg Med. 2008 Dec;52(6):714-48. Stiell IG, Clement CM, Rowe BH, Schull MJ, Brison R, Cass D, Eisenhauer MA, McKnight RD, Bandiera G, Holroyd B, Lee JS, Dreyer J, Worthington JR, Reardon M, Greenberg G, Lesiuk H,MacPhail I, Wells GA. Comparison of the Canadian CT head rule and the New Orleans criteria in patients with minor head injury. JAMA. 2005 Sep 28;294(12):1511-8. Haydel MJ, Preston CA, Mills TJ, Luber S, Blaudeau E, DeBlieux PM. Indications for computed tomography in patients with minor head injury. N Engl J Med. 2000 Jul 13;343(2):100-5. Smits M, Dippel DWJ, de Haan GG, Dekker HM, Vos PE, Kool DR, Nederkoorn PJ, Hofman PA, Twijnstra A, Tanghe HL, Hunink MG. External validation of the Canadian CT head rule and the New Orleans criteria for CT scanning in patients with minor head injury. JAMA. 2005 Sep 28;294(12):1519-25.

134

Avoid performing plain x-rays in instances of facial trauma.

Rationale and Comments

Evidence currently indicates that maxillofacial CT is available in most trauma centers and is the most sensitive method for detecting fractures in instances of facial trauma. Evidence also indicates that the use of plain x-rays does not improve quality of care, causes unnecessary radiation exposure, and leads to substantial increase in costs. Use of plain x-rays for diagnosis and treatment is helpful in instances of dental and/or isolated mandibular injury or trauma.

Sources

American Society of Plastic Surgeons

Sources

Expert consensus

References

Sitzman TJ, et al. Clinical criteria for obtaining maxillofacial computed tomographic scans in trauma patients. Plast Reconstr Surg. 2011 Mar;127(3):1270–8. Stacey DH, Doyle JF, Mount DL, Snyder MC, Gutowski KA. Management of mandible fractures. Plast Reconstr Surg. 2006 Mar;117(3):48e–60e.

205

Avoid placing indwelling urinary catheters in the emergency department for either urine output monitoring in stable patients who can void, or for patient or staff convenience.

Rationale and Comments

Indwelling urinary catheters are placed in patients in the emergency department to assist when patients cannot urinate, to monitor urine output, or for patient comfort. Catheter-associated urinary tract infection is the most common hospital-acquired infection in the U.S., and can be prevented by reducing the use of indwelling urinary catheters. Emergency physicians and nurses should discuss the need for a urinary catheter with a patient and/or their caregivers, as sometimes such catheters can be avoided. Emergency physicians can reduce the use of indwelling urinary catheters by following the Centers for Disease Control and Prevention's evidence-based guidelines for the use of urinary catheters. Indications for a catheter may include: output monitoring for critically ill patients, relief of urinary obstruction, at the time of surgery and end-of-life care. When possible, alternatives to indwelling urinary catheters should be used.

Sponsoring Organizations

American College of Emergency Physicians

Sources

Expert consensus

References

Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. Infect Control Hosp Epidemiol. 2011 Feb;32:101-14. Lo E, Nicolle L, Classen D, Arias KM, Podgorny K, Anderson DJ, Burstin H, Calfee DP, Coffin SE, Dubberke ER, Fraser V, Gerding DN, Griffin FA, Gross P, Kaye KS, Klompas M, Marschall J,Mermel LA, Pegues DA, Perl TM, Saint S, Salgado CD, Weinstein RA, Wise R, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals. Infect Control Hosp Epidemiol. 2008 Oct;29:S41-50. Munasinghe RL, Yazdani H, Siddique M, Hafeez W. Appropriateness of use of indwelling urinary catheters in patients admitted to the medical service. Infect Control Hosp Epidemiol. 2001 Oct;22:647-9. Hazelett SE, Tsai M, Gareri M, Allen K. The association between indwelling urinary catheter use in the elderly and urinary tract infection in acute care. BMC Geriatr. 2006 Oct 12;6:15. Gardam MA, Amihod B, Orenstein P, Consolacion N, Miller MA. Overutilization of indwelling urinary catheters and the development of nosocomial urinary tract infections. Clin Perform Qual Health Care. 1998 Jul-Sep;6:99-102. Gokula RR, Hickner JA, Smith MA. Inappropriate use of urinary catheters in elderly patients at a midwestern community teaching hospital. Am J Infect Control. 2004;32:196-9. Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA; Healthcare Infection Control Practices Advisory Committee (HICPAC). Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta (GA): HICPAC; 2009. 67 p. Scott RA, Oman KS, Makic MB, Fink RM, Hulett TM, Braaten JS, Severyn F, Wald HL. Reducing indwelling urinary catheter use in the emergency department. A successful quality-improvement initiative. J Emerg Nurs. 2013 Mar 7. pii: S0099-1767(12)00344–3. [Epub ahead of print]

Avoid the routine use of "whole-body" diagnostic CT scanning in patients with minor or single system trauma.

Rationale and Comments

Aggressive use of "whole-body" CT scanning improves early diagnosis of injury and may even positively impact survival in polytrauma patients. However, the significance of radiation exposure as well as costs associated with these studies must be considered, especially in patients with low energy mechanisms of injury and absent physical examination findings consistent with major trauma.

Sponsoring Organizations

American College of Surgeons

Sources

Expert consensus

References

Huber-Wagner S, Lefering R, Qvick LM, Körner M, Kay MV, Pfeifer KJ, Reiser M, Mutschler W, Kanz KG; Working Group on Polytrauma of the German Trauma Society. Effect of whole-body CT during trauma resuscitation on survival: a retrospective, multicentre study. Lancet. 2009 Apr 25;373(9673):1455-61. Stengel D, Ottersbach C, Matthes G, Weigeldt M, Grundei S, Rademacher G, Tittel A, Mutze S, Ekkernkamp A, Frank M, Schmucker U, Seifert J. Accuracy of single-pass whole-body computed tomography for detection of injuries in patients with blunt major trauma. CMAJ. 2012 May 15;184(8):869-76. Ahmadinia K, Smucker JB, Nash CL, Vallier HA. Radiation exposure has increased in trauma patients over time. J Trauma. 2012 Feb;72(2):410-5. Winslow JE, Hinshaw JW, Hughes MJ, Williams RC, Bozeman WP. Quantitative assessment of diagnostic radiation doses in adult blunt trauma patients. Ann Emerg Med. 2008 Aug;52(2):93-7.

Avoid the routine use of whole-body CT scanning (pan-scanning) in pediatric trauma patients.

Rationale and Comments

While CT scans can be a helpful adjunct to diagnosing traumatic injuries, their usage should be tailored to the mechanism of injury and clinical findings. Radiation from CT scans places children at a low but real risk of developing potentially fatal malignancies later in life. Decision rules have been developed to guide the judicious use of CT scans for evaluating traumatic head, cervical spine, chest, and abdominal/pelvic injuries. Chest CTs, in particular, have limited value in the evaluation of pediatric patients with blunt trauma as few findings require specific treatments that change management. Adherence to published guidelines helps reduce unnecessary scans and reduce costs while minimizing significant missed injuries.

Sponsoring Organizations

American Academy of Pediatrics – Section on Surgery

Sources

Prospective cohort studies

References

Brenner DJ, Hall EJ. Computed tomography--an increasing source of radiation exposure. N Engl J Med. 2007;357:2277-2284. Pearce MS, Salotti JA, et al. Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study. Lancet [Internet]. 2012 Aug 4;380(9840):499-505. Kuppermann N, Holmes JF, et al. Pediatric Emergency Care Applied Research Network (PECARN). Identification of children at very low risk of clinically-important brain injuries after head trauma: a prospective cohort study. Lancet [Internet]. 2009 Oct;374(9696):1160-1170. Hoffman JR, Mower WR, et al. Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. National Emergency X-Radiography Utilization Study Group. N Engl J Med. 2000 Jul 13;343(2):94-99. Leonard JC. Cervical spine injury. Pediatr Clin North Am. 2013 Oct;60(5):1123-1137. Stephens CQ, Boulos MC, et al. Limiting thoracic CT: a rule for use during initial pediatric trauma evaluation. J Pediatr Surg. 2017 Dec;52(12):2031-2037. Streck CJ, Vogel AM, et al. Pediatric Surgery Research Collaborative. Identifying children at very low risk for blunt intra-abdominal injury in whom CT of the abdomen can be avoided safely. J Am Coll Surg. 2017 Apr;224(4):449-458.

Don't delay engaging available palliative and hospice care services in the emergency department for patients likely to benefit.

Rationale and Comments

Palliative care is medical care that provides comfort and relief of symptoms for patients who have chronic and/or incurable diseases. Hospice care is palliative care for those patients in the final few months of life. Emergency physicians should engage patients who present to the emergency department with chronic or terminal illnesses, and their families, in conversations about palliative care and hospice services. Early referral from the emergency department to hospice and palliative care services can benefit select patients resulting in both improved quality and quantity of life.

Sponsoring Organizations

American College of Emergency Physicians

Sources

Expert consensus

References

DeVader TE, DeVader SR, Jeanmonod R. Reducing cost at the end of life by initiating transfer to inpatient hospice in the emergency department. Ann Emerg Med. 2012;60(4s):S73. Kenen J. We can't save you: how to tell emergency room patients that they're dying. Slate [Internet]. 2010 Aug 4 [cited 2013 Sep 4]. http://www.slate.com/id/2262769/. Quest TE, Marco CA, Derse AR. Hospice and palliative medicine: new subspecialty, new opportunities. Ann Emerg Med. 2009;54:94-102. Smith AK, McCarthy E, Weber E, Cenzer IS, Boscardin J, Fisher J, Covinsky K. Half of older Americans seen in emergency department in last month of life; most admitted to hospital, and many die there. Health Aff. 2012 Jun 31:1277-85.

Don't obtain imaging of the cervical spine following trauma in a patient who is awake and alert without considering the use of clinical decision-making tools for cervical spine clearance.

Rationale and Comments

Consideration should be given to avoid unnecessary radiation exposure when appropriate. For instance, clinical decision-making tools incorporate three or more variables from history, physical examination, or simple clinical tests to guide patient management. Results from the National Emergency X-Radiography Utilization Study (NEXUS) and the Pediatric Emergency Care Applied Research Network (PECARN) provide a high negative predictive value for significant cervical spine injuries in pediatric patients. Low-risk criteria from NEXUS include: no posterior midline cervical spine tenderness, no evidence of intoxication, normal level of consciousness, no focal neurological deficit, and no painful distracting injuries. PECARN developed a model that was highly sensitive for a normal cervical spine in the absence of: altered mental status, focal neurologic findings, neck pain, torticollis, substantial torso injury, conditions predisposing to cervical spine injury, high-risk motor vehicle crash, and diving. In comparison to NEXUS, the PECARN model takes into account mechanism of injury and specific extent and location of other associated injuries.

Sponsoring Organizations

American Academy of Pediatrics – Section on Neurological Surgery

Sources

Expert consensus

References

Hoffman JR, Mower WR, et al. Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. National Emergency X-Radiography Utilization Study Group. N Engl J Med. 2000;343(2):94-99.
Leonard JC, Kupperman N, et al. Factors associated with cervical spine injury in children after blunt trauma. Ann Emerg Med. 2011;58(2):145-155.

480

Don't rely on antihistamines as firstline treatment in severe allergic reactions.

See Allergy and Immunologic.

CT scans are not necessary in the routine evaluation of abdominal pain.

See Gastroenterologic.

Don't test for amylase in cases of suspected acute pancreatitis. Instead, test for lipase.

See Gastroenterologic.

Don't routinely repeat the labs hemoglobin and hematocrit in the hemodynamically normal pediatric patients with isolated blunt solid organ injury.

See Hematologic.

Don't order troponins for the routine evaluation of pediatric chest pain in the absence of a concerning history or ECG abnormalities.

See Cardiovascular.

Don't perform stress cardiovascular magnetic resonance (CMR) in patients with acute chest pain and high probability of coronary artery disease.

See Cardiovascular.

Don't use coronary CT angiography in high-risk emergency department patients presenting with acute chest pain. note: Risk defined by the Thrombolysis In Myocardial Infarction risk score for unstable angina/ acute coronary syndromes.

See Cardiovascular.

CT scans are not necessary in the evaluation of minor head injuries.

See Neurologic.

Don't routinely obtain CT scanning of children with mild head injuries.

See Neurologic.

Do not routinely perform brain imaging after acute seizure in patients with established epilepsy.

See Neurologic.

Don't use phenytoin or fosphenytoin to treat seizures caused by drug toxicity or drug withdrawal.

See Neurologic.

Don't order ankle or midfoot x-rays for patients older than six years without positive criteria, per the Ottawa ankle rules.

See Orthopedic.

Avoid instituting intravenous (IV) fluids before doing a trial of oral rehydration therapy in uncomplicated emergency department cases of mild to moderate dehydration in children.

See Pediatric.

Don't do CT for evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

See Pediatric.

Don't do CT for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

See Pediatric.

Don't routinely order electroencephalography on neurologically healthy children who have a simple febrile seizure.

See Pediatric.

Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.

See Pediatric.

Avoid CT pulmonary angiography in emergency department patients with a low-pretest probability of pulmonary embolism and either a negative Pulmonary Embolism Rule-Out Criteria or a negative D-dimer.

See Pulmonary.

Avoid routine multiple daily self-glucose monitoring in adults with stable type 2 diabetes on agents that do not cause hypoglycemia.

Rationale and Comments

Once target control is achieved and the results of self-monitoring become quite predictable, there is little gained in most individuals from repeatedly confirming. There are many exceptions, such as for acute illness, when new medications are added, when weight fluctuates significantly, when A1C targets drift off course and in individuals who need monitoring to maintain targets. Self-monitoring is beneficial as long as one is learning and adjusting therapy based on the result of the monitoring.

Sponsoring Organizations

The Endocrine Society/American Association of Clinical Endocrinologists

Sources

Randomized controlled trials

References

Davidson MB, Castellanos M, Kain D, Duran P. The effect of self monitoring of blood glucose concentrations on glycated hemoglobin levels in diabetic patients not taking insulin: a blinded, randomized trial. Am J Med. 2005;118:422-5. Farmer A, Wade A, Goyder E, Yudkin P, French D, Craven A, Holman Rury, Kinmonth AL, Neil A. Impact of self monitoring of blood glucose in the management of patients with non-insulin treated diabetes: open parallel group randomized trial. BMJ. 2007;335:132-40. O'Kane MJ, Bunting B, Copeland M, Coates VE; ESMON study group. Efficacy of self monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomized controlled trial. BMJ. 2008;336:1174-7.

139

Avoid routinely measuring thyroid function and/or insulin levels in children with obesity.

Rationale and Comments

TSH levels can be slightly elevated in obesity but this is more likely a consequence of obesity and rarely true hypothyroidism. Free T4 levels are usually normal and if so there is no proven benefit to treatment when TSH is minimally elevated. Testing thyroid function in otherwise healthy children should be considered only if stature and/or height velocity is decreased in relation to the stage of puberty. There are significant limitations in the use of insulin levels as a marker of insulin resistance; furthermore, it is not necessary to order this test to establish a weight control management plan. (This item submitted jointly with the AAP Section on Obesity)

Sponsoring Organizations

American Academy of Pediatrics – Section on Endocrinology

Sources

Expert consensus

References

Gertig, A.M., E. Niechcial, and B. Skowronska. Thyroid axis alterations in childhood obesity. Pediatr Endocrinol Diabetes Metab, 2012. 18(3): p. 116-9. Grandone, A., et al., Thyroid function derangement and childhood obesity: an Italian experience. BMC Endocr Disord, 2010. 10: p. 8. August, G.P., et al., Prevention and treatment of pediatric obesity: an endocrine society clinical practice guideline based on expert opinion. J Clin Endocrinol Metab, 2008. 93(12): p. 4576-99. Reinehr, T., et al., Definable somatic disorders in overweight children and adolescents. J Pediatr, 2007. 150(6): p. 618-22, 622 e1-5. Levy-Marchal, C., et al., Insulin resistance in children: consensus, perspective, and future directions. J Clin Endocrinol Metab, 2010. 95(12): p. 5189-98.

355

Don't medicate to achieve tight glycemic control in older adults. Moderate control is generally better.

Rationale and Comments

There is no evidence that using medications to achieve tight glycemic control in older adults with type 2 diabetes is beneficial. Among nonolder adults, except for reductions in myocardial infarction and mortality with metformin, using medications to achieve glycated hemoglobin levels less than 7% is associated with harms, including higher mortality rates. Given the long time frame to achieve theorized microvascular benefits of tight control, glycemic goals should reflect patient goals, health status, and life expectancy.

Sponsoring Organizations

American Geriatrics Society

Sources

Randomized controlled trials

References

ACCORD Study Group. Effects of intensive glucose lowering in type 2 diabetes. N Engl J Med. 2008;258(24):2545-59. ACCORD Study Group. Long-term effects of intensive glucose lowering on cardiovascular outcomes. N Engl J Med. 2011;364(9):818-28. Duckworth W, et al. Glucose control and vascular complications in veterans with type 2 diabetes. N Engl J Med. 2009;360(2):129-39. ADVANCE Collaborative Group, et al. Intensive blood glucose control and vascular outcomes in patients with type 2 diabetes. N Engl J Med. 2008;358:2560-72. UK Prospective Diabetes Study Group. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes. Lancet. 1998;352: 854-65. Montori VM, et al. Glycemic control in type 2 diabetes: time for an evidence-based about-face? Ann Intern Med. 2009; 150(11):803-8. [Erratum: Ann Intern Med. 2009;151(2): 144]. Finucane T. "Tight control" in geriatrics: the emperor wears a thong. J Am Geriatr Soc. 2012;60:1571-5.

16

Don't order a total or free triiodothyronine (T3) level when assessing levothyroxine (T4) dose in hypothyroid patients.

Rationale and Comments

T4 is converted into T3 at the cellular level in virtually all organs. Intracellular T3 levels regulate pituitary secretion and blood levels of thyroid-stimulating hormone (TSH), as well as the effects of thyroid hormone in multiple organs; a normal TSH indicates an adequate T4 dose. Conversion of T4 to T3 at the cellular level may not be reflected in the T3 level in the blood. Compared to patients with intact thyroid glands, patients taking T4 may have higher blood T4 and lower blood T3 levels. Thus the blood level of total or free T3 may be misleading (low normal or slightly low); in most patients a normal TSH indicates a correct dose of T4.

Sponsoring Organizations

The Endocrine Society/American Association of Clinical Endocrinologists

Sources

AACE/ATA guidelines

References

Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. Endocr Pract. 2012; Sep 11:1-207.

142

Don't order multiple tests in the initial evaluation of a patient with suspected thyroid disease. Order TSH, and if abnormal, follow up with additional evaluation or treatment depending on the findings.

Rationale and Comments

The TSH test can detect subclinical thyroid disease in patients without symptoms of thyroid dysfunction. A TSH value within the reference interval excludes the majority of cases of primary overt thyroid disease. If the TSH is abnormal, confirm the diagnosis with free thyroxine (T4).

Sponsoring Organizations

American Society for Clinical Pathology

Sources

U.S. Preventive Services Task Force

References

Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA; American Association of Clinical Endocrinologists and American Thyroid Association Taskforce on Hypothyroidism in Adults. ATA/AACE guidelines for hypothyroidism in adults. Endocr Pract. 2012;18(6):988-1028. Dufour DR. Laboratory tests of thyroid function: uses and limitations. Endocrinol Metab Clin North Am. 2007;36(3):579-94, v. U.S. Preventative Services Task Force. Screening for thyroid disease: recommendation statement. Ann Intern Med. 2004;140(2):125-7.

247

Don't prescribe testosterone or testosterone products to men contemplating/ attempting to initiate pregnancy.

Rationale and Comments

Testosterone therapy is widely used as treatment for hypoandrogenemia and associated symptoms such as sexual dysfunction. However, it is well established that exogenous testosterone and other androgens can lead to decreased or absent sperm production, low sperm count, and infertility. Furthermore, this is not always reversible, even after removing the exogenous androgens.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

Randomized controlled trials

References

Amory JK. Progress and prospects in male hormonal contraception. Curr Opin Endocrinol Diabetes Obes. 2008 Jun;15(3):255–60. Gu Y, Liang X, Wu W, Liu M, Song S, Cheng L, Bo L, Xiong C, Wang X, Liu X, Peng L, Yao K. Multicenter contraceptive efficacy trial of injectable testosterone undecanoate in Chinese men. J Clin Endocrinol Metab. 2009;94(6):1910–5. Moss JL, Crosnoe LE, Kim ED. Effect of rejuvenation hormones on spermatogenesis. Fertil Steril. 2013 jun;99(7):1814–20.

259

Don't prescribe testosterone therapy unless there is biochemical evidence of testosterone deficiency.

Rationale and Comments

Many of the symptoms attributed to male hypogonadism are commonly seen in normal male aging or in the presence of comorbid conditions. Testosterone therapy has the potential for serious side effects and represents a significant expense. It is therefore important to confirm the clinical suspicion of hypogonadism with biochemical testing. Current guidelines recommend the use of a total testosterone level obtained in the morning. A low level should be confirmed on a different day, again measuring the total testosterone. In some situations, a free or bioavailable testosterone may be of additional value.

Sponsoring Organizations

The Endocrine Society/American Association of Clinical Endocrinologists

Sources

Endocrine Society guidelines

References

Bhasin S, Cunningham GR, Hayes FJ, Matsumoto AM, Snyder PJ, Swerdloff RS, Montori VM. Testosterone therapy in adult men with androgen deficiency syndromes: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2006 Jun;91(6):1995-2010. Wu FCW, Tajar A, Beynon JM, Pye SR, Silman AJ, Finn JD, O'Neill TW, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Boonen S, Vanderschueren D, Labrie F, Huhtaniemi IT; EMAS Group. Identification of late-onset hypogonadism in middle-aged and elderly men. N Engl J Med. 2010 Jul 8;363(2):123-35.

143

Don't recommend daily home finger glucose testing in patients with type 2 diabetes mellitus not using insulin.

Rationale and Comments

Self-monitoring of blood glucose (SMBG) is an integral part of patient self-management in maintaining safe and target-driven glucose control in type 1 diabetes. However, there is no benefit to daily finger glucose testing in patients with type 2 diabetes mellitus who are not on insulin or medications associated with hypoglycemia, and there is negative economic impact and potential negative clinical impact of daily glucose testing. SMBG should be reserved for patients during the titration of their medication doses or during periods of changes in patients' diet and exercise routines.

Sponsoring Organizations

Society of General Internal Medicine

Sources

Cochrane Database of Systematic Reviews

References

American Diabetes Association. Standards of medical care in diabetes. Diabetes Care. 2013;36 Suppl 1:S11-66. Karter AJ, Parker MM, Moffet HH, Spence MM, Chan J, Ettner SL, Selby JV. Longitudinal study of new and prevalent use of self-monitoring of blood glucose. Diabetes Care. 2006;29:1757-63. Harris MI. Frequency of blood glucose monitoring in relation to glycemic control in patients with type 2 diabetes. Diabetes Care. 2001;24:979-82. Malanda UL, Welschen LMC, Riphagen II, Dekker JM, Nijpels G, Bot SDM. Self-monitoring of blood glucose in patients with type 2 diabetes mellitus who are not using insulin. Cochrane Database of Systematic Reviews. 2012;1:1-88. O'Kane MJ, Bunting B, Copeland M, Coates VE; ESMON study group. Efficacy of self-monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomised controlled trial. BMJ. 2008;336:1174-7. Peel E, Douglas M, Lawton J. Self-monitoring of blood glucose in type 2 diabetes: longitudinal qualitative study of patients' perspectives. BMJ. 2007;335:493-8. Cameron C, Coyle D, Ur E, Klarenback S. Cost-effectiveness of self-monitoring of blood glucose in patients with type 2 diabetes mellitus managed without insulin. CMAJ. 2010;182(1):28-34.

105

Don't repeat A1C testing in stable patients within three months of a previous result.

Rationale and Comments

The lifespan of an A1C is approximately 90 to 120 days, and the full effects of a patient's change in behavior, diet, or newly adjusted medications will not be fully appreciated until all previous A1C in circulation are replaced (~90 days). Therefore, testing at time intervals earlier than three months may not allow enough time to pass to reach the expected target by the clinician. Testing at six-month intervals may be considered when glycemic targets are consistently achieved.

Sponsoring Organizations

American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

ADA guideline

References

American Diabetes Association. Standards of medical care in diabetes—2007. Diabetes Care. 2007;30 Suppl 1:S4-S41.
Driskell OJ, Holland D, Waldron JL, et al. Reduced testing frequency for glycated hemoglobin, HbA1c, is associated with deteriorating diabetes control. Diabetes Care. 2014;37(10):2731-2737.
McCarter RJ, Hempe JM, Chalew SA. Mean blood glucose and biological variation have greater influence on HbA1c levels than glucose instability: an analysis of data from the Diabetes Control and Complications Trial. Diabetes Care. 2006;29(2):352-355.

525

Don't routinely order a thyroid ultrasound in patients with abnormal thyroid function tests if there is no palpable abnormality of the thyroid gland.

Rationale and Comments

Thyroid ultrasound is used to identify and characterize thyroid nodules, and is not part of the routine evaluation of abnormal thyroid function tests (over- or underactive thyroid function) unless the patient also has a large goiter or a lumpy thyroid. Incidentally discovered thyroid nodules are common. Overzealous use of ultrasound will frequently identify nodules, which are unrelated to the abnormal thyroid function, and may divert the clinical evaluation to assess the nodules, rather than the thyroid dysfunction. Imaging may be needed in thyrotoxic patients; when needed, a thyroid scan, not an ultrasound, is used to assess the etiology of the thyrotoxicosis and the possibility of focal autonomy in a thyroid nodule.

Sponsoring Organizations

The Endocrine Society/American Association of Clinical Endocrinologists

Sources

American Association of Clinical Endocrinologists|American Thyroid Association guidelines

References

Bahn RS, Burch HB, Cooper DS, Garber JR, Greenlee MC, Klein I, Laurberg P, McDougall IR, Montori VM, Rivkees SA, Ross DS, Sosa JA, Stan MN; American Thyroid Association; American Association of Clinical Endocrinologists. Hyperthyroidism and other causes of thyrotoxicosis: management guidelines of the American Thyroid Association and American Association of Clinical Endocrinologists. Thyroid. 2011;21:593-646. Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. Endocr Pract. 2012; Sep 11:1-207.

141

Don't routinely recommend daily home glucose monitoring for patients who have type 2 diabetes mellitus and are not using insulin.

Rationale and Comments

Self-monitoring of blood glucose is an integral part of patient self-management in maintaining safe and target-driven glucose control in type 1 diabetes mellitus. However, daily finger glucose testing has no benefit in patients with type 2 diabetes mellitus who are not on insulin or medications associated with hypoglycemia, and small, but significant, patient harms are associated with daily glucose testing. Self-monitoring of blood glucose should be reserved for patients during the titration of their medication doses or during periods of changes in patients' diet and exercise routines.

Sponsoring Organizations

American Academy of Family Physicians

Sources

Cochrane Database of Systematic Reviews

References

JAMA: More Evidence That Glucose Self-Monitoring May Not Improve Outcomes in Non-Insulin Dependent Type 2 Diabetes http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2630691. Society for Internal Medicine Choosing Wisely Recommendation: Don't recommend daily home finger glucose testing in patients with Type 2 diabetes mellitus not using insulin. http://www.choosingwisely.org/clinician-lists/society-general-internal-medicine-daily-home-finger-glucose-testing-type-2-diabetes-mellitus/. American Diabetes Association. Standards of medical care in diabetes. Diabetes Care. 2013;36 Suppl 1:S11-66. Karter AJ, Parker MM, Moffet HH, Spence MM, Chan J, Ettner SL, Selby JV. Longitudinal study of new and prevalent use of self-monitoring of blood glucose. Diabetes Care. 2006;29:1757-63. Harris MI. Frequency of blood glucose monitoring in relation to glycemic control in patients with type 2 diabetes. Diabetes Care. 2001;24:979-82. Malanda UL, Welschen LMC, Riphagen II, Dekker JM, Nijpels G, Bot SDM. Self-monitoring of blood glucose in patients with type 2 diabetes mellitus who are not using insulin. Cochrane Database of Systematic Reviews 2012;1:1-88. O'Kane MJ, Bunting B, Copeland M, Coates VE; ESMON study group. Efficacy of self-monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomized controlled trial. BMJ. 2008;336:1174-7. Peel E, Douglas M, Lawton J. Self-monitoring of blood glucose in type2 diabetes: longitudinal qualitative study of patients' perspectives. BMJ. 2007;335:493-8. Cameron C, Coyle D, Ur E, Klarenback S. Cost-effectiveness of self-monitoring of blood glucose in patients with type 2 diabetes mellitus managed without insulin. CMAJ. 2010;182(1):28-34. Canada's Choosing Wisely Recommendation: Don't recommend routine or multiple daily self-glucose monitoring in adults with stable type 2 diabetes on agents that do not cause hypoglycemia. https://choosingwiselycanada.org/endocrinology-and-metabolism. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee, et al. Monitoring glycemic control. Can J Diabetes. 2013;37 Suppl 1:S35-9. Davidson MB, et al. The effect of self monitoring of blood glucose concentrations on glycated hemoglobin levels in diabetic patients not taking insulin: a blinded, randomized trial. Am J Med. 2005;118(4):422-5. Farmer A, et al. Impact of self monitoring of blood glucose in the management of patients with non-insulin treated diabetes: open parallel group randomised trial. BMJ. 2007;335(7611):132. O'Kane MJ, et al. Efficacy of self monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomised controlled trial. BMJ. 2008;336(7654):1174-7.

369

Don't use nuclear medicine thyroid scans to evaluate thyroid nodules in patients with normal thyroid gland function.

Rationale and Comments

Nuclear medicine thyroid scanning does not conclusively determine whether thyroid nodules are benign or malignant. Cold nodules on thyroid scans will still require biopsy. Nuclear medicine thyroid scans are useful to evaluate the functional status of thyroid nodules in patients who are hyperthyroid.

Sponsoring Organizations

Society of Nuclear Medicine and Molecular Imaging

Sources

Expert consensus

References

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17

Don't use plasma catecholamines to evaluate a patient for pheochromocytoma or paraganglioma. Instead, use plasma free metanephrines or urinary fractionated metanephrines.

Rationale and Comments

Recommended first-line testing is either plasma free metanephrines or urinary fractionated metanephrines. If measuring plasma metanephrines, patients should have their blood drawn while in a supine position, and the values should be compared to reference intervals determined from the same collection position.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Endocrine Society guidelines

References

Lenders JW, Duh QY, Eisenhofer G, Gimenez-Roqueplo AP, Grebe SK, Murad MH, Naruse M, Pacak K, Young WF Jr. Pheochromocytoma and paraganglioma: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2014 Jun;99(6):1915-1942.

422

Don't use serum cortisol levels as initial screening for adrenal hyperfunction (Cushing syndrome); instead consider superior strategies provided in the justification.

Rationale and Comments

Serum cortisol levels do not provide high-end diagnostic accuracy or sensitivity when used as an initial diagnostic test. Late-night salivary cortisol samples employing an approved collection device, 24-hour urine-free cortisol, or a 1-mg overnight dexamethasone suppression test should be used as an initial test. These tests have a high diagnostic accuracy for Cushing syndrome. Multiple screening tests may need to be performed based on the variability of hypercortisolism in Cushing syndrome. Two measurements of abnormal cortisol levels with these tests are recommended for an initial diagnosis; further workup should be referred to an endocrinologist to make the final diagnosis. Each of these tests has different limitations and should be chosen based on the lifestyle and medical history of the patient. Patients with erratic sleep schedules or shift workers would not obtain accurate results from a late-night salivary cortisol test. Women taking oral estrogen, those taking antiepileptic drugs (e.g., phenytoin and phenobarbitone), and pregnant women could have falsely elevated cortisol levels as CYP3A4 metabolizes dexamethasone with the dexamethasone suppression test. Urine-free cortisol tests require rigorous collection management and should not be used on patients experiencing renal failure, or those suspected to have mild Cushing syndrome. Exogenous glucocorticoid use must be excluded before performing these biochemical tests.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

Endocrine Society guidelines

References

Lila AR, Sarathi V, Jagtap VS, et al. Cushing's syndrome: stepwise approach to diagnosis. Indian J Endocrinol Metab. 2011;15 Suppl 4(Suppl4):S317-21. Nieman LK, Biller BM, Findling JW, et al. The diagnosis of Cushing's syndrome: an Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab. 2008;93(5):1526-1540. Nieman, LK. Establishing the diagnosis of Cushing's syndrome. UptoDate. Available from https://www.uptodate.com/contents/establishing-the-diagnosis-of-cushings-syndrome. Gröschl M, Rauh M. Influence of commercial collection devices for saliva on the reliability of salivary steroids analysis. Steroids. 2006;71(13-14):1097-1100. Poll EM, Kreitschmann-Andermahr I, Langejuergen Y, et al. Saliva collection method affects predictability of serum cortisol. Clin Chim Acta. 2007;382(1-2):15-19.

Don't prescribe neuropathic pain agents for painless neuropathy.

See Neurologic.

Don't screen asymptomatic pregnant women for subclinical hypothyroidism.

See Obstetric.

Avoid ordering luteinizing hormone- and follicle-stimulating hormone and either estradiol or testosterone for children with pubic hair and/or body odor but no other signs of puberty.

See Pediatric.

Avoid ordering screening tests looking for chronic illness or an endocrine cause, including complete blood count, cytidine monophosphate , insulinlike growth factor 1, thyroid tests, and celiac antibodies, in healthy children who are growing at or above the 3rd percentile for height with a normal growth rate (i.e., not crossing percentiles) and with appropriate weight gain.

See Pediatric.

Avoid ordering Vitamin D concentrations routinely in otherwise healthy children, including children who are overweight or obese.

See Pediatric.

Avoid routinely ordering thyroid ultrasounds in children who have simple goiters or autoimmune thyroiditis.

See Pediatric.

Avoid TSH screening in annual well-visits for asymptomatic adults, regardless of age.

See Preventive Medicine.

Don't perform population-based screening for 25-OH-vitamin D deficiency.

See Preventive Medicine.

Gastroenterologic

Avoid other imaging tests apart from ultrasound for the initial evaluation of patients with suspected gallstone disease.

Rationale and Comments

The diagnostic workup of acute right upper quadrant pain is informed by risk factors for cholecystitis. When acute cholecystitis is suspected, the initial imaging modality of choice is ultrasound based on availability, examination time, lack of ionizing radiation, morphologic evaluation, confirmation of the presence or absence of gallstones, evaluation of bile ducts, and identification or exclusion of alternative diagnoses. When the clinical features, examination, laboratory and ultrasound findings are congruent, no further imaging is required.

Sponsoring Organizations

Society of American Gastrointestinal and Endoscopic Surgeons

Sources

Society of American Gastrointestinal and Endoscopic Surgeons and American College of Radiology guidelines

References

SAGES guideline for the clinical application of laparoscopic biliary tract surgery. Available at https://www.sages.org/publications/guidelines/guidelines-for-the-clinical-application-of-laparoscopic-biliary-tract-surgery/. Yarmish, GM et al., 2014. ACR appropriateness criteria right upper quadrant pain. Journal of the American College of Radiology : JACR, 11(3), pp.316–322.

399

Avoid routine cholecystectomy for patients with asymptomatic cholelithiasis.

Rationale and Comments

10% to 20% of people in Western countries have gallstones and 50% to 70% of these are asymptomatic. Incidental discovery of gallstones on imaging performed for unrelated reasons is common, often prompting surgical consultation. Treatment with observation alone is indicated for asymptomatic patients with incidental cholelithiasis, unless diagnosed with related hematologic disease. Cholecystectomy for patients with asymptomatic cholelithiasis is too aggressive. For patients with asymptomatic cholelithiasis who are undergoing an unrelated abdominal operation, such as gastric bypass, concomitant cholecystectomy may be considered.

Sponsoring Organizations

Society of American Gastrointestinal and Endoscopic Surgeons

Sources

Society of American Gastrointestinal and Endoscopic Surgeons guideline

References

SAGES guideline for the application of laparoscopic biliary tract surgery. Available at https://www.sages.org/publications/guidelines/guidelines-for-the-clinical-application-of-laparoscopic-biliary-tract-surgery/. Sakorafas GH, et al: Dig Dis Sci 2007 May;52(5)1313-25. Williams CI, et al: Current Treatment Options in Gastroenterology 11(2)71-77.

398

Avoid routine use of antireflux medications for treatment of symptomatic GERD or for treatment of apnea and desaturation in preterm infants.

Rationale and Comments

Gastroesophageal reflux is normal in infants. There is minimal evidence that reflux causes apnea and desaturation. Similarly, there is little scientific support for the use of H2 antagonists, proton pump inhibitors, and motility agents for the treatment of symptomatic reflux. Importantly, several studies show that their use may have adverse physiologic effects as well as an association with necrotizing enterocolitis, infection and, possibly, intraventricular hemorrhage and mortality.

Sponsoring Organizations

American Academy of Pediatrics - Section on Perinatal Pediatrics

Sources

Systematic review

References

Beck-Sague CM, Azimi P, Fonseca SN, Baltimore RS, Powell DA, Bland LA, Arduino MJ, McAllister SK, Huberman RS, Sinkowitz RL, et al. Bloodstream infections in neonatal intensive care unit patients: results of a multicenter study. Pediatr Infect Dis J. 1994 Dec;13(12):1110-6. Bianconi S, Gudavalli M, Sutija VG, Lopez AL, Barillas-Arias L, Ron N. Ranitidine and late-onset sepsis in the neonatal intensive care unit. J Perinat Med. 2007; 35(2):147-50. Chung EY, Yardley J. Are there risks associated with empiric acid suppression treatment of infants and children suspected of having gastroesophageal reflux disease? Hosp Pediatr. 2013 Jan;3(1):16-23. Guillet R, Stoll BJ, Cotten CM, Gantz M, McDonald S, Poole WK, Phelps DL; National Institute of Child Health and Human Development Neonatal Research Network. Association of H2-blocker therapy and higher incidence of necrotizing enterocolitis in very low birth weight infants. Pediatrics. 2006 Feb;117(2):e137-42. Hibbs AM, Lorch SA. Metoclopramide for the treatment of gastroesophageal reflux disease in infants: a systematic review. Pediatrics. 2006 Aug;118(2):746-52. Rojas MA, Efird MM, Lozano JM, Bose CL, Rojas MX, Rondón MA, Ruiz G, Piñeros JG, Rojas C, Robayo G, Hoyos A, Gosendi MH, Cruz H, O'Shea M, Leon A. Risk factors for nosocomial infections in selected neonatal intensive care units in Colombia, South America. J Perinatol. 2005 Aug;25(8):537–41. Terrin G, Passariello A, De Curtis M, Manguso F, Salvia G, Lega L, Messina F, Paludetto R, Canani RB. Ranitidine is associated with infections, necrotizing enterocolitis, and fatal outcome in newborns. Pediatrics. 2012 Jan;129(1):e40-5. van der Pol RJ, Smits MJ, van Wijk MP, Omari TI, Tabbers MM, Benninga MA. Efficacy of proton-pump inhibitors in children with gastroesophageal reflux disease: a systematic review. Pediatrics. 2011 May;127(5):925-35. Wheatley E, Kennedy KA. Cross-over trial of treatment for bradycardia attributed to gastroesophageal reflux in preterm infants. J Pediatrics. 2009 Oct;155(4):516-21.

276

Avoid using acid blockers and motility agents such as metoclopramide (generic) for physiologic gastroesophageal reflux that is effortless, painless, and not affecting growth. Do not use medication in the so-called "happy-spitter."

Rationale and Comments

There is scant evidence that gastroesophageal reflux is a causative agent in many conditions though reflux may be a common association. There is accumulating evidence that acid-blocking and motility agents such as metoclopramide (generic) are not effective in physiologic gastroesophageal reflux. Long-term sequelae of infant gastroesophageal reflux is rare, and there is little evidence that acid blockade reduces these sequelae. The routine performance of upper gastrointestinal tract radiographic imaging to diagnose gastroesophageal reflux or GERD is not justified. Parents should be counseled that gastroesophageal reflux is normal in infants and not associated with anything but stained clothes. Gastroesophageal reflux that is associated with poor growth or significant respiratory symptoms should be further evaluated.

Sponsoring Organizations

American Academy of Pediatrics

Sources

Expert consensus

References

Lightdale JR, Gremse DA; American Academy of Pediatrics Section on Gastroenterology, Hepatology, and Nutrition. Gastroesophageal reflux: management guidance for the pediatrician. Pediatrics. 2013 May;131(5):e1684–95.

196

CT scans are not necessary in the routine evaluation of abdominal pain.

Rationale and Comments

Utilization of CT imaging in the emergency department evaluation of children with abdominal pain is increasing. The increased lifetime risk of cancer due to excess radiation exposure is of special concern given the acute sensitivity of children's organs. There also is the potential for radiation overdose with inappropriate CT protocols.

Sponsoring Organizations

American Academy of Pediatrics

Sources

Expert consensus

References

Brenner DJ, et al. Computed tomography–an increased risk of radiation exposure. N Engl J Med. 2007;357:2277-84. Burr A, et al. Glowing in the dark: time of day as a determinant of radiographic imaging in the evaluation of abdominal pain in children. J Pediatr Surgery. 2011;46(1): 188-91. Kyuseok Kim, et al. Low-dose abdominal CT for evaluating suspected appendicitis. N Engl J Med. 2012;366:1596-605. Stewart K, et al. Sonography for appendicitis: nonvisualiza-tion of the appendix is an indication for active clinical observation rather than direct referral for computed tomography. J Clin Ultrasound. 2012;40(8):455-61. Pearce MS, et al. Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study. Lancet. 2012; 380(9840):499-505. Saito JM. Beyond appendicitis: evaluation and surgical treatment of pediatric acute abdominal pain. Curr Opin Pediatr. 2012;24(3):357-64.

21

Don't continue hospital-prescribed stress ulcer prophylaxis with proton pump inhibitor therapy in the absence of an appropriate diagnosis in the post-acute and long-term care population.

Rationale and Comments

In the absence of an appropriate diagnosis for the long-term use of proton pump inhibitors in post-acute and long-term care populations, stop hospital-prescribed medications for stress prophylaxis, as literature does not support proton pump inhibitor use for stress ulcer prophylaxis outside the ICU setting. It is important to determine the indication for use and balance potential harm versus benefit, recognizing known adverse events with long-term proton pump inhibitor use, including pneumonia, diminished vitamin absorption, and bacterial infections such as Clostridium difficile.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Expert consensus

References

Wilsdon TD, et al. Effectiveness of interventions to deprescribe inappropriate proton pump inhibitors in older adults. Drugs Aging. 2017;34(4):265-287. Ito T, et al. Association of long-term proton pump inhibitor therapy with bone fractures and effects on absorption of calcium, vitamin B12, iron, and magnesium. Curr Gastroenterol Rep. 2010;12(6):448-457. Wilhelm SM, et al. Perils and pitfalls of long-term effects of proton pump inhibitors. Expert Rev Clin Pharmacol. 2013;6(4):443-451. Johnson DA, et al. Reported side effects and complications of long-term proton pump inhibitor use: dissecting the evidence. Clin Gastroenterol Hepatol. 2013;11(5):458-464; quiz e37-e38.

456

Don't obtain abdominal radiographs for suspected constipation.

Rationale and Comments

Functional constipation and nonspecific, generalized abdominal pain are common presenting complaints for children in emergency departments. Constipation is a clinical diagnosis and does not require testing, yet many of these children receive an abdominal radiograph. However, subjectivity and lack of standardization result in poor sensitivity and specificity of abdominal radiographs to diagnose constipation. The use of abdominal radiographs to diagnose constipation has been associated with increased diagnostic errors. Clinical guidelines recommend against obtaining routine abdominal radiographs in patients with a clinical diagnosis of functional constipation. The diagnosis of constipation or fecal impaction should be made primarily by history and physical examination, augmented by a digital rectal examination when indicated.

Sponsoring Organizations

American Academy of Pediatrics – Section on Emergency Medicine and the Canadian Association of Emergency Physicians

Sources

Systematic review

References

Freedman SB, Rodean J, Hall M, et al. Delayed diagnoses in children with constipation: multicenter retrospective cohort study. J Pediatr. 2017;186:87-94.e16.
Pensabene L, Buonomo C, Fishman L, et al. Lack of utility of abdominal x-rays in the evaluation of children with constipation: comparison of different scoring methods. J Pediatr Gastroenterol Nutr. 2010;51(2):155-159.
Berger MY, Tabbers MM, Kurver MJ, et al. Value of abdominal radiography, colonic transit time, and rectal ultrasound scanning in the diagnosis of idiopathic constipation in children: a systematic review. J Pediatr. 2012;161(1):44-50.e502.
Tabbers MM, DiLorenzo C, Berger MY, et al. Evaluation and treatment of functional constipation in infants and children: evidence-based recommendations from ESPGHAN and NASPGHAN. J Pediatr Gastroenterol Nutr. 2014;58(2):258-274.
Kearney R, Edwards T, Bradford M, et al. Emergency provider use of plain radiographs in the evaluation of pediatric constipation. Pediatr Emerg Care. 2019;35(9):624-629.
Freedman SB, Thull-Freedman J, Manson D, et al. Pediatric abdominal radiograph use, constipation, and significant misdiagnoses. J Pediatr. 2014;164(1):83-88.e2.

532

Don't obtain routine blood work (e.g., complete blood count, liver function tests) other than a carcinoembryonic antigen level during surveillance for colorectal cancer.

Rationale and Comments

Due to lack of sensitivity and accuracy in detecting early recurrences, current evidence does not support measurement of complete blood count or liver function tests for surveillance following colorectal cancer treatment. Although evidence is not unequivocal, surveillance regimens that include serial carcinoembryonic antigen testing have been associated with improved survival. Depending on the stage of nonmetastatic disease, accepted components for colorectal cancer surveillance include a combination of history and physical examination; carcinoembryonic antigen; CT of the chest, abdomen, and pelvis; and colonoscopy at variable intervals depending on stage and risk of recurrent disease.

Sponsoring Organizations

Society of Surgical Oncology

Sources

National Comprehensive Cancer Network/ACS/ASCO guidelines

References

Benson AB 3rd, Bekaii-Saab T, Chan E, Chen YJ, Choti MA, Cooper HS, Engstrom PF, Enzinger PC, Fakih MG, Fenton MJ, Fuchs CS, Grem JL, Hunt S, Kamel A, Leong LA, Lin E, May KS, Mulcahy MF, Murphy K, Rohren E, Ryan DP, Saltz L, Sharma S, Shibata D, Skibber JM, Small W Jr, Sofocleous CT, Venook AP, Willett CG, Gregory KM, Freedman-Cass DA; National Comprehensive Cancer Network. Localized colon cancer, version 3.2013: featured updates to the NCCN Guidelines. J Natl Compr Canc Netw. 2013 May 1;11(5):519-28. El-Shami K, Oeffinger KC, Erb NL, Willis A, Bretsch JK, Pratt-Chapman ML, Cannady RS, Wong SL, Rose J, Barbour AL, Stein KD, Sharpe KB, Brooks DD, Cowens-Alvarado RL. American Cancer Society colorectal cancer survivorship care guidelines. CA Cancer J Clin. 2015;65(6):428-55. Meyerhardt JA, Mangu PB, Flynn PJ, Korde L, Loprinzi CL, Minsky BD, Petrelli NJ, Ryan K, Schrag DH, Wong SL, Benson AB 3rd; American Society of Clinical Oncology. Follow-up care, surveillance protocol, and secondary prevention measures for survivors of colorectal cancer: American Society of Clinical Oncology clinical practice guideline endorsement. J Clin Oncol. 2013 Dec 10;31(35):4465-70.

315

Don't order a comprehensive stool ova and parasite microscopic exam on patients presenting with diarrhea lasting less than seven days who have no immunodeficiency or no history of living in or traveling to endemic areas where gastrointestinal parasitic infections are prevalent. If symptoms of infectious diarrhea persist for seven days or longer, start with molecular or antigen testing and next consider a full ova and parasite microscopic exam if other testing is negative.

Rationale and Comments

The comprehensive ova and parasite microscopic exam often requires submission of multiple stool samples, is labor intensive, requires significant expertise to perform, and typically has lower sensitivity when compared with many other tests now available. Instead, consider ordering antigen detection tests (i.e., direct fluorescent antibody, enzyme immunoassay, indirect immunofluorescence assay, rapid immunochromatographic tests), modified acid-fast stain, or molecular tests that detect specific gastrointestinal parasites most commonly acquired in the United States. When investigating cases of gastrointestinal disease, it is important to take a comprehensive clinical history that considers the patient's exposure risk, mechanism(s) of transmission, and immune status. Patients lacking international travel history or residence in areas where parasites are endemic are most likely to be exposed to intestinal parasites associated with outbreaks from exposure to contaminated food or water. In the United States these pathogens include Giardia duodenalis (G. lamblia, G. intestinalis), Entamoeba histolytica, Cryptosporidium, and Cyclospora. For most individuals with healthy immune systems, symptoms self-resolve without treatment. Testing is recommended in individuals with prolonged symptoms, risk for development of severe infection, or when pathogen identification is necessary for public health reasons. Numerous antigen detection assays and molecular tests, including multiplex panels, have been developed for targeted detection of the most common gastrointestinal parasites acquired in the United States.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

IDSA guideline

References

Centers for Disease Control and Prevention. DPDx- Laboratory identification of parasites of public health concern. Stool specimens- detection of parasite antigens. Website accessed 23 May 2019. https://www.cdc.gov/dpdx/index.html Centers for Disease Control and Prevention. Parasites. Website accessed 23 May 2019. https://www.cdc.gov/parasites/index.html Garcia LS, Arrowood M, Kokoskin E, et al. Practical guidance for clinical microbiology laboratories: laboratory diagnosis of parasites from the gastrointestinal tract. Clin Microbiol Rev. 2017;31(1):e00025-17. Shane AL, et al. 2017 Infectious Diseases Society of America clinical practice guidelines for the diagnosis and management of infectious diarrhea. Clin Infect Dis. 2017;65:1963-1973.

433

Don't order tissue transglutaminase (tTG) immunoglobulin G (IgG) antibody or deamidated gliadin peptide antibodies (IgG or IgA) in the initial screening for celiac disease.

Rationale and Comments

Transglutaminase (tTG) immunoglobulin A (IgA) antibody (anti-tTG IgA) is the recommended first-line screening test for celiac disease because it provides the best diagnostic sensitivity and specificity. Serum IgA should also be included to detect IgA deficiency. Anti-tTG IgG or deamidated gliadin peptide antibodies (IgG or IgA) could be appropriate as reflex tests in specific situations based on initial findings, although they have less specificity than the tTG IgA antibody. In particular, deamidated gliadin peptides result in a higher false-positive rate that can lead to further unnecessary testing and/or endoscopy.

Sponsoring Organizations

American Society for Microbiology
American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

ACG guidelines
AGA guidelines

References

Rubio-Tapia A, Hill ID, Kelly CP, et al. ACG clinical guidelines: diagnosis and management of celiac disease. Am J Gastroenterol. 2013;108(5):656-76; quiz 677.
Husby S, Koletzko S, Korponay-Szabó I, et al. European Society Paediatric Gastroenterology, Hepatology and Nutrition Guidelines for diagnosing coeliac disease 2020. J Pediatr Gastroenterol Nutr. 2020;70(1):141-156.
Husby S, Murray JA, Katzka DA. AGA clinical practice update on diagnosis and monitoring of celiac disease-changing utility of serology and histologic measures: expert review. Gastroenterology. 2019;156(4):885-889.

524

Don't perform CT or MRI routinely to monitor benign focal lesions in the liver unless there is a major change in clinical findings or symptoms.

Rationale and Comments

Patients with benign focal liver lesions (other than hepatocellular adenoma) who don't have underlying liver disease and have demonstrated clinical and radiologic stability do not need repeated imaging.

Sponsoring Organizations

American Association for the Study of Liver Diseases

Sources

Expert consensus

References

Bioulac-Sage P, et al. Hepatocellular adenoma management and phenotypic classification: the Bordeaux experience. Hepatology. 2009;50(2):481–9.

204

Don't prescribe medications for stress ulcer prophylaxis to medical inpatients unless at high risk for gastrointestinal complications.

Rationale and Comments

According to published guidelines, medications for stress ulcer prophylaxis are not recommended for adult patients in non-intensive care unit settings. Histamine H2-receptor antagonists and proton pump inhibitors commonly used to treat stress ulcers are associated with adverse drug events and increased medication costs, and commonly enhance susceptibility to community-acquired nosocomial pneumonia and Clostridium difficile. Adherence to therapeutic guidelines will aid health care providers in reducing treatment of patients without clinically important risk factors for gastrointestinal bleeding.

Sponsoring Organizations

Society of Hospital Medicine (Adult)

Sources

Expert consensus

References

ASHP therapeutic guidelines on stress ulcer prophylaxis. Am J Health Sys Pharm. 1999;56:347-79.

22

Don't repeat hepatitis C viral load testing outside of antiviral therapy.

Rationale and Comments

Highly sensitive quantitative assays of hepatitis C RNA are appropriate at diagnosis and as part of antiviral therapy. Otherwise, the results of virologic testing do not change clinical management or outcomes.

Sponsoring Organizations

American Association for the Study of Liver Diseases

Sources

American Association for the Study of Liver Diseases guideline

References

Ghany MG, Strader DB, Thomas DL, Seeff LB. American Association for the Study of Liver Diseases. Diagnosis, management,and treatment of hepatitis C: an update. Hepatology. 2009 Apr;49(4):1335–74.

203

Don't request serology for Helicobacter pylori. Use the stool antigen or breath tests instead.

Rationale and Comments

Serologic evaluation of patients to determine the presence/absence of H. pylori infection is no longer considered clinically useful. Alternative noninvasive testing methods (e.g., the urea breath test and stool antigen test) exist for detecting the presence of the bacteria and have demonstrated higher clinical utility, sensitivity, and specificity. Additionally, both the American College of Gastroenterology and the American Gastroenterology Association recommend either the breath or stool antigen tests as the preferred testing modalities for active H. pylori infection. Finally, several laboratories have dropped the serological test from their menus, and many insurance providers are no longer reimbursing patients for serologic testing.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Babak Pourakbari, Mona Ghazi, Shima Mahmoudi, Setareh Mamishi, Hossein Azhdarkosh, Mehri Najafi, Bahram Kazemi, Ali Salavati, and Akbar Mirsalehian. Diagnosis of Helicobacter pylori infection by invasive and noninvasive tests. Braz J Microbiol. 2013; 44(3): 795–798. Published online 2013 Nov 15. Elvira Garza-González, Guillermo Ignacio Perez-Perez, Héctor Jesús Maldonado-Garza, and Francisco Javier Bosques-Padilla. A review of Helicobacter pylori diagnosis, treatment, and methods to detect eradication. World J Gastroenterol. 2014 Feb 14; 20(6): 1438–1449. Published online 2014 Feb 14. doi: 10.3748/wjg.v20.i6.1438 Theel ES, Johnson RD, Plumhoff E, Hanson CA. Use of the Optum Labs Data Warehouse to assess test ordering patterns for diagnosis of Helicobacter pylori infection in the United States. J Clin Microbiol 2015 Apr;53(4):1358-1360 Wang YK, Kuo FC, Liu CJ, Wu MC, Shih HY, Wang SS, Wu JY, Kuo CH, Huang YK, Wu DC. Diagnosis of Helicobacter pylori infection: Current options and developments. World J Gastroenterol. 2015 Oct 28;21(40):11221-35. doi: 10.3748/wjg.v21.i40.11221. Tamadon MR, Saberi Far M, Soleimani A, Ghorbani R, Semnani V, Malek F, Malek M. Evaluation of noninvasive tests for diagnosis of Helicobacter pylori infection in hemodialysis patients. J Nephropathol. 2013 Oct;2(4):249-53. Epub 2013 Sep 1. Talley NJ, Ford AC. Functional Dyspepsia. The New England Journal of Medicine. 2015;373:1853-63. Published online 2015 November 5.

Don't routinely test for community gastrointestinal stool pathogens in hospitalized patients who develop diarrhea after day 3 of hospitalization.

Rationale and Comments

A number of studies have indicated that stool culture and parasitological examination are usually not indicated when diarrhea develops more than three days after admission to the hospital, because these tests are designed to detect agents of community-acquired gastrointestinal infection. In contrast, testing for C. difficile should be considered in such patients if they are over two years in age; patients less than two years in age commonly have asymptomatic C. difficile colonization. NOTE: There are select patient populations, such as older adults and immunocompromised patients, in whom community-type pathogens may be detected after three days of hospitalization. Therefore, clinicians should be able to obtain stool cultures and/or stool parasitological examinations in these select populations after three days of hospitalization.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Diagnostic accuracy studies

References

Ramdeen SK, Wortmann GW. What stool testing is appropriate when diarrhea develops in a hospitalized patient? Cleveland Clinic Journal of Medicine. 2016;83(12):882-884. Morris AJ, Wilson ML, Reller LB. Application of rejection criteria for stool ovum and parasite examinations. J Clin Microbiol. 1992;30:3213-3216. Nikolic D, Richter SS, Asamoto K, Wyllie R, Tuttle R, Procop GW. Implementation of a clinical decision support tool for stool cultures and parasitological studies in hospitalized patients. J Clin Microbiol. 2017;55:3350-3354. Bauer TM, Lalvani A, Fehrenbach J, Steffen I, Aponte JJ, Segovia R, Vila J, Philippczik G, Steinbruckner B, Frei R, Bowler I, Kist M. Derivation and validation of guidelines for stool cultures for enteropathogenic bacteria other than Clostridium difficile in hospitalized adults. JAMA. 2001; 285:313-319.

Don't test for amylase in cases of suspected acute pancreatitis. Instead, test for lipase.

Rationale and Comments

Amylase and lipase are digestive enzymes normally released from the acinar cells of the exocrine pancreas into the duodenum. Following injury to the pancreas, these enzymes are released into the circulation. While amylase is cleared in the urine, lipase is reabsorbed back into the circulation. In cases of acute pancreatitis, serum activity for both enzymes is greatly increased. Serum lipase is now the preferred test due to its improved sensitivity, particularly in alcohol-induced pancreatitis. Its prolonged elevation creates a wider diagnostic window than amylase. In acute pancreatitis, amylase can rise rapidly within three to six hours of the onset of symptoms and may remain elevated for up to five days. Lipase, however, usually peaks at 24 hours with serum concentrations remaining elevated for eight to 14 days. This means it is far more useful than amylase when the clinical presentation or testing has been delayed for more than 24 hours. Current guidelines and recommendations indicate that lipase should be preferred over total and pancreatic amylase for the initial diagnosis of acute pancreatitis and that the assessment should not be repeated over time to monitor disease prognosis. Repeat testing should be considered only when the patient has signs and symptoms of persisting pancreatic or peripancreatic inflammation, blockage of the pancreatic duct, or development of a pseudocyst. Testing both amylase and lipase is generally discouraged because it increases costs while only marginally improving diagnostic efficiency compared to either marker alone.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Basnayake C, Ratnam D. Blood test for acute pancreatitis. Aust Prescr. Aug 2015;38:128-30. Lankisch PG, Burchard-Reckert S, Lehnick D. Underestimation of acute pancreatitis: patients with only a small increase in amylase/lipase levels can also have or develop severe acute pancreatitis. Gut. Apr 1999;44(4):542-4. Lippi, G, Valentino, M, Cervellin G. Laboratory diagnosis of acute pancreatitis: in search of the Holy Grail. Crit Rev Clin Lab Sci. Jan – Feb 2012; 49(1)18-21. Shafget MA, Brown TV, Sharma R. Normal lipase drug-induced pancreatitis: a novel finding. Am J Emerg Med. Mar 2015; 33(3):476.e5-6. Smith RC, Southwell-Keely J, Chesher D. Should serum pancreatic lipase replace serum amylase as a biomarker of acute pancreatitis? ANZ J Surg. Jun 2005;75(6):399-404. Yadav D, Agarwal N, Pitchumondi CS. A critical evaluation of laboratory tests in acute pancreatitis. Am J Gastroenterol. Jun 2002;97(6):1309-18. Viel JF, Foucault P, Bureau F, Albert A, Drosdowsky MA. Combined diagnostic value of biochemical markers in acute pancreatitis. ClinChimActa. 1990;189(2):191-198.

Don't treat gastroesophageal reflux in infants routinely with acid suppression therapy.

Rationale and Comments

Antireflux therapy has been demonstrated to have no effect in reducing the symptoms of gastroesophageal reflux disease (GERD) in children. Concerns regarding the use of proton pump inhibitor therapy in infants include an inability to definitively diagnose pediatric patients according to the established criteria of GERD, lack of documented efficacy of acid suppression therapy in infants, and the potential adverse effects associated with acid suppression therapy.

Sponsoring Organizations

Society of Hospital Medicine (Pediatric)

Sources

Systematic review of RCTs

References

Vandenplas Y. Pediatric gastroesophageal reflux clinical practice guidelines. J Pediatr Gastroenterol Nutr. 2009;49: 498-547. Van der Pol RJ, et al. Efficacy of proton-pump inhibitors in children with gastroesophageal reflux: a systematic review. Pediatrics. 2011;127(5):925-35. Gibbons TE, et al. The use of proton pump inhibitors in children: a comprehensive review. Paediatr Drugs. 2003;5(1): 25-40. Orenstein SR, et al. Infants and proton pump inhibitors: tribulations, no trials. J Pediatr Gastroenterol Nutr. 2007;45:395-8. Khoshoo V, et al. Are we overprescribing antireflux medications for infants with regurgitation? Pediatrics. 2007;120:946-9.

Don't use topical lorazepam (Ativan), diphenhydramine (Benadryl), and haloperidol (Haldol) ("ABH") gel for nausea.

Rationale and Comments

Topical drugs can be safe and effective, such as topical nonsteroidal anti-inflammatory drugs for local arthritis symptoms. However, while topical gels are commonly prescribed in hospice practice, antinausea gels have not been proven effective in any large, well-designed or placebo-controlled trials. The active ingredients in ABH are not absorbed to systemic levels that could be effective. Only diphenhydramine (Benadryl) is absorbed via the skin, and then only after several hours and erratically at subtherapeutic levels. It is therefore not appropriate for "as needed" use. The use of agents given via inappropriate routes may delay or prevent the use of more effective interventions.

Sponsoring Organizations

American Academy of Hospice and Palliative Medicine

Sources

Expert consensus

References

Smith TJ, et al. ABH gel is not absorbed from the skin of normal volunteers. J Pain Symptom Manage. 2012;43(5): 961-6. Weschules DJ. Tolerability of the compound ABHR in hospice patients. J Palliat Med. 2005;8(6):1135-43.

24

Don't use two or more medications that are known to increase the risk of bleeding without evaluating the potential risks and benefits. These medications include direct oral anticoagulants, warfarin, aspirin, selective serotonin reuptake inhibitors (SSRIs), antiplatelet agents, NSAIDs, and corticosteroids.

Rationale and Comments

Prescribing more than one of these medications concurrently may result in an enhanced risk of bleeding. This heightened risk of bleeding may be mediated through complex pharmacokinetic and/or pharmacodynamic mechanisms. It is well established that the combination of anticoagulants and NSAIDs increase the risk of bleeding. A combination of warfarin with either single or dual antiplatelet therapy significantly increases the risk of major bleeding by two- to four-fold, respectively. The most commonly prescribed antidepressant therapeutic class (SSRIs), may decrease platelet serotonin uptake, leading to impaired platelet aggregation, and thereby increased risk of bleeding. Specific to gastrointestinal bleeding, SSRIs may also increase gastric acid secretion. Bleeding has been observed in association with other antidepressants in some observational studies; however, recent systematic reviews give weight to SSRIs in combination with NSAIDs for increased vigilance for risk of upper gastrointestinal bleeding. In patients where benefits outweigh the risks of the combination, appropriate education of patient and caregivers and appropriate follow-up monitoring for early detection of any signs and symptoms of bleeding is highly recommended.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Systematic reviews

References

Juurlink DN. Antidepressants, antiplatelets and bleeding: one more thing to worry about? CMAJ. 2011;183(16):1819-1820. Chang S-H, Chou I-J, et al. Association between use of non-vitamin k oral anticoagulants with and without concurrent medications and risk of major bleeding in nonvalvular atrial fibrillation. JAMA. 2017;318(13):1250-1259. Spina E, Barbieri MA, et al. Clinically relevant drug interactions between newer antidepressants and oral anticoagulants. Expert Opin Drug Metab Toxicol. 2020;16(1):31-44. Vazquez SR. Drug-drug interactions in an era of multiple anticoagulants: a focus on clinically relevant drug interactions. Hematology Am Soc Hematol Educ Program. 2018;2018(1):339-347. Liu L, Huang J, et al. Efficacy and safety of triple therapy versus dual antiplatelet therapy in patients with atrial fibrillation undergoing coronary stenting: a meta-analysis. PLoS ONE. 2018;13(6):e0199232. Kumar S, Danik SB, et al. Non-vitamin K antagonist oral anticoagulants and antiplatelet therapy for stroke prevention in patients with atrial fibrillation: a meta-analysis of randomized controlled trials. Cardiol Rev. 2016;24(5):218-223. Lin C-C, Hu H-Y, et al. Risk factors of gastrointestinal bleeding in clopidogrel users: a nationwide population-based study. Aliment Pharmacol Ther. 2013;38(9):1119-1128. Labos C, Dasgupta K, et al. Risk of bleeding associated with combined use of selective serotonin reuptake inhibitors and antiplatelet therapy following acute myocardial infarction. CMA. 2011;183(16):1835-1843. Hansen ML, Sørensen R, et al. Risk of bleeding with single, dual, or triple therapy with warfarin, aspirin, and clopidogrel in patients with atrial fibrillation. Arch Intern Med. 2010;170(16):1433-1441. Anglin R, Yuan Y, et al. Risk of upper gastrointestinal bleeding with selective serotonin reuptake inhibitors with or without concurrent nonsteroidal anti-inflammatory use: a systematic review and meta-analysis. Am J Gastroenterol. 2014;109(6):811-819.

486

For a patient with functional abdominal pain syndrome, CT scans should not be repeated unless there is a major change in clinical findings or symptoms.

Rationale and Comments

There is a small, but measurable increase in one's cancer risk from x-ray exposure. An abdominal CT scan is one of the higher radiation exposure x-rays — equivalent to three years of natural background radiation. Due to this risk and the high costs of this procedure, CT scans should be performed only when they are likely to provide useful information that changes patient management.

Sponsoring Organizations

American Gastroenterological Association

SourcesU.S. Food and Drug Administration

References

Drossman DA, et al. Rome III: The Functional Gastrointestinal Disorders. 3rd ed. 2006. Clouse RE, et al. Functional abdominal pain syndrome. Gastroenterology. 2006;130(5):1492-7. U.S. Food and Drug Administration. Reducing radiation from medical x-rays. February 19, 2009. http://www.fda.gov/ ForConsumers/ConsumerUpdates/ucm095505.htm. Image Wisely, U.S. Food and Drug Administration. My medical imaging history. http://www.radiologyinfo.org/en/ safety/ImageWisely/7678_Medical%20Imaging%20History.pdf.

20

Long-term acid suppression therapy for gastroesophageal reflux disease should be titrated to the lowest effective dose.

Rationale and Comments

The main identifiable risk associated with reducing or discontinuing acid suppression therapy is an increased symptom burden. It follows that the decision regarding the need for (and dosage of) maintenance therapy is driven by the impact of those residual symptoms on the patient's quality of life rather than as a disease control measure.

Sponsoring Organizations

American Gastroenterological Association

Sources

American Gastroenterological Association position statement

References

Kahrilas PJ, et al. American Gastroenterological Association medical position statement on the management of gastroesophageal reflux disease. Gastroenterology. 2008;135(4):1383-91.

18

Avoid testing for a Clostridium difficile infection in the absence of diarrhea.

See Infectious Disease.

Don't obtain a Clostridium difficile toxin test to confirm "cure" if symptoms have resolved.

See Infectious Disease.

Don't repeat hepatitis C virus (HCV) antibody testing in patients with a previous positive (HCV) test. Instead, order hepatitis C viral load testing for assessment of active versus resolved infection.

See Infectious Disease.

Don't routinely test more than one stool specimen per week for C. difficile by nucleic acid amplification test.

See Infectious Disease.

Don't use antibiotics in patients with recent C. difficile without convincing evidence of need. Antibiotics pose a high risk of C. difficile recurrence.

See Infectious Disease.

Don't continue treatment for hepatic encephalopathy indefinitely after an initial episode with an identifiable precipitant.

See Neurologic.

Avoid colorectal cancer screening tests on asymptomatic patients with a life expectancy of less than 10 years and no family or personal history of colorectal neoplasia.

See Preventive Medicine.

Don't repeat colorectal cancer screening (by any method) for 10 years after a high-quality colonoscopy is negative in average-risk individuals.

See Preventive Medicine.

Don't have genetic testing for nerve and muscle diseases prior to having a discussion with your physician or a genetics professional.

Rationale and Comments

Genetic testing is now widely available and can be ordered directly by patients from home. Due to the potential implications of test results and the complexity of testing, patients are advised to speak with their physician or genetic counselor prior to having testing performed. Pretesting counseling will help patients select appropriate testing, understand the limitations of testing, potential out-of-pocket costs, and the effect that positive test results may have on the patient and their family.

Sponsoring Organizations

American Association of Neuromuscular & Electrodiagnostic Medicine

Sources

Expert consensus

References

AANEM Position Statement. The utility of genetic testing in neuromuscular disease: a consensus from the AANEM on the clinical usefulness of genetic testing in the diagnosis of neuromuscular disease. April 2016. ACMG Board of Directors. Genet Med. 2015, Dec; 18:207-208, advance online publication, Dec 17, 2015; doi:10.1038/gim.2015.190.

336

Don't make irreversible decisions based on the results of cell-free DNA screening test.

Rationale and Comments

False-positive and false-negative results occur with cell-free DNA screening. Any positive cell-free DNA screening result should be confirmed with invasive diagnostic testing prior to a termination of pregnancy. If cell-free DNA screening is performed, adequate pretest counseling must be provided to explain the benefits and limitations.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

ACOG guidelines

References

American College of Obstetricians and Gynecologists' Committee on Practice Bulletins-Obstetrics; Committee on Genetics; Society for Maternal-Fetal Medicine. Screening for fetal chromosomal abnormalities: ACOG practice bulletin, number 226. Obstet Gynecol. 2020;136(4):e48-e69.

466

Don't order a duplicate genetic test for an inherited condition unless there is uncertainty about the validity of the existing test result.

Rationale and Comments

Prior to ordering a genetic test for an inherited condition, the health care provider should ask a patient about prior genetic testing and review the medical record for previously performed genetic tests. Repeating a genetic test should be considered if the existing result is inconsistent with the individual's clinical presentation or if the test methodology has changed and may yield a different result from the original report that could impact patient management.

Sponsoring Organizations

American College of Medical Genetics and Genomics

Sources

Expert consensus

References

Miller CE, Krautscheid P, Baldwin EE, Tvrdik T, Openshaw AS, Hart K, Lagrave D. Genetic counselor review of genetic test orders in a reference laboratory reduces unnecessary testing. Am J Med Genet A. 2014 May;164A(5):1094-101.

281

Don't order HFE genetic testing for a patient without iron overload or a family history of HFE-associated hereditary hemochromatosis.

Rationale and Comments

The majority of hereditary hemochromatosis is due to inheritance of hemochromatosis gene mutations. Hemochromatosis gene mutations are common among individuals of European ancestry; however, only a small proportion of individuals with these mutations develop clinical disease. Other genetic and nongenetic factors contribute to disease expression. Hemochromatosis genotyping should only be performed among individuals with iron overload (e.g., elevated fasting transferrin saturation >45%) or a known family history of hemochromatosis-associated hereditary hemochromatosis.

Sponsoring Organizations

American College of Medical Genetics and Genomics

Sources

American Association for the Study of Liver Diseases guideline

References

Hanson EH, Imperatore G, Burke W. HFE gene and hereditary hemochromatosis: a HuGE review. Human Genome Epidemiology. Am J Epidemiol. 2001 Aug 1;154(3):193-206. King C, Barton DE. Best practice guidelines for the molecular genetic diagnosis of Type 1 (HFE-related) hereditary haemochromatosis. BMC Med Genet. 2006 Nov 29;7:81. Bacon BR, Adams PC, Kowdley KV, Powell LW, Tavill AS; American Association for the Study of Liver Diseases. Diagnosis and management of hemochromatosis: 2011 practice guideline by the American Association for the Study of Liver Diseases. Hepatology. 2011 Jul;54(1):328-43. European Association for the Study of the Liver. EASL clinical practice guidelines for HFE hemochromatosis. J Hepatol. 2010 Jul;53(1):3-22.

284

Don't order MTHFR genetic testing for the risk assessment of hereditary thrombophilia.

Rationale and Comments

The common MTHFR gene variants, 677C>T and 1298A>G, are prevalent in the general population. Recent meta-analyses have disproven an association between the presence of these variants and venous thromboembolism.

Sponsoring Organizations

American College of Medical Genetics and Genomics

Sources

American College of Medical Genetics and Genomics guideline

References

Hickey SE, Curry CJ, Toriello HV. ACMG Practice Guideline: lack of evidence for MTHFR polymorphism testing. Genet Med. 2013 Feb;15(2):153-6.

283

Don't test women for MTHFR mutations.

Rationale and Comments

MTHFR is responsible for the conversion of 5,10-methylenetetrahydrofolate to 5-methyltetrahydrofolate. Genetic variant C677T and A1286C have been associated with a mild decrease in enzymatic activity, which in the setting of reduced folate levels has been found to be a risk factor for hyperhomocysteinemia. Although hyperhomocysteinemia is a risk factor for cardiovascular disease and venous thrombosis, its cause is multifactorial and independent of the MTHFR genotype, even in homozygotic individuals. Despite earlier (mostly case control) studies that found an association between the MTHFR genotype and adverse outcomes, recent studies of more robust design have not replicated these findings. Due to the lack of evidence associating genotype independently with thrombosis, recurrent pregnancy loss, or other adverse pregnancy outcomes, MTHFR genotyping should not be ordered as part of a workup for thrombophilia.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

ACOG guidelines|American College of Medical Genetics and Genomics guidelines

References

Inherited thrombophilias in pregnancy. ACOG Practice Bulletin No. 197. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2018;132:e18-34. Hickey SE, Curry CJ, Toriello HV. ACMG practice guideline: lack of evidence for MTHFR polymorphism testing. Genet Med. 2013 Feb;15(2):153-6. Baglin T, Gray E, Greaves M, et al. Clinical guidelines for testing for heritable thrombophilia. Br J Haematol. 2010;149:209-220.

412

Don't order thrombophilia testing on children with venous access (i.e., peripheral or central) associated thrombosis in the absence of a positive family history.

See Hematologic.

Don't order apolipoprotein E genetic testing as a predictive test for Alzheimer disease.

See Neurologic.

Don't offer noninvasive prenatal testing to low-risk patients or make irreversible decisions based on the results of this screening test.

See Obstetric.

Don't send periodic fever syndrome genetic panels prior to infectious and oncologic workup or in a patient without clear evidence of recurrent fever.

See Pediatric.

Don't prescribe or routinely continue medications for older adults with limited life expectancy without due consideration to individual goals of care, presence of comorbidities, and time to benefit for preventive medications.

Rationale and Comments

Older adults with limited life expectancy (life expectancy less than 24 months) continue to be consumers of health care resources, including preventive medications for chronic diseases that provide questionable benefit. At the end of life, consider shifting from curative to palliative goals of therapy with subsequent modifications in medication use concerning a patient's goals of care. To identify older adults for whom medications are most likely to benefit (and most likely to harm), a framework that compares a patient's life expectancy with the time to benefit has been proposed. Time to benefit may be defined as the point in time at which patients are expected to derive a benefit from treatment. Time to benefit is increasingly considered in addition to other measures of medication effectiveness to understand and contextualize the benefits and harms of a therapy for an individual patient. Reducing the use of unnecessary medications may reduce pill burden and adverse drug events and has the potential to improve quality of life. Some recent studies have highlighted medications to manage dementia (cholinesterase inhibitors and memantine) and possibly statins as medications of questionable benefit for older adults with advanced dementia.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Expert consensus

References

Holmes HM, Min LC, Yee M, et al. Rationalizing prescribing for older patients with multimorbidity: considering time to benefit. Drugs Aging. 2013;30(9):655-666.
Lee SJ, Leipzig RM, Walter LC. Incorporating lag time to benefit into prevention decisions for older adults. JAMA. 2013;310(24):2609-2610.
Lee SJ, Kim CM. Individualizing prevention for older adults. J Am Geriatr Soc. 2018;66(2):229-234.
Matlow JN, Bronskill SE, Gruneir A, et al. Use of medications of questionable benefit at the end of life in nursing home residents with advanced dementia. J Am Geriatr Soc. 2017;65(7):1535-1542.
Morin L, Vetrano DL, Grande G, et al. Use of medications of questionable benefit during the last year of life of older adults with dementia. J Am Med Dir Assoc. 2017;18(6):551.e1-551.e7.
Lee SWH, Mak VSL, Tang YW. Pharmacist services in nursing homes: a systematic review and meta-analysis. Br J Clin Pharmacol. 2019;85(12):2668-2688.
Zueger PM, Holmes HM, Calip GS, et al. Older Medicare beneficiaries frequently continue medications with limited benefit following hospice admission. J Gen Intern Med. 2019;34(10):2029-2037.
Kutner JS, Blatchford PJ, Taylor DH Jr, et al. Safety and benefit of discontinuing statin therapy in the setting of advanced, life-limiting illness: a randomized clinical trial [published corrections appear in JAMA Intern Med. 2015;175(5):869 and JAMA Intern Med. 20191;179(1):126-127]. JAMA Intern Med. 2015;175(5):691-700.

516

Avoid using prescription appetite stimulants or high-calorie supplements for treatment of anorexia or cachexia in older adults; instead, optimize social supports, discontinue medications that may interfere with eating, provide appealing food and feeding assistance, and clarify patient goals and expectations.

Rationale and Comments

Unintentional weight loss is a common problem for medically ill or frail elderly. Although high-calorie supplements increase weight in older people, there is no evidence that they affect other important clinical outcomes, such as quality of life, mood, functional status, or survival. Use of megestrol acetate results in minimal improvements in appetite and weight gain, no improvement in quality of life or survival, and increased risk of thrombotic events, fluid retention, and death. In patients who take megestrol acetate, one in 12 will have an increase in weight and one in 23 will have an adverse event leading to death. The 2012 American Geriatric Society Beers criteria lists megestrol acetate and cyproheptadine as medications to avoid in older adults. Systematic reviews of cannabinoids, dietary polyunsaturated fatty acids, thalidomide, and anabolic steroids have not identified adequate evidence for the efficacy and safety of these agents for weight gain. Mirtazapine is likely to cause weight gain or increased appetite when used to treat depression, but there is little evidence to support its use to promote appetite and weight gain in the absence of depression.

Sponsoring Organizations

American Geriatrics Society

Sources

Cochrane Database of Systematic Reviews

References

Hanson LC, Ersek M, Gilliam R, Carey TS. Oral feeding options for people with dementia: a systematic review. J Am Geriatr Soc. 2011;59:463–72.
Milne AC, Potter J, Vivanti A, Avenell A. Protein and energy supplementation in elderly people at risk from malnutrition. Cochrane Database Syst Rev. 2009Apr 15;2:CD003288. Ruiz Garcia V, López-Briz E, Carbonell Sanchis R, Gonzalvez Perales JL, Bort-Marti S. Megestrol acetate for treatment of anorexia-cachexia syndrome. Cochrane Database Syst Rev. 2013 Mar 28;3:CD004310. American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc. 2012 Apr;60(4):616–31. Mazotta P, Jeney CM. Anorexia-cachexia syndrome: a systematic review of the role of dietary polyunsaturated fatty acids in the management of symptoms, survival, and quality of life. J Pain Symptom Manage. 2009;37:1069–77. Dewey A, Baughan C, Dean TP, Higgins B, Johnson I. Eicosapentaenoic acid (EPA, an omega-3 fatty acid from fish oils) for the treatment of cancer cachexia. Cochrane Database Syst Rev. 2007;Jan 24;1:CD004597. Reid J, Mills M, Cantwell M, Cardwell CR, Murray LJ, Donnelly M. Thalidomide for managing cancer cachexia. Cochrane Database Syst Rev. 2012;Apr 18;4:CD008664. Yavuzsen T, Davis MP, Walsh D, LeGrand S, Lagman R. Systematic review of the treatment of cancer-associated anorexia and weight loss. J Clin Oncol. 2005;23:8500–11. Watanabe N, Omori IM, Nakagawa A, Cipriani A, Barbui C, Churchill R, Furukawa TA. Mirtazapine versus other antidepressive agents for depression. Cochrane Database Syst Rev. 2011;Dec 7;12:CD006528. Fox CB, Treadway AK, Blaszczyk, Sleeper RB. Megestrol acetate and mirtazapine for the treatment of unplanned weight loss in the elderly. Pharmacotherapy. 2009;29(4):383–97.

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Do not prescribe medications for patients on five or more medications, or continue medications indefinitely, without a comprehensive review of their existing medications, including over-the-counter medications and dietary supplements, to determine whether any of the medications or supplements should or can be discontinued.

Rationale and Comments

Studies have shown that patients taking five or more medications often find it difficult to understand and adhere to complex medication regimens. A comprehensive review, including medical conditions, should be done at periodic intervals, at least annually, to determine if the medications are still needed and if any medications can be discontinued.

Sponsoring Organizations

American Society of Health-System Pharmacists

Sources

Expert consensus

References

Maher RL, et al. Clinical consequences of polypharmacy in elderly. Expert Opin Drug Saf. 2014; 13: 57-65. dx.doi.org/10.1517/14740338.2013.827660 . Gorard, DA. Escalating polypharmacy. QJM 2006; 99 (11): 797-800. doi.org/10.1093/qjmed/hcl109. Lehnbom, EC, et al. Impact of medication reconciliation and review on clinical outcomes. Ann Pharmacother. 2014;48:1298-1312. Shane, R and Abramowitz, PW. Choosing Wisely: Pharmacy's role in effective use of medications. Am J Health-Syst Pharm. 2015; 72:1529-30. doi.org/10.2146/ajhp150324.

338

Don't administer diazepam for muscle spasm following spine surgery in the elderly.

Rationale and Comments

Classic spine surgical treatment involves bilateral dissection of paraspinal muscles to expose the involved levels. Spasms of these muscles are common postoperatively. Treatment of these spasms should include both pharmacologic and non-pharmacologic interventions. Age-related changes in adults can affect both metabolism and drug elimination in the body, resulting in a prolonged half-life for medications. Among the benzodiazepines, diazepam is particularly problematic due to its long half-life and many active metabolites. Benzodiazepines can lead to over-sedation, potential for respiratory depression, increased risk of delirium, and extended in-hospital recovery time. Benzodiazepines have consistently been associated with falls in the aging population and should be avoided. Effective non-pharmacological interventions for use include heat, cold, repositioning, and massage.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

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Don't assume a diagnosis of dementia in an older adult who presents with an altered mental status and/or symptoms of confusion without assessing for delirium or delirium superimposed on dementia using a brief, sensitive, validated assessment tool.

Rationale and Comments

Delirium is common in older adults, especially in the hospital setting, yet delirium is frequently unrecognized and not documented by nursing or medical staff. Delirium occurs in as much as 50% of older adults in the hospital, and delirium superimposed on dementia occurs in as high as 90% of hospitalized older adults. Delirium is associated with very poor clinical outcomes, including prolonged length of stay, high costs and lower quality of life for older adults when not detected early. Delirium is treatable and often reversible and dementia is not, so mislabeling older adults with dementia may miss a life-threatening underlying condition causing the delirium such as an infection, medication side effect, or subdural hematoma. Delirium is extremely costly to the health care system and to society with estimates ranging from $143 to $152 billion annually. Nurses and physicians often fail to recognize delirium. Only 12% to 35% of delirium cases are detected in routine care, with hypoactive delirium and delirium superimposed on dementia most likely to be missed.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

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311

Don't combine opioids with benzodiazepines or gabapentinoids to treat pain in older adults; reevaluate routinely for deprescribing during chronic use.

Rationale and Comments

Coprescribing of benzodiazepines or gabapentinoids (e.g., gabapentin, pregabalin) with opioids is increasingly used in the multimodal treatment of acute and chronic pain, despite limited evidence to support the effectiveness of this practice. Population studies have demonstrated that these combinations are associated with an increased risk of serious adverse outcomes such as excessive sedation, overdose events, and death. In 2019, the U.S. Food and Drug Administration required new warnings about the risk of serious breathing difficulties that can lead to death in patients who use gabapentinoids with opioid pain medicines or other drugs that depress the central nervous system or in patients who have underlying respiratory impairment, such as those with chronic obstructive pulmonary disease, or the elderly. Older adults may be particularly vulnerable because of age-related changes in pharmacokinetics, pharmacodynamics, and medical comorbidity. Initiation of combination therapy should be avoided whenever possible; older patients who require chronic concurrent use of these medication classes should be closely monitored and periodically evaluated for deprescribing. Choosing Wisely Canada (Canadian Pharmacists Association) spells out an important consideration for prescribing benzodiazepines that includes discontinuation strategies, except for patients with valid indications requiring long-term use of these medications.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Case-control study

References

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518

Don't continue life support for patients at high risk for death or severely impaired functional recovery without offering patients and their families the alternative of care focused entirely on comfort.

Rationale and Comments

Patients and their families often value the avoidance of prolonged dependence on life support. However, many of these patients receive aggressive life-sustaining therapies, in part due to clinicians' failures to elicit patients' values and goals, and to provide patient-centered recommendations. Routinely engaging high-risk patients and their surrogate decision makers in discussions about the option of foregoing life-sustaining therapies may promote patients' and families' values, improve the quality of dying and reduce family distress and bereavement. Even among patients pursuing life-sustaining therapy, initiating palliative care simultaneously with ongoing disease-focused therapy may be beneficial.

Sponsoring Organizations

Critical Care Societies Collaborative–Critical Care

Sources

Expert consensus

References

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Don't continue medications at transitions of care without a pharmacist or other qualified health care professional performing a comprehensive medication review to verify accurate and complete medication information in concert with current medical problems.

Rationale and Comments

Transitions of care can contribute to serious medication-related problems when transitioning between different care settings. Older adults with complex health care problems appear to be a group particularly at risk for increased adverse events. To mitigate errors in prescribing and transcribing, routine assessments should include a comprehensive medication review, medication reconciliation, and an accurate medication history with the patient and the patient's advocate. A thorough medication history involves following a systematic process of interviewing the patient, family, or caregiver, and verifying the history with at least one other reliable source of information to determine the complete and correct list of the patient's actual medication use at the time of the transition. Negative outcomes associated with transitions across health care settings include increased likelihood of polypharmacy when medications are continued that are no longer indicated, therapeutic drug duplication, heightened risk of adverse drug reactions, and poor adherence related to greater complexity of the medication regimen.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Systematic reviews

References

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Don't delay palliative care for patients with a serious illness who have physical, psychological, social, or spiritual distress because they are pursuing disease-directed treatment.

Rationale and Comments

Numerous studies—including randomized trials—provide evidence that palliative care improves pain and symptom control, improves family satisfaction with care, and reduces costs. Palliative care does not accelerate death, and may prolong life in selected populations.

Sponsoring Organizations

American Academy of Hospice and Palliative Medicine

Sources

Randomized controlled trials

References

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Don't initiate medications to treat new and emerging symptoms without first ascertaining that the new symptom is not an adverse drug event of an already prescribed medication.

Rationale and Comments

The risk of adverse drug reactions and hospital admissions related to adverse drug reactions increases with age, polypharmacy, and comorbidities. It is prudent for clinicians to be aware of the prescribing cascade to reduce the prescription of potentially unnecessary medications that may cause harm to the patient. Prescribing cascades are a type of problematic polypharmacy that occur when an adverse drug event is misinterpreted as a new medical condition, and a second medication is prescribed to address this emerging adverse drug event. If a suitable alternative is available, discontinuation of the medication thought to be the cause of the adverse drug reaction would be the best course of action. The decision to prescribe a second medication to counteract an adverse drug reaction from a first medication should only occur after careful consideration, and where the benefits of continuing therapy with the first medication outweigh the risks of additional adverse reactions from the second medication. Older adults are at an increased risk of experiencing prescribing cascades due to the higher incidence of polypharmacy and multi-comorbidity. For example, calcium channel blockers are commonly prescribed for hypertension and have the potential to cause peripheral edema. A prescribing cascade occurs when the edema is misinterpreted as a new medical condition and a diuretic is subsequently prescribed to treat the edema. Ideally, the choice of a different antihypertensive may be the best action at this time, in this example. Addressing the prescribing cascade involves focusing on the medication review process and deprescribing initiatives. There are a range of resources to prevent, detect, and reverse prescribing cascades to improve the appropriate use of medications.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Expert consensus

References

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482

Don't insert percutaneous feeding tubes in individuals with advanced dementia. Instead, offer oral assisted feedings.

Rationale and Comments

Strong evidence exists that artificial nutrition does not prolong life or improve quality of life in patients with advanced dementia. Substantial functional decline and recurrent or progressive medical illnesses may indicate that a patient who is not eating is unlikely to obtain any significant or long-term benefit from artificial nutrition. Feeding tubes are often placed after hospitalization, frequently with concerns for aspirations, and for those who are not eating. Contrary to what many people think, tube feeding does not ensure the patient's comfort or reduce suffering; it may cause fluid overload, diarrhea, abdominal pain, local complications, less human interaction and may increase the risk of aspiration. Assistance with oral feeding is an evidence-based approach to provide nutrition for patients with advanced dementia and feeding problems.

Sponsoring Organizations

American Medical Directors Association

Sources

Cochrane Database of Systematic Reviews

References

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94

Don't let older adults lie in bed or only get up to a chair during their hospital stay.

Rationale and Comments

Up to 65% of older adults who are independent in their ability to walk will lose their ability to walk during a hospital stay. Walking during the hospital stay is critical for maintaining functional ability in older adults. Loss of walking independence increases the length of hospital stay, the need for rehabilitation services, new nursing home placement, and risk for falls both during and after discharge from the hospital; places higher demands on caregivers; and increases the risk of death for older adults. Bed rest or limited walking (only sitting up in a chair) during a hospital stay causes deconditioning and is one of the primary factors for loss of walking independence in hospitalized older adults. Older adults who walk during their hospital stay are able to walk farther by discharge, are discharged from the hospital sooner, have improvement in their ability to independently perform basic activities of daily living, and have a faster recovery rate after surgery.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

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219

Don't prescribe a medication without conducting a drug regimen review.

Rationale and Comments

Older patients disproportionately use more prescription and nonprescription drugs than other populations, increasing the risk for side effects and inappropriate prescribing. Polypharmacy may lead to diminished adherence, adverse drug reactions and increased risk of cognitive impairment, falls, and functional decline. Medication review identifies high-risk medications, drug interactions, and those continued beyond their indication. Additionally, medication review elucidates unnecessary medications and underuse of medications, and may reduce medication burden. Annual review of medications is an indicator for quality prescribing in vulnerable elderly.

Sponsoring Organizations

American Geriatrics Society

Sources

Expert consensus

References

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182

Don't prescribe cholinesterase inhibitors for dementia without periodic assessment for perceived cognitive benefits and adverse gastrointestinal effects.

Rationale and Comments

Although some randomized controlled trials suggest that cholinesterase inhibitors may improve cognitive testing results, it is unclear whether these changes are clinically meaningful. It is uncertain whether these medicines delay institutionalization, improve quality of life, or lessen caregiver burden. No studies have investigated benefits beyond a year nor clarified the risks and benefits of long-term therapy. Clinicians, patients, and their caregivers should discuss treatment goals of practical value that can be easily assessed and the nature and likelihood of adverse effects before beginning a trial of cholinesterase inhibitors. If the desired effects (including stabilization of cognition) are not perceived within 12 weeks or so, the inhibitors should be discontinued.

Sponsoring Organizations

American Geriatrics Society

Sources

Systematic review

References

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181

Don't prescribe patients medications at discharge that they were on prior to admission without verifying that these medications are still needed and that the discharge medications will not result in duplication, drug interactions, or adverse events.

Rationale and Comments

Treatments and procedures during a hospitalization may impact a patient's ongoing need for a medication they were receiving prior to admission. Care should be taken at discharge to consider each medication taken prior to hospitalization in light of the patient's current state. Unnecessary medications should be discontinued, duplicate or overlapping therapies should be changed, and the specific changes should be clearly communicated to the patient. The Joint Commission recommends a thorough medication review at admission and discharge to prevent any unnecessary medications being continued.

Sponsoring Organizations

American Society of Health-System Pharmacists

Sources

Expert consensus

References

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340

Don't prescribe tramadol for older adults without considering the potential risks and harms related to serotonergic excess, seizures, falls, and drug-drug interactions.

Rationale and Comments

The use of tramadol, a weak and mixed centrally acting opioid analgesic, has increased steadily over the past decade, a trend influenced by perceived safety advantages over opioid medications such as morphine, oxycodone, and hydrocodone. However, a recent national study reported that older adults account for 33% of tramadol-associated emergency department visits and half of subsequent hospitalizations, suggesting that greater scrutiny of tramadol's safety in this population is warranted. Tramadol's adverse effects (e.g., sedation) and the potential for serotonin syndrome and hyponatremia are well recognized by clinicians. However, tramadol-induced seizures and hypoglycemia are particularly harmful to older adults and may further elevate the risk of falls and fractures. The risk of tramadol's clinically relevant adverse effects is heightened among patients with decreased renal function. By way of brief review, the opioid receptor-mediated analgesic effects are mainly attributed to the active metabolite M1 (O-desmethyltramadol), whereas the inhibition of the neurotransmitter reuptake is caused by the parent drug. The metabolic conversion to the M1 metabolite is mediated primarily through the enzyme CYP2D6, which exhibits substantial genetic variability; consequently, the pharmacologic effect of tramadol is affected by drug-drug and drug-gene interactions. Knowledge of this genetic variability to tramadol's analgesic response and the potential for drug-drug interactions may help optimize pain control and prevent the emergence of adverse effects.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Prospective cohort studies

References

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Musich S, Wang SS, Schaeffer JA, et al. Safety events associated with tramadol use among older adults with osteoarthritis. Popul Health Manag. 2021;24(1):122-132.

519

Don't prescribe under-dosed strength training programs for older adults. Instead, match the frequency, intensity, and duration of exercise to the individual's abilities and goals.

Rationale and Comments

Improved strength in older adults is associated with improved health, quality of life, and functional capacity, and with a reduced risk of falls. Older adults are often prescribed low dose exercise and physical activity that are physiologically inadequate to increase gains in muscle strength. Failure to establish accurate baseline levels of strength limits the adequacy of the strength training dosage and progression, and thus limits the benefits of the training. A carefully developed and individualized strength training program may have significant health benefits for older adults.

Sponsoring Organizations

American Physical Therapy Association

Sources

Systematic review

References

Silva NL, Oliveira RB, Fleck SJ, Leon AC, Farinatti P. Influence of strength training variables on strength gains in adults over 55 years old: a meta-analysis of dose-response relationships. J Sci Med Sport. 2014;17(3):337–44. Raymond MJ, Bramley-Tzerefos RE, Jeffs KJ, Winter A, Holland AE. Systematic review of high-intensity progressive resistance strength training of the lower limb compared with other intensities of strength training in older adults. Arch Phys Med Rehabil. 2013;94(8):1458–72. Valenzuela T. Efficacy of progressive resistance training interventions in older adults in nursing homes: a systematic review. J Am Med Dir Assoc. 2012;13(5):418–28. Mayer F, Scharhag-Rosenberger F, Carlsohn A, Cassel M, Muller S, Scharhag J. The intensity and effects of strength training in the elderly. Dtsch Arztebl Int. 2011;108(21):359–64. Nicola F, Catherine S. Dose-response relationship of resistance training in older adults: a meta-analysis. Br J Sports Med. 2011;45(3):233–4.

210

Don't provide ambulation or gait training interventions that do not directly link to functional mobility.

Rationale and Comments

Occupational therapy practice requires consideration of contextual factors that affect a person's ability to participate in meaningful occupations. Gait training and ambulation interventions do not necessarily consider the context of performing everyday activities. While occupational therapists can assess underlying performance skills for ambulation and gait and utilize related interventions, they must address functional mobility by considering the context in order to implement effective, evidence-based interventions that are personally meaningful to the individual.

Sponsoring Organizations

American Occupational Therapy Association, Inc.

Sources

Expert consensus

References

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491

Don't provide care that is discordant with the patient's goals and values.

Rationale and Comments

The condition of ICU patients is often uncertain and dynamic, which generates stress for ICU families and the care staff. Accordingly, eliciting and documenting desired care preferences helps ensure the provision of goal-concordant care. Patients, families, and providers may participate as partners in shared decision-making to ensure that goals and values align with care that is offered and provided.

Sponsoring Organizations

Society of Critical Care Medicine

Sources

Expert consensus

References

Deptola AZ, et al. (2019). Inpatient goals-of-care conversations reduce ICU transfers in high-risk patients. Am J Hosp Palliat Care. 2019;36(7):583-586.

476

Don't recommend aggressive or hospital-level care for a frail elder without a clear understanding of the individual's goals of care and the possible benefits and burdens.

Rationale and Comments

Hospital-level care has known risks, including delirium, infections, side effects of medications and treatments, disturbance of sleep, and loss of mobility and function. These risks are often more significant for patients in the post-acute and long-term care setting, who are more likely to be frail and to have multimorbidity, functional limitations, and dementia. Therefore, for some frail elders, the balance of benefits and harms of hospital-level care may be unfavorable. To avoid unnecessary hospitalizations, care providers should engage in advance care planning by defining goals of care for the patient and discussing the risks and benefits of various interventions, including hospitalization, in the context of prognosis, preferences, indications, and the balance of risks and benefits. Advance directives such as the Physician Orders for Life Sustaining Treatment paradigm form and Do Not Hospitalize orders communicate a patient's preferences about end-of-life care. Patients with Do Not Hospitalize orders are less likely to be hospitalized than those who do not have these directives. Patients who opt for less-aggressive treatment options are less likely to be subjected to unnecessary, unpleasant, and invasive interventions and the risks of hospitalization.

Sponsoring Organization

Society for Post-Acute and Long-Term Care Medicine

Sources

Expert consensus

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266

Don't recommend highly anticholinergic medications in older adults without first considering safer alternatives or non-drug measures.

Rationale and Comments

Many medications have strong anticholinergic activity including first generation antihistamines (e.g., diphenydramine, doxylamine), tricyclic antidepressants, gastrointestinal antispasmodics, antiemetics, muscle relaxants, medications for urinary incontinence, and medications to treat Parkinson disease. Older adults are more sensitive to adverse events associated with anticholinergics, including confusion, dry mouth, blurry vision, constipation, urinary retention, decreased perspiration, and excess sedation. Anticholinergics have also been associated with increased risk of dementia. These medications are especially problematic for people with existing cognitive impairment, and bladder anticholinergics should be used judiciously for these patients. It is important to inquire about over-the-counter antihistamine use and help patients select safer alternatives for sleep and seasonal allergies. For example, for seasonal allergies, second-generation antihistamines have minimal anticholinergic effects and allergies may be managed with inhaled steroids.

Sponsoring Organization

American Society of Consultant Pharmacists

Sources

American Geriatrics Society guidelines

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484

Don't recommend percutaneous feeding tubes in patients with advanced dementia.

Rationale and Comments

Careful hand feeding for patients with severe dementia is at least as good as tube feeding for the outcomes of death, aspiration pneumonia, functional status, and patient comfort. Food is the preferred nutrient. Tube feeding is associated with agitation, increased use of physical and chemical restraints, and worsening pressure ulcers.

Sponsoring Organization

American Academy of Hospice and Palliative Medicine|American Geriatrics Society

Sources

Randomized controlled trials

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23

Don't routinely continue sedative hypnotics (Restoril, Ambien), diphenhydramine (Benadryl), benzodiazepines, or serotonin modulators (Trazadone) for long-term treatment of insomnia in geriatric populations. Consider the use of cognitive behavioral therapy as an alternative.

Rationale and Comments

Use of diphenhydramine (or other first generation antihistamines), benzodiazepines, or sedative hypnotics with anticholinergic side effects should be avoided, as the data suggests these drugs may cause confusion and delirium in the short term, and some have been associated with an increased risk of dementia with long-term use. These drugs are associated with a five-fold increase in adverse cognitive events, an increase in adverse psychomotor events, and are associated with an increased risk of falls. The 2019 updated Beers criteria for potentially inappropriate medications for use in older adults recognized these medications as problematic.

Sponsoring Organization

Society for Post-Acute and Long-Term Care Medicine

Sources

Randomized controlled trials

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459

Don't routinely prescribe lipid-lowering medications in individuals with a limited life expectancy.

Rationale and Comments

There is no evidence that hypercholesterolemia, or low high-density lipoprotein cholesterol is an important risk factor for all-cause mortality, coronary heart disease mortality, or hospitalization for myocardial infarction or unstable angina in persons older than 70 years. In fact, studies show that elderly patients with the lowest cholesterol have the highest mortality after adjusting other risk factors. In addition, a less favorable risk-benefit ratio may be seen for patients older than 85, where benefits may be more diminished and risks from statin drugs more increased (cognitive impairment, falls, neuropathy and muscle damage).

Sponsoring Organizations

American Medical Directors Association

Sources

Expert consensus

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98

Don't use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present.

Rationale and Comments

Cohort studies have found no adverse outcomes for older men or women associated with asymptomatic bacteriuria. Antimicrobial treatment studies for asymptomatic bacteriuria in older adults demonstrate no benefits and show increased adverse antimicrobial effects. Consensus criteria have been developed to characterize the specific clinical symptoms that, when associated with bacteriuria, define urinary tract infection. Screening for and treatment of asymptomatic bacteriuria is recommended before urologic procedures for which mucosal bleeding is anticipated.

Sponsoring Organizations

American Geriatrics Society

Sources

Infectious Diseases Society of America guidelines

References

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35

Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation, or delirium.

Rationale and Comments

Large-scale studies consistently show that the risk of motor vehicle accidents, falls, and hip fractures leading to hospitalization and death can more than double in older adults taking benzodiazepines and other sedative-hypnotics. Older patients, their caregivers, and their providers should recognize these potential harms when considering treatment strategies for insomnia, agitation, or delirium. Use of benzodiazepines should be reserved for alcohol withdrawal symptoms/delirium tremens or severe generalized anxiety disorder unresponsive to other therapies.

Sponsoring Organizations

American Geriatrics Society

Sources

American Geriatrics Society guidelines

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25

Don't use physical or chemical restraints, outside of emergency situations, when caring for long-term care residents with dementia who display behavioral and psychological symptoms of distress; instead assess for unmet needs or environmental triggers and intervene using non-pharmacological approaches as the first approach to care whenever possible.

Rationale and Comments

BPSD include aggression, agitation, wandering, disruptive vocalizations, anxiety, apathy, hallucinations, and depression. The majority of people living with dementia will experience these symptoms. They result in poor quality of life, more rapid cognitive and functional decline, high risk for abuse, caregiver burden, and tremendous cost to the US healthcare system. In fact, dementia care is among the most costly of diseases including diabetes, cancer, and heart disease; and BPSD account for a staggering 30% of total dementia costs. Despite the high human and dollar costs associated with these symptoms, their treatment continues to challenge practitioners and remains a top research priority in long-term care settings. Because BPSD are often triggered by a change in physical condition, an unmet need or an environment that exceeds the person's stress threshold, it is important that these triggers be addressed as the first line of treatment rather than resorting to physical or chemical restraint, which carry a risk for adverse effects.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

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386

Don't use physical restraints to manage behavioral symptoms of hospitalized older adults with delirium.

Rationale and Comments

Persons with delirium may display behaviors that risk injury or interference with treatment. There is little evidence to support the effectiveness of physical restraints in these situations. Physical restraints can lead to serious injury or death and may worsen agitation and delirium. Effective alternatives include strategies to prevent and treat delirium, identification and management of conditions causing patient discomfort, environmental modifications to promote orientation and effective sleep-wake cycles, frequent family contact, and supportive interaction with staff. Nursing educational initiatives and innovative models of practice have been shown to be effective in implementing a restraint-free approach to patients with delirium. This approach includes continuous observation; trying reorientation once, and if not effective, not continuing; observing behavior to obtain clues about patients' needs; discontinuing and/or hiding unnecessary medical monitoring devices or IVs; and avoiding short-term memory questions to limit patient agitation. Pharmacological interventions are occasionally utilized after evaluation by a medical provider at the bedside, if a patient presents harm to him or herself or others. If physical restraints are used, they should only be used as a last resort, in the least-restrictive manner, and for the shortest possible time.

Sponsoring Organizations

American Geriatrics Society

Sources

Expert consensus

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Don't use physical restraints with an older hospitalized patient.

Rationale and Comments

Restraints cause more problems than they solve, including serious complications and even death. Physical restraints are most often applied when behavioral expressions of distress and/or a change in medical status occur. These situations require immediate assessment and attention, not restraint. Safe, quality care without restraints can be achieved when multidisciplinary teams and/or geriatric nurse experts help staff anticipate, identify, and address problems; family members or other caregivers are consulted about the patient's usual routine, behavior, and care; systematic observation and assessment measures and early discontinuation of invasive treatment devices are implemented; staff are educated about restraints and the organizational culture and structure support restraint-free care.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

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Don't use sliding scale insulin (SSI) for long-term diabetes management for individuals residing in the nursing home.

Rationale and Comments

SSI is a reactive way of treating hyperglycemia after it has occurred rather than preventing it. Good evidence exists that SSI is neither effective in meeting the body's insulin needs nor is it efficient in the long-term care setting. Use of SSI leads to greater patient discomfort and increased nursing time because patients' blood glucose levels are usually monitored more frequently than may be necessary and more insulin injections may be given. With SSI regimens, patients may be at risk from prolonged periods of hyperglycemia. In addition, the risk of hypoglycemia is a significant concern because insulin may be administered without regard to meal intake. Basal insulin, or basal plus rapid-acting insulin with one or more meals (often called basal/bolus insulin therapy) most closely mimics normal physiologic insulin production and controls blood glucose more effectively.

Sponsoring Organizations

American Medical Directors Association

Sources

Expert consensus

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Don't leave an implantable cardioverter-defibrillator activated when it is inconsistent with the patient/family goals of care.

See Cardiovascular.

Don't routinely prescribe lipid-lowering medications in individuals with a limited life expectancy.

See Cardiovascular.

Don't medicate to achieve tight glycemic control in older adults. Moderate control is generally better.

See Endocrinologic.

Don't use sliding scale insulin (SSI) for long-term diabetes management for individuals residing in the nursing home.

See Endocrinologic.

Don't continue hospital-prescribed stress ulcer prophylaxis with proton pump inhibitor therapy in the absence of an appropriate diagnosis in the post-acute and long-term care population.
See Gastroenterologic.

Don't insert percutaneous feeding tubes in individuals with advanced dementia. Instead, offer oral assisted feedings.
See Gastroenterologic.

Don't recommend percutaneous feeding tubes in patients with advanced dementia.
See Gastroenterologic.

Don't order routine follow-up chest imaging for post-acute and long-term care residents with CAP whose symptoms have resolved within five to seven days.
See Infectious Disease.

Don't use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present.
See Infectious Disease.

Don't combine opioids with benzodiazepines or gabapentinoids to treat pain in older adults; reevaluate routinely for deprescribing during chronic use.
See Neurologic.

Don't prescribe cholinesterase inhibitors for dementia without periodic assessment for perceived cognitive benefits and adverse gastrointestinal effects.
See Neurologic.

Don't prescribe tramadol for older adults without considering the potential risks and harms related to serotonergic excess, seizures, falls, and drug-drug interactions.
See Neurologic.

Don't provide long-term opioid therapy for chronic non-cancer pain in the absence of clear and documented benefits to functional status and quality of life.
See Neurologic.

Don't routinely prescribe or continue acetyl cholinesterase inhibitors or N-methyl-D-aspartate antagonists in patients with advanced dementia.
See Neurologic.

Don't use anticholinergic medications concomitantly with cholinesterase inhibitors in patients with dementia.
See Neurologic.

Don't use physical or chemical restraints, outside of emergency situations, when caring for long-term care residents with dementia who display behavioral and psychological symptoms of distress; instead assess for unmet needs or environmental triggers and intervene using non-pharmacological approaches as the first approach to care whenever possible.
See Neurologic.

Don't use three or more central nervous system–active medications (antidepressants, benzodiazepines, Z-drugs [zopiclone, eszopiclone, and zaleplon], opioids, gabapentinoids, antipsychotics, antiepileptics), especially in older adults.
See Neurologic.

Don't administer diazepam for muscle spasm following spine surgery in the elderly.
See Orthopedic.

Avoid colorectal cancer screening tests on asymptomatic patients with a life expectancy of less than 10 years and no family or personal history of colorectal neoplasia.
See Preventive Medicine.

Don't initiate medications to treat symptoms, adverse events, or side effects without determining if an existing therapy or lack of adherence is the cause, and whether a dosage reduction, discontinuation of a medication, or another medication is warranted.
See Preventive Medicine.

Don't perform screening mammography in asymptomatic patients with normal exams who have less than five-year life expectancy.
See Preventive Medicine.

Don't prescribe under-dosed strength training programs for older adults. Instead, match the frequency, intensity, and duration of exercise to the individual's abilities and goals.
See Preventive Medicine.

Don't recommend cancer screening in adults with life expectancy of less than 10 years.
See Preventive Medicine.

Don't recommend screening for breast, colorectal or prostate cancer if life expectancy is estimated to be less than 10 years.
See Preventive Medicine.

Don't recommend screening for breast, colorectal, prostate, or lung cancers without considering life expectancy and the risks of testing, overdiagnosis, and overtreatment.
See Preventive Medicine.

Don't administer "prn" (i.e., as needed) sedative, antipsychotic, or hypnotic medications to prevent and/or treat delirium without first assessing for, removing, and treating the underlying causes of delirium and using nonpharmacologic delirium prevention and treatment approaches.
See Psychiatric and Psychologic.

Don't assume a diagnosis of dementia in an older adult who presents with an altered mental status and/or symptoms of confusion without assessing for delirium or delirium superimposed on dementia using a brief, sensitive, validated assessment tool.
See Psychiatric and Psychologic.

Don't prescribe antipsychotic medications for behavioral and psychological symptoms of dementia (BPSD) in individuals with dementia without an assessment for an underlying cause of the behavior.
See Psychiatric and Psychologic.

Don't prescribe cholinesterase inhibitors for dementia without periodic assessment for perceived cognitive benefits and adverse gastrointestinal effects.
See Psychiatric and Psychologic.

Don't routinely continue sedative hypnotics (Restoril, Ambien), diphenhydramine (Benadryl), benzodiazepines, or serotonin modulators (Trazadone) for long-term treatment of insomnia in geriatric populations. Consider the use of cognitive behavioral therapy as an alternative.

See Psychiatric and Psychologic.

Don't use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

See Psychiatric and Psychologic.

Don't use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

See Psychiatric and Psychologic.

Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation, or delirium.

See Psychiatric and Psychologic.

Don't use physical or chemical restraints, outside of emergency situations, when caring for long-term care residents with dementia who display behavioral and psychological symptoms of distress; instead assess for unmet needs or environmental triggers and intervene using non-pharmacological approaches as the first approach to care whenever possible.

See Psychiatric and Psychologic.

Don't use physical restraints to manage behavioral symptoms of hospitalized older adults with delirium.

See Psychiatric and Psychologic.

Don't prescribe under-dosed strength training programs for older adults. Instead, match the frequency, intensity, and duration of exercise to the individual's abilities and goals.

See Sports Medcine.

Avoid using anticholinergic medication to treat overactive bladder in women older than 70 years.

See Urologic.

Don't place an indwelling urinary catheter to manage urinary incontinence.

See Urologic.

Don't use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present.

See Urologic.

Avoid treatment of CIN 1 in women under age 25.

Rationale and Comments

Regardless of prior cytology, treatment of CIN 1 in women aged 21– to 4 years is not recommended. CIN 1 is the histologic manifestation of HPV infection, and like HPV infection in young women, regression rates are high. It is uncommon for these lesions to progress.

Sponsoring Organizations

American Society for Colposcopy and Cervical Pathology

Sources

Prospective cohort studies

References

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321

Don't exclude pessaries as a treatment option for pelvic organ prolapse.

Rationale and Comments

Nonsurgical treatment options for pelvic organ prolapse include pessaries, which are removable devices that are placed into the vagina to support the prolapsed organs (i.e., uterus, vagina, bladder and/or rectum). A pessary trial can be offered to almost all women with pelvic organ prolapse. Exceptions include women with an active vaginal infection and those who would be noncompliant with follow-up.

Sponsoring Organizations

American Urogynecologic Society

Sources

Cochrane Database of Systematic Reviews

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271

Don't obtain a karyotype as part of the initial evaluation for amenorrhea.

Rationale and Comments

Amenorrhea is the absence of menstruation and can be attributed to many causes. A karyotype (chromosomal analysis) is not indicated as an initial test for amenorrhea as it is not a screening test. However, it is indicated to further evaluate the etiology of an elevated follicle-stimulating hormone in a woman under 40 years of age or in the presence of physical findings suggestive of disorders of sexual development.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

Expert consensus

References

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258

Don't obtain follicle-stimulating hormone levels in women in their 40s to identify the menopausal transition as a cause of irregular or abnormal menstrual bleeding.

Rationale and Comments

Menstrual bleeding patterns for women after age 40 are less predictable than in the younger years due to the normal menopausal transition. Menopause is defined as the absence of menstrual periods for one year when no other cause can be identified (it is often accompanied by symptoms such as hot flashes and night sweats). During this time, blood levels of follicle-stimulating hormone vary both from woman to woman and from day to day in the same woman. A follicle-stimulating hormone level does not predict when the transition to menopause will occur, diagnose that it has begun, or provide reassurance that contraception is no longer necessary. If there are no other causes of irregular or abnormal bleeding, the treatment for these women will not change based on the follicle-stimulating hormone level.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

Prospective cohort studies

References

Paramsothy P, Harlow SD, Greendale GA, Gold EB, Crawford SL, Elliott MR, Lisabeth LD, Randolph JF Jr. Bleeding patterns during the menopausal transition in the multi-ethnic Study of Women's Health Across the Nation (SWAN): a prospective cohort study. BJOG. 2014 Nov;121(12):1564–73. Harlow SD, Lin X, Ho MJ. Analysis of menstrual diary data across the reproductive life span applicability of the bipartite model approach and the importance of within-woman variance. J Clin Epidemiol. 2000 Jul;53(7):722–33. Treloar AE, Boynton RE, Behn BG, Brown BW. Variation of the human menstrual cycle through reproductive life. Int J Fertil. 1967 Jan-Mar;12(1 Pt 2):77–126. Vollman RF. The degree of variability of the length of the menstrual cycle in correlation with age of woman. Gynaecologia. 1956 Nov;142(5):310–4. Burger HG, Hale GE, Robertson DM, Dennerstein L. A review of hormonal changes during the menopausal transition: focus on findings from the Melbourne Women's Midlife Health Project. Hum Reprod Update. 2007 Nov–Dec;13(6):559–65. Burger HG. Diagnostic role of follicle-stimulating hormone (FSH) measurements during the menopausal transition–an analysis of FSH, oestradiol and inhibin. Eur J Endocrinol. 1994 Jan;130(1):38-42.

260

Don't perform annual cervical cytology (Pap test) or annual HPV screening of immunocompetent women with a history of negative screening.

Rationale and Comments

There is a slight increase in cancer risk by increasing the interval between screens. However, this risk is balanced with potential harm from more colposcopy as a result of spurious HPV infection that, in most women, will clear spontaneously and is unlikely to progress to any clinically relevant cervical disease. Based on modeling studies of three- or five-year intervals, the screening intervals should be greater than a year, but the current evidence does not support a longer screening interval than three years for cervical cytology with HPV triage or for primary HPV screening with cytology triage.

Sponsoring Organizations

American Society for Colposcopy and Cervical Pathology

Sources

U.S. Preventive Services Task Force|American Cancer Society guidelines

References

Stout NK, Goldhaber-Fiebert JD, Ortendahl JD, Goldie SJ. Trade-offs in cervical cancer prevention: balancing benefits and risks. Arch Intern Med. 2008; 168:1881–1889. Kulasingam, S.; Havrilesky, L.; Ghebre, R.; Myers, E. Screening for Cervical Cancer: A DecisionAnalysis for the US Preventive Services Task Force. Rockville, MD: Agency for Healthcare Research and Quality; 2011. AHRQ Publication No.11-05157-EF. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. <BLOCKQUOTE>Am J Clin Pathol. 2012 Apr;137(4):516-42. CA Cancer J Clin. 2012 May-Jun;62(3):147-72. J Low Genit Tract Dis. 2012 Jul;16(3):175-204. </BLOCKQUOTE>

Don't perform cervical cytology (Pap test) or HPV screening in immunocompetent women under age 21.

Rationale and Comments

Cervical cancer is rare in adolescents and screening does not appear to lower that risk. Screening adolescents for cervical cancer exposes them to the potential harms of tests, biopsies, and procedures, without proven benefit.

Sponsoring Organizations

American Society for Colposcopy and Cervical Pathology

Sources

American Cancer Society guidelines

Rationale and Comments

American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. <BLOCKQUOTE>Am J Clin Pathol. 2012 Apr;137(4):516-42. CA Cancer J Clin. 2012 May-Jun;62(3):147-72. J Low Genit Tract Dis. 2012 Jul;16(3):175-204. </BLOCKQUOTE> http://seer.cancer.gov/statfacts/html/cervix.html Lee JW, Berkowitz Z, Saraiya M. Low-risk human papillomavirus testing and other nonrecommended human papillomavirus testing practices among U.S. health care providers. Obstet Gynecol. 2011 Jul;118(1):4-13. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. <BLOCKQUOTE>Am J Clin Pathol. 2012 Apr;137(4):516-42. CA Cancer J Clin. 2012 May-Jun;62(3):147-72. J Low Genit Tract Dis. 2012 Jul;16(3):175-204. </BLOCKQUOTE> Booth CN, Bashleben C, Filomena CA, Means MM, Wasserman PG, Souers RJ, Henry MR. Monitoring and ordering practices for human papillomavirus in cervical cytology: findings from the College of American Pathologists Gynecologic Cytopathology Quality Consensus Conference working group 5. Arch Pathol Lab Med. 2013 Feb;137(2):214-9. College of American Pathologists Policy on HPV testing: http://www.cap.org/ShowProperty?nodePath=/UCMCon/Contribution%20Folders/WebContent/pdf/hpv-testing.pdf

Don't perform colposcopy in patients treated for cervical cancer with Pap tests of low-grade squamous intraepithelial lesion or less.

Rationale and Comments

Colposcopy for low-grade abnormalities in this group does not detect recurrence unless there is a visible lesion and is not cost effective.

Sponsoring Organizations

Society of Gynecologic Oncology

Sources

Expert consensus

Rationale and Comments

Rimel BJ, Ferda A, Erwin J, Dewdney SB, Seamon L, Gao F, DeSimone C, Cotney KK, Huh W, Massad LS. Cervicovaginal cytology in the detection of recurrence after cervical cancer treatment. Obstet Gynecol. 2011;118:548-53. Tergas A HL, Guntupalli SR, Huh WK, Massad LS, Fader AN, Rimel BJ. A cost analysis of colposcopy following abnormal cytology in posttreatment surveillance for cervical cancer. Gynecol Oncol. 2013.

Don't perform endometrial biopsy in the routine evaluation of infertility.

Rationale and Comments

Endometrial biopsy performed for histologic dating does not distinguish fertile from infertile women. Chronic endometritis on endometrial biopsy does not predict the likelihood of pregnancy in general nor is it associated with live birth rates in assisted reproductive technology cycles. Endometrial biopsy should not be utilized in the routine evaluation of infertility.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

Expert consensus

Rationale and Comments

Coutifaris C, Myers ER, Guzick DS, Diamond MP, Carson SA, Legro RS, et al; NICHD National Cooperative Reproductive Medicine Network. Histological dating of timed endometrial biopsy tissue is not related to fertility status. Fertil Steril 2004 Nov;82(5):1264-72. Murray MJ, Meyer WR, Zaino RJ, Lessey BA, Novotny DB, Ireland K, Zeng D, Fritz MA. A critical analysis of the accuracy, reproducibility, and clinical utility of histologic endometrial dating in fertile women. Fertil Steril. 2004 May;81(5):1333–43. Batista MC, Cartledge TP, Merino MJ, Axiotis C, Platia MP, Merriam GR, Loriaux DL, Nieman LK. Midluteal phase endometrial biopsy does not accurately predict luteal function. Fertil Steril. 1993 Feb;59(2):294–300. Gibson M. Clinical evaluation of luteal function. Semin Reprod Endocrinol. 1990;8:130–41. Dockery P, Li TC, Rogers AW, Cooke ID, Lenton EA, Warren MA. An examination of the variation in timed endometrial biopsies. Hum Reprod. 1988 Aug;3(6):715–20. Kasius JC, Fatemi HM, Bourgain C, Sie-Go DM, Eijkemans RJ, Fauser BC, Devroey P, Broekmans FJ. The impact of chronic endometritis on reproductive outcome.Fertil Steril. 2011 Dec;96(6):1451–6. Haggerty C, Ness RB, Amortegui A, Hendrix SL, Hillier SL, Holley RL, Peipert J, Randall H, Sondheimer SJ, Soper DE, Sweet RL, Trucco G. Endometritis does not predict reproductive morbidity after pelvic inflammatory disease. Am J Obstet Gynecol. 2003 Jan;188(1):141–8.

Don't perform immunological testing as part of the routine infertility evaluation.

Rationale and Comments

Diagnostic testing of infertility requires evaluation of factors involving ovulation, fallopian tube patency and spermatogenesis based upon clinical history. Although immunological factors may influence early embryo implantation, routine immunological testing of couples with infertility is expensive and does not predict pregnancy outcome.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

Expert consensus

References

Cervera R, Balasch J. Bidirectional effects on autoimmunity and reproduction. Hum Reprod. 2008;14:359-66. Carp HJA, Selmi C, Shoenfel Y. The autoimmune bases of infertility and pregnancy loss. J Autoimmun. 2012;38:J266-74.

163

Don't perform low-risk human papillomavirus (HPV) testing.

Rationale and Comments

National guidelines provide for HPV testing in patients with certain abnormal Pap smears and in other select clinical indications. The presence of high-risk HPV leads to more frequent examination or more aggressive investigation (e.g., colposcopy and biopsy). There is no medical indication for low-risk HPV testing (HPV types that cause genital warts or very minor cell changes on the cervix) because the infection is not associated with disease progression and there is no treatment or therapy change indicated when low-risk HPV is identified.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

ACS/ASCCP/ASCP guidelines

References

Lee JW, et al. Low-risk human papillomavirus testing and other non-recommended human papillomavirus testing practices among U.S. health care providers. Obstet Gynecol. 2011;118(1):4-13. Saslow D, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Am J Clin Pathol. 2012;137:516-42. Zhao C, et al. Follow-up outcomes for a large cohort of U.S. women with negative imaged liquid-based cytology finding sand positive high risk human papillomavirus test results. Gynecol Oncol. 2011;122:291-6. American Society for Colposcopy and Cervical Pathology. Descriptions of new FDA-approved HPV DNA tests. HPV genotyping clinical update. 2009. http://mail.ny.acog.org/ website/ASCCPHPVUpdate.pdf.

28

Don't perform Pap tests for surveillance of women with a history of endometrial cancer.

Rationale and Comments

Pap testing of the top of the vagina in women treated for endometrial cancer does not improve detection of local recurrence. False-positive Pap smears in this group can lead to unnecessary procedures such as colposcopy and biopsy.

Sponsoring Organizations

Society of Gynecologic Oncology

Sources

Society of Gynecologic Oncology guidelines

References

Salani R, Backes FJ, Fung MF, Holschneider CH, Parker LP, Bristow RE, Goff BA. Posttreatment surveillance and diagnosis of recurrence in women with gynecologic malignancies: Society of Gynecologic Oncologists recommendations. Am J Obstet Gynecol. 2011;204:466-78. Salani R, Nagel CI, Drennen E, Bristow RE. Recurrence patterns and surveillance for patients with early stage endometrial cancer. Gynecol Oncol. 2011;123:205-7. Bristow RE, Purinton SC, Santillan A, Diaz-Montes TP, Gardner GJ, Giuntoli RL II. Cost-effectiveness of routine vaginal cytology for endometrial cancer surveillance. Gynecol Oncol. 2006;103:709-13.

145

Don't perform Pap tests in patients younger than 21 years or in women after hysterectomy for benign disease.

Rationale and Comments

Most dysplasia in adolescents regresses spontaneously; therefore, screening Pap tests in this age group can lead to unnecessary anxiety, morbidity, and cost. Pap tests have low yield in women after hysterectomy for benign disease, and there is poor evidence for improved outcomes.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force|American College of Obstetricians and Gynecologists guidelines

References

U.S. Preventive Services Task Force American College of Obstetricians and Gynecologists

60

Don't perform pelvic ultrasound in average risk women to screen for ovarian cancer.

Rationale and Comments

Although the mortality rate associated with ovarian cancer is high, the disease occurs infrequently in the general U.S. population, with an age-adjusted incidence of 13 cases per 100,000 women. As a result, the positive predictive value of screening for ovarian cancer is low, and most women with a positive screening test result will have a false-positive result. Annual screening with transvaginal ultrasonography in women does not reduce the number of ovarian cancer deaths.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

U.S. Preventive Services Task Force

References

Moyer VA. Screening for ovarian cancer: U.S. Preventive Services Task Force reaffirmation recommendation statement. U.S. Preventive Services Task Force. Ann Intern Med 2012;157:900–4. American College of Obstetricians and Gynecologists Committee on Gynecologic Practice. Committee Opinion No. 477: the role of the obstetrician-gynecologist in the early detection of epithelial ovarian cancer. Obstet Gynecol. 2011 Mar;117(3):742-6. U.S. Preventive Services Task Force. Ovarian cancer: screening. Rockville (MD): USPSTF; 2012. Available at: http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/ovarian-cancer-screening. Retrieved December 9, 2015.

305

Don't perform prolactin testing as part of the routine infertility evaluation in women with regular menses.

Rationale and Comments

It has become common practice to obtain prolactin levels in the routine infertility evaluation. However, there is no reason to expect that a woman would exhibit clinically significant, elevated prolactin levels in the presence of normal menstrual cycles and without galactorrhea (milk discharge from breast). Therefore, serum testing of prolactin levels in a normally menstruating woman without galactorrhea provides no benefit and would not impact clinical management.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

Expert consensus

References

Glazener CM, Kelly NJ, Hull MG. Prolactin measurement in the investigation of infertility in women with a normal menstrual cycle. Br J Obstet Gynaecol. 1987 Jun;94(6):535–8. Kostrzak A, Warenik-Szymankiewicz A, Meczekalski B. The role of serum PRL bioactivity evaluation in hyperprolactinaemic women with different menstrual disorders. Gynecol Endocrinol. 2009 Dec;25(12):799–806.

262

Don't perform routine annual cervical cytology screening (Pap tests) in women 30 to 65 years of age.

Rationale and Comments

In average-risk women, annual cervical cytology screening has been shown to offer no advantage over screening performed at three-year intervals. However, a well-woman visit should occur annually for patients with their health care provider to discuss concerns, problems, and have appropriate screening, with consideration of a pelvic examination.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

ACS/ASCCP/ASCP guidelines|American College of Obstetricians and Gynecologists guidelines

References

Boulware LE, et al. Systematic review: the value of the periodic health evaluation. Ann Intern Med. 2007;146:289-300. Saslow D, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. CA Cancer J Clin. 2012;62:147-72. American College of Obstetricians and Gynecologists. Well-woman visit. Committee opinion no. 534. Obstet Gynecol 2012;120:421-4. American College of Obstetricians and Gynecologists. Screening for cervical cancer. Practice bulletin no. 131. Obstet Gynecol. 2012;120(5):122-38.

57

Don't perform screening for cervical cancer in low-risk women aged 65 years or older and in women who have had a total hysterectomy for benign disease.

Rationale and Comments

Health care professionals should not perform cervical cancer screening in women who have had a hysterectomy that removed their cervix and do not have a history of high-grade precancerous lesions or cervical cancer. Screening provides no benefits to these patients and may subject them to potential risks from false-positive results, including physical (e.g., vaginal bleeding from biopsies) or psychological (e.g., anxiety). In addition, cervical cancer screening should not be performed in women over the age of 65 that are at low risk for cervical cancer and have had negative results from prior screenings. Health care professionals should make this decision on a case-by-case basis, but once a patient stops receiving screenings, in general, they should not restart screenings. Screening for women in this population provides little to no benefit because the incidence and prevalence of cervical disease declines for women starting at age 40–50 years.

Sponsoring Organizations

American College of Preventive Medicine

Sources

U.S. Preventive Services Task Force

References

Moyer; U.S. Preventive Services Task Force. Screening for cervical cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2012;156(12):880-91, W312. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; ACS-ASCCP-ASCP Cervical Cancer Guideline Committee. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. CA Cancer J Clin. 2012;62(3):147-72.

252

Don't perform vaginal cytology (Pap test) or HPV screening in women who had hysterectomy (with removal of the cervix) for reasons other than high-grade cervical dysplasia (cervical intraepithelial neoplasia [CIN] 2/3) or cancer.

Rationale and Comments

Vaginal cancer after hysterectomy is very rare, less likely than breast cancer for men, for which screening is not recommended. Screening these women is more likely to discover benign changes that prompt invasive testing than to prevent cancer. Continued vaginal cytology (Pap test) is recommended for women who had a hysterectomy for the indication of high-grade cervical dysplasia or cancer, as their risk of vaginal cancer remains elevated. Vaginal assessment may also be indicated in the presence of HPV-associated vulvar cancer.

Sponsoring Organizations

American Society for Colposcopy and Cervical Pathology

Sources

American Cancer Society guidelines

References

American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. <BLOCKQUOTE>Am J Clin Pathol. 2012 Apr;137(4):516-42. CA Cancer J Clin. 2012 May-Jun;62(3):147-72. J Low Genit Tract Dis. 2012 Jul;16(3):175-204. </BLOCKQUOTE> ACOG Committee on Practice Bulletins – Gynecology. Cervical Cancer Screening and Prevention. Practice Bulletin #157. Obstet Gynecol 2016;127:e1–20.

319

Don't require a pelvic exam or other physical exam to prescribe oral contraceptive medications.

Rationale and Comments

Hormonal contraceptives are safe, effective, and well-tolerated for most women. Data do not support the necessity of performing a pelvic or breast examination to prescribe oral contraceptive medications. Hormonal contraception can be safely provided on the basis of medical history and blood pressure measurement.

Sponsoring Organizations

American Academy of Family Physicians

Sources

American College of Obstetricians and Gynecologists

References

Stewart FH, Harper CC, Ellertson CE, Grimes DA, Sawaya GF, Trussell J. Clinical breast and pelvic examination requirements for hormonal contraception: current practice vs evidence. JAMA. 2001 May 2;285(17):2232-9. Henderson JT, Sawaya GF, Blum M, Stratton L, Harper CC. Pelvic examinations and access to oral hormonal contraception. Obstet Gynecol. 2010 Dec;116(6):1257-64. Committee on Gynecologic Practice. Committee opinion no. 534: well-woman visit. Obstet Gynecol. 2012 Aug;120(2 Pt 1):421-4.

120

Don't routinely order thrombophilia testing on patients undergoing a routine infertility evaluation.

Rationale and Comments

There is no indication to order these tests, and there is no benefit to be derived in obtaining them in someone that does not have any history of bleeding or abnormal clotting and in the absence of any family history. This testing is not a part of the infertility workup. Furthermore, the testing is costly, and there are risks associated with the proposed treatments, which would also not be indicated in this routine population.

Sponsoring Organizations

American Society for Reproductive Medicine

Sources

American College of Obstetricians and Gynecologists

References

Lockwood C, Wendel G; Committee on Practice Bulletins—Obstetrics. Practice bulletin no. 124: inherited thrombophilias in pregnancy. Obstet Gynecol. 2011 Sept;118(3):730-40. Casadei L, Puca F, Privitera L, Zamaro V, Emidi E. Inherited thrombophilia in infertile women: implication in unexplained infertility. Fertil Steril. 2010 Jul;94(2):755-7. The Practice Committee of the American Society for Reproductive Medicine. Diagnostic evaluation of the infertile female: a committee opinion. Fertil Steril. 2012 Aug;98:302-7. Baglin T, Gray E, Greaves M, Hunt B, Keeling D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Talt RC, Walker I, Watson H. Clinical guidelines for testing for heritable thrombophilia. Br J Haematol. 2010;149:209-20.

162

Don't screen women older than 65 years for cervical cancer who have had adequate prior screening and are not otherwise at high risk for cervical cancer.

Rationale and Comments

There is adequate evidence that screening women older than 65 years for cervical cancer who have had adequate prior screening and are not otherwise at high risk provides little to no benefit.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force

References

American Academy of Family Physicians. Screening for cervical cancer policy. http://www.aafp.org/online/en/home/clinical/ exam/cervicalcancer.html U.S. Preventive Services Task Force. Screening for cervical cancer. http://www.uspreventiveservicestaskforce.org/uspstf/ uspscerv.htm. Vesco KK, et al. Screening for cervical cancer: a systematic evidence review for the U.S. Preventive Services Task Force. Rockville, Md.: Agency for Healthcare Research and Quality; 2011. http://preview.ncbi.nlm.nih.gov/bookshelf/booktest/ br.fcgi?book=es86.

59

Don't screen women younger than 30 years for cervical cancer with human papillomavirus (HPV) testing, alone or in combination with cytology.

Rationale and Comments

There is adequate evidence that the harms of HPV testing, alone or in combination with cytology, in women younger than 30 years are moderate. The harms include more frequent testing and invasive diagnostic procedures such as colposcopy and cervical biopsy. Abnormal screening test results are also associated with psychological harms, anxiety, and distress.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force

References

American Academy of Family Physicians. Screening for cervical cancer policy. http://www.aafp.org/online/en/home/clinical/ exam/cervicalcancer.html. U.S. Preventive Services Task Force. Screening for cervical cancer. http://www.uspreventiveservicestaskforce.org/uspstf/ uspscerv.htm. Vesco KK, et al. Screening for cervical cancer: a systematic evidence review for the U.S. Preventive Services Task Force. Rockville, Md.: Agency for Healthcare Research and Quality; 2011. http://preview.ncbi.nlm.nih.gov/bookshelf/booktest/ br.fcgi?book=es86.

58

Don't treat patients who have mild cervical dysplasia of less than two years' duration.

Rationale and Comments

Mild dysplasia (cervical intraepithelial neoplasia 1) is associated with the presence of human papillomavirus (HPV), which does not require treatment in average-risk women. Most women with cervical intraepithelial neoplasia 1 on biopsy have a transient HPV infection that will usually clear in less than 12 months and, therefore, does not require treatment.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

American Society for Colposcopy and Cervical Pathology guidelines|American College of Obstetricians and Gynecologists guidelines

References

Wright TC, et al. 2006 consensus guidelines for the management of women with cervical intraepithelial neoplasia or adenocarcinoma in situ. Am J Obstet Gynecol. 2007;197:340-5. American College of Obstetricians and Gynecologists. Management of abnormal cervical cytology and histology. Practice bulletin no. 99. Obstet Gynecol. 2008;112:1419-44.

29

Don't routinely drain non-painful fluid-filled breast cysts.

See Dermatologic.

Avoid opioid misuse in patients with chronic pelvic pain without compromising care through education, responsible opioid prescribing, and advocacy.

See Neurologic.

Don't perform pelvic exams on asymptomatic nonpregnant women, unless necessary for guideline-appropriate screening for cervical cancer.

See Preventive Medicine.

Don't perform screening mammography in asymptomatic patients with normal exams who have less than five-year life expectancy.

See Preventive Medicine.

Don't routinely use breast MRI for breast cancer screening in average risk women.

See Preventive Medicine.

Don't screen for ovarian cancer in asymptomatic women at average risk.

See Preventive Medicine.

Don't screen low-risk women with cancer antigen (CA) 125 or ultrasound for ovarian cancer.

See Preventive Medicine.

Don't perform surgery for asymptomatic vaginal exposure of monofilament mesh.

See Surgical.

Avoid dependence on standard laboratory values for transfusion decisions; consideration of the patient's clinical status is requisite.

Rationale and Comments

Laboratory studies may not accurately portray the individual's hemostatic status, bleeding risk, or need for transfusion; laboratory studies must be assessed in the context of the patient's overall clinical status. Additional platelet function and viscoelastic testing should be performed to guide blood product transfusions in children with (or at risk for) moderate to severe bleeding. Pharmacologic modalities (i.e., antifibrinolytics, topical hemostatic agents) should be utilized as appropriate. Hemoglobin levels should be assessed in the context of the patient's fluid status, hemodynamics, and degree of cardiopulmonary reserve, with the goal of restrictive RBC transfusion practices.

Sponsoring Organizations

Society for the Advancement of Patient Blood Management: Pediatric and Neonatal Medicine

Sources

AABB guidelines

References

Carson JL, Guyatt G, Heddle NM, et al. Clinical practice guidelines from the AABB: red blood cell transfusion thresholds and storage. JAMA. 2016;316(19):2025-2035. American Society of Anesthesiologists Task Force on Perioperative Blood Management. Practice guidelines for perioperative blood management: an updated report by the American Society of Anesthesiologists Task Force on Perioperative Blood Management*. Anesthesiology. 2015;122(2):241-75. New HV, Berryman J, Bolton-Maggs PH, et al.; British Committee for Standards in Haematology. Guidelines on transfusion for fetuses, neonates and older children. Br J Haematol. 2016;175(5):784-828. Valentine SL, Bembea MM, Muszynski JA, et al.; Pediatric Critical Care Transfusion and Anemia Expertise Initiative (TAXI); Pediatric Critical Care Blood Research Network (BloodNet), and the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) Network. Consensus recommendations for RBC transfusion practice in critically ill children from the pediatric critical care transfusion and anemia expertise initiative. Pediatr Crit Care Med. 2018;19(9):884-898.

497

Avoid hemodilution and unnecessary blood draws to avoid dilutional coagulopathy and iatrogenic anemia.

Rationale and Comments

Excessive fluid administration causing hemodilution and unnecessary phlebotomy reduce hemoglobin levels and may unnecessarily trigger RBC transfusions based on a numeric threshold despite adequate oxygen-carrying capacity. Replacing blood loss with intravenous fluids, which do not contain adequate clotting factors (i.e., crystalloids, colloids, and packed RBCs), may lead to dilutional coagulopathy, causing a bleeding diathesis. Routine blood draws should be avoided, and if necessary, blood laboratory investigations should be consolidated when appropriate, using minimal volume withdrawal and closed loop collecting systems.

Sponsoring Organizations

Society for the Advancement of Patient Blood Management: Pediatric and Neonatal Medicine

Sources

Expert consensus

References

Spahn DR, Bouillon B, Cerny V, et al. The European guideline on management of major bleeding and coagulopathy following trauma: fifth edition. Crit Care. 2019;23(1):98. National Blood Authority Australia. Patient blood management guidelines: Module 6 Neonatal And Paediatrics. 2016. https://www.blood.gov.au/pbm-module-6 Valentine SL, Bateman ST. Identifying factors to minimize phlebotomy-induced blood loss in the pediatric intensive care unit. Pediatr Crit Care Med. 2012;13(1):22-7. Haas T, Mauch J, Weiss M, et al. Management of dilutional coagulopathy during pediatric major surgery. Transfus Med Hemother. 2012;39(2):114-119.

496

Avoid transfusion, outside of emergencies, when alternative strategies are available as part of informed consent; make discussion of alternatives part of the informed consent process.

Rationale and Comments

Informed choice/consent regarding transfusion and other effective methods should be standardized and consistently delivered. Throughout the world, there is wide variation among medical practitioners and hospitals with regard to medical knowledge about the true risks of transfusion, alternatives to transfusion, and the delivery of this information to patients. Outside of the truly emergent clinical situation, transfusion should be avoided or limited when other interventions are available. Alternative strategies include, but are not limited to pharmacologic agents, cell salvage, normovolemic hemodilution, and minimally-invasive surgical techniques.

Sponsoring Organizations

Society for the Advancement of Blood Management

Sources

Expert consensus

References

Friedman M, Arja W, Bata R, et al. Informed consent for blood transfusion: What do medical residents tell? What do patients understand? Am J Clin Pathol. 2012;138(4):559-65. Davis R, Vincent C, Murphy M. Blood transfusion safety: the potential role of the patient. Transfus Med Rev. 2011;25(1)12-23. Booth C, Grant-Casey J, Court EL, et al. National comparative audit of blood transfusion: report on the 2014 audit of patient information and consent. Transfus Med. 2017:21(3):183-189. Vossoughi S, Macauley R, Sazama K, Fung M. Attitudes, practices, and training on informed consent for transfusions and procedures. Amer J Clin Path. 2015;144:315-321. Howell CA, Forsythe JLR. Patient consent for blood transfusion- recommendations from the SaBTO. Transfus Med. 2011;21:359-362. Court EL, Robinson JA, Hocken DB. Informed consent and patient understanding of blood transfusion. Transfus Med. 2011;21:183-189.

367

Avoid transfusions of red blood cells for arbitrary hemoglobin or hematocrit thresholds and in the absence of symptoms or active coronary disease, heart failure, or stroke.

Rationale and Comments

The AABB recommends adhering to a restrictive transfusion strategy (7 to 8 g/dL) in hospitalized, stable patients. The AABB suggests that transfusion decisions be influenced by symptoms as well as hemoglobin concentration. According to a National Institutes of Health Consensus Conference, no single criterion should be used as an indication for red cell component therapy. Instead, multiple factors related to the patient's clinical status and oxygen delivery needs should be considered.

Sponsoring Organizations

Society of Hospital Medicine (Adult)

Sources

AABB guidelines

References

Red blood cell transfusion: a clinical practice guideline from the AABB. Ann Intern Med. 2012;157(1):49-58. Consensus conference. Perioperative red blood cell transfusion. JAMA. 1988;260(18):2700-3. AABB. Advancing Transfusion and Cellular Therapies Worldwide. AABB name change. http://www.aabb.org/about/ who/Pages/namechange.aspx.

31

Avoid using hemoglobin to evaluate patients for iron deficiency in susceptible populations. Instead, use ferritin.

Rationale and Comments

Iron depletion is a progressive process with anemia as the final phase. Thus, screening for iron deficiency using hemoglobin will only identify the most severe cases. Moreover, hemoglobin is not specific for iron deficiency or iron deficiency anemia. Iron deficiency is one of the most common nutritional deficiencies worldwide. Prevalence of iron deficiency in U.S. women ages 12 to 49 years rose from 11% in 2003 to 14.8% in 2010. Pregnant women and young children are also high-risk groups and must be evaluated. Iron deficiency in U.S. toddlers, without anemia, is estimated at 6.6% to 15.2%. Serum ferritin is a measure of iron stores and is the most sensitive biomarker to test for early stages of iron deficiency as well as iron deficiency anemia. Sensitivity of ferritin test is 89% for diagnosis of iron depletion compared with hemoglobin, which is only 26%. Moreover, a ferritin cut off of ≤ 30 ng/mL provides 92% sensitivity and 98% specificity for iron deficiency anemia and is the best screening test for this disorder. Evaluating patients for iron deficiency with ferritin will identify early stage iron deficiency and will potentially result in iron therapy, preventing iron deficiency anemia. Iron deficiency anemia has been long associated with psychomotor and cognitive abnormalities but even iron deficiency without anemia has been related to negative neurodevelopmental outcomes in children. Ferritin is an acute phase reactant, and occasionally in inflammatory conditions, ferritin levels may be normal or elevated even in the presence of iron deficiency. Additional laboratory tests (such as reticulocyte hemoglobin content, mean corpuscular volume, red cell distribution width, and additional iron studies such as percent transferrin saturation and total iron binding capacity) accompanying clinical correlation are also helpful to determine iron deficiency.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

American Academy of Pediatrics guidelines

References

Second National Report on Biochemical Indicators of Diet and Nutrition in the U.S. Population. In: NHANES, ed: CDC; 2012. Baker RD, Greer FR, The Committee on Nutrition of the American Academy of Pediatrics. Diagnosis and prevention of iron deficiency and iron-deficiency anemia in infants and young children (0-3 years of age). Pediatrics. 2010;126(5):1040-1050. Cook JD, Flowers CH, Skikne BS. The quantitative assessment of body iron. Blood. 2003;101(9):3359-3364. Esani M, Arcari C, Mutambudzi M, Freeman V, Bryant B. Recommended interventions to reduce risk of iron deficiency in blood donors. TPHA. 2017;69:5-9. Garcia-Casal MN, Pena-Rosas JP, Pasricha SR. Rethinking ferritin cutoffs for iron deficiency and overload. Lancet Haematol. 2014;1(3):e92-94. Goddard AF, James MW, McIntyre AS, Scott BB; British Society of Gastroenterology. Guidelines for the management of iron deficiency anaemia. Gut. 2011;60(10):1309-1316. Grantham-McGregor S, Ani C. A review of studies on the effect of iron deficiency on cognitive development in children. J Nutr. 2001;131(2S-2):649S-656S. Ioannou GN, Spector J, Scott K, Rockey DC. Prospective evaluation of a clinical guideline for the diagnosis and management of iron deficiency anemia. Am J Med. 2002;113(4):281-287. Centers for Disease Control and Prevention (CDC). Iron deficiency--United States, 1999-2000. MMWR Morb Mortal Wkly Rep. 2002;51(40):897-899. Mast AE, Blinder MA, Gronowski AM, Chumley C, Scott MG. Clinical utility of the soluble transferrin receptor and comparison with serum ferritin in several populations. Clin Chem. 1998;44(1):45-51. Radtke H, Meyer T, Kalus U, et al. Rapid identification of iron deficiency in blood donors with red cell indexes provided by Advia 120. Transfusion. 2005;45(1):5-10. Short MW, Domagalski JE. Iron deficiency anemia: evaluation and management. Am Fam Physician. 2013;87:98-104. Skikne BS, Punnonen K, Caldron PH, et al. Improved differential diagnosis of anemia of chronic disease and iron deficiency anemia: a prospective multicenter evaluation of soluble transferrin receptor and the sTfR/ log ferritin index. Am J Hematol. 2011;86:923-927. U.S. Preventive Services Task Force. Screening for iron deficiency anemia, including iron supplementation for children and pregnant women: recommendation statement. Am Fam Physician. 2006;74(3):461-464. Ullrich C, Wu A, Armsby C, et al. Screening healthy infants for iron deficiency using reticulocyte hemoglobin content. JAMA. 2005;294:924-930.

Do not measure the international normalized ratio in patients who are taking an anti-Xa inhibitor.

Rationale and Comments

Anti-Xa inhibitors (e.g., rivaroxaban [Xarelto], apixaban [Eliquis]) are commonly prescribed anticoagulants. Their indications include (but are not limited to) reducing the risk of stroke or systemic embolism in patients with nonvalvular atrial fibrillation; treating deep venous thromboembolism and pulmonary embolism; and deep venous thromboembolism prophylaxis. Bleeding is a common complication from anti-Xa inhibitor use that may require reversal with andexanet alfa, prothrombin complex concentrate, or plasma. Although the international normalized ration (INR) is commonly used to measure the anticoagulation effect of vitamin K antagonists (e.g., warfarin), it is insensitive for anti-Xa inhibitors, potentially leading to inappropriate patient management decisions.

Sponsoring Organizations

American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

Expert consensus

References

Gosselin RC, Adcock DM, Bates SM, et al. International Council for Standardization in Haematology (ICSH) recommendations for laboratory measurement of direct oral anticoagulants. Thromb Haemost. 2018;118(3):437-450.
Milling TJ Jr, Frontera J. Exploring indications for the use of direct oral anticoagulants and the associated risks of major bleeding. Am J Manag Care. 2017;23(4 Suppl):S67-S80.
Cuker A, Burnett A, Triller D, et al. Reversal of direct oral anticoagulants: guidance from the Anticoagulation Forum. Am J Hematol. 2019;94(6):697-709.

Don't administer packed red blood cells in a young healthy patient without ongoing blood loss and hemoglobin of ≥ 6 g/dL unless symptomatic or hemodynamically unstable.

Rationale and Comments

The hemoglobin transfusion threshold used in multiple studies has varied from 6.0 to 10.0 g/dL. The optimal hemoglobin/hematocrit criterion for transfusion remains controversial in several clinical settings. Nevertheless, compared with higher hemoglobin thresholds, a lower hemoglobin threshold is associated with fewer red blood cell units transfused without adverse associations with mortality, cardiac morbidity, functional recovery, or length of hospital stay. Hospital mortality remains lower in patients randomized to a lower hemoglobin threshold for transfusion versus those randomized to a higher hemoglobin threshold. The decision to transfuse should be based on a combination of both clinical and hemodynamic parameters.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

Cochrane Database of Systematic Reviews

References

American Society of Anesthesiologists Task Force on Perioperative Blood Transfusion and Adjuvant Therapies. Practice guidelines for perioperative blood transfusion and adjuvant therapies. Anesthesiology. 2006 Jul;105(1):198-208. Carson JL, Carless PA, Hebert PC. Outcomes using lower versus higher hemoglobin thresholds for red blood cell transfusion. JAMA. 2013;309(1):83-4. Carson JL, Patel MS. (2013). Is there an optimal perioperative hemoglobin level? In: Fleisher L. Evidence-based practice of anesthesiology (3rd ed., pp. 155–163). Philadelphia (PA): Elsevier Saunders. Goodnough LT, Levy JH, Murphy MF. Concepts of blood transfusion in adults. Lancet. 2013;381(9880):1845-54. Carson JL, Carless PA, Hebert PC. Transfusion threshold and other strategies for guiding allogeneic red blood cell transfusion. Cochrane Database Syst Rev. 2012;4:CD002042. Bittencourt R, Costa J, Lobo JE, Aquiar FC. Consciously transfusion of blood products. Systematic review of indicative factors for blood components infusion trigger. Rev Bras Anestesiol. 2012;62(3):402-10. Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton-McLaughlin LG, Djulbegovic B, Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical perspective guideline from the AABB. Ann Intern Med. 2012;157(1):49-58. Toy P, Feiner J, Viele MK, Watson J, Yeap H, Weiskopf RB. Fatigue during acute isovolemic anemia in healthy resting humans. Transfusion. 2000;40(4):457–60.

132

Don't administer plasma or prothrombin complex concentrates for nonemergent reversal of vitamin K antagonists (i.e., outside of the setting of major bleeding, intracranial hemorrhage, or anticipated emergent surgery).

Rationale and Comments

Blood products can cause serious harm to patients, are costly, and are rarely indicated in the reversal of vitamin K antagonists. In nonemergent situations, elevations in the international normalized ratio are best addressed by holding the vitamin K antagonist and/or by administering vitamin K.

Sponsoring Organizations

American Society of Hematology

Sources

American College of Chest Physicians guidelines

References

Holbrook A, Schulman S, Witt DM, Vandvik PO, Fish J, Kovacs MJ, Svensson PJ, Veenstra DL, Crowther M, Guyatt GH; American College of Chest Physicians. Evidence-based management of anticoagulant therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012 Feb;141(2 Suppl):e152S-84S. Scottish Intercollegiate Guidelines Network (SIGN). Antithrombotics: indications and management. Edinburgh (UK): 2012. 75 p. Report No. 129.

170

Don't do workup for clotting disorder (order hypercoagulable testing) for patients who develop first episode of deep vein thrombosis (DVT) in the setting of a known cause.

Rationale and Comments

Lab tests to look for a clotting disorder will not alter treatment of a venous blood clot, even if an abnormality is found. DVT is a very common disorder, and recent discoveries of clotting abnormalities have led to increased testing without proven benefit.

Sponsoring Organizations

Society for Vascular Medicine

Sources

Prospective cohort studies

References

Dalen JE. Should patients with venous thromboembolism be screened for thrombophilia? Am J Med. 2008;121(6):458-63. Baglin T, et al. Incidence of recurrent venous thromboembo-lism in relation to clinical and thrombophilic risk factors: prospective cohort study. Lancet. 2003;362:523-6. Ho WK, et al. Risk of recurrent venous thromboembolism in patients with common thrombophilia. Arch Intern Med. 2006;166:729-36. Baglin T, et al. Clinical guidelines for testing for heritable thrombophilia. Br J Haematol. 2010;149:209-20.

32

Don't order a factor V Leiden mutation assay as the initial test to identify a congenital cause for a thrombotic event. First, order a phenotypic activated protein C resistance (APCR) ratio assay.

Rationale and Comments

There exist several acquired APCR conditions such as elevated factor VIII and antibody-mediated APCR that can lead to thrombotic events such as deep venous thrombosis or pulmonary embolism. Further, several factor V Leiden-independent mutations may be associated with thrombosis. Best practice guidelines recommend testing for APCR using one of several phenotypic clot-based APCR ratio assays as an initial assay and following up positive APCR ratio results with the molecular factor V Leiden assay. Most currently available phenotypic tests are economical, with a greater than 95% concordance with molecular testing and up to 99% clinical sensitivity. Based on Medicare reimbursement rates, switching to initial-phase phenotypic testing and relying on its negative predictive value with follow-up genotypic testing on APCR-positive samples could result in a 75% reduction in costs. Although the factor V Leiden mutation assay is often ordered to determine the cause of venous thromboembolic disease, the APCR ratio assay provides greater clinical sensitivity at a lower cost. In instances when clot-based thrombosis risk testing is indicated during acute thrombosis, line-associated thrombosis, or anticoagulant therapy, the APCR is compromised and the factor V Leiden mutation assay is used as a primary assay.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

Expert consensus

References

Arachchillage DRJ, Efthymiou M, Mackie IJ, et al. Anti-protein C antibodies are associated with resistance to endogenous protein C activation and a severe thrombotic phenotype in antiphospholipid syndrome. J Thromb Haemost. 2014;12:1801-1809. Elice F, Fink L, Tricot G, Barlogie B, Zangar M. Acquired resistance to activated protein C (aAPCR) in multiple myeloma is a transitory abnormality associated with an increased risk of venous thromboembolism. Brit J Haematol. 2006;134:394-405. Majluf-Cruz A, Moreno-Hernández M, Ruiz-de-Chávez-Ochoa A, et al. Activated protein C resistance and factor V Leiden in Mexico. Clin Appl Thromb Hemost. 2008;14(4):428-437. Moore GW, Van Cott EM, Cutler JA, Mitchell MJ, Adcock DM. Recommendations for clinical laboratory testing of activated protein C resistance; communication from the SSC of the ISTH. J Thromb Haemost. 2019;17(9):1555-1561. Murphy CH, Sabath DE. Comparison of phenotypic activated protein C resistance testing with a genetic assay for factor V Leiden. Am J Clin Pathol. 2019;151:302-305.

429

Don't order a homocysteine assay as part of the thrombophilia workup.

Rationale and Comments

For long it was thought that elevated homocysteine was associated with cardiovascular diseases. That could lead to coronary artery disease, heart attacks, strokes, clots in veins causing DVT and PE, and pregnancy complications, among others. But in 2010 the American Heart Association declared that elevated homocysteine levels were not considered to be a major risk factor for cardiovascular disease. Subsequently, in 2013, the American College of Obstetricians and Gynecologists recommended that fasting homocysteine levels should not be ordered as part of workup for VTE. Homocysteine is a breakdown product of methionine that can be recycled by the human body with the help of the enzyme methylene tetrahydrofolate reductase to reuse in building proteins. A mutation of the methylene tetrahydrofolate reductase gene (C677T) impairs its ability to process folate that may lead to elevated homocysteine levels. An elevated homocysteine level is not a clotting disorder and should not be included in thrombophilia testing panels.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

Expert consensus

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Don't order a Type & Crossmatch for patients undergoing procedures that have minimal anticipated blood loss, historically low fraction of transfusion use, and a low transfusion index (ratio of transfused units to patients).

Rationale and Comments

Appropriate use of blood component resources is critical to maintain adequate supply. For specific elective surgeries, the need for RBC transfusion may be anticipated; however, there is often over-ordering of RBCs and a lack of valid need. The Type & Crossmatch is labor and reagent intensive, resulting in increased workload costs and increased inventory wastage. Optimizing appropriate orders for a Type & Crossmatch can prevent these downstream detriments to effective, efficient care and stewardship of our blood supply. Development and implementation of an institutional-specific maximal surgical blood ordering schedule can aid in this endeavor, along with overarching education regarding transfusion best practices. Each hospital medical staff should have a maximal surgical blood ordering schedule and it should be available to all members of the medical and hospital staff, on request.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Frank SM, Rothschild JA, Masear CG, et al. Optimizing preoperative blood ordering with data acquired from an anesthesia information management system. Anesthesiology. 2013;118(6):1286-1297. Collins RA, Wisniewski MK, Waters JH, et al. Excessive quantities of red blood cells are issued to the operating room. Transfus Med. 2015;25(6):374-379. Frank SM, Oleyar MJ, Ness PM, et al. Reducing unnecessary preoperative blood orders and costs by implementing an updated institution-specific maximum surgical blood order schedule and a remote electronic blood release system. Anesthesiology. 2014;121(3):501-509. Mahar FK, Moiz B, Khurshid M, et al. Implementation of maximum surgical blood ordering schedule and an improvement in transfusion practices of surgeons subsequent to intervention. Indian J Hematol Blood Transfus. 2013;29(3):129-133.

448

Don't order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.

Rationale and Comments

Many diagnostic studies (including chest radiographs, arterial blood gases, blood chemistries and counts and electrocardiograms) are ordered at regular intervals (e.g., daily). Compared with a practice of ordering tests only to help answer clinical questions, or when doing so will affect management, the routine ordering of tests increases health care costs, does not benefit patients and may in fact harm them. Potential harms include anemia due to unnecessary phlebotomy, which may necessitate risky and costly transfusion, and the aggressive work-up of incidental and nonpathological results found on routine studies.

Sponsoring Organizations

Critical Care Societies Collaborative–Critical Care

Sources

Expert consensus

References

Flabouris A, Bishop G, Williams L, Cunningham M. Routine blood test ordering for patients in intensive care. Anaesth Intensive Care. 2000;28(5):562–5. Ganapathy A, Adhikari NKJ, Spiegelman J, Scales DC. Routine chest x-rays in intensive care units: A systematic review and meta-analysis. Crit Care. 2012;16(2):R68. May TA, Clancy M, Critchfield J, Ebeling F, Enriquez A, Gallagher C, Genevro J, Kloo J, Lewis P, Smith R, Ng VL. Reducing unnecessary inpatient laboratory testing in a teaching hospital. Am J Clin Pathol. 2006;126(2):200–6.

175

Don't order red blood cell folate levels at all. In adults, consider folate supplementation instead of serum folate testing in patients with macrocytic anemia.

Rationale and Comments

Since 1998, when the United States and Canada mandated that foods with processed grains be fortified with folic acid, there has been a significant decline in the incidence of folate deficiency. For the rare patient suspected of having a folate deficiency, simply treating with folic acid is a more cost-effective approach than blood testing. While red blood cell folate levels have been used in the past as a surrogate for tissue folate levels or a marker for folate status over the lifetime of red blood cells, the result of this testing does not, in general, add to the clinical diagnosis or therapeutic plan.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Joelson DW, Fiebig EW, Wu AH. Diminished need for folate measurements among indigent populations in the post folic acid supplementation era. Arch Path Lab Med. 2007; 131(3):477-480. Ray, JG, Vermeulen MJ, Boss SC, Cole DE. Declining rate of folate insufficiency among adults following increased folic acid food fortification in Canada. Can J Public Health. 2002;3(4):249-253. Latif T, His ED, Rybicki LA, Adelstein DJ. Is there a role for folate determinations in current clinical practice in the USA? Clin Lab Haematol. 2004;26(6):379-383. Shojania AM, VonKuster K. Folate assays are no longer useful diagnostic tools in medical practice. Blood. 2005;106(11 pt1):12b. Shojania AM. Folate assays are no longer useful as screening tests for malabsorption syndrome. Now, iron and B12 deficiency are more common than folate deficiency in adults with untreated celiac disease. Blood. 2005;106(11 pt1): 12b.

350

Don't order thrombophilia testing on children with venous access (i.e., peripheral or central) associated thrombosis in the absence of a positive family history.

Rationale and Comments

Testing for inherited forms of thrombophilia does not influence the initial management of a first episode of provoked venous thrombosis and should not be performed routinely. The results of such testing have not been shown to either predict recurrence of venous thrombosis or inform the intensity or duration of anticoagulant therapy. Thrombophilia testing has substantial financial cost, and a positive result has the potential for misinterpretation of risk assessment leading to undue psychological distress or impact on childbearing plans, as well as possible life insurance discrimination for affected patients.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

National Institute for Health and Clinical Excellence guidelines

References

Baglin T, Gray E, Greaves M, Hunt BJ, Keeling D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Tait RC, Walker I, Watson H. Clinical guidelines for testing for heritable thrombophilia. British Journal of Haematology. 2010 Apr;149(2)209-220. Chalmers E, Ganesen V, Liesner R, Maroo S, Nokes T, Saunders D, Williams M. Guideline on the investigation, management and prevention of venous thrombosis in children. British Journal of Haematology. 2011 Jul;154(2)196-207. National Institute for Health and Care Excellence. Venous thromboembolic diseases: diagnosis, management and thrombophilia testing. 2015 Nov. Retrieved from www.nice.org.uk/guidance/cg144. Scottish Intercollegiate Guidelines Network. Prevention and management of venous thromboembolism. 2014 Oct. Retrieved from www.sign.ac.uk/sign-122-prevention-and-management-of-venous-thromboembolism.html.

409

Don't perform a hypercoagulable workup in patients taking direct factor Xa or direct thrombin inhibitors.

Rationale and Comments

Direct oral anticoagulants such as dabigatran etexilate, rivaroxaban, apixaban, edoxaban, and betrixaban often interfere with clot-based or chromogenic coagulation assays and may lead to inaccurate results or render the test uninterpretable. Affected tests include many commonly ordered tests on hypercoagulable workup panels: lupus anticoagulant panels, activated protein C resistance, protein C and protein S activity, antithrombin activity, and specific factor activity levels. These tests should not be done in patients taking direct oral anticoagulants. If there is a compelling reason to perform these tests, great caution must be taken to avoid acting on a false result. For instance, specimens should be collected at the medication trough, and potential test interference should be considered prior to ordering. The potential for interference is dependent on test methodology, drug mechanism of action, and drug concentration. For patients suspected clinically to have antiphospholipid antibody syndrome, the lupus anticoagulant panel may be uninterpretable, but ELISA-based anticardiolipin and anti-beta2 GP1 antibody testing is unaffected. Genetic testing, such as polymerase chain reaction testing for factor V Leiden, is also unaffected.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Adcock DM, Gosselin R. Direct oral anticoagulants (DOACs) in the laboratory: 2015 review. 2015;136:7-12. Murer LM, Pirruccello SJ, Koepsell SA. Rivaroxaban therapy, false-positive lupus anticoagulant screening results, and confirmatory assay results. Laboratory Medicine. 2016 Nov;47(4):275-278.

421

Don't perform an extensive workup in otherwise healthy neutropenic patients of African or Middle Eastern ancestry prior to Duffy-null phenotype testing.

Rationale and Comments

Individuals, typically of African or Middle Eastern ancestry, may present with an absolute neutrophil count (ANC) < 1,500 cells per μL with no signs of recurrent infections, immunocompromise, or malignancy. Frequently, the lower ANC is a normal variant associated with the red blood cell Duffy-null phenotype [Fy(a-b-)] that should be confirmed by blood bank phenotyping. Asymptomatic Duffy-null individuals do not require additional testing and should not be denied clinical trial participation or prescription of certain medications (including chemotherapy) based on ANC alone.

Sponsoring Organizations

American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

Expert consensus

References

Merz LE, Achebe M. When non-whiteness becomes a condition. Blood. 2021 7;137(1):13-15.

526

Don't perform laboratory blood testing unless clinically indicated or necessary for diagnosis or management in order to avoid iatrogenic anemia.

Rationale and Comments

Up to 90% of patients become anemic by day 3 in the intensive care unit. Although laboratory testing can aid in diagnosis, prognosis, and treatment of disease, a significant number of tests are inappropriate or unnecessary. Anemia secondary to iatrogenic blood loss causes an increased length of stay and mortality. Increased phlebotomy for laboratory testing also increases the odds for transfusion and its associated risks. Unnecessary laboratory testing adds to the cost of care through laboratory test charges and also by increasing downstream costs due to unnecessary interventions, prescriptions, etc. Thus judicious use of laboratory testing is recommended, and testing should not be performed in the absence of clinical indications.

Sponsoring Organizations

Society for the Advancement of Blood Management

Sources

Expert consensus

References

Gattinoni L, Chiumello P. Anemia in the intensive care unit: how big is the problem? Transfus Altern Transfus Med. 2002;4(4):118-120. Thavendranathan P, Bagai A, Ebidia A, et al. Do blood tests cause anemia in hospitalized patients? The effect of diagnostic phlebotomy on hemoglobin and hematocrit levels. J Gen Int Med. 2005;20(6):520-524. Chant C, Wilson G, Friedrich JO, et al. Anemia, transfusion, and phlebotomy practices in critically ill patients with prolonged intensive care unit length of stay: a cohort study. Crit Care. 2006;10(5):R140.

365

Don't perform repetitive complete blood count and chemistry testing in the face of clinical and lab stability.

Rationale and Comments

Hospitalized patients frequently have considerable volumes of blood drawn (phlebotomy) for diagnostic testing during short periods of time. Phlebotomy is highly associated with changes in hemoglobin and hematocrit levels for patients and can contribute to anemia. This anemia, in turn, may have significant consequences, especially for patients with cardiorespiratory diseases. Additionally, reducing the frequency of daily unnecessary phlebotomy can result in significant cost savings for hospitals.

Sponsoring Organizations

Society of Hospital Medicine (Adult)

Sources

Prospective studies

References

Adam C, et al. Diagnostic blood loss from phlebotomy and hospital-acquired anemia during acute myocardial infarction. Arch Intern Med. 2011;171(18):1646-53. Thavendiranathan P, et al. Do blood tests cause anemia in hospitalized patients? The effect of diagnostic phlebotomy on hemoglobin and hematocrit levels. J Gen Intern Med. 2005;20(6):520-4. Stuebing EA, et al. Surgical vampires and rising health care expenditure: reducing the cost of daily phlebotomy. Arch Surg. 2011;146(5):524-7.

30

Don't recommend bed rest following diagnosis of acute DVT after the initiation of anti-coagulation therapy, unless significant medical concerns are present.

Rationale and Comments

Given the clinical benefits and lack of evidence indicating harmful effects of ambulation and activity, both are recommended following achievement of anticoagulation goals unless there are overriding medical indications. Patients can be harmed by prolonged bed rest that is not medically necessary.

Sponsoring Organizations

American Physical Therapy Association

Sources

Systematic review

References

Aissaoui N, Martins E, Mouly S, Weber S, Meune C. A meta-analysis of bed rest versus early ambulation in the management of pulmonary embolism, deep vein thrombosis, or both. Int J Cardiol. 2009;137(1):37–41. Anderson CM, Overend TJ, Godwin J, Sealy C, Sunderji A. Ambulation after deep vein thrombosis: a systematic review. Physiother Can. 2009;61(3):133–40. Gay V, Hamilton R, Heiskell S, Sparks AM. Influence of bedrest or ambulation in the clinical treatment of acute deep vein thrombosis on patient outcomes: a review and synthesis of the literature. Medsurg Nurs. 2009;18(5):293–99. Kahn SR, Shrier I, Kearon C. Physical activity in patients with deep venous thrombosis: a systematic review. Thromb Res. 2008;122(6):763–73.

211

Don't reimage deep vein thrombosis in the absence of a clinical change.

Rationale and Comments

Repeat ultrasound images to evaluate "response" of venous clot to therapy does not alter treatment.

Sponsoring Organizations

Society for Vascular Medicine

Sources

American College of Chest Physicians guidelines

References

Bates SM, et al. Diagnosis of DVT antithrombotic therapy and prevention of thrombosis, 9th ed. American College of Chest Physicians evidence-based clinical practice guidelines. Chest. 2012;141(2 suppl):e351S-418S.

33

Don't repeat hemoglobin electrophoresis (or equivalent) in patients who have a prior result and who do not require therapeutic intervention or monitoring of hemoglobin variant levels.

Rationale and Comments

Preconception and antenatal hemoglobin electrophoresis screening is recommended, especially in high prevalence areas for sickle cell disease or thalassemia, and has become routine practice in order to detect abnormalities of hemoglobins S, C, D-Punjab, E, O-Arab, Lepore, beta-thalassemia trait, delta/beta thalassemia trait, alpha thalassemia trait (2 chain deletion), and hereditary persistence of fetal hemoglobin. Partner testing should be offered when there is a risk of a significant hemoglobinopathy in the infant. Repeat hemoglobin electrophoresis testing is required only to make a more specific diagnosis or monitor the results of interventional therapies in patients with known hemoglobinopathies. Providers should investigate prior results before requesting a repeat hemoglobin electrophoresis.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

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Don't routinely prescribe venous thromboembolism (VTE) prophylaxis to all hospitalized patients; use an evidence-based risk stratification system to determine whether a patient needs VTE prophylaxis. If the patient does warrant prophylaxis, use a bleeding risk assessment to determine whether mechanical prophylaxis is more appropriate than pharmacologic prophylaxis.

Rationale and Comments

VTE is a major cause of morbidity and mortality in hospitals. Pharmacologic prophylaxis has been shown to reduce the risk of clinically significant VTE. Although VTE prevention should be considered for every hospitalized patient, excess VTE prophylaxis—either prophylaxis inappropriately administered to patients at low risk of VTE or to high-risk patients with contraindications—can be harmful. National guidelines recommend objective risk stratification for VTE prevention in hospitalized medical patients.

Sponsoring Organizations

Society of Hospital Medicine – Adult Hospital Medicine

Sources

ACCP guidelines
ACP guidelines
ASH guidelines

References

Kahn SR, Lim W, Dunn AS, et al. Prevention of VTE in non-surgical patients: antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice. Chest. 2012;141(2 suppl):e195S-e226S.
Schünemann HJ, Cushman M, Burnett AE, et al. American Society of Hematology 2018 guidelines for management of venous thromboembolism: prophylaxis for hospitalized and nonhospitalized medical patients. Blood Adv. 2018;2(22):3198-3225.
Gould MK, Garcia DA, Wren SM, et al. Prevention of VTE in nonorthopedic surgical patients: antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines [published correction appears in Chest. 2012;141(5):1369]. Chest. 2012;141(2 suppl):e227S-e277S.
Qaseem A, Chou R, Humphrey LL, et al.; Clinical Guidelines Committee of the American College of Physicians. Venous thromboembolism prophylaxis in hospitalized patients: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2011;155(9):625-632.
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515

Don't routinely repeat the labs hemoglobin and hematocrit in the hemodynamically normal pediatric patients with isolated blunt solid organ injury.

Rationale and Comments

Preset timed interval measurements of hemoglobin and hematocrit are no longer indicated as early detectors of instability. Clinical instability is defined by physiologic criteria such as age-specific tachycardia or hypotension, tachypnea, low urine output, altered mental status, or any significant clinical deterioration that warrants increased level of care and investigation. Therefore, the routine use of repeat laboratory studies in children with isolated solid organ injury who have physiologically normal vital signs for their age is not necessary.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

Acker S, Petrun B, Partrick D, Roosevelt, G, Bensard D. Lack of utility of repeat monitoring of hemoglobin and hematocrit following blunt solid organ injury in children. J Trauma Acute Care Surg. 2015;79:991-994. Fallon S, Delemos D, Akinkuotu A, Christopher D, Naik-Mathuria B. The use of an institutional pediatric abdominal trauma protocol improves resource use. J Trauma Acute Care Surg. 2016; 80:57-63. Golden J, Mitchell I, Kuzniewski S, Lipskar A, Prince J, Bank A, Stylianos S, Rosen G. Reducing scheduled phlebotomy in stable pediatric patients with blunt liver or spleen injury. J Pediatr Surg. 2014;49:759-762. Holmes JF, Lillis K, Monroe D, Borgialli D, Kerrey B,Mahajn P, Adegais K, Ellison A, Yen K, Atabaki S, Menaker J, Bonsu B, Quayle KS, Garcia M, Rogers A, Blumber S, Lee L, Tunik M, Kooistra J, Kowk M, Cook L, Dean JM, Sokolove PE, Wisne DH, Ehrlich P, Cooper A, Dayan PS, Wootton-Geroges S, Kuppermann N, Pediatric Emergency Care Applied Research Network (PECARN). Identifying children at very low risk of clinically important blunt abdominal injuries. Ann Emerg Med. 2013;62(2):107-116.

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Don't routinely transfuse patients with sickle cell disease for chronic anemia or uncomplicated pain crisis without an appropriate clinical indication.

Rationale and Comments

Patients with sickle cell disease are especially vulnerable to potential harms from unnecessary red blood cell transfusion. In particular, they experience an increased risk of alloimmunization to minor blood group antigens and a high risk of iron overload from repeated transfusions. Patients with the most severe genotypes of sickle cell disease with baseline hemoglobin values in the 7 to 10 g/dL range can usually tolerate further temporary reductions in Hb without developing symptoms of anemia. Many patients with sickle cell disease receive intravenous fluids to improve hydration when hospitalized for management of pain crisis, which may contribute to a decrease in hemoglobin by 1 to 2 g/dL. Routine administration of red blood cells in this setting should be avoided. Moreover, there is no evidence that transfusion reduces pain due to vaso-occlusive crises. For a discussion of when transfusion is indicated in sickle cell disease, readers are referred to recent evidence-based guidelines from the National Heart, Lung, and Blood Institute (see references).

Sponsoring Organizations

American Society of Hematology

Sources

National Heart, Lung and Blood Institute guidelines

References

Evidence-based management of sickle cell disease: expert panel report, 2014. Washington, DC: National Institutes of Health, National Heart, Lung and Blood Institute; 2014:161. Blood transfusion guideline. Dutch Institute for Healthcare Improvement CBO; 2011:402.

228

Don't routinely transfuse stable, asymptomatic hospitalized patients with a hemoglobin level greater than 7–8 grams.

Rationale and Comments

Multiple factors need to be considered in transfusion decisions, including the patient's clinical status and oxygen delivery ability. Arbitrary hemoglobin or hematocrit thresholds should not be used as the only criterion for transfusions of packed red blood cells.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

AABB guidelines

References

Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. Ann Intern Med. 2012;157:49–58.

304

Don't test for Protein C, protein S, or antithrombin (ATIII) levels during an active clotting event to diagnose a hereditary deficiency because these tests are not analytically accurate during an active clotting event.

Rationale and Comments

These assays may be useful to test for an acquired deficiency (i.e., disseminated intravascular coagulation) in consumptive coagulopathies. These tests are not analytically accurate during an active clotting event. Moreover they are not clinically actionable at the time of an acute clot, because the same therapeutic intervention (anticoagulation) is performed regardless of the results. Deferral to the outpatient/nonacute setting allows for the testing to be done at a time when the results would change patient management (i.e., ceasing or continuing anticoagulation). Because anticoagulation may also impact the determination of results (e.g., protein C and protein S decrease on warfarin, while ATIII is actually elevated), testing while on anticoagulants may also yield misleading results and should be avoided.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

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Don't test for thrombophilia in adult patients with venous thromboembolism (VTE) occurring in the setting of major transient risk factors (surgery, trauma, or prolonged immobility).

Rationale and Comments

Thrombophilia testing is costly and can result in harm to patients if the duration of anticoagulation is inappropriately prolonged or if patients are incorrectly labeled as thrombophilic. Thrombophilia testing does not change the management of VTEs occurring in the setting of major transient VTE risk factors. When VTE occurs in the setting of pregnancy or hormonal therapy, or when there is a strong family history plus a major transient risk factor, the role of thrombophilia testing is complex and patients and clinicians are advised to seek guidance from an expert in VTE.

Sponsoring Organizations

American Society of Hematology

Sources

National Institute for Health and Clinical Excellence guidelines

References

Chong LY, Fenu E, Stansby G, Hodgkinson S. Management of venous thromboembolic diseases and the role of thrombophilia testing: summary of NICE guidance. BMJ. 2012 Jun 27;344:e3979. Baglin T, Gray E, Greaves M, Hunt BJ, Keeling D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Tait RC, Walker I, Watson H; British Committee for Standards in Haematology. Clinical guidelines for testing for heritable thrombophilia. Br J Haematol. 2010 Apr;149(2):209-20.

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Don't test or treat for suspected heparin-induced thrombocytopenia in patients with a low pretest probability of heparin-induced thrombocytopenia.

Rationale and Comments

In patients with suspected heparin-induced thrombocytopenia, use the "4T's" score to calculate the pretest probability of heparin-induced thrombocytopenia. This scoring system uses the timing and degree of thrombocytopenia, the presence or absence of thrombosis, and the existence of other causes of thrombocytopenia to assess the pretest probability of heparin-induced thrombocytopenia. It can be excluded by a low pretest probability score (4T's score of 0-3) without the need for laboratory investigation. Do not discontinue heparin or start a non-heparin anticoagulant in these low-risk patients because presumptive treatment often involves an increased risk of bleeding, and because alternative anticoagulants are costly.

Sponsoring Organizations

American Society of Hematology

Sources

Systematic review

References

Watson H, Davidson S, Keeling D. Guidelines on the diagnosis and management of heparin-induced thrombocytopenia: second edition. Br J Haematol. 2012;159(5):528–40. Cuker A, Gimotty PA, Crowther MA, Warkentin TE. Predictive value of the 4Ts scoring system for heparin-induced thrombocytopenia: a systematic review and meta-analysis. Blood. 2012;120:4160–7.

Don't test vitamin K levels unless the patient has an abnormal international normalized ratio and does not respond to vitamin K therapy.

Rationale and Comments

Measurements of the level of vitamin K in the blood are rarely used to determine if a deficiency exists. Vitamin K deficiency is very rare, but when it does occur, a prolonged prothrombin time and elevated international normalized ratio will result. A diagnosis is typically made by observing the prothrombin time correction following administration of vitamin K, plus the presence of clinical risk factors for vitamin K deficiency.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

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Don't transfuse more than the minimum number of red blood cell (RBC) units necessary to relieve symptoms of anemia or to return a patient to a safe hemoglobin range (7 to 8 g/dL in stable, noncardiac inpatients).

Rationale and Comments

Transfusion of the smallest effective dose of RBCs is recommended because liberal transfusion strategies do not improve outcomes when compared to restrictive strategies. Unnecessary transfusion generates costs and exposes patients to potential adverse effects without any likelihood of benefit. Clinicians are urged to avoid the routine administration of two units of RBCs if one unit is sufficient and to use appropriate weight-based dosing of RBCs in children.

Sponsoring Organizations

American Society of Hematology

Sources

AABB guidelines

References

Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. Ann Intern Med. 2012 Jul 3;157(1):49-58. Retter A, Wyncoll D, Pearse R, Carson D, McKechnie S, Stanworth S, Allard S, Thomas D, Walsh T; British Committee for Standards in Hematology. Guidelines on the management of anaemia and red cell transfusion in adult critically ill patients. Br J Haematol. 2013 Feb;160(4):445-64.

Don't transfuse more than the minimum of red blood cell units necessary to relieve symptoms of anemia or to return a patient to a safe hemoglobin range (7 to 8 g/dL in stable patients).

Rationale and Comments

Unnecessary transfusion exposes patients to potential adverse effects without any likelihood of benefit and generates additional costs. Transfusion decisions should be influenced by a person's symptoms and hemoglobin concentration

Sponsoring Organizations

American Academy of Family Physicians

Sources

AABB guidelines

References

American Society of Hematology Choosing Wisely Recommendation: Don't transfuse more than the minimum number of red blood cell units necessary to relieve symptoms of anemia or to return a patient to a safe hemoglobin range (7 to 8 g/dL in stable, non-cardiac in-patients). http://www.choosingwisely.org/societies/american-society-of-hematology. Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. Ann Intern Med. 2012;157(1):49-58. Retter A, Wyncoll D, Pearse R, Carson D, McKechnie S, Stanworth S, Allard S, Thomas D, Walsh T; British Committee for Standards in Hematology. Guidelines on the management of anaemia and red cell transfusion in adult critically ill patients. Br J Haematol. 2013;160(4):445-64. American Association of Blood Banks Choosing Wisely recommendation: Don't transfuse more units of blood than absolutely necessary http://www.choosingwisely.org/societies/american-association-of-blood-banks. Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. Ann Intern Med. 2012;157(1):49-58. Canada's Choosing Wisely Recommendation: Don't transfuse patients based solely on an arbitrary hemoglobin threshold. https://choosingwiselycanada.org/hematology/. Callum J, et al. Bloody easy 3, blood transfusions, blood alternatives and transfusion reactions, a guide to transfusion medicine. 3rd ed. Toronto (ON): Sunnybrook and Women's College Health Sciences Centre; 2011. Choosing Wisely Canada. Canadian Society of Internal Medicine: Five Things Physicians and Patients Should Question [Internet]. 2014 [cited 2014 Aug 26]. Carson JL, et al. Red blood cell transfusion: a clinical practice guideline from the AABB*. Ann Intern Med. 2012;157(1):49-58. Hebert PC, et al. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. Transfusion Requirements in Critical Care Investigators, Canadian Critical Care Trials Group. N Engl J Med. 1999;340(6):409-417. Hicks LK, et al. The ASH Choosing Wisely(R) campaign: five hematologic tests and treatments to question. Blood. 2013;122(24):3879-3883.

Don't transfuse packed red blood cells for iron deficiency anemia in asymptomatic pediatric patients when there is no evidence of hemodynamic instability or active bleeding.

Rationale and Comments

In pediatric patients with asymptomatic, iron deficiency anemia, do not transfuse packed red blood cells in the absence of hemodynamic instability or active bleeding. Unnecessary packed red blood cell transfusions put patients at risk for complications, such as transfusion reactions, blood-borne infections, and volume overload. The judicious use of packed red blood cell transfusions would also be associated with cost savings for health care systems.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

Expert consensus

References

Alberta Medical Association. Iron Deficiency Anemia (IDA). 2018 Mar. Retrieved from actt.albertadoctors.org/CPGs/Lists/CPGDocumentList/IDA-CPG.pdf. British Columbia Guidelines and Protocols Advisory Committee. Iron deficiency – diagnosis and management. 2019 April. Retrieved from www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/bc-guidelines/iron-deficiency.

Don't transfuse plasma in the absence of active bleeding or significant laboratory evidence of coagulopathy.

Rationale and Comments

Recent studies demonstrate that plasma is often transfused inappropriately. In the absence of active bleeding or clear evidence of coagulopathy, current literature shows no reduction in blood loss or transfusion requirements with the use of plasma, but shows increased risk of transfusion-associated adverse events such as transfusion-related acute lung injury, transfusion-associated circulatory overload, and allergic reactions. These transfusion-associated adverse events lead to poorer outcomes and increased cost of care.

Sponsoring Organizations

Society for the Advancement of Blood Management

Sources

Systematic review of randomized controlled trials

References

Stanworth SJ, Brunskill SJ, Hyde CJ, et al. Is fresh-frozen plasma clinically effective? A systematic review of randomized controlled trials. Brit J Haematol. 2004;126(11):139-152. Holland LL, Foster TM, Marlar RA, Brooks JP, et al. Fresh frozen plasma is ineffective for correcting minimally elevated international normalized ratios. Transfusion. 2005;45(7):1234-1235. Segal J, Dzik W. Paucity of studies to support that abnormal coagulation test results predict bleeding in the setting of invasive procedures: an evidence-based review. Transfusion. 2005;45(9):1412-1425. Stanworth S, Grant-Casey J, Lowe D, et al. The use of fresh-frozen plasma in England: high levels of inappropriate use in adults and children. Transfusion. 2011;51(1):62-70. Yang L, Stanworth S, Hopewell S, et al. Is fresh-frozen plasma clinically effective: an update of a systematic review of randomized controlled trials. Transfusion. 2012;52(8):1673-1686. Muller M, Arbous MS, Spoelstra-de Man AM, et al. Transfusion of fresh-frozen plasma in critically ill patients with coagulopathy before invasive procedures: a randomized controlled trial. Transfusion. 2015;55(1):26-35. Green L, Bolton-Maggs P, Beattie C, et al. British Society of Haematology guidelines on the spectrum of fresh frozen plasma and cryoprecipitate products: their handling and use in various patient groups in the absence of major bleeding. Brit J Haematol. 2018;181(1):54-67.

Don't transfuse plasma to correct a laboratory value; treat the clinical status of the patient.

Rationale and Comments

Plasma transfusion to a patient with an international normalized ratio of less than 1.6 has minimal effect, and transfusion for international normalized ratio values between 1.6 and 2 should be carefully considered. Since a mildly elevated international normalized ratio is usually not associated with spontaneous hemorrhage and doesn't increase the risk of bleeding during routine invasive procedures, excessive transfusion of plasma is unnecessary and increases the risk of transfusion-associated circulatory overload, which is a leading cause of transfusion associated morbidity and mortality. Judicious use of vitamin K and/or prothrombin complex concentrate following evidence-based clinical practice guidelines should also be considered to avoid unnecessary transfusion.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Triulzi D, Gottschall J, Murphy E, et. al. A multicenter study of plasma use in the United States. Transfusion. 2015;55:1313-1319. Shah N, Baker SA, Spain D, et.al. Real-time clinical decision support decreases inappropriate plasma transfusion. Am J Clin Pathol. 2017;148(2):154-160. Alcorn K, Ramsey G, Souers R, Lehman CM. Appropriateness of plasma transfusion: a College of American Pathologists Q-probes study of guidelines, waste, and serious adverse events. Arch Pathol Lab Med. 2017;141:396-401. Holland LL, Brooks JP. Toward rational fresh frozen plasma transfusion: the effect of plasma transfusion on coagulation test results. Am J Clin Pathol. 2006;126:133-139. Roback JD, Caldwell S, Carson J, et. al. Evidence-based practice guidelines for plasma transfusion. Transfusion. 2010;50:1227-1239. Fatalities Reported to FDA Following Blood Collection and Transfusion Annual Summary for FY2016. [accessed Mar 20, 2018]. Available from: https://www.fda.gov/downloads/BiologicsBloodVaccines/SafetyAvailability/ReportaProblem/TransfusionDonationFatalities/UCM598243.pdf Garcia DA, Crowther MA. Reversal of warfarin: case-based practice recommendations. Circulation. 2012;125:2944-2967. Gorlin J, Kinney S, Fung MK, et al. Prothrombin complex concentrate for emergent reversal of warfarin: an international survey of hospital protocols. Vox Sanguinis. 2017;112(6):595-597.

Don't transfuse platelets in an asymptomatic (i.e., nonbleeding) pediatric patient (e.g., aplastic anemia, leukemia), with a platelet count > 10,000/mcL unless other signs and/or symptoms for bleeding are present, or if the patient is to undergo an invasive procedure.

Rationale and Comments

In asymptomatic (i.e., nonbleeding) pediatric patients with a platelet count > 10,000/mcL, transfusion is not clinically indicated unless signs, symptoms, or increased risk factors of bleeding are present. This practice is consistent with recommendations from the clinical guidelines of multiple associations (National Institute for Health and Care Excellence, British Society for Haematology, American Society of Clinical Oncology, and American Society of Hematology). The risk of spontaneous bleeding is low at platelet counts > 10,000/mcL. Unnecessary transfusions put patients at risk for transfusion reactions, alloimmunization, blood-borne infections, and refractoriness to future platelet transfusions. This recommendation does not apply in anticipation of an invasive procedure.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

National Institute for Health and Clinical Excellence guidelines|American Society of Clinical Oncology guideline

References

National Institute for Health and Care Excellence. Blood transfusion NICE guideline 24. 2015 Nov. Retrieved from www.nice.org.uk/guidance/ng24. Neunert C, Lim W, Crowther M, Cohen A, Solberg L Jr., Crowther MA. The American Society of Hematology 2011 evidence-based practice guideline for immune thrombocytopenia. Blood. 2011 Apr;117(16):4190–4207. New HV, Berryman J, Bolton-Maggs PH, Cantwell C, Chalmers EA, Davies T, Gottstein R, Kelleher A, Kumar S, Morley SL, Stanworth SJ. Guidelines on transfusion for fetuses, neonates and older children. British Journal of Haematology. 2016 Nov;175(5):784-828. Schiffer CA, Bohlke K, Delaney M, Hume H, Magdalinski AJ, McCullough JJ, Omel JL, Rainey JM, Rebulla P, Rowley SD, Troner MB, Anderson KC. Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. Journal of Clinical Oncology. 2018 Jan;36(3):283-299.

Don't transfuse RBCs as the sole intervention for expansion of circulatory volume unless deemed necessary for patients experiencing severe hemorrhage.

Rationale and Comments

The Canadian Transfusion Requirements in Critical Care trial was the first to investigate a liberal versus restrictive approach to RBC transfusions. The trial included a total of 838 hemodynamically stable, critically ill patients who had a hemoglobin concentration less than 9 g/dL (adult transfusion trigger 7g/dL to 8 g/dL). The trial defined two categories for the study, a "liberal" approach that required allogeneic RBC transfusions for patients with hemoglobin less than 10 g/dL and a "restrictive" approach for patients with a hemoglobin concentration less than 7 g/dL. Patients were randomly divided between both study groups and were evaluated at 30 days. There was no significant mortality difference. The trial also noted a significantly better survival rate among patients younger than 55 years old within the restrictive group, particularly less acutely ill patients. Subsequent studies have shown that clinically stable patients may benefit more from a restrictive approach by reducing the percentage of patients exposed to allogeneic RBCs. It is not recommended to transfuse RBCs as the sole intervention for volume expansion. The World Health Organization recommends volume-expanding solutions such as crystalloids or colloids to expand fluid volume. These promote blood circulation through vital organs and tissues. RBC transfusions should be used to treat conditions such as severe hemorrhage that otherwise lead to significant mortality. Recent evidence for blood transfusions suggests that a restrictive transfusion approach is safer and as effective as a liberal approach for postoperative stable patients, normovolemic critically ill patients with a hemoglobin transfusion trigger of 7g/dL to 8 g/dL, and patients with clinical symptoms of anemia. The exception to the restrictive approach is comprised of patients with clinically significant cardiovascular conditions. Blood products carry the risk of transmitted infectious diseases and adverse effects of blood transfusion (e.g., immunosuppressive complications).

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

Randomized controlled trials

References

American Cancer Society. Alternatives to blood transfusions. https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/blood-transfusion-and-donation/blood-transfusion-alternatives.html Carson JL, Terrin ML, Noveck H, et al. Liberal or restrictive transfusion in high-risk patients after hip surgery. N Eng J Med. 2011;365(26):2453-2462. Carson JL, Triulzi DJ, Ness PM. Indications for and adverse effects of red-cell transfusion. N Engl J Med. 2017;377:1261-1272. Hébert PC, Wells G, Blajchman MA, Marshall J, Martin C, Pagliarello G, Tweeddale M, Schweitzer I, Yetisir E. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. N Engl J Med. 1999;340(6):409-417. Fung MK, Eder A, Spitalnik SL, Westhoff CM. Technical manual. 19th ed. Bethesda, MD: AABB. 2017;19:505-510. Jenkins I, Doucet JJ, Clay B, Kopko P, Fipps D, Hemmen E, Paulson D. Transfusing wisely: clinical decision support improves blood transfusion practices. Jt Comm J Qual Patient Saf. 2017;43:389-395. World Health Organization. Clinical transfusion practice: guidelines for medical interns. http://www.who.int/bloodsafety/transfusion_services/ClinicalTransfusionPracticeGuidelinesforMedicalInternsBangladesh.pdf

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Don't transfuse red blood cells in hemodynamically stable, non-bleeding ICU patients with a hemoglobin concentration greater than 7 mg/dL.

Rationale and Comments

Most red blood cell transfusions in the ICU are for benign anemia rather than acute bleeding that causes hemodynamic compromise. For all patient populations in which it has been studied, transfusing red blood cells at a threshold of 7 mg/dL is associated with similar or improved survival, fewer complications and reduced costs compared to higher transfusion triggers. More aggressive transfusion may also limit the availability of a scarce resource. It is possible that different thresholds may be appropriate in patients with acute coronary syndromes, although most observational studies suggest harms of aggressive transfusion even among such patients.

Sponsoring Organizations

Critical Care Societies Collaborative–Critical Care

Sources

Randomized controlled trials

References

Corwin HL, Gettinger A, Pearl RG, Fink MP, Levy MM, Abraham E, MacIntyre NR, Shabot MM, Duh MS, Shapiro MJ. The CRIT Study: anemia and blood transfusion in the critically ill – current clinical practice in the United States. Crit Care Med. 2004;32(1):39–52. Carson JL, Terrin ML, Noveck H, Sanders DW, Chaitman BR, Rhoads GG, Nemo G, Dragert K, Beaupre L, Hildebrand K, Macaulay W, Lewis C, Cook DR, Dobbin G, Zakriya KJ, Apple FS, Horney RA, Magaziner J; FOCUS Investigators. Liberal or restrictive transfusion in high-risk patients after hip surgery. N Eng J Med. 2011;365(26):2453–62. Hajjar LA, Vincent JL, Galas F, Nakamura RE, Silva CM, Santos MH, Fukushima J, Kalil Filho R, Sierra DB, Lopes NH, Mauad T, Roquim AC, Sundin MR, Leão WC, Almeida JP, Pomerantzeff PM, Dallan LO, Jatene FB, Stolf NA, Auler JO Jr. Transfusion requirements after cardiac surgery: the TRACS randomized controlled trial. JAMA-JAMA. 2010;304(14):1559–67. Hebert PC, Wells G, Blajchman MA, Marshall J, Martin C, Pagliarello G, Tweeddale M, Schweitzer I, Yetisir E. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. N Eng J Med. 1999;340(6):409–17. Villanueva C, Colomo A, Bosch A, Concepción M, Hernandez-Gea V, Aracil C, Graupera I, Poca M, Alvarez-Urturi C, Gordillo J, Guarner-Argente C, Santaló C, Muñiz E, Guarner C. Transfusion strategies for acute upper gastrointestinal bleeding. N Eng J Med. 2013;368:11–21. Chatterjee S, Wetterslev J, Sharma A, Lichstein E, Mukherjee D. Association of blood transfusion with increased mortality in myocardial infarction. JAMA.2013;173:132–39.

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Don't treat patients with immune thrombocytopenic purpura in the absence of bleeding or a very low platelet count.

Rationale and Comments

Treatment for immune thrombocytopenic purpura should be aimed at treating and preventing bleeding episodes and improving quality of life. Unnecessary treatment exposes patients to potentially serious treatment side effects and can be costly, with little expectation of clinical benefit. The decision to treat immune thrombocytopenic purpura should be based on an individual patient's symptoms, bleeding risk (as determined by prior bleeding episodes and risk factors for bleeding such as use of anticoagulants, advanced age, high-risk activities, etc.), social factors (distance from the hospital/travel concerns), side effects of possible treatments, upcoming procedures, and patient preferences. In the pediatric setting, treatment is usually not indicated in the absence of mucosal bleeding regardless of platelet count. In the adult setting, treatment may be indicated in the absence of bleeding if the platelet count is very low. However, immune thrombocytopenic purpura treatment is rarely indicated in adult patients with platelet counts greater than 30,000/microL unless they are preparing for surgery or an invasive procedure, or have a significant additional risk factor for bleeding. In patients preparing for surgery or other invasive procedures, short-term treatment may be indicated to increase the platelet count prior to the planned intervention and during the immediate postoperative period.

Sponsoring Organizations

American Society of Hematology

Sources

American Society of Hematology guidelines

References

Neunert C, Lim W, Crowther M, Cohen A, Solberg L Jr., Crowther MA; American Society of Hematology. The American Society of Hematology 2011 evidence-based practice guideline for immune thrombocytopenia. Blood. 2011;117(16):4190–207.

230

Don't treat with an anticoagulant for more than three months in a patient with a first VTE occurring in the setting of a major transient risk factor.

Rationale and Comments

Anticoagulation is potentially harmful and costly. Patients with a first VTE triggered by a major, transient risk factor such as surgery, trauma, or an intravascular catheter are at low risk for recurrence once the risk factor has resolved and an adequate treatment regimen with anticoagulation has been completed. Evidence-based and consensus guidelines recommend three months of anticoagulation over shorter or longer periods of anticoagulation in patients with VTE in the setting of a reversible provoking factor. By ensuring a patient receives an appropriate regimen of anticoagulation, clinicians may avoid unnecessary harm, reduce health care expenses, and improve quality of life. This Choosing Wisely recommendation is not intended to apply to VTE associated with non-major risk factors (e.g., hormonal therapy, pregnancy, travel-associated immobility), as the risk of recurrent VTE in these groups is either intermediate or poorly defined.

Sponsoring Organizations

American Society of Hematology

Sources

American College of Chest Physicians guidelines

References

Kearon C, Akl EA, Comerota AJ, Prandoni P, Bounameaux H, Goldhaber SZ, Nelson ME, Wells PS, Gould MK, Dentali F, Crowther M, Kahn SR; American College of Chest Physicians. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines [erratum appears in Chest. 2012;142(6):1698-1704]. Chest. 2012;141(2 Suppl):e419S–94S. Chalmers E, Ganesen V, Liesner R, Maroo S, Nokes T, Saunders D, Williams M; British Committee for Standards in Haematology. Guideline on the investigation, management and prevention of venous thrombosis in children. Br J Haematol. 2011;154(2):196–207. Monagle P, Chan AK, Goldenberg NA, Ichord RN, Journeycake JM, Nowak-Göttl U, Vesely SK; American College of Chest Physicians. Antithrombotic therapy in neonates and children: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012;141(2 Suppl):e737S–801S.

Don't use strong cytochrome P450 3A4 (CYP3A4) and P-glycoprotein inhibitors or inducers with direct oral anticoagulants; periodically assess the medication regimen for such drug-drug interactions.

Rationale and Comments

Direct oral anticoagulants (DOACs), such as dabigatran, rivaroxaban, and apixaban, have significantly fewer drug-drug interactions than warfarin. However, notable drug-drug interactions occur with strong CYP3A4 and P-glycoprotein (P-gp) inhibitors with DOACs, which clinicians need to consider when necessitating dosage adjustments and monitoring for their older patients. As a general principle, drugs that are inhibitors block the metabolic activity of one or more cytochrome P450 (CYP450) enzymes, and their effects usually occur immediately. Inducers increase CYP450 enzyme activity by increasing enzyme synthesis, thereby causing a delay before this increased enzymatic activity has an impact on metabolism. Each of the DOACs is a substrate for P-gp, an efflux transporter located in the gut mucosa; therefore, all DOACs are susceptible to drugs that induce or inhibit P-gp. Dabigatran requires efflux transportation by the P-gp; however, it is independent of the CYP450 enzyme system. Apixaban and rivaroxaban undergo minor hepatic metabolism by CYP enzymes. Alterations in varying rates of renal elimination of DOACs should be equally considered as possibly additive to the metabolic effects affecting outcomes from drug-drug interactions. Because drug product labeling provides specific guidance for the management of inhibitor interactions, it is highly recommended to consult this information before prescribing decisions are made. It is prudent for clinicians to exercise caution when coprescribing a DOAC and a strong CYP3A4 and/or P-gp inhibitor to minimize bleeding or in the case of a strong inducer (e.g., rifampin) to prevent the risk of thrombotic events. Pharmacokinetic DOAC drug-drug interactions are clinically important because patient harm may go unnoticed because of no international normalized ratio–equivalent testing and monitoring for DOACs as compared with warfarin. In a recent review, the most significant interacting drugs to cause bleeding events with DOACs were amiodarone and ritonavir, via inhibition of P-gp and CYP3A4. Conversely, a reduction in DOAC levels has been observed in some case reports and pharmacokinetic studies when used concomitantly with enzyme inducers (e.g., rifampin, carbamazepine), potentially resulting in therapeutic failure. It is advisable for all clinicians to periodically assess the patient's medication regimen for drug-drug interactions when DOACs are prescribed. Advanced age, low body weight, renal impairment, or concomitant antiplatelet medications are additional factors that may affect the severity and outcome of DOAC drug-drug interactions.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Systematic review

References

Vazquez SR. Drug-drug interactions in an era of multiple anticoagulants: a focus on clinically relevant drug interactions. Hematology Am Soc Hematol Educ Program. 2018;2018(1):339-347.
Harskamp RE, Teichert M, Lucassen WAM, et al. Impact of polypharmacy and P-glycoprotein- and CYP3A4-modulating drugs on safety and efficacy of oral anticoagulation therapy in patients with atrial fibrillation. Cardiovasc Drugs Ther. 2019;33(5):615-623.
Wiggins BS, Dixon DL, Neyens RR, et al. Select drug-drug interactions with direct oral anticoagulants. J Am Coll Cardiol. 2020;75(11):1341-1350.
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Hill K, Sucha E, Rhodes E, et al. Risk of hospitalization with hemorrhage among older adults taking clarithromycin vs azithromycin and direct oral anticoagulants. JAMA Intern Med. 2020;180(8):1052-1060.
Li A, Li MK, Crowther M, et al. Drug-drug interactions with direct oral anticoagulants associated with adverse events in the real world: a systematic review. Thromb Res. 2020;194:240-245.
Lee JY, Oh IY, Lee JH, et al. Drug-drug interactions in atrial fibrillation patients receiving direct oral anticoagulants. Sci Rep. 2021;11(1):22403.

Don't order HFE genetic testing for a patient without iron overload or a family history of HFE-associated hereditary hemochromatosis.

See Genetic.

Don't order MTHFR genetic testing for the risk assessment of hereditary thrombophilia.

See Genetic.

Don't test women for MTHFR mutations.

See Genetic.

Don't transfuse asymptomatic postoperative hip fracture patients with a hemoglobin higher than 8g/dL.

See Orthopedic.

Don't perform routine preoperative hemostatic testing (PT, aPTT) in an otherwise healthy child with no prior personal or family history of bleeding.

See Pediatric.

Don't order an erythrocyte sedimentation rate to look for inflammation in patients with undiagnosed conditions. Order a C-reactive protein to detect acute phase inflammation.

See Rheumatologic.

Avoid routine prothrombin time and partial thromboplastin time preoperative screens on patients who are asymptomatic; use instead a history-based bleeding assessment test.

See Surgical.

Don't proceed with elective surgery in patients with properly diagnosed and correctable anemia until the anemia has been appropriately treated.

See Surgical.

Don't proceed with nonemergent major surgery until anemia is evaluated and treated.

See Surgical.

Antibiotics should not be used for apparent viral respiratory illnesses (sinusitis, pharyngitis, bronchitis).

Rationale and Comments

Although overall antibiotic subscription rates for children have fallen, they still remain alarmingly high. Unnecessary medication use for viral respiratory illnesses can lead to antibiotic resistance and contributes to higher health care costs and the risks of adverse events.

Sponsoring Organizations

American Academy of Pediatrics

Sources

American Academy of Pediatrics guidelines|Infectious Diseases Society of America guidelines

References

American Academy of Pediatrics Subcommittee on Diagnosis and Management of Bronchiolitis. Diagnosis and management of bronchiolitis. Pediatrics. 2006;118(4):1774-93. Kelly LF. Pediatric cough and cold preparations. 2004;25(4): 115-23. O'Brien KL, et al. Cough illness/bronchitis–principles of judicious use of antimicrobial agents. Pediatrics. 1998;101 (suppl):178-81. Shulman ST, et al. Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis: 2012 update by the Infectious Diseases Society of America. Clin Infect Dis. 2012;55(10):e86-102. Williamson IG, et al. Antibiotics and topical nasal steroids for treatment of acute maxillary sinusitis: a randomized controlled trial. JAMA. 2007;298(21):2487-96.

34

Avoid invasive devices (including central venous catheters, endotracheal tubes, and urinary catheters) and, if required, use no longer than necessary. They pose a major risk for infections.

Rationale and Comments

Invasive devices are often necessary for patient support; however, they are a major risk for health care-associated infections. We are learning they can often be avoided and, if used, can be quickly removed with the help of clinical reminders and protocols. They should never be used for convenience.

Sponsoring Organizations

Society for Healthcare Epidemiology of America

Sources

Expert consensus

References

Klompas M, Anderson D, Trick W, Babcock H, Kerlin MP, Li L, Sinkowitz-Cochran R, Ely EW, Jernigan J, Magill S, Lyles R, O'Neil C, Kitch BT, Arrington E, Balas MC, Kleinman K, Bruce C, Lankiewicz J, Murphy MV, E Cox C, Lautenbach E, Sexton D, Fraser V, Weinstein RA, Platt R; CDC Prevention Epicenters. The preventability of ventilator-associated events. The CDC Prevention Epicenters Wake Up and Breathe Collaborative. Am J Respir Crit Care Med. 2015 Feb 1;191(3):292-301. Marschall J, Mermel LA, Fakih M, Hadaway L, Kallen A, O'Grady NP, Pettis AM, Rupp ME, Sandora T, Maragakis LL, Yokoe DS; Society for Healthcare Epidemiology of America. Strategies to prevent central line-associated bloodstream infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014 Jul;35(7):753-71. Lo E, Nicolle LE, Coffin SE, Gould C, Maragakis LL, Meddings J, Pegues DA, Pettis AM, Saint S, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014 Sep;35 Suppl 2:S32-47.

290

Avoid prescribing antibiotics for upper respiratory infections.

Rationale and Comments

The majority of acute upper respiratory infections are viral in etiology, and the use of antibiotic treatment is ineffective, inappropriate, and potentially harmful. However, proven infection by Group A Streptococcal disease (Strep throat) and pertussis (whooping cough) should be treated with antibiotic therapy. Symptomatic treatment for upper respiratory infections should be directed to maximize relief of the most prominent symptom(s). It is important that health care providers have a dialogue with their patients and provide education about the consequences of misusing antibiotics in viral infections, which may lead to increased costs, antimicrobial resistance, and adverse effects.

Sponsoring Organizations

Infectious Diseases Society of America

Sources

Infectious Diseases Society of America guidelines

References

Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. Clin Infect Dis. 2012;54(8):e72-112. Zoorod R, Sidani MA, Fremont RD, Kihlberg C. Antibiotic use in acute upper respiratory tract infections. Am Fam Physician. 2012;86(9):817-22. Adult appropriate antibiotic use summary: physician information sheet (adults) [Internet].Atlanta (GA): The Centers for Disease Control and Prevention; 2012 May 1 [updated 2012 Jun 25; cited 2015 Jan 28]. Available from: http://www.cdc.gov/getsmart/campaign-materials/info-sheets/adult-approp-summary.html.

254

Avoid quarterly viral load testing of patients who have durable viral suppression, unless clinically indicated.

Rationale and Comments

Viral load testing should be conducted before initiation of treatment, two to eight weeks after initiation or modification of therapy, and then every three to four months to confirm continuous viral suppression. In clinically stable patients who have durable virological suppression for more than two years, clinicians may extend the interval to six months.

Sponsoring Organizations

HIV Medicine Association

Sources

IDSA and U.S. Department of Health and Human Services guidelines

References

Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. Clin Infect Dis. 2014 Jan;58(1):1-10. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf. 2015 Apr. 288 p.

300

Avoid routine continuation of antibiotic therapy beyond 48 hours for initially asymptomatic infants without evidence of bacterial infection.

Rationale and Comments

There is insufficient evidence to support antibiotic treatment for more than 48 hours to rule out bacterial infection in asymptomatic term and preterm infants. Current blood culturing systems identify the great majority of pathologic organisms prior to 48 hours. Prolonged antibiotic use may be associated with necrotizing enterocolitis and death in extremely low-birth-weight infants.

Sponsoring Organizations

American Academy of Pediatrics - Section on Perinatal Pediatrics

Sources

Expert consensus

References

Cotten CM, Smith PB. Duration of empirical antibiotic therapy for infants suspected of early-onset sepsis. Curr Opin Pediatr. 2013 Apr;25(2):167-71. Cotten CM, Taylor S, Stoll B, Goldberg RN, Hansen NI, Sánchez PJ, Ambalavanan N, Benjamin DK Jr; NICHD Neonatal Research Network. Prolonged duration of initial empirical antibiotic treatment is associated with increased rates of necrotizing enterocolitis and death for extremely low birth weight infants. Pediatrics. 2009 Jan;123(1):58-66. Garcia-Prats JA, Cooper TR, Schneider VF, Stager CE, Hansen TN. Rapid detection of microorganisms in blood cultures of newborn infants utilizing an automated blood culture system. Pediatrics. 2000 Mar;105(3 Pt 1):523-7.

277

Avoid testing for a Clostridium difficile infection in the absence of diarrhea.

Rationale and Comments

Testing for Clostridium difficile or its toxins should be performed only on diarrheal (unformed) stool, unless ileus due to Clostridium difficile is suspected. Because Clostridium difficile carriage is increased in patients on antimicrobial therapy and in patients in the hospital, only diarrheal stools warrant testing. In the absence of diarrhea, the presence of Clostridium difficile indicates carriage and should not be treated and, therefore, not tested.

Sponsoring Organizations

Infectious Diseases Society of America

Sources

SHEA/IDSA guidelines

References

Cohen SH, Gerding DN, Johnson S, Kelly CP, Loo VG, McDonald LC, Pepin J, Wilcox MH; Society for Healthcare Epidemiology of America; Infectious Diseases Society of America. Clinical practice guidelines for Clostridium difficile infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). Infect Control Hosp Epidemiol. 2010;31(5):431-55. Surawicz, Christina M, Brandt LJ, Binion DG, Ananthakrishnan AN, Curry SR, Gilligan PH, McFarland LV, Mellow M, Zuckerbraun BS. Guidelines for diagnosis, treatment, and prevention of Clostridium difficile infections. Am J Gastroenterol. 2013;108(4):478-98.

256

Avoid the use of surveillance cultures for the screening and treatment of asymptomatic bacteruria.

Rationale and Comments

There is minimal evidence that surveillance urine cultures or treatment of asymptomatic bacteruria is beneficial. Surveillance cultures are costly and produce both false-positive and false-negative results. Treatment of asymptomatic bacteruria also increases exposure to antibiotics, which is a risk factor for subsequent infections with a resistant organism. This also results in the overall use of antibiotics in the community and may lead to unnecessary imaging.

Sponsoring Organizations

American Academy of Pediatrics

Sources

American Academy of Pediatrics guidelines

References

Conway PH, Cnaan A, Zaoutis T, Henry BV, Grundmeier RW, Keren R. Recurrent urinary tract infections in children: risk factors and association with prophylactic antimicrobials. JAMA. 2007 Jul 11;298(2):179–86. Kemper KJ, Avner ED. The case against screening urinalysis for asymptomatic bacteruria in children. Am J Dis Child. 1992 Mar;146(3):343–6. Nicolle LE. Asymptomatic bacteruria: when to screen and when to treat. Infect Dis Clin North Am. 2003 Jun;17(2):367–94. Roberts KB; American Academy of Pediatrics Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. Pediatrics. 2011 Sep;128(3):595–610.

198

Avoid unnecessary CD4 tests.

Rationale and Comments

A CD4 count is not required in conjunction with every viral load test. Viral load testing is a better indicator of a patient's response to therapy. CD4 monitoring is not necessary for patients who have stable viral suppression. For the first two years after treatment initiation, the CD4 count should be monitored every three to six months. After two years, if the viral load is undetectable, the CD4 count should be measured yearly if it is 300–500 cells/mm3. If it is consistently above 500 cells/mm3 then further monitoring is optional.

Sponsoring Organizations

HIV Medicine Association

Sources

IDSA and U.S. Department of Health and Human Services guidelines

References

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf. 2015 Apr. 288 p. Ahn JY, Boettiger D, Law M, Kumarasamy N, Yunihastuti E, Chaiwarith R, Lee MP, Sim BL, Oka S, Wong W, Kamarulzaman A, Kantipong P, Phanuphak P, Ng OT, Kiertiburanakul S, Zhang F, Pujari S, Ditangco R, Ratanasuwan W, Merati TP, Saphonn V, Sohn AH, Choi JY; TREAT Asia HIV Observational Databases (TAHOD). Implementation and operational research: effects of CD4 monitoring frequency on clinical endpoints in clinically stable HIV-infected patients with viral suppression. J Acquir Immune Defic Syndr. 2015 Jul 1;69(3):e85-92.

298

Don't continue antibiotic therapy without evidence of need.

Rationale and Comments

In addition to employing microbe-directed therapy, a core principle of antibiotic stewardship is limiting antimicrobial therapy to the shortest effective duration. As a general rule, antimicrobials should be discontinued when the condition for which they were prescribed has been adequately treated, as one strategy to ensure access to effective antimicrobials at a time when increased antimicrobial resistance represents a global health care challenge.

Sponsoring Organizations

Society of Critical Care Medicine

Sources

Centers for Disease Control and Prevention

References

CDC. Core elements of hospital antibiotics stewardship program. Atlanta, GA: US Department of Health and Human Services, CDC, 2019.

475

Don't continue antibiotics beyond 72 hours in hospitalized patients unless patient has clear evidence of infection.

Rationale and Comments

Antibiotics are often started when a patient is possibly infected. After three days, laboratory and radiology information is available and antibiotics should either be deescalated to a narrow-spectrum antibiotic based on culture results or discontinued if evidence of infection is no longer present. Lessening antibiotic use decreases risk of infections with C. difficile or antibiotic-resistant bacteria.

Sponsoring Organizations

Society for Healthcare Epidemiology of America

Sources

Expert consensus

References

Core Elements of hospital antibiotic stewardship programs from the Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2015 [updated 2015 May 7; cited 2015 Jul 21]. Available from: http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html. Antibiotic resistance threats in the United States, 2013 [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2013 [cited 2015 Jul 21]. Available from: http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf. Elligsen M, Walker SA, Pinto R, Simor A, Mubareka S, Rachlis A, Allen V, Daneman N. Audit and feedback to reduce broad-spectrum antibiotic use among intensive care unit patients: a controlled interrupted time series analysis. Infect Control Hosp Epidemiol. 2012 Apr;33(4): 354-61.

289

Don't continue surgical prophylactic antibiotics after the patient has left the operating room.

Rationale and Comments

Prophylactic antibiotics during surgery can significantly decrease the risk of surgical site infections; however, they only have benefit if used immediately around the time of surgery. When antibiotics are used for longer than necessary, they increase the risk of infection with antibiotic-resistant bacteria and C. difficile.

Sponsoring Organizations

Society for Healthcare Epidemiology of America

Sources

Expert consensus

References

Anderson DJ, Podgorny K, Berríos-Torres SI, Bratzler DW, Dellinger EP, Greene L, Nyquist AC, Saiman L, Yokoe DS, Maragakis LL, Kaye KS. Strategies to prevent surgical site infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014 Sep;35 Suppl 2:S66-88. Bratzler DW, Dellinger EP, Olsen KM, Perl TM, Auwaerter PG, Bolon MK, Fish DN, Napolitano LM, Sawyer RG, Slain D, Steinberg JP, Weinstein RA; American Society of Health-System Pharmacists; Infectious Disease Society of America; Surgical Infection Society; Society for Healthcare Epidemiology of America. Clinical practice guidelines for antimicrobial prophylaxis in surgery. Am J Health Syst Pharm. 2013 Feb 1;70(3):195-283.

293

Don't culture or treat clinically uninfected lower extremity wounds with systemic antibiotics.

Rationale and Comments

Uninfected wounds are contaminated with surface flora and will yield false positive culture results. Furthermore, wounds that are not clinically infected do not require antibiotics, and the unnecessary prescription of antibiotics may have harmful side effects and lead to further antibiotic resistance.

Sponsoring Organizations

American Podiatric Medical Association

Sources

IDSA guideline

References

Lipsky BA, et al. 2012 Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. CID. 2012;54:132.

326

Don't initiate empiric antibiotic therapy in the patient with suspected invasive bacterial infection without first confirming that blood, urine, or other appropriate cultures have been obtained, excluding exceptional cases.

Rationale and Comments

For suspected invasive bacterial infections, diagnostic testing should include blood cultures and appropriate culture of specimens from the suspected infected site. Not all specimens may be obtained prior to antibiotics but optimally a blood culture can be obtained at the time of intravenous access. In cases where antibiotics are started due to clinical instability, or when there is a requirement for coordination for surgically accessed cultures, cultures should still be obtained at that time. In certain cases, polymerase chain reaction testing may be helpful to guide therapy (e.g., cerebrospinal fluid, synovial fluid, pleural fluid). Diagnostic testing should be considered for suspected systemic viral infection that may mimic bacterial sepsis, and may allow more timely initiation of antiviral therapy and discontinuation of antibiotics if bacterial infection is excluded. In neonates where bacterial or viral sepsis cannot be differentiated based on the clinical presentation, and both antibiotics and antivirals are initiated, blood cultures should be prioritized and cultures from additional sites (e.g., cerebrospinal fluid) and polymerase chain reaction testing (e.g., herpes simplex virus) should be obtained as soon as is clinically feasible.

Sponsoring Organizations

American Academy of Pediatrics – Committee on Infectious Diseases and the Pediatric Infectious Diseases Society

Sources

American Academy of Pediatrics guidelines

References

Wong D, Wong T, Romney M, Leung V. Comparison of outcomes in patients with methicillin-susceptible Staphylococcus aureus (MSSA) bacteremia who are treated with β-lactam vs vancomycin empiric therapy: a retrospective cohort study. BMC Infect Dis. 2016 May 23;16:224. doi: 10.1186/s12879-016-1564-5. Urinary Tract Infection: Clinical Practice Guideline for the Diagnosis and Management of the Initial UTI in Febrile Infants and Children 2 to 24 Months. Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management. Pediatrics. Aug 2011, peds.2011-1330; DOI: 10.1542/peds.2011-1330. Shah SS, Aronson PL, Mohamad Z, Lorch SA. Delayed acyclovir therapy and death among neonates with herpes simplex virus infection. Pediatric 2011;128:1153. Dellinger RP, Levy MM, Rhodes A, et al. Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2012. Critical Care Medicine. 2013 Feb;41(2):580-637.

391

Don't obtain a Clostridium difficile toxin test to confirm "cure" if symptoms have resolved.

Rationale and Comments

Rates of C. difficile infection have been increasing, especially among older adults who have recently been hospitalized or who reside in the post-acute and long-term care setting. Patients residing in these facilities are particularly at risk for C. difficile infection because of advanced age, frequent hospitalizations, and frequent antibiotic exposure. However, only symptomatic patients should be tested. Furthermore, studies have shown that C. difficile tests may remain positive for as long as 30 days after symptoms have resolved. False positive "test-of-cure" specimens may complicate clinical care and result in additional courses of inappropriate anti–C. difficile therapy. To limit the spread of C. difficile, care providers in the post-acute and long-term care setting should concentrate on early detection of symptomatic patients and the consistent use of proper infection control practices, including hand washing with soap and water, contact precautions, and environmental cleaning with 1:10 dilution of sodium hypochlorite (bleach) prepared fresh daily.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Expert consensus

References

Riggs MM, Sethi AK, Zabarsky TF, Eckstein EC, Jump RL, Donskey CJ. Asymptomatic carriers are a potential source for transmission of epidemic and nonepidemic Clostridium difficile strains among long-term care facility residents. Clin Infect Dis. 2007 Oct 15;45 (8):992. Surawicz CM, Brandt LJ, Binion DG, Ananthakrishnan AN, Curry SR, Gilligan PH, McFarland LV, Mellow M, Zuckerbraun BS. Guidelines for diagnosis, treatment, and prevention of Clostridium difficile infections. Am J Gastroenterol. 2013 Apr;108(4):478–98.

265

Don't obtain comprehensive viral panel testing for patients who have suspected respiratory viral illnesses.

Rationale and Comments

Viral infections occur frequently in children and are a common reason to seek medical care. The diagnosis of a viral illness is made clinically and usually does not require confirmatory testing. There is a lack of consistent evidence to demonstrate the impact of comprehensive viral panel (i.e., panels simultaneously testing for 8 to 20+ viruses) results on clinical outcomes or management, especially in emergency department settings. Hence, most national and international clinical practice guidelines do not recommend their routine use. Some viral tests are quite expensive, and obtaining nasopharyngeal swab specimens can be uncomfortable for children. Comprehensive viral panel testing can be considered in high-risk patients (e.g., immunocompromised) or in situations where the results will directly influence treatment decisions, such as the need for antibiotics, performance of additional tests, or hospitalization. Testing for specific viruses might be indicated if the results of the testing may alter treatment plans (e.g., antivirals for influenza) or public health recommendations (e.g., isolation for SARS-CoV-2). For more specific recommendations related to the diagnosis and management of SARS-CoV-2, please see www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections.

Sponsoring Organizations

American Academy of Pediatrics – Section on Emergency Medicine and the Canadian Association of Emergency Physicians

Sources

Meta-analysis

References

Gill PJ, Richardson SE, Ostrow O, et al. Testing for respiratory viruses in children: to swab or not to swab. JAMA Pediatr. 2017;171(8):798-804.
Noël KC, Fontela PS, Winters N, et al. The clinical utility of respiratory viral testing in hospitalized children: a meta-analysis. Hosp Pediatr. 2019;9(7):483-494.
Parikh K, Hall M, Mittal V, et al. Establishing benchmarks for the hospitalized care of children with asthma, bronchiolitis, and pneumonia. Pediatrics. 2014;134(3):555-562.
Innis K, Hasson D, Bodilly L, et al. Do I need proof of the culprit? Decreasing respiratory viral testing in critically ill patients. Hosp Pediatr. 2021;11(1):e1-e5.

533

Don't order a Lyme immunoblot without a positive Lyme enzyme immunoassay screening test.

Rationale and Comments

The Lyme immunoblot test is designed only as a confirmatory test, so it is important not to test screen-negative samples. Some antigens on the blot react with non-Lyme antibodies, and the immunoblot can be overinterpreted in the absence of a positive screening test. Current two-tiered serology has a sensitivity of 70% to 100% and specificity > 95% for disseminated Lyme disease; use of an immunoblot without a positive screening test is unwise. While the exact characteristics of current immunoblot tests used alone are not well defined, high false-positive IgM rates have been observed in patients tested without a prior enzyme immunoassay. This recommendation assumes that a patient has had the potential for contact with ticks in an endemic area.

Sponsoring Organizations

American Society for Microbiology

Sources

IDSA guideline

References

Moore A, Nelson C, Molins C, Mead P, Schriefer M. Current guidelines, common clinical pitfalls, and future directions for laboratory diagnosis of Lyme disease, United States. Emerg Infect Dis. 2016;22(7):1169-1177. Draft Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA), American Academy of Neurology (AAN), and American College of Rheumatology (ACR): 2019 Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease. CDC Lyme Disease Resources: https://www.cdc.gov/lyme/index.html Wormser GP, Dattwyler RJ, Shapiro ED, et al. The clinical assessment, treatment, and prevention of lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. Clin Infect Dis. 2006;43(9):1089-1134. Seriburi V, Ndukwe N, Chang Z, Cox ME, Wormser GP. High frequency of false positive IgM immunoblots for Borrelia burgdorferi in clinical practice. Clin Microbiol Infect. 2012;18(12):1236-1240.

441

Don't order complex lymphocyte panels when ordering CD4 counts.

Rationale and Comments

Order only CD4 counts and percentages rather than ordering other lymphocyte panels. For example, CD8 testing, including the CD4/CD8 ratio, adds cost without providing useful information. More complex lymphocyte panels are unnecessary and increase costs even more.

Sponsoring Organizations

HIV Medicine Association

Sources

IDSA and U.S. Department of Health and Human Services guidelines

References

Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. Clin Infect Dis. 2014 Jan;58(1):1-10. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf. 2015 Apr. 288 p.

299

Don't order immunoglobulin M (IgM) antibody serologic studies to assess for acute infection with infectious agents no longer endemic in the United States, and in general avoid using immunoglobulin M antibody serologies to test for acute infection in the absence of sufficient pretest probability.

Rationale and Comments

As the prevalence of a disease decreases, so does the positive predictive value for testing for acute infection with that disease. Althoug-ctious agents is useful (for documentation of effective vaccination, for example), assessing acute infection by evaluation of IgM antibody status to these agents is fraught with false positives and low predictive value. For example, according to the Centers for Disease Control and Prevention, rubella is no longer endemic in the United States. As such, nearly all positive rubella IgM antibody tests are false positives, resulting in unnecessary follow-up testing and unnecessary anxiety. Even for diseases not yet eradicated and for which low level outbreaks still occur (such as measles), if overall prevalence remains low, then the predictive value of positive IgM serology will still be low. False-positive measles IgM serology, for example, has been documented due to cross-reactivity to parvovirus and human herpes virus 6, among others. If clinical evaluation yields legitimate pretest suspicion for a rare infectious disease, then practitioners should report to and engage the help of their state public health department and/or the Centers for Disease Control and Prevention in further evaluating for potential acute infection. In common viral infections, it is also most effective to limit IgM serology to those cases in which clinical assessment yields relatively high suspicion for acute infection, since there are well-known causes for potential IgM antibody cross-reactivity (rheumatoid factor, cross-reactivity with other viral antigens). The potential for false-positive results will decrease (and positive predictive value will increase) with increasing pretest probability for true acute infection.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Binnicker M. Hot topic: Serologic testing for rubella (video presentation with transcript); 2008: http://www.mayomedicallaboratories.com/articles/hottopics/2008-08-rubella.html (accessed 06/21/2017). Best JM, O'Shea S, Tipples G, Davies N, Al-Khusaiby SM, Krause A, Hesketh LM, Jin L, Enders G. Interpretation of rubella serology in pregnancy—pitfalls and problems. BMJ. 2001; 325:147-8. Dietz V, Rota J, Izurieta H, Carrasco P, Bellini W. The laboratory confirmation of suspected measles cases in settings of low measles transmission: conclusions from the experience in the Americas. Bulletin of the World Health Organization. 2004;82:852-7. Woods CR: False-positive results for immunoglobulin M serologic results: explanations and examples. J Ped Infect Dis Soc. 2013;2(1):87-90.

389

Don't order Lyme serology on patients with a primary erythema migrans lesion.

Rationale and Comments

No current diagnostic method is highly sensitive in Lyme disease patients with less than two weeks of rash or illness. Most patients with primary Lyme disease are seronegative at the time of presentation and should be treated on clinical grounds regardless of serological results. In patients with equivocal or atypical lesions, paired testing with sera collected acutely and two to three weeks later may be helpful.

Sponsoring Organizations

American Society for Microbiology

Sources

IDSA guideline

References

Moore A, Nelson C, Molins C, Mead P, Schriefer M. Current guidelines, common clinical pitfalls, and future directions for laboratory diagnosis of Lyme disease, United States. Emerg Infect Dis. 2016;22(7): 1169-1177. Draft Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA), American Academy of Neurology (AAN), and American College of Rheumatology (ACR): 2019 Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease. CDC Lyme Disease Resources: https://www.cdc.gov/lyme/index.html Wormser GP, Dattwyler RJ, Shapiro ED, et al. The clinical assessment, treatment, and prevention of lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. Clin Infect Dis. 2006;43(9):1089-1134.

440

Don't order routine follow-up chest imaging for post-acute and long-term care residents with CAP whose symptoms have resolved within five to seven days.

Rationale and Comments

Radiographic findings tend to lag behind clinical response. Obtaining routine follow-up chest radiograph in patients with CAP who have responded to prescribed therapy is therefore not indicated and does not improve care outcomes. This approach is similar to that outlined by the American Thoracic Society and Infectious Diseases Society of America, both of whom recommend not obtaining a follow-up chest radiograph in patients whose symptoms have resolved within five to seven days.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

ATS/IDSA guideline

References

Metlay JP, et al. Diagnosis and treatment of adults with community-acquired pneumonia. An official clinical practice guideline of the American Thoracic Society and Infectious Diseases Society of America. Am J Respir Crit Care Med. 2019;200(7):e45-e67. Bruns AH, et al. Patterns of resolution of chest radiograph abnormalities in adults hospitalized with severe community-acquired pneumonia. Clin Infect Dis. 2007;45(8):983-991. Mittl RL Jr, et al. Radiographic resolution of community-acquired pneumonia. Am J Respir Crit Care Med. 1994;149(3 Pt 1):630-635.

457

Don't overuse non-beta lactam antibiotics in patients with a history of penicillin allergy, without an appropriate evaluation.

Rationale and Comments

While about 10% of the population reports a history of penicillin allergy, studies show that 90% on more of these patients are not allergic to penicillins and are able to take these antibiotics safely. The main reason for this observation is that penicillin allergy is often misdiagnosed and when present wanes over time in most (but not all) individuals. Patients labeled penicillin-allergic are more likely to be treated with alternative antibiotics (such as vancomycin and quinolones), have higher medical costs, experience longer hospital stays, and are more likely to develop complications such as infections with vancomycin-resistant enterococcus and Clostridium difficile. Evaluation for specific IgE to penicillin can be carried out by skin testing. Ideally, penicillin skin testing should be performed with both major and minor determinants. The negative predictive value of penicillin skin testing for immediate reactions approaches 100%, whereas the positive predictive value is between 40 and 100%. The usefulness of in vitro tests for penicillin-specific IgE is limited by their uncertain predictive value. They are not suitable substitutes for penicillin skin testing. By identifying the overwhelming majority of individuals who can safely receive penicillin and penicillin-like drugs, we can improve the appropriateness of antibiotic therapy and clinical care outcomes.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

Expert consensus

References

Solensky R, Khan DA. Drug allergy: an updated parameter. Ann Allergy Asthma Immunol. 2010 Oct;105(4):259–73. Solensky R. Penicillin allergy as a public health measure. J Allergy Clin Immunol. 2013 Dec 8. pii:S0091-6749(13)01646–1. Macy E, Contreras R. Healthcare utilization and serious infection prevalence associated with penicillin "allergy" in hospitalized patients: a cohort study. J Allergy Clin Immunol. 2013 Nov 1. pii:S0091–6749(13)01467–X. Park MA, Markus PJ, Matesic D, Li JTC. Safety and effectiveness of a preoperative allergy clinic in decreasing vancomycin use in patients with a history of penicillin allergy. Ann Allergy Asthma Immunol. 2006;97:681–7.

197

Don't perform procalcitonin testing without an estaºd, evidence-based protocol.

Rationale and Comments

Procalcitonin is a biomarker that has been used successfully to identify patients with certain bacterial infections (e.g., sepsis). The appropriate use includes serial (usually daily) measurements of procalcitonin in select patient populations (e.g., patients with fever and presumed serious infection for which antibiotics were initiated). Such uses may help to identify low-risk patients with respiratory infections who would not benefit from antibiotic therapy, and to differentiate blood culture contaminants (e.g., coagulase-negative staphylococci) from true infections. When used appropriately, there are significant opportunities to decrease unnecessary antimicrobial use. The overuse of antimicrobial agents is directly related to the increasing antimicrobial resistance, so judicious use of these agents is warranted. Unfortunately, procalcitonin is often either misused (i.e., not used in the appropriate setting) or established algorithms are not followed. When the latter occurs, the procalcitonin result becomes simply another piece of laboratory data that adds costs, but does not benefit the patient. These scenarios often occur because there is not an evidence-based utilization plan established at an institution. Laboratory and intensive care unit leadership are encouraged to identify the major users of procalcitonin, to establish guidelines that are most appropriate for the local setting and to monitor use.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Randomized controlled trials

References

Assink-de Jong E. de Lange DW van Oers JA, et al. Stop Antibiotics on guidance of Procalcitonin Study (SAPS): a randomized prospective multicenter investigator-initiated trial to analyse whether daily measurements of procalcitonin versus standard-of-care approach can safely shorten antibiotic duration in intensive care unit patients – calculated sample size: 1816 patients. BMC Infectious Diseases. 2013:13:178. Rhee C. Using Procalcitonin to Guide Antibiotic Therapy. Open Forum Infect Dis. 2017:4:ofw249. Bouadma L, Luyt CE, Tubach F, et al. Use of Procalcitonin to Reduce Patients' Exposure to Antibiotics in Intensive Care Units (PRORATA Trial): a Multicentre Randomised Controlled Trial. Lancet. 2010;375:463-74. 24 25.

390

Don't perform urinalysis, urine culture, blood culture or C. difficile testing unless patients have signs or symptoms of infection. Tests can be falsely positive leading to over diagnosis and overtreatment.

Rationale and Comments

Although important for diagnosing disease when used in patients with appropriate signs or symptoms, these tests often are positive when an infection is not present. For example, in the absence of signs or symptoms, a positive blood culture may represent contamination, a positive urine culture could represent asymptomatic bacteriuria, and a positive test for C. difficile could reflect colonization. There are no perfect tests for these or most infections. If these tests are used in patients with low likelihood of infection, they will result in more false positive tests than true positive results, which will lead to treating patients without infection and exposing them to risks of antibiotics without benefits of treating an infection.

Sponsoring Organizations

Society for Healthcare Epidemiology of America

Sources

Expert consensus

References

Peterson LR, Robicsek A. Does my patient have Clostridium difficile infection? Ann Intern Med. 2009 Aug 4;151(3):176-9. Dubberke ER, Carling P, Carrico R, Donskey CJ, Loo VG, McDonald LC, Maragakis LL, Sandora TJ, Weber DJ, Yokoe DS, Gerding DN. Strategies to prevent Clostridium difficile infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014 Sep;35 Suppl 2:S48-65. Lo E, Nicolle LE, Coffin SE, Gould C, Maragakis LL, Meddings J, Pegues DA, Pettis AM, Saint S, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014 Sep;35 Suppl 2:S32-47. Bates DW, Goldman L, Lee TH. Contaminant blood cultures and resource utilization. The true consequences of false-positive results. JAMA. 1991 Jan 16;265(3):365-9.

291

Don't prescribe IV antibiotics for predetermined durations for patients hospitalized with infections such as pyelonephritis, osteomyelitis and complicated pneumonia. Consider early transition to oral antibiotics.

Rationale and Comments

Recent publications have demonstrated that strategies for early transition to oral antibiotics achieve equal or better outcomes for common inpatient infections and are safer than prolonged intravenous antibiotics in children. The use of intravenous lines such as peripherally inserted central catheters, which are often necessary for prolonged intravenous antibiotics, can lead to complications such as thrombosis or line infections. Antibiotic courses with predetermined durations are often not based on high-quality evidence and ignore individual response to treatments, which can vary significantly from patient to patient. Once a patient is able to tolerate them, early transition to oral antibiotics, based on individual patient clinical responses such as defervescence and other symptoms and signs of improvement, are patient and family centered and can improve the value of care for hospitalized children.

Sponsoring Organizations

Pediatric Hospital Medicine – SHM, AAP, APA

Sources

Retrospective cohort study

References

Keren R, et al.; Pediatric Research in Inpatient Settings Network. Comparative effectiveness of intravenous vs oral antibiotics for post-discharge treatment of acute osteomyelitis in children. JAMA Pediatr. 2015;169(2):120-8. Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, Roberts KB. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. Pediatrics. 2011;128(3):595-610. Shah SS, et al.; Pediatric Research in Inpatient Settings Network. Intravenous versus oral antibiotics for post-discharge treatment of complicated pneumonia. Pediatrics. 2016;138(6): e20161692. Schroeder AR, et al. Intravenous antibiotic durations for common bacterial infections in children: when is enough enough? J Hosp Med. 2014;9(9):604-609.

461

Don't prophylactically use compounded antibiotic soaks for aftercare following office-based procedures (e.g., nail and skin lesion removal).

Rationale and Comments

The marked increase of prescribing and dispensing of compounded antibiotic powders for soaking after non-complicated office-based procedures has shown no more effectiveness than the current standard (i.e., over-the-counter Betadine, white vinegar, astringent soaks, and Epsom salts), while having the downside of adding significant overall cost to in-office procedures. The hundreds of dollars being spent on these expensive substitutes represents medical waste.

Sponsoring Organizations

American Podiatric Medical Association

Sources

Expert consensus

References

There are no peer-reviewed studies to support the use of compounded antibiotic powders over what is currently available for soaking after non-complicated office-based nail and/or skin procedures. There are low-cost alternatives available currently. No reference could be found to support the use of these soaking powders as far as being overall more effective than standard current soaking materials in non-complicated, otherwise-healthy patients.

504

Don't repeat hepatitis C virus (HCV) antibody testing in patients with a previous positive (HCV) test. Instead, order hepatitis C viral load testing for assessment of active versus resolved infection.

Rationale and Comments

There are joint guidelines from the IDSA and the American Association for the Study of Liver Diseases, which are consistent with guidance from the CDC regarding the testing, management, and treatment of patients with HCV infection. A positive HCV antibody test remains positive for life. Repeat HCV antibody testing adds cost but no clinical benefit, so it should not be performed. A common reason for unnecessary repeat testing is the inclusion of this test in order sets (e.g., hepatitis and/or opioid screening order sets), or a result of problematic follow-up in patients positive for HCV in an outpatient setting. A positive HCV serologic test (or a proven history of positive results) should be followed by a hepatitis C viral load test, which distinguishes an active from resolved infection. The result of the hepatitis C viral load establishes a baseline in patients with active disease by which the efficacy of therapy can be monitored. Patients with active infection (i.e., positive serology and hepatitis C viral load) may often need an HCV genotyping assay to guide therapy. Patients who have had a remote and resolved HCV infection who are suspected to have been reinfected should be tested using the hepatitis C viral load test, rather than the HCV antibody test, since this latter test remains positive for life. Viral load reflects the degree and severity of active infection and also acts as a useful component in monitoring antiviral therapy in medication-managed patients.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

American Association for the Study of Liver Diseases guideline|IDSA guideline

References

Infectious Disease Association of America. HCV guidance: recommendations for testing, managing, and treating hepatitis C. Accessed on July 22, 2016 at http://www.hcvguidelines.org/fullreport/initial-treatment-hcv-infection Centers for Disease Control and Prevention. Viral hepatitis - hepatitis C information. Hepatitis C FAQs for health professionals. Accessed on July 22, 2016 at http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm#section3 Kanakis CE. The "C" in HCV stands for "curable" [Internet]. Lablogatory. ASCP; 2018 [cited 2018Mar2]. https://labmedicineblog.com/2018/02/26/the-c-in-hcv-stands-for-curable/

420

Don't request routinely extended incubation of blood cultures in suspected endocarditis.

Rationale and Comments

Extending incubation of routine blood cultures does not increase the recovery of clinically significant pathogens causing endocarditis. Five-day incubation, using currently available media formulations and automated incubation and detection systems, is sufficient to recover the majority of true pathogens including HACEK \organisms. Alternative methods (such as serology, molecular, targeted fungal or mycobacterial cultures, or tissue histopathology) should be utilized, when clinically indicated, for detection of rarely encountered, fastidious organisms (Bartonella, Coxiella, Mycobacterium, dimorphic fungi) not recovered using routine blood cultures. Occasional exceptions may be appropriate and should be reviewed in consultation with an infectious disease specialist.

Sponsoring Organizations

American Society for Microbiology

Sources

Expert consensus

Baron EJ, Scott JD, Tompkins LS. Prolonged incubation and extensive subculturing do not increase recovery of clinically significant microorganisms from standard automated blood cultures. Clin Inf Dis. 2005;41(11):1677-1680. Liesman RM, Pritt BS, Maleszewski JJ, Patel R. Laboratory diagnosis of infective endocarditis. J Clin Microbiol. 2017;55(9):2599-2608.

438

Don't retain catheters and drains in place without a clear indication.

Rationale and Comments

Patients in ICUs typically require insertion of catheters and drains for fluid and medication delivery, pressure and flow monitoring, and fluid and gas evacuation. The majority of hospital-acquired infections and unintended safety events are associated with such devices. Daily assessment of need for invasive devices should be an essential element of critical care workflow, to reduce time of exposure by identifying the earliest opportunity for their discontinuation.

Sponsoring Organizations

Society of Critical Care Medicine

Sources

Expert consensus

References

Bell T, et al. Prevention of central line-associated bloodstream infections. Infect Dis Clin North Am. 2017;31(3):551-559. Hooten TM, et al.; Infectious Diseases Society of America. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America. Clin Infect Dis. 2010;50(5):625-663.

473

Don't routinely order broad respiratory pathogen panels unless the result will affect patient management.

Rationale and Comments

In place of broad respiratory pathogen panels, use tests that provide immediate diagnosis and potentially expedite management decisions. Consider first using tests of commonly suspected pathogens, which may change according to the location/season. Examples include rapid molecular or point-of-care tests for respiratory syncytial virus, influenza A/B, or group A pharyngitis. Rapid tests may be laboratory-based or point-of-care, depending on operational needs. Broader testing for other respiratory pathogens may be done when the result will affect patient management, such as altering/discontinuing empiric antimicrobial therapy or changing infection control measures.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

IDSA guideline

Miller JM, Binnicker MJ, Campbell S, Carroll KC, Chapin KC, Gilligan PH, Gonzalez MD, Jerris RC, Kehl SC, Patel R, Pritt BS, Richter SS, Robinson-Dunn B, Schwartzman JD, Snyder JM, Telford S, Theel ES, Thomson RB, Weinstein MP, Yao JD. 2018. A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2018 recommendations by the Infectious Diseases Society of America (IDSA) and the American Society for Microbiology (ASM). Clinical Infectious Disease. 31;67(6):e1-e94.

423

Don't routinely order testing for glucose-6-phosphate dehydrogenase deficiency for patients who are not predisposed due to race/ethnicity.

Rationale and Comments

Glucose-6-phosphate dehydrogenase deficiency testing is recommended upon entry into care-odeficiency virus (HIV) infection who are predisposed to this genetic disorder that can cause hemolytic anemia. Glucose-6-phosphate dehydrogenase deficiency most frequently occurs in populations of African, Asian, and Mediterranean descent and is most likely to affect HIV-infected patients with one of these racial or ethnic backgrounds.

Sponsoring Organizations

HIV Medicine Association

Sources

IDSA guideline

References

Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. Clin Infect Dis. 2014 Jan;58(1):1-10. Prchal JT, Gregg XT. Red cell enzymes. American Society of Hematology. 2015 Aug 11;(1):19-23.

302

Don't routinely send urine for Chlamydia trachomatis and Neisseria gonorrhoeae testing from women if vaginal swab collection is possible.

Rationale and Comments

Nucleic acid amplification testing (NAAT) for Chlamydia trachomatis and Neisseria gonorrhoeae is the standard of care for testing adults and has largely replaced culture. Vaginal swabs are the preferred single specimen for screening and diagnosis of C. trachomatis and N. gonorrhoeae by NAAT, providing 5% to greater than 10% increased sensitivity compared to urine for women; testing multiple specimens (i.e., vaginal, endocervical, urine) can further increase sensitivity. First-void urine can be considered as a noninvasive alternative when vaginal collections are not possible because of the setting, test, collection device shortages, or very strong patient preference.

Sponsoring Organizations

American Society for Microbiology
American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

Diagnostic accuracy studies

References

Centers for Disease Control and Prevention. Recommendations for the laboratory-based detection of Chlamydia trachomatis and Neisseria gonorrhoeae—2014. MMWR Recomm Rep. 2014;63(RR-02):1-19. Shafer MA, Moncada J, Boyer CB, et al. Comparing first-void urine specimens, self-collected vaginal swabs, and endocervical specimens to detect Chlamydia trachomatis and Neisseria gonorrhoeae by a nucleic acid amplification test. J Clin Microbiol. 2003;41(9):4395-4399. Van Der Pol B, Taylor SN, Liesenfeld O, et al. Vaginal swabs are the optimal specimen for detection of genital Chlamydia trachomatis or Neisseria gonorrhoeae using the Cobas 4800 CT/NG test. Sex Transm Dis. 2013;40(3):247-250.

Don't routinely test for CMV immunoglobulin G in HIV-infected patients who have a high likelihood of being infected with CMV.

Rationale and Comments

CMV immunoglobulin G testing is recommended only in patients who are at lower risk for CMV to detect latent CMV infection. CMV immunoglobulin G testing is not necessary in patients at higher risk for CMV, including men who have sex with men and injection drug users, because they can be assumed to be CMV positive. Testing for CMV antibody in low-risk populations is recommended to foster patient counseling in avoidance of CMV infection through practicing safe sex and to avoid transfusion except with CMV-negative blood products. Patients at lower risk for CMV infection, e.g., patients who are heterosexual and have not injected drugs, should be tested for latent CMV infection with an anti–CMV immunoglobulin G upon initiation of care.

Sponsoring Organizations

HIV Medicine Association

Sources

IDSA guideline

References

Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. Clin Infect Dis. 2014 Jan;58(1):1-10. Panel on Opportunistic Infections in HIV-Infected Adults and Adolescents. Guidelines for prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from the Centers for Disease Control and Prevention, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America; 2015 Apr. 414 p. Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf.

Don't routinely test more than one stool specimen per week for C. difficile by nucleic acid amplification test.

Rationale and Comments

Repeat testing using the nucleic acid amplification test (within seven days) for C. difficile is not recommended when the symptoms represent a single episode of diarrheal illness. Studies have shown that repeat testing using the nucleic acid amplification test within a seven-day period yields only a 2% diagnostic yield. Exceptions should only be made in the setting of an institutional epidemic or when C. difficile infection is highly suspected with no alternative diagnosis, but for which the initial test is negative and symptoms persist or worsen.

Sponsoring Organizations

American Society for Microbiology

Sources

IDSA guideline

References

McDonald LC, Gerding DN, Johnson S, et al. Clinical practice guidelines for Clostridium difficile infection in adults and children: 2017 update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). Clin Infect Dis. 2018;66(7):987-994. Luo RF, Banaei N. Is repeat PCR needed for diagnosis of Clostridium difficile infection? J Clin Microbiol. 2010;48(10):3738-3741. Surawicz CM, Brandt LJ, Binion DG, et al. Guidelines for diagnosis, treatment, and prevention of Clostridium difficile infections. Am J Gastroenterol. 2013;108(4):478-498.

Don't routinely use antibiotics to treat bilateral swelling and redness of the lower leg unless there is clear evidence of infection.

Rationale and Comments

Research has suggested that bilateral lower leg cellulitis is very rare. Patients with swelling and redness of both legs most likely have another condition, such as dermatitis resulting from leg swelling, varicose veins, or contact allergies. To ensure appropriate treatment, doctors must consider the likelihood of diagnoses other than cellulitis when evaluating swelling and redness of the lower legs. Misdiagnosis of bilateral cellulitis can lead to overuse of antibiotics and subject patients to potentially unnecessary hospital stays.

Sponsoring Organizations

American Academy of Dermatology

Sources

Expert consensus

References

Arakaki RY, Strazzula L, Woo E, Kroshinsky D. The impact of dermatology consultation on diagnostic accuracy and antibiotic use among patients with suspected cellulitis seen at outpatient internal medicine offices: a randomized clinical trial. JAMA Dermatol. 2014 Oct;150(10):1056-61. Hughey LC. The impact dermatologists can have on misdiagnosis of cellulitis and overuse of antibiotics: closing the gap. JAMA Dermatol. 2014 Oct;150(10):1061-2. Hepburn MJ, Dooley DP, Ellis MW. Alternative diagnoses that often mimic cellulitis. Am Fam Physician. 2003 Jun 15;67(12):2471. David CV, Chira S, Eells SJ, Ladrigan M, Papier A, Miller LG, Craft N. Diagnostic accuracy in patients admitted to hospitals with cellulitis. Dermatol Online J. 2011 Mar 15;17(3):1. Levell NJ, Wingfield CG, Garioch JJ. Severe lower limb cellulitis is best diagnosed by dermatologists and managed with shared care between primary and secondary care. Br J Dermatol. 2011 Jun;164(6):1326-8. Kroshinsky D, Grossman ME, Fox LP. Approach to the patient with presumed cellulitis. Semin Cutan Med Surg. 2007 Sep;26(3):168-78. Hirschmann JV, Raugi GJ. Lower limb cellulitis and its mimics: part I. Lower limb cellulitis. J Am Acad Dermatol. 2012 Aug;67(2):163.e1-12; quiz 175-6. Hirschmann JV, Raugi GJ. Lower limb cellulitis and its mimics: part II. Conditions that simulate lower limb cellulitis. J Am Acad Dermatol. 2012 Aug;67(2):177.e1-9; quiz 185-6.

Don't routinely use topical antibiotics on a surgical wound.

Rationale and Comments

The use of topical antibiotics on clean surgical wounds has not been shown to reduce the rate of infection compared to the use of non-antibiotic ointment or no ointment. Topical antibiotics can aggravate open wounds, hindering the normal wound-healing process. When topical antibiotics are used in this setting, there is a significant risk of developing contact dermatitis, a condition in which the skin becomes red, sore, or inflamed after direct contact with a substance, along with the potential for developing antibiotic resistance. Only wounds that show symptoms of infection should receive appropriate antibiotic treatment.

Sponsoring Organizations

American Academy of Dermatology

Sources

Randomized controlled trials

References

Dixon AJ, Dixon MP, Dixon JB. Randomized clinical trial of the effect of applying ointment to surgical wounds before occlusive dressing. Br J Surg. 2006 Aug;93(8):937-43. Smack DP, Harrington AC, Dunn C, Howard RS, Szkutnik AJ, Krivda SJ, Caldwell JB, James WD. Infection and allergy incidence in ambulatory surgery patients using white petrolatum vs bacitracin ointment. A randomized controlled trial. JAMA. 1996 Sep 25;276(12):972-7. Campbell RM, Perlis CS, Fisher E, Gloster HM Jr. Gentamicin ointment versus petrolatum for management of auricular wounds. Dermatol Surg. 2005 Jun;31(6):664-9. Sheth VM, Weitzul S. Postoperative topical antimicrobial use. Dermatitis. 2008 Jul-Aug;19(4):181-9. Gehrig KA, Warshaw EM. Allergic contact dermatitis to topical antibiotics: epidemiology, responsible allergens, and management. J Am Acad Dermatol. 2008 Jan;58(1):1-21.

150

Don't test for influenza unless the patient is symptomatic and the result will influence clinical management and decision-making.

Rationale and Comments

The U.S. Centers for Disease Control and Prevention National Center for Immunization and Respiratory Diseases recommends that hospitalized patients with influenza indications undergo influenza testing when influenza is circulating in the community, and the Infectious Disease Society of America recommends rapid influenza molecular assays or reverse transcriptase polymerase chain reaction testing for greatest diagnostic certainty. The National Center for Immunization and Respiratory Diseases indications include typical influenza symptoms, atypical presentations, complications, and admission status. Three scenarios to consider: perform molecular testing if a patient has signs and symptoms suggestive of influenza, including an atypical clinical presentation, or findings suggestive of complications associated with influenza and is being admitted to the hospital; perform molecular testing if a patient has signs and symptoms suggestive of influenza and is not being admitted to the hospital but the result will influence clinical management; and if a patient is not symptomatic, then influenza testing is probably not indicated.

Sponsoring Organizations

American Society for Microbiology
American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

Systematic review

References

Centers for Disease Control and Prevention. Guide for considering influenza testing when influenza viruses are circulating in the community. Accessed December 2020. https://www.cdc.gov/flu/professionals/diagnosis/consider-influenza-testing.htm
Centers for Disease Control and Prevention. Overview of influenza testing methods. Accessed December 2020. https://www.cdc.gov/flu/professionals/diagnosis/overview-testing-methods.htm
Centers for Disease Control and Prevention. Algorithm to assist in the interpretation of influenza testing results and clinical decision-making during periods when influenza viruses are circulating in the community. Accessed December 2020. https://www.cdc.gov/flu/professionals/diagnosis/algorithm-results-circulating.htm
Merckx J, Wali R, Schiller I, et al. Diagnostic accuracy of novel and traditional rapid tests for influenza infection compared with reverse transcriptase polymerase chain reaction: a systematic review and meta-analysis. Ann Intern Med. 2017;167(6):394-409.

523

Don't test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history or appropriate exam findings.

Rationale and Comments

The musculoskeletal manifestations of Lyme disease include brief attacks of arthralgia with early disseminated Lyme and/or intermittent or persistent episodes of arthritis in one or a few large joints, with predilection for the knee, in late disease. Lyme testing in the absence of these features and without appropriate exposure from living in or traveling to a Lyme endemic area increases the likelihood of false positive results and may lead to unnecessary follow-up and therapy. Diffuse arthralgias, myalgias, or fibromyalgia alone are not criteria for musculoskeletal Lyme disease.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

Expert consensus

References

Lantos P, Lipsett S, Nigrovic L. False positive Lyme disease IgM immunoblots in children. J Pediatr. 2016(174):267-269. Lipsett S, Nigrovic L. Diagnosis of Lyme disease in the pediatric acute care setting. Curr Opin Pediatr. 2016;28(3):287-293. Markowicz M, Kivaranovic D, Stanek G. Testing patients with non-specific symptoms for antibodies against borrelia burgdorferi sensulato does not provide useful clinical information about their aetiology. Clin Microbiol Infect. 2015;21(1098):1103. Moore A, Nelson C, Molins C, Mead P, Schriefer M. Current guidelines, common clinical pitfalls, and future directions for laboratory diagnosis of Lyme disease, United States. Emerg Infect Dis. 2016(22):7. Sigal L. Musculoskeletal features of Lyme disease: understanding the pathogenesis of clinical findings helps make appropriate therapeutic choices. J Clin Rheumatol. 2011;17(5):256-265.

404

Don't treat asymptomatic bacteruria with antibiotics.

Rationale and Comments

Inappropriate use of antibiotics to treat asymptomatic bacteruria, or a significant number of bacteria in the urine that occurs without symptoms such as burning or frequent urination, is a major contributor to antibiotic overuse in patients. With the exception of pregnant patients, patients undergoing prostate surgery or other invasive urological surgery, and kidney or kidney pancreas organ transplant patients within the first year of receiving the transplant, use of antibiotics to treat asymptomatic bacteruria is not clinically beneficial and does not improve morbidity or mortality. The presence of a urinary catheter increases the risk of bacteruria; however, antibiotic use does not decrease the incidence of symptomatic catheter-associated urinary tract infection, and unless there are symptoms referable to the urinary tract or symptoms with no identifiable cause, catheter-associated asymptomatic bacteruria does not require screening and antibiotic therapy. The overtreatment of asymptomatic bacteruria with antibiotics is not only costly, but can lead to Clostridum difficile infection and the emergence of resistant pathogens, raising issues of patient safety and quality.

Sponsoring Organizations

Infectious Diseases Society of America

Sources

Infectious Diseases Society of America guidelines

References

Trautner B, Kelly PA, Petersen N, Hysong S, Kell H, Liao KS, Patterson JE, Naik AN. A hospital-site controlled intervention using audit and feedback to implement guidelines concerning inappropriate treatment of catheter-associated asymptomatic bacteriuria. Implement Sci. 2011;6:41. Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM. Infectious Diseases Society of America, American Society of Nephrology, American Geriatric Society. Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. Clin Infect Dis. 2005;40(5):643-54. Gross PA, Patel B. Reducing antibiotic overuse: a call for a national performance measure for not treating asymptomatic bacteriuria. Clin Infect Dis. 2007;45(10):1335-7.

253

Don't treat uncomplicated community-acquired pneumonia in otherwise healthy, immunized, hospitalized patients with antibiotic therapy broader than ampicillin.

Rationale and Comments

Community-acquired pneumonia (CAP) accounts for a significant percentage of antibiotic use in children. Unnecessary use of broad-spectrum antibiotics, including cephalosporins such as ceftriaxone, have been shown to contribute to antibiotic resistance and C. difficile infection. The most common cause of CAP in healthy, immunized children is Streptococcus pneumoniae, of which most strains are highly susceptible to penicillin/ampicillin. As ampicillin achieves high levels in the lung and is narrow in spectrum, it should be used as a first-line drug for inpatient management of most children with uncomplicated pediatric CAP. In cases with more resistant local epidemiology, or complicated CAP including empyema, antibiotics with a broader spectrum may be needed.

Sources

American Academy of Pediatrics – Committee on Infectious Diseases and the Pediatric Infectious Diseases Society

Sources

IDSA guideline

References

Bradley, JS, Byington CL, Shah SS, Alverson B, Carter ER, Harrison C, et al. (2011, October). The management of community-acquired pneumonia in infants and children older than 3 months of age: clinical practice guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America. Oxford University Press. http://doi.org/10.1093/cid/cir531. Newman RE, Hedican EB, Herigon JC, Williams DD, Williams AR, Newland JG. (2012). Impact of a Guideline on Management of Children Hospitalized With Community-Acquired Pneumonia. Pediatrics, 129(3), e597–e604. http://doi.org/10.1542/peds.2011-1533. Harrison CJ, Woods C, Stout G, et al. Susceptibilities of Haemophilus influenzae, Streptococcus pneumoniae, including serotype 19A, and Moraxella catarrhalis paediatric isolates from 2005 to 2007 to commonly used antibiotics. J Antimicrob Chemother. 2009;63:511–9. Kyaw MH, Lynfield R, Schaffner W, et al. Effect of introduction of the pneumococcal conjugate vaccine on drug-resistant Streptococcus pneumoniae. N Engl J Med.2006; 354:1455–63.

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Don't use antibiotics in patients with recent C. difficile without convincing evidence of need. Antibiotics pose a high risk of C. difficile recurrence.

Rationale and Comments

C. difficile can be a life-threatening illness and is generally caused by antibiotics killing normal bacteria in the intestine. Patients recovering from C. difficile are three times as likely to have a recurrence if they receive an antibiotic in the following month. However, unnecessary antibiotics are often used in this population – primarily for misdiagnosed urinary tract infection or pneumonia.

Sponsoring Organizations

Society for Healthcare Epidemiology of America

Sources

Expert consensus

References

Shaughnessy MK, Amundson WH, Kuskowski MA, DeCarolis DD, Johnson JR, Drekonja DM. Unnecessary antimicrobial use in patients with current or recent Clostridium difficile infection. Infect Control Hosp Epidemiol. 2013 Feb;34(2):109-16. Drekonja DM, Amundson WH, Decarolis DD, Kuskowski MA, Lederle FA, Johnson JR. Antimicrobial use and risk for recurrent Clostridium difficile infection. Am J Med. 2011 Nov;124(11):1081.e1-7. Dubberke ER, Carling P, Carrico R, Donskey CJ, Loo VG, McDonald LC, Maragakis LL, Sandora TJ, Weber DJ, Yokoe DS, Gerding DN. Strategies to prevent Clostridium difficile infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014 Sep;35 Suppl 2:S48-65.

292

Don't use herpes simplex virus (HSV) polymerase chain reaction testing for genital HSV infection screening in adults and adolescents. Real-time HSV polymerase chain reaction testing should only be used to confirm herpes diagnosis in patients with suspected herpes.

Rationale and Comments

HSV shedding is intermittent. Therefore, testing swabs from asymptomatic patients is not recommended for routine diagnosis since it is unlikely to yield confirmation of carrier status. However, laboratory confirmation in all patients with suspected herpes is recommended. HSV DNA detection by real-time polymerase chain reaction is considered the gold standard for diagnosis. Swabs for testing are taken from the base of the lesion (vesicles should be unroofed with a needle or scalpel blade). HSV typing into HSV-1 and HSV-2 is recommended in all patients with first-episode genital herpes to guide counseling and management.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

Centers for Disease Control and Prevention

References

Patel R, et al. 2017 European guidelines for the management of genital herpes. Int J STD AIDS. 2017;28:1366-1379. Workowski KA. Centers for Disease Control and Prevention sexually transmitted diseases treatment guidelines. Clin Infect Dis. 2015;61:S759-S762. Ong JJ, et al. Clinical characteristics of herpes simplex virus urethritis compared with chlamydial urethritis among men. Sex Transm Dis. 2017;44(2):121-125. Centers for Disease Control and Prevention. Genital herpes – CDC fact sheet (detailed). August 2017. https://www.cdc.gov/std/herpes/stdfact-herpes-detailed.htm

430

Avoid prophylactic antibiotics for the treatment of mitral valve prolapse.

See Cardiovascular.

Don't routinely prescribe antibiotics for inflamed epidermal cysts.

See Dermatologic.

Don't use antibiotic therapy for stasis dermatitis of lower extremities.

See Dermatologic.

Avoid antibiotics and wound cultures in emergency department patients with uncomplicated skin and soft tissue abscesses after successful incision and drainage and with adequate medical follow-up.
See Emergency Medicine.

Avoid placing indwelling urinary catheters in the emergency department for either urine output monitoring in stable patients who can void, or for patient or staff convenience.
See Emergency Medicine.

Don't order a comprehensive stool ova and parasite microscopic exam on patients presenting with diarrhea lasting less than seven days who have no immunodeficiency or no history of living in or traveling to endemic areas where gastrointestinal parasitic infections are prevalent. If symptoms of infectious diarrhea persist for seven days or longer, start with molecular or antigen testing and next consider a full ova and parasite microscopic exam if other testing is negative.
See Gastroenterologic.

Don't repeat hepatitis C viral load testing outside of antiviral therapy.
See Gastroenterologic.

Don't routinely test for community gastrointestinal stool pathogens in hospitalized patients who develop diarrhea after day 3 of hospitalization.
See Gastroenterologic.

Don't start IV antibiotic therapy on well-appearing newborn infants with isolated risk factors for sepsis such as maternal chorioamnionitis, prolonged rupture of membranes, or untreated Group B Streptococcal colonization. Use clinical tools such as an evidence-based sepsis risk calculator to guide management.
See Neonatology.

Don't use vancomycin or carbapenems empirically for neonatal intensive care patients unless an infant is known to have a specific risk for pathogens resistant to narrower-spectrum agents.
See Neonatology.

Don't perform third trimester Group B streptococcus (GBS) culture in patients with GBS bacteriuria during pregnancy.
See Obstetric.

Don't order antibiotics for adenoviral conjunctivitis.
See Ophthalmologic.

Don't routinely use MRI to diagnose bone infection (osteomyelitis) in the foot.
See Orthopedic.

Avoid prescribing antibiotics in the emergency department for uncomplicated sinusitis.
See Otolaryngologic.

Don't order more than one CT scan of the paranasal sinuses within 90 days to evaluate uncomplicated chronic rhinosinusitis patients when the paranasal sinus CT obtained is of adequate quality and resolution to be interpreted by the clinician and used for clinical decision-making and/or surgical planning.
See Otolaryngologic.

Don't prescribe antibiotics for otitis media in children aged two to 12 years with nonsevere symptoms where the observation option is reasonable.
See Otolaryngologic.

Don't prescribe oral antibiotics for uncomplicated external otitis.
See Otolaryngologic.

Don't prescribe oral antibiotics for uncomplicated tympanostomy tube otorrhea.
See Otolaryngologic.

Don't routinely obtain radiographic imaging for patients who meet diagnostic criteria for uncomplicated acute rhinosinusitis.
See Otolaryngologic.

Don't routinely prescribe antibiotics for acute, mild to moderate sinusitis unless symptoms (which must include purulent nasal secretions and maxillary pain or facial or dental tenderness to percussion) last at least seven days or symptoms worsen after initial clinical improvement.
See Otolaryngologic.

Don't perform a bagged urine specimen for urine culture to confirm UTI in a child who has not been potty trained.
See Pediatric.

Don't perform heterophile antibody (monospot) testing to diagnose acute Epstein-Barr virus infection in children younger than five years.
See Pediatric.

Don't place peripherally inserted central catheters and/or use prolonged intravenous antibiotics in otherwise healthy children with infections that can be transitioned to an appropriate oral agent.
See Pediatric.

Don't place peripherally inserted central catheters and/or use prolonged intravenous antibiotics in otherwise healthy children with infections that can be transitioned to an appropriate oral agent.
See Pediatric.

Don't use broad-spectrum antibiotics such as ceftriaxone for children hospitalized with uncomplicated CAP. Use narrow-spectrum antibiotics such as penicillin, ampicillin, or amoxicillin.
See Pediatric.

Don't use systemic corticosteroids in children younger than two years with an uncomplicated lower respiratory tract infection.
See Pediatric.

Don't screen for genital herpes simplex virus infection in asymptomatic adults, including pregnant women.
See Preventive Medicine.

Don't test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history and appropriate exam findings.
See Rheumatologic.

Don't place, or leave in place, peripherally inserted central catheters for patient or provider convenience.
See Surgical.

Don't use a broad spectrum antimicrobial agent for perioperative prophylaxis or continue prophylaxis after the incision is closed for uncomplicated clean and clean-contaminated procedures.
See Surgical.

Avoid ordering follow-up urine cultures after treatment for an uncomplicated urinary tract infection in patients that show evidence of clinical resolution of infection.
See Urologic.

Avoid presumptive antibiotic treatment of recurrent UTIs in women without first obtaining a urinalysis (culture and sensitivity).
See Urologic.

Avoid using a fluoroquinolone antibiotic for the first-line treatment of uncomplicated UTIs in women.
See Urologic.

Don't obtain a urine culture unless there are clear signs and symptoms that localize to the urinary tract.
See Urologic.

Don't order urine cultures unless patients have symptoms consistent with UTI.
See Urologic.

Don't perform voiding cystourethrogram routinely in first febrile urinary tract infection (UTI) in children aged two to 24 months.
See Urologic.

Don't place or maintain a urinary catheter in a patient unless there is a specific indication to do so.
See Urologic.

Don't prescribe antimicrobials to patients using indwelling or intermittent catheterization of the bladder unless there are signs and symptoms of urinary tract infection.
See Urologic.

Don't screen for UTI in asymptomatic patients who perform clean intermittent catheterization.
See Urologic.

Don't treat uncomplicated cystitis in women with fluoroquinolones if other oral antibiotic treatment options exist.
See Urologic.

Avoid routine daily chest radiographs without an indication for intubated infants.

Rationale and Comments

Although intermittent chest radiographs may identify unexpected findings, there is no evidence documenting the effectiveness of daily chest X-rays to reduce adverse outcomes. Further, this practice is associated with increased radiation exposure.

Sponsoring Organizations

American Academy of Pediatrics - Section on Perinatal Pediatrics

Sources

Expert consensus

References

Greenough A, Dimitriou G, Alvares BR, Karani J. Routine daily chest radiographs in ventilated, very low birth weight infants. Eur J Pediatr. 2001 Mar;160(3):147-9. Spitzer AR, Greer JG, Antunes M, Szema KF, Gross GW. The clinical value of screening chest radiography in the neonate with lung disease. Clin Pediatr (Phila). 1993 Sep;32(9):514-9.

279

Avoid routine screening term-equivalent or discharge brain MRIs in preterm infants.

Rationale and Comments

Findings on term-equivalent MRI correlate with neurodevelopmental outcomes at discharge and at 2 and 5 years of age. There is, however, insufficient evidence that the routine use of term-equivalent or discharge screening brain MRIs in preterm infants improves long-term outcome.

Sponsoring Organizations

American Academy of Pediatrics - Section on Perinatal Pediatrics

Sources

Expert consensus

References

Iwata S, Nakamura T, Hizume E, Kihara H, Takashima S, Matsuishi T, Iwata O. Qualitative brain MRI at term and cognitive outcomes at 9 years after very preterm birth. Pediatrics. 2012 May;129(5):e1138-47. Janvier A, Barrington K. Trying to predict the future of ex-preterm infants: who benefits from a brain MRI at term? Acta Paediatr. 2012 Oct;101(10):1016-7. Miller SP, Ferriero DM, Leonard C, Piecuch R, Glidden DV, Partridge JC, Perez M, Mukherjee P, Vigneron DB, Barkovich AJ. Early brain injury in premature newborns detected with magnetic resonance imaging is associated with adverse early neurodevelopmental outcome. J Pediatr. 2005 Nov;147(5):609-16. Nongena P, Ederies A, Azzopardi DV, Edwards AD. Confidence in the prediction of neurodevelopmental outcome by cranial ultrasound and MRI in preterm infants. Arch Dis Child Fetal Neonatal Ed. 2010 Nov; 95(6):F388-90. Pearce R, Baardsnes J. Term MRI for small preterm babies: do parents really want to know and why has nobody asked them? Acta Paediatr. 2012 Oct;101(10):1013-5. Setänen S, Haataja L, Parkkola R, Lind A, Lehtonen L. Predictive value of neonatal brain MRI on the neurodevelopmental outcome of preterm infants by 5 years of age. Acta Paediatr. 2013 May;102(5):492-7. Woodward LJ, Anderson PJ, Austin NC, Howard K, Inder TE. Neonatal MRI to predict neurodevelopmental outcomes in preterm infants. N Engl J Med. 2006 Aug 17; 355(7):685-94. Woodward LJ, Clark CA, Bora S, Inder TE. Neonatal white matter abnormalities an important predictor of neurocognitive outcome for very preterm children. PLoS One. 2012;7(12):e51879.

280

Avoid routine use of pneumograms for pre-discharge assessment of ongoing and/or prolonged apnea of prematurity.

Rationale and Comments

Cardiorespiratory events are common in both term and preterm infants. Although there may be a role for pneumograms in selected cases where the etiology of the events is in doubt, they have not been shown to reduce acute life-threatening events or mortality from their routine use.

Sponsoring Organizations

American Academy of Pediatrics - Section on Perinatal Pediatrics

Sources

NULL

References

Di Fiore T. Use of sleep studies in the neonatal intensive care unit. Neonatal Netw. 2005 Jan;24(1):23-30. Ramanathan R, Corwin MJ, Hunt CE, Lister G, Tinsley LR, Baird T, Silvestri JM, Crowell DH, Hufford D, Martin RJ, Neuman MR, Weese-Mayer DE, Cupples LA, Peucker M, Willinger M, Keens TG; Collaborative Home Infant Monitoring Evaluation (CHIME) Study Group. Cardiorespiratory events recorded on home monitors: comparison of healthy infants with those at increased risk for SIDS. JAMA. 2001 May 2;285(17):2199-207.

278

Don't initiate phototherapy in term or late preterm well-appearing infants with neonatal hyperbilirubinemia if their bilirubin is below levels at which the AAP guidelines recommend treatment.

Rationale and Comments

The risk of poor neurologic outcomes, such as cerebral palsy due to kernicterus, is extremely low for term and late preterm newborns with modestly elevated bilirubin levels. Confirmed cases of kernicterus have average bilirubin levels near 40 mg/dL, and are typically associated with hemolysis. While phototherapy for bilirubin values above published thresholds may be useful to prevent severe hyperbilirubinemia and exchange transfusions, its use for bilirubin values below published thresholds is unnecessary and is associated with additional costs and unnecessary hospitalization.

Sponsoring Organizations

Pediatric Hospital Medicine – SHM, AAP, APA

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics Subcommittee on Hyperbilirubinemia. Management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation [published correction appears in Pediatrics. 2004 Oct;114(4):1138]. Pediatrics. 2004;114(1):297-316. Wu YW, et al. Risk for cerebral palsy in infants with total serum bilirubin levels at or above the exchange transfusion threshold: a population-based study. JAMA Pediatr. 2015;169(3):239-246. Newman TB, et al. Outcomes among newborns with total serum bilirubin levels of 25 mg per deciliter or more. NEJM. 2006;354(18):1889-1900. Newman TB, et al. Numbers needed to treat with phototherapy according to American Academy of Pediatrics guidelines. Pediatrics. 2009;123(5):1352-1359. Kuzniewicz MW, et al. Incidence, etiology, and outcomes of hazardous hyperbilirubinemia in newborns. Pediatrics. 2014;134(3):504-509. Kuzniewicz MW, et al. Impact of universal bilirubin screening on severe hyperbilirubinemia and phototherapy use. Pediatrics. 2009;124(4):1031-1039. Wickremasinghe AC, et al. Neonatal phototherapy and infantile cancer. Pediatrics. 2016;137(6):e20151353.

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Don't order a screening hip ultrasound to rule out developmental hip dysplasia or developmental hip dislocation if the baby has no risk factors and has a clinically stable hip examination.

Rationale and Comments

Hip dysplasia/dislocation is relatively rare, with incidence of approximately 7 per 1,000 births. Studies have shown that universal screening programs for developmental hip instability using ultrasounds to assess otherwise normal appearing hips have a nearly negligible positive yield. There is a substantial false positive rate, with an associated increase in treatment rate, suggesting that babies without hip pathology are being treated. When there are no physical findings or underlying risk factors for hip dysplasia/dislocation in a newborn, a hip ultrasound is costly, time-intensive and the findings may be misleading to parents and physicians. This recommendation is in accordance with the 2016 AAP clinical report regarding the use of ultrasound in early detection of developmental dysplasia of the hip (see reference: "Evaluation and Referral for Developmental Dysplasia of the Hips in Infants").

Sponsoring Organizations

American Academy of Pediatrics – Section on Orthopaedics and the Pediatric Orthopaedic Society of North America

Sources

Prospective cohort studies

References

Mahan ST, Katz JN, Kim YJ. To screen or not to screen? A decision analysis of the utility of screening for developmental dysplasia of the hip. J Bone Joint Surg Am. 2009:91(7):1705-1719. Laborie LB, Markestad TH, Davidsen H. Bruras KR, Aukland SM, Bjorlykke JA, Reigstad H. Indrekvam K, Lehmann TG, Engesaeter IO, Engesaeter LB, Rosendahl K. Selective ultrasound screening for developmental hip dysplasia: effect on management and late detected cases. A prospective study during 1991-2006. Pediatri Radiol. 2014;44 (4): 410-424. Shorter D, Hong T, Osborn DA. Cochrane Review: Screening programs for developmental dysplasia of the hip in newborn infants. Evid Based Child Health. 2013;8(1):11-54. Shaw BA, Segal LS, Section on Orthopaedics. Evaluation and referral for developmental dysplasia of the hip in infants. Pediatric 2016;138(6).

Don't perform newborn clamp circumcision in boys with anatomic penile anomalies including hypospadias, chordee, penile torsion, or penoscrotal webbing, without first consulting with a urologist.

Rationale and Comments

In 2012, the American Academy of Pediatrics Task Force on Circumcision listed hypospadias, congenital chordee, and deficient shaft skin (penoscrotal fusion/webbing, or buried penis) as contraindications to newborn circumcision. For patients with hypospadias, preservation of the prepuce is important for use in future reconstruction. Additionally, abnormal urethral anatomy may predispose the patient to urethral injury during clamp circumcision. Best practice dictates consulting a urologist to help assess these anatomic penile anomalies prior to initiation of circumcision. Newborns with a circumferentially normal foreskin may undergo completion of clamp circumcision without concern for concealed hypospadias. In this situation, if a hypospadias is present, it is usually on the glans of the penis, and clamp circumcision should not increase the risk for future complications if hypospadias repair is needed.

Sponsoring Organizations

American Academy of Pediatrics - Section on Urology

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics Task Force on Circumcision. Male circumcision. Pediatrics. 2012;130(3):e756-e785. Lerman SE, Liao JC. Neonatal circumcision. Pediatr Clin North Am. 2001;48(6):1539-1557. Snodgrass WT, Khavari R. Prior circumcision does not complicate repair of hypospadias with an intact prepuce. J Urol. 2006;176(1):296-298. Chalmers D, Wiedel CA, Siparsky GL, et al. Discovery of hypospadias during newborn circumcision should not preclude completion of the procedure. J Pediatr. 2014;164(5):1171-1174.e1. Zamilpa I, Patel A, Booth J, Canon S. To finish the cut or not. Clin Pediatr (Phila). 2017;56(2):157-161.

Don't prescribe high-dose dexamethasone (0.5mg/kg per day) for the prevention or treatment of bronchopulmonary dysplasia in preterm infants.

Rationale and Comments

High-dose dexamethasone (0.5 mg/kg day) does not appear to confer additional therapeutic benefit over lower doses and is not recommended. High doses also have been associated with numerous short- and long-term adverse outcomes, including neurodevelopmental impairment.

Sponsoring Organizations

American Academy of Pediatrics

Sources

American Academy of Pediatrics guidelines

References

Watterberg KL; American Academy of Pediatrics Committee on Fetus and Newborn. Policy statement–postnatal corticosteroids to prevent or treat bronchopulmonary dysplasia. Pediatrics. 2010 Oct;126(4):800–8.

Don't routinely obtain a CT or MRI scan for infants with macrocephaly who are developmentally normal and clinically asymptomatic.

Rationale and Comments

Most infants with macrocephaly do not have abnormalities that require neuroimaging or neurosurgical evaluation. Imaging should generally be reserved for infants with clinical concerns such as abnormal neurological examination findings, significant developmental delay, or rapidly increasing head circumference measurements (such as those crossing growth curves). When imaging is indicated, head ultrasonography should typically be considered as the first-line test for infants with an open fontanelle.

Sponsoring Organizations

American Academy of Pediatrics – Section on Neurological Surgery

Sources

Retrospective cohort study

References

Haws ME, Linscott L, et al. A retrospective analysis of the utility of head computed tomography and/or magnetic resonance imaging in the management of benign macrocrania. J Pediatr. 2017;182:283-289.e1. Sampson MA, Berg AD, et al. Necessity of intracranial imaging in infants and children with macrocephaly. Pediatr Neurol. 2019;93:21-26.

Don't start IV antibiotic therapy on well-appearing newborn infants with isolated risk factors for sepsis such as maternal chorioamnionitis, prolonged rupture of membranes, or untreated Group B Streptococcal colonization. Use clinical tools such as an evidence-based sepsis risk calculator to guide management.

Rationale and Comments

Unnecessary exposure of infants to antibiotics is associated with increased parental anxiety, increased length of stay, increased cost, gut microbiome dysbiosis, necrotizing enterocolitis, and possibly allergic and autoimmune diseases. Antibiotic therapy often leads to transfers to higher levels of care and thus decreased maternal-infant bonding. The use of evidence-based sepsis calculators has demonstrated reductions in antibiotic use of 50% or more without a concomitant increase in the incidence of early-onset sepsis.

Sponsoring Organizations

Pediatric Hospital Medicine – SHM, AAP, APA

Sources

American Academy of Pediatrics guidelines

References

Puopolo KM, et al.; Committee on Fetus and Newborn; Committee on Infectious Diseases. Management of neonates born at ≥35 0/7 weeks' gestation with suspected or proven early-onset bacterial sepsis. Pediatrics. 2018;142(6):e20182894. Leonardi BM, et al. Utilization of a neonatal early-onset sepsis calculator to guide initial newborn management. Pediatr Qual Saf. 2019;4(5):e214. Goel N, et al. Screening for early onset neonatal sepsis: NICE guidance-based practice versus projected application of the Kaiser Permanente sepsis risk calculator in the UK population. Arch Dis Child Fetal Neonatal Ed. 2020;105(2):118-122. Kaiser Permanente Research. Neonatal Early-Onset Sepsis Calculator. https://neonatalsepsiscalculator.kaiserpermanente.org/

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Don't use vancomycin or carbapenems empirically for neonatal intensive care patients unless an infant is known to have a specific risk for pathogens resistant to narrower-spectrum agents.

Rationale and Comments

Antibiotics such as vancomycin and carbapenems are active against highly-antibiotic resistant bacteria unresponsive to other antibiotics. Overuse of these antibiotics can exert selection pressure and promote colonization and infection with increasingly resistant organisms, raising the specter of morbidity and mortality due to untreatable infection. Vancomycin in particular is commonly used as a first-line choice when infection is suspected in the newborn intensive care unit, despite evidence that there is no survival benefit attributed to empiric therapy for most infected infants. Guidelines have been developed that can safely limit the empiric use of vancomycin to those infants known to be colonized with MRSA.

Sponsoring Organizations

American Academy of Pediatrics – Committee on Infectious Diseases and the Pediatric Infectious Diseases Society

Sources

Cohort studies

References

Hsieh EM, Hornik CP, Clark RH, Laughon MM, Benjamin DK Jr, Smith PB; Best Pharmaceuticals for Children Act Pediatric Trials Network. Medication use in the neonatal intensive care unit. Am J Perinatol. 2014;31(9):811-821. Ericson JE, Thaden J, Cross HR, Clark RH, Fowler VG Jr, Benjamin DK Jr, Cohen-Wolkowiez M, Hornik CP, Smith PB; Antibacterial Resistance Leadership Group. No survival benefit with empirical vancomycin therapy for coagulase-negative staphylococcal bloodstream infections in infants. Pediatr Infect Dis J. 2015;34(4):371-375. Thaden JT, Ericson JE, Cross H, Bergin SP, Messina JA, Fowler VG Jr, Benjamin DK Jr, Clark RH, Hornik CP, Smith PB; Antibacterial Resistance Leadership Group. Survival Benefit of Empirical Therapy for Staphylococcus aureus Bloodstream Infections in Infants. Pediatr Infect Dis J. 2015;34(11):1175-1179. Chiu CH, Michelow IC, Cronin J, Ringer SA, Ferris TG, Puopolo KM. Effectiveness of a guideline to reduce vancomycin use in the neonatal intensive care unit. Pediatr Infect Dis J. 2011;30(4):273-278. Holzmann-Pazgal G, Khan AM, Northrup TF, Domonoske C, Eichenwald EC. Decreasing vancomycin utilization in a neonatal intensive care unit. Am J Infect Control. 2015;43(11):1255-1257.

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Avoid routine use of antireflux medications for treatment of symptomatic GERD or for treatment of apnea and desaturation in preterm infants.

See Gastroenterologic.

Avoid routine continuation of antibiotic therapy beyond 48 hours for initially asymptomatic infants without evidence of bacterial infection.

See Infectious Disease.

Don't separate mothers and their newborns at birth unless medically necessary. Instead, help the mother to place her newborn in skin-to-skin contact immediately after birth and encourage her to keep her newborn in her room during hospitalization after the birth.

See Obstetric.

Avoid nonsteroidal anti-inflammatory drugs (NSAIDs) in individuals with hypertension or heart failure or chronic kidney disease of all causes, including diabetes.

See Cardiovascular.

Don't perform routine cancer screening for dialysis patients with limited life expectancies without signs or symptoms.

Rationale and Comments

Due to high mortality among end-stage renal disease patients, routine cancer screening—including mammography, colonoscopy, prostate-specific antigen, and Pap smears—in dialysis patients with limited life expectancy, such as those who are not transplant candidates, is not cost-effective and does not improve survival. False-positive tests can cause harm: unnecessary procedures, overtreatment, misdiagnosis, and increased stress. An individualized approach to cancer screening incorporating patients' cancer risk factors, expected survival, and transplant status is required.

Sponsoring Organizations

American Society of Nephrology

Sources

American Society of Nephrology

References

U.S. Renal Data System. http://www.usrds.org. American Society of Nephrology American Society of Transplantation Archives of Internal Medicine Seminars in Dialysis

63

Don't request just a serum creatinine to test adult patients with diabetes and/or hypertension for chronic kidney disease; use the kidney profile (serum creatinine with eGFR and urinary albumin-creatinine ratio.)

Rationale and Comments

Use the National Kidney Foundation updated evidence-based kidney profile test to evaluate patients for chronic kidney disease with the following common tests to more effectively assess kidney function. § "Spot" urine for albumin-creatinine ratio to detect albuminuria § Serum creatinine to estimate glomerular filtration rate using the Chronic Kidney Disease Epidemiology Collaboration equation

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

KDOQI US Commentary on the 2012 KDIGO clinical practice guideline for the evaluation and management of CKD. Am J Kidney Dis. 2014;63:713-735. American Diabetes Association. 10. Microvascular Complications and Foot Care: Standards of Medical Care in Diabetes—2018. Diabetes Care. 2018;41(Suppl 1):S28-S37. Vassalotti JA, Centor R, Turner BJ, et al. A practical approach to detection and management of chronic kidney disease for the primary care clinician. Am J Med. 2015;129:153-162. Berns JS. Routine screening for CKD should be done in asymptomatic adults....selectively. Clin J Am Soc Nephrol. 2014;9:1988-1992. Matsushita K, et al. Clinical risk implications of the CKD Epidemiology Collaboration (CKD-EPI) equation compared with the Modification of Diet in Renal Disease (MDRD) Study equation for estimated GFR. Am J Kidney Dis. 2010;60(2):241-249. https://www.ascp.org/content/docs/default-source/get-involved-pdfs/istp-ckd/ckd-practice-algorithm.pdf

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Don't screen for renal artery stenosis in patients without resistant hypertension and with normal renal function, even if known atherosclerosis is present.

Rationale and Comments

Performing surgery or angioplasty to improve circulation to the kidneys has no proven preventive benefit, and shouldn't be considered unless there is evidence of symptoms, such as elevated blood pressure or decreased renal function.

Sponsoring Organizations

Society for Vascular Medicine

Sources

ACC/AHA guidelines

References

ACC/AHA 2005 practice guidelines for the management of patients with peripheral arterial disease (lower extremity, renal, mesenteric, and abdominal aortic): executive summary. Circulation. 2006;113;1474-1547.

37

Avoid nonsteroidal anti-inflammatory drugs (NSAIDs) in individuals with hypertension or heart failure or chronic kidney disease of all causes, including diabetes.

See Cardiovascular.

Don't place central lines or peripherally inserted PICCs in pediatric patients with advanced (Stage 3-5) chronic kidney disease/end-stage renal disease without consultation with pediatric nephrology due to goals to avoid adverse events, preserve long-term vascular access, and avoid unnecessary and costly procedures.

See Pediatric.

Avoid opioid misuse in patients with chronic pelvic pain without compromising care through education, responsible opioid prescribing, and advocacy.

Rationale and Comments

Patients have a right to appropriate assessment and management of pain; however, opioid misuse has become a public health crisis. It is essential that providers become familiar with published U.S. Food and Drug Administration and CDC plans and guidelines. Providers must also educate and screen for risk factors for opioid misuse and follow patients on chronic opioid therapy for any signs of misuse.

Sponsoring Organizations

American Association of Gynecologic Laparoscopists

Sources

Centers for Disease Control and Prevention

References

Phillips DM. JCAHO pain management standards are unveiled. JAMA 2000;284:428-429. Dowell, T.M. Haegerich, R. Chou, CDC guideline for prescribing opioids for chronic pain – United States, 2016, MMWR Recomm. Rep. 65 (1) (2016).

347

Avoid polysomnography in chronic insomnia patients unless symptoms suggest a comorbid sleep disorder.

Rationale and Comments

Chronic insomnia is diagnosed by a clinical evaluation that includes a thorough sleep history along with a medical, substance, and psychiatric history. Some instruments can be helpful at the clinical encounter; these include self-administered questionnaires, sleep logs completed at home, and symptom checklists. Although polysomnography may confirm self-reported symptoms of chronic insomnia, it does not provide additional information necessary for diagnosis of chronic insomnia. However, polysomnography is indicated in some specific circumstances; for example, when sleep apnea or sleep-related movement disorders are suspected, the initial diagnosis is uncertain, behavioral or pharmacologic treatment fails, or sudden arousals occur with violent or injurious behavior.

Sponsoring Organizations

American Academy of Sleep Medicine

Sources

Expert consensus

References

Schutte-Rodin S, Broch L, Buysse D, Dorsey C, Sateia M. Clinical guideline for the evaluation and management of chronic insomnia in adults. J Clin Sleep Med. 2008;4(5):487-504. Sateia M, Doghramji K, Hauri P, Morin CM. Evaluation of chronic insomnia. Sleep. 2000;23(2):243-308. Chesson A Jr, Hartse K, Anderson WM, Davila D, Johnson S, Littner M, Wise M, Rafecas J. Practice parameters for the evaluation of chronic insomnia. An American Academy of Sleep Medicine report. Standards of Practice Committee of the American Academy of Sleep Medicine. Sleep. 2000;23(2):237-41. Reite M, Buysse D, Reynolds C, Mendelson W. The use of polysomnography in the evaluation of insomnia. Sleep. 1995;18(1):58-70.

231

Avoid routine testing for antiepileptic drug levels in people with epilepsy.

Rationale and Comments

Antiepileptic drug level testing should not be routinely ordered when seizures are well controlled, and no adverse effect is suspected. The reference ranges should not be used as a rigid framework. The effectiveness and tolerability of treatments should be determined by the clinical responses. Antiepileptic drug levels should be ordered to address a specific question. Some examples include weight-based dosing adjustments in young children, adherence, suspected toxicity, and pregnant women.

Sponsoring Organizations

American Epilepsy Society

Sources

Cochrane Database of Systematic Reviews

References

Eadie MJ Therapeutic drug monitoring – antiepileptic drugs. Br J Clin Pharmacol. 1998;46:185-193. Patsalos PN et al. Antiepileptic drugs—best practice guidelines for therapeutic drug monitoring: A position paper by the subcommission on therapeutic drug monitoring, ILAE Commission on Therapeutic Strategies. Epilepsia 2008;49(7):1239-1276. St. Louis EK Monitoring Antiepileptic Drugs: A Level-Headed Approach. Current Neuropharmacology, 2009;7:115-119. Affolter N et al. Appropriateness of serum level determinations of antiepileptic drugs. Swiss Med Wkly. 2003;133:591-597. Tomson T et al. Therapeutic monitoring of antiepileptic drugs for epilepsy (Review). Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD002216. Copyright © 2010 The Cochrane Collaboration. John Wiley & Sons, Ltd. Walters RJL et al. Inappropriate requests for serum anti-epileptic drug levels in hospital practice. Q J Med 2004;97:337-341. Stepanova D, Beran RG. The benefits of antiepileptic drug (AED) blood level monitoring to complement clinical management of people with epilepsy. Epilepsy Behav. 2015; 42:7-9.

373

Avoid using opioids for the treatment of mild, acute pain. For moderate to severe acute pain, if opioids are used, they should be in conjunction with nonopioid methods with the lowest effective dose for the shortest required duration.

Rationale and Comments

Opioids have serious risks, including opioid use disorder and overdose. If opioid therapy is required, pain management with short-acting opioids should be the lowest effective dose for the shortest required duration, often no more than one week. A trial of nonopioid and nonpharmacologic alternatives is recommended for opioid-naïve patients. If opioids are used, they may be used in conjunction with nonopioid methods, when clinically appropriate. For patients already on opioids for chronic pain, it is not recommended to abruptly stop or taper opioid therapy to avoid withdrawal, mental health crisis, and overdose. Individualized treatment plans should be made with the patient and outpatient clinicians, whenever possible. It is important for the clinician to assess potential biases that may affect the treatment of pain.

Sponsoring Organizations

Society of Hospital Medicine – Adult Hospital Medicine

Sources

CDC guideline

References

Wood E, Simel DL, Klimas J. Pain management with opioids in 2019-2020. JAMA. 2019;322(19):1912-1913.
Chou R, Gordon DB, de Leon-Casasola OA, et al. Management of postoperative pain: a clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council [published correction appears in J Pain. 2016;17(4):508-510]. J Pain. 2016;17(2):131-157.
Hachimi-Idrissi S, Dobias V, Hautz WE, et al. Approaching acute pain in emergency settings; European Society for Emergency Medicine (EUSEM) guidelines-part 2: management and recommendations. Intern Emerg Med. 2020;15(7):1141-1155.
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Agnoli A, Xing G, Tancredi DJ, et al. Association of dose tapering with overdose or mental health crisis among patients prescribed long-term opioids [published corrections appear in JAMA. 2022;327(7):687, and JAMA. 2022;327(7):688]. JAMA. 2021;326(5):411-419.

510

CT scans are not necessary in the evaluation of minor head injuries.

Rationale and Comments

Head injuries occur commonly in children and adolescents. Approximately 50% of children who visit hospital emergency departments with a head injury are given a CT scan, a considerable number of which are unnecessary. Unnecessary exposure to x-rays poses considerable danger to children, including increasing the lifetime risk of cancer because a child's brain tissue is more sensitive to ionizing radiation. They also impose undue costs to the health care system. Clinical observation prior to CT decision making for children with minor head injuries is an effective approach.

Sponsoring Organizations

American Academy of Pediatrics

Sources

Systematic review and meta-analysis

References

Dunning J, et al. A meta-analysis of variables that predict significant intracranial injury in minor head trauma. Arch Dis Child. 2004;89(7):653-9. Kuppermann N, et al. Identification of children at very low-risk of clinically-important brain injuries after head trauma: a prospective cohort study. 2009;374(9696):1160-70. Nigrovic LE, et al. The effect of observation on cranial computed tomography utilization for children after blunt head trauma. Pediatrics. 2011;127(6):1067-73. Oman JA, et al. Performance of a decision-rule to predict need for computed tomography among children with blunt head trauma. Pediatrics. 2006;117(2):e238-46.

40

Do not prescribe long-term treatment with antiepileptic drugs after withdrawal seizures.

Rationale and Comments

Alcohol and other withdrawal seizures occur due to abrupt cessation in a person who is substance-dependent, and can usually be readily identified by the clinical scenario. Once the acute detoxification is complete, anti-epileptic drugs are not indicated. It is, however, important to identify scenarios where there is increased risk of epilepsy, such as prior epilepsy diagnosis, acute intoxication related brain injury, and seizures with history of alcohol use but without acute withdrawal.

Sponsoring Organizations

American Epilepsy Society

Sources

Expert consensus

References

Rogawski, MA. Update on the Neurobiology of Alcohol Withdrawal Seizures. Epilepsy Curr. 2005;5(6):225–230. Leach JP, Mohanraj R, Borland W. Alcohol and drugs in epilepsy: Pathophysiology, presentation, possibilities, and prevention. Epilepsia. 2012;53:48–57. Rogawski, MA. Update on the Neurobiology of Alcohol Withdrawal Seizures. Epilepsy Curr. 20055(6):225–230.

376

Do not routinely perform brain imaging after acute seizure in patients with established epilepsy.

Rationale and Comments

Unnecessary brain imaging increases radiation exposure and medical cost without benefit, yet is often done after habitual seizures when the patient is at baseline. Brain imaging should be considered in certain clinical situations, such as when there is seizure-related trauma or post-ictal deficits on exam.

Sponsoring Organizations

American Epilepsy Society

Sources

AAN and ACEP guidelines

References

Stiell IG, Clement CM, Rowe BH, Schull MJ, Brison R, Cass D, Eisenhauer MA, McKnight RD, Bandiera G, Holroyd B, Lee JS, Dreyer J, Worthington JR, Reardon M, Greenberg G, Lesiuk H, MacPhail I, Wells GA. Comparison of the Canadian CT Head Rule and the New Orleans Criteria in patients with minor head injury. JAMA. 2005;294(12):1511-8. Kavalci C, Aksel G, Salt O, Yilmaz MS, Demir A, Kavalci G, Akbuga Ozel B, Altinbilek E, Durdu T, Yel C, Durukan P, Isik B Comparison of the Canadian CT head rule and the new orleans criteria in patients with minor head injury. World J Emerg Surg. 2014. Harden CL, Huff JS, Schwartz TH, Dubinsky RM, Zimmerman RD, Weinstein S, Foltin JC, Theodore WH; Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Reassessment: neuroimaging in the emergency patient presenting with seizure (an evidence-based review): report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology. 2007;69(18):1772-80. American College of Emergency Physicians, Best Practices for Seizure Management in the Emergency Department. http://www.acepnow.com/article/best-practicesseizure-management-emergency-department/.

377

Do not treat females of childbearing potential with Valproate if other effective treatments are available.

Rationale and Comments

The risks to an unborn child from valproate are significant enough to warrant avoiding this medication if at all possible. If valproate is deemed necessary, aim for lowest effective dose. Females on valproate should receive risk counseling prior to conception including possibility of major malformations from first trimester exposure, and long-term cognitive and behavioral effects (lower IQ and increased risk of autism spectrum disorder and attention-deficit/hyperactivity disorder) throughout pregnancy.

Sponsoring Organizations

American Epilepsy Society

Sources

Expert consensus

References

Campbell E1, Kennedy F2, Russell A3, Smithson WH4, Parsons L5, Morrison PJ6, Liggan B7, Irwin B1, Delanty N8, Hunt SJ1, Craig J1, Morrow J1. Malformation risks of antiepileptic drug mo*Díaz S1, Smith CR, Shen A, Mittendorf R, Hauser WA, Yerby M, Holmes LB; North American AED Pregnancy Registry; North American AED Pregnancy Registry. Comparative safety of antiepileptic drugs during pregnancy. Neurology. 2012;78(21):1692-9. Epub 2012 May 2. Tomson T1, Battino D, Bonizzoni E, Craig J, Lindhout D, Sabers A, Perucca E, Vajda F; EURAP study group. Dose-dependent risk of malformations with antiepileptic drugs: an analysis of data from the EURAP epilepsy and pregnancy registry. Lancet Neurol. 2011;10(7):609-17. Epub 2011 Jun 5. Tomson T1, Marson A2,3, Boon P4, Canevini MP5, Covanis A6, Gaily E7, Kälviäinen R8,9, Trinka E10,11,12. Valproate in the treatment of epilepsy in girls and women of childbearing potential. Epilepsia. 2015;56(7):1006-19. Epub 2015 May 16.

374

Don't choose opioids or narcotics as the first choice of treatment for neuropathic pain.

Rationale and Comments

Opioids and narcotics include drugs such as hydrocodone, oxycodone, fentanyl, and others. Risks related to the use of these drugs include uncontrollable sleepiness and slow or stopped breathing. They are a leading cause of addiction and avoidable death. Opioids may be less risky when used for a short time after some surgeries or when used for pain related to deadly cancers. There are many effective, safer options for neuropathic pain.

American Association of Neuromuscular & Electrodiagnostic Medicine

Sources

Expert consensus

References

Scholten PM, Harden RN. Assessing and treating patients with neuropathic pain. PM R. 2015;7(11Suppl):S257-69.

335

Don't continue treatment for hepatic encephalopathy indefinitely after an initial episode with an identifiable precipitant.

Rationale and Comments

In circumstances where the precipitating factors are identified and well-controlled (e.g., recurrent infections, variceal bleeding) or liver function or nutritional status improved, prophylactic therapy may be discontinued.

Sponsoring Organizations

American Association for the Study of Liver Diseases

Sources

American Association for the Study of Liver Diseases guideline

References

Amodio P, et al. Practice Guidelines Committee of the American Association for the Study of Liver Diseases. Hepatic encephalopathy in chronic liver disease. Hepatology. 2014; [In Press].

202

Don't do an MRI scan of the spine or brain for patients with only peripheral neuropathy (without signs or symptoms suggesting a brain or spine disorder).

Rationale and Comments

Because the vast majority of people with peripheral neuropathy (also called polyneuropathy) have the longest nerves of the body primarily affected (mostly in the toes and feet, but sometimes also in the hands), there is essentially no justification for MRI of the brain or spine in these cases.

Sponsoring Organizations

American Association of Neuromuscular & Electrodiagnostic Medicine

Sources

American Academy of Neurology guidelines

References

England, JD Gronseth GS, Franklin G, Carter GT, Kinsella LJ, Cohen JA, Asbury AK, Szigeti K, Lupski JR, Latov N, Lewis RA, Low PA, Fisher MA, Herrmann DN, Howard JF Jr, Lauria G, Miller RG, Polydefkis M, Sumner AJ; American Academy of Neurology. Practice Parameter: evaluation of distal symmetric polyneuropathy: role of laboratory and genetic testing (an evidence-based review). Report of the American Academy of Neurology, American Association of Neuromuscular and Electrodiagnostic Medicine, and American Academy of Physical Medicine and Rehabilitation. Neurology. 2009;72(2):185-92.

239

Don't do imaging for uncomplicated headache.

Rationale and Comments

Imaging headache patients absent specific risk factors for structural disease is not likely to change management or improve outcome. Those patients with a significant likelihood of structural disease requiring immediate attention are detected by clinical screens that have been validated in many settings. Many studies and clinical practice guidelines concur. Also, incidental findings lead to additional medical procedures and expense that do not improve patient well-being.

Sponsoring Organizations

American College of Radiology

Sources

American Academy of Neurology guidelines|American College of Radiology guidelines

References

Jordan JE, et al. ACR Appropriateness Criteria: headache. Reston, Va.: American College of Radiology; 2009. http://www.acr.org/~/media/ACR/Documents/AppCriteria/Diagnostic/Headache.pdf. Institute for Clinical Systems Improvement. Diagnosis and treatment of headache. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2011. Frishberg BM, et al. Evidence-based guidelines in the primary care setting: neuroimaging in patients with nonacute headache. American Academy of Neurology. 2000. http://www.aan.com/ professionals/practice/pdfs/gl0088.pdf. Silberstein SD. Practice parameter: evidence-based guidelines for migraine headache. Neurology. 2000;55:754. Edlow JA, et al. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with acute headache. Ann Emerg Med. 2008;52(4): 407-36.

38

Don't do nerve conduction studies without also doing a needle EMG for testing for radiculopathy, a pinched nerve in the neck or back.

Rationale and Comments

For diagnosis of a pinched nerve in the neck or back, nerve conduction studies alone cannot make the diagnosis. Needle EMG is necessary to identify and characterize the disease process.

Sponsoring Organizations

American Association of Neuromuscular & Electrodiagnostic Medicine

Sources

Expert consensus

References

Dillingham TR, Lauder TD, Andary M, Kumar S, Pezzin LE, Stephens RT, Shannon S. Identifying lumbrosacral radiculopathies: an optimal electromyographic screen. Am J Phys Med Rehabil. 2000;79(6):496-503. Dillingham TR, Lauder TD, Andary M, Kumar S, Pezzin LE, Stephens RT, Shannon S. Identification of cervical radiculopathies: optimizing the electromyographic screen. Am J Phys Med Rehabil. 2001;80(2):84-91.

238

Don't order "formal" swallow evaluation in stroke patients unless they fail their initial swallow screen.

Rationale and Comments

Dysphagia (difficulty swallowing) is a common disorder in patients who have suffered a stroke, occurring in 50% to 60% of acute stroke patients. It is associated with an increased risk of aspiration, pneumonia, prolonged hospital stay, disability, and death. Swallow screening is critical in the rapid identification of risk of aspiration in patients presenting with acute stroke symptoms. Because formal swallowing evaluation is not warranted in all patients with acute stroke, the purpose of a swallowing screen is to identify those who do not need a formal evaluation and who can safely take food and medication by mouth. Formal swallowing evaluations can be done in patients who don't pass the initial screening.

Sponsoring Organizations

American Academy of Nursing

Sources

Systematic review

References

Jauch, E., Saver, J., Adams, H., Bruno, A., Connors, J., Demaerschalk, B., Khatri, P., et al.(2013) AHA / ASA guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association / American Stroke Association. Stroke. 44, 870-947. Kenmuir, C., Hammer, M., Tudor, J., Reddy, V., Wechsler, L., Jadhav, A., (2015). Predictors of outcome in patients presenting with acute ischemic stroke and mild stroke scale scores. Journal of Stroke and Cerebrovascular Disease. 24(7) 1685-1689. Martino, R., Maki, E., Diamant, N. (2014) Identification of dysphagia using the Toronto Bedside Swallowing Screening Test (TOR-BSST): Are 10 teaspoons of water necessary? International Journal of Speech-Language Pathology. 16 (3): 193-198. Schepp, S., Tirschewll, D., Miller, R., Longstreth, W. (2012) Swallowing screens after acute stroke: A systematic review. Stroke. 43, 869-871. Summers, D. Leonard, A., Wentworth, D., Saver, J., Simpson, J., Spilker, J., Hock, N...et al. (2009). Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient. A scientific statement from the American Heart Association. Stroke. 40, 1-35.

325

Don't order "formal" swallow evaluation in stroke patients unless they fail their initial swallow screen.

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Dysphagia (difficulty swallowing) is a common disorder in patients who have suffered a stroke, occurring in 50% to 60% of acute stroke patients. It is associated with an increased risk of aspiration, pneumonia, prolonged hospital stay, disability, and death. Swallow screening is critical in the rapid identification of risk of aspiration in patients presenting with acute stroke symptoms. Because formal swallowing evaluation is not warranted in all patients with acute stroke, the purpose of a swallowing screen is to identify those who do not need a formal evaluation and who can safely take food and medication by mouth. Formal swallowing evaluations can be done in patients who don't pass the initial screening.

Sponsoring Organizations

American Academy of Nursing

Sources

Systematic review

References

Jauch, E., Saver, J., Adams, H., Bruno, A., Connors, J., Demaerschalk, B., Khatri, P., et al.(2013) AHA / ASA guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association / American Stroke Association. Stroke. 44, 870-947. Kenmuir, C., Hammer, M., Tudor, J., Reddy, V., Wechsler, L., Jadhav, A., (2015). Predictors of outcome in patients presenting with acute ischemic stroke and mild stroke scale scores. Journal of Stroke and Cerebrovascular Disease. 24(7) 1685-1689. Martino, R., Maki, E., Diamant, N. (2014) Identification of dysphagia using the Toronto Bedside Swallowing Screening Test (TOR-BSST): Are 10 teaspoons of water necessary? International Journal of Speech-Language Pathology. 16 (3): 193-198. Schepp, S., Tirschewll, D., Miller, R., Longstreth, W. (2012) Swallowing screens after acute stroke: A systematic review. Stroke. 43, 869-871. Summers, D. Leonard, A., Wentworth, D., Saver, J., Simpson, J., Spilker, J., Hock, N...et al. (2009). Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient. A scientific statement from the American Heart Association. Stroke. 40, 1-35.

536

Don't order apolipoprotein E genetic testing as a predictive test for Alzheimer disease.

Rationale and Comments

Apolipoprotein E is a susceptibility gene for later-onset Alzheimer disease, the most common cause of dementia. The presence of an μ4 allele is neither necessary nor sufficient to cause Alzheimer disease. The relative risk conferred by the μ4 allele is confounded by the presence of other risk alleles, gender, environment, and possibly ethnicity. Apolipoprotein E genotyping for Alzheimer disease risk prediction has limited clinical utility and poor predictive value.

Sponsoring Organizations

American College of Medical Genetics and Genomics

Sources

American College of Medical Genetics and Genomics guideline

References

American College of Medical Genetics, American Society of Human Genetics. Statement on the use of apolipoprotein E testing for Alzheimer disease. American College of Medical Genetics/American Society of Human Genetics Working Group on ApoE and Alzheimer disease. JAMA. 1995 Nov 22-29;274(20):1627-9. Goldman JS, Hahn SE, Catania JW, LaRusse-Eckert S, Butson MB, Rumbaugh M, Strecker MN, Roberts JS, Burke W, Mayeaux R, Bird T; American College of Medical Genetics and the National Society of Genetic Counselors. Genetic counseling and testing for Alzheimer disease: joint practice guidelines of the American College of Medical Genetics and the National Society of Genetic Counselors. Genet Med. 2011 Jun;13(6):597-605. Alzheimer's disease genetics fact sheet. Baltimore (MD): National Institute on Aging; 2011 Jun. 8 p. Report No.: 11-6424.

282

Don't order laboratory testing or a computed tomography scan of the head for a patient with an unprovoked, generalized seizure or a simple febrile seizure who has returned to baseline mental status.

Children presenting with unprovoked, generalized seizures or simple febrile seizures who return to their baseline mental status rarely have blood test or computed tomography (CT) scan findings that change acute management. CT scans are associated with radiation-related risk of cancer, increased cost of care, and added risk if sedation is required to complete the scan. A head CT scan may be indicated in patients with a new focal seizure, new focal neurologic findings, or high-risk medical history (e.g., neoplasm, stroke, coagulopathy, sickle cell disease, age younger than six months).

Sponsoring Organizations

American Academy of Pediatrics – Section on Emergency Medicine and the Canadian Association of Emergency Physicians

Sources

AAP guidelines
AAN guidelines

References

Hirtz D, Ashwal S, Berg A, et al. Practice parameter: evaluating a first nonfebrile seizure in children: report of the quality standards subcommittee of the American Academy of Neurology, The Child Neurology Society, and The American Epilepsy Society. Neurology. 2000;55(5):616-623.
Riviello JJ Jr, Ashwal S, Hirtz D, et al. Practice parameter: diagnostic assessment of the child with status epilepticus (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. Neurology. 2006;67(9):1542-1550.
McKenzie KC, Hahn CD, Friedman JN. Emergency management of the paediatric patient with convulsive status epilepticus. Paediatr Child Health. 2021;26(1):50-66.
Subcommittee on Febrile Seizures; American Academy of Pediatrics. Neurodiagnostic evaluation of the child with a simple febrile seizure. Pediatrics. 2011;127(2):389-394.

531

Don't perform CT imaging for headache when MRI is available, except in emergency settings.

Rationale and Comments

When neuroimaging for headache is indicated, MRI is preferred over CT, except in emergency settings when hemorrhage, acute stroke, or head trauma are suspected. MRI is more sensitive than CT for the detection of neoplasm, vascular disease, posterior fossa and cervicomedullary lesions, and high and low intracranial pressure disorders. CT of the head is associated with substantial radiation exposure, which may elevate the risk of later cancers, while there are no known biologic risks from MRI.

Sponsoring Organizations

American Headache Society

Sources

Expert consensus

References

Neuroimaging for the evaluation of chronic headaches: an evidence-based analysis. Ont Health Technol Assess Ser. 2010;10(26):1-57. Evans R. Diagnostic testing for migraine and other primary headaches. Neurol Clin. 2009 May;27(2):393-414. Semelka RC, Armao DM, Elias J Jr, Huda W. Imaging strategies to reduce the risk of radiation in CT studies, including selective substitution with MRI. J Magn Reson Imaging. 2007;25(5):900-09. Brenner DJ, Hall EJ. Computed tomography—an increasing source of radiation exposure. N Engl J Med. 2007;357(22):2277-84.

158

Don't perform electro-encephalography for headaches.

Rationale and Comments

Electroencephalography has no advantage over clinical evaluation in diagnosing headache, does not improve outcomes, and increases cost. Recurrent headache is the most common pain problem, affecting 15% to 20% of people.

Sponsoring Organizations

American Academy of Neurology

Sources

American Academy of Neurology guidelines

References

American Academy of Neurology. Practice parameter: the electroencephalogram in the evaluation of headache. http:// aan.com/professionals/practice/pdfs/pdf_1995_thru_1998/1995.45.1411.pdf.

39

Don't perform imaging of the carotid arteries for simple syncope without other neurologic symptoms.

Occlusive carotid artery disease does not cause fainting but rather causes focal neurologic deficits such as unilateral weakness. Thus, carotid imaging will not identify the cause of the fainting and increases cost. Fainting is a frequent complaint, affecting 40% of people during their lifetime.

Sponsoring Organizations

American Academy of Neurology

Sources

American Heart Association guidelines|National Institute for Health and Clinical Excellence guidelines

References

AHA/ACCF scientific statement on the evaluation of syncope. Circulation. 2006;113:316-27. The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology. Guidelines for the diagnosis and management of syncope. http://www.escardio. org/guidelines-surveys/esc-guidelines/guidelinesdocuments/ guidelines-syncope-ft.pdf. National Institute for Health and Clinical Excellence. Transient loss of consciousness ("blackouts") management in adults and young people. London, U.K.: Royal College of Physicians; 2010.

43

Don't perform neuroimaging studies in patients with stable headaches that meet criteria for migraine.

Rationale and Comments

Numerous evidence-based guidelines agree that the risk of intracranial disease is not elevated in migraine. However, not all severe headaches are migraine. To avoid missing patients with more serious headaches, a migraine diagnosis should be made after a careful clinical history and an examination that documents the absence of any neurologic findings such as papilledema. Diagnostic criteria for migraine are contained in the International Classification of Headache Disorders.

Sponsoring Organizations

American Headache Society

Sources

American Academy of Neurology guidelines

References

Frishberg BM. The utility of neuroimaging in the evaluation of headache in patients with normal neurologic examination. Neurology. 1994 Jul;44(7):1191-7. Silberstein SD. Practice parameter: evidence-based guidelines for migraine headache (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2000 Sep 26;55(6):754-62. Neuroimaging for the evaluation of chronic headaches: an Evidence-based analysis. Ont Health Technol Assess Ser. 2010;10(26):1-57. Headache Classification Subcommittee of the International Headache Society. International classification of headache disorders. Cephalalgia. 2004 Sep 1;4(1):1-151.

157

Don't prescribe neuropathic pain agents for painless neuropathy.

Rationale and Comments

Diabetic peripheral neuropathy is a progressive condition that may be painful or painless. Neuropathic pain agents (e.g., anticonvulsants, antidepressants) have been studied to reduce painful symptoms in those with neuropathy; however, they have no effect on painless neuropathy and their many side effects can cause unnecessary harm (e.g., unwanted drug interactions, increased fall risk).

Sponsoring Organizations

American Podiatric Medical Association

Sources

American Academy of Neurology guidelines

References

Bril V, England JD, Franklin GM, et al. Evidence-based guideline: treatment of painful diabetic neuropathy--report of the American Association of Neuromuscular and Electrodiagnostic Medicine, the American Academy of Neurology, and the American Academy of Physical Medicine & Rehabilitation. Muscle Nerve. 2011;43(6):910-917. Benbow SJ, Chan AW, Bowsher D, et al. A prospective study of painful symptoms, small-fibre function and peripheral vascular disease in chronic painful diabetic neuropathy. Diabet Med. 1994;11(1):17-21.

503

Don't prescribe opioid analgesics as first-line therapy to treat chronic non-cancer pain.

Rationale and Comments

Physicians should consider multimodal therapy, including non-drug treatments such as behavioral and physical therapies prior to pharmacological intervention. If drug therapy appears indicated, non-opioid medication (e.g., nonsteroidal anti-inflammatory drugs, anticonvulsants) should be trialed prior to commencing opioids.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

American Society of Anesthesiologists guidelines

References

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178

Don't prescribe opioid analgesics as long-term therapy to treat chronic non-cancer pain until the risks are considered and discussed with the patient.

Rationale and Comments

Patients should be informed of the risks of such treatment, including the potential for addiction. Physicians and patients should review and sign a written agreement that identifies the responsibilities of each party (e.g., urine drug testing) and the consequences of non-compliance with the agreement. Physicians should be cautious in coprescribing opioids and benzodiazepines. Physicians should proactively evaluate and treat, if indicated, the nearly universal side effects of constipation and low testosterone or estrogen.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

Expert consensus

References

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179

Don't prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders.

Rationale and Comments

These medications impair alertness and may produce dependence or addiction syndromes, an undesirable risk for the young, otherwise healthy people most likely to have recurrent headaches. They increase the risk that episodic headache disorders such as migraine will become chronic, and may produce heightened sensitivity to pain. Use may be appropriate when other treatments fail or are contraindicated. Such patients should be monitored for the development of chronic headache.

Sponsoring Organizations

American Headache Society

Sources

Expert consensus

References

Bigal ME, Lipton RB. Excessive opioid use and the development of chronic migraine. Pain. 2009 Apr;142(3):179-82. Bigal ME, Serrano D, Buse D, Scher AI, Stewart WF, Lipton RB. Migraine medications and evolution from episodic to chronic migraine: a longitudinal population-based study. Headache. 2008;48:1157-68. Scher AI, Stewart WF, Ricci JA, Lipton RB. Factors associated with the onset and remission of chronic daily headache in a population-based study. Pain. 2003;106(1-2):81-9. Katsarava Z, Schneeweiss S, Kurth T, Kroener U, Fritsche G, Eikermann A, Diener HC, Limmroth V. Incidence and predictors for chronicity of headache in patients with episodic migraine. Neurology. 2004 Mar;62(5):788-90.

160

Don't prescribe opioids for treatment of chronic or acute pain for workers who perform safety-sensitive jobs such as operating motor vehicles, forklifts, cranes, or other heavy equipment.

Rationale and Comments

The use of both strong and weak opioids has been consistently associated with increased risk of motor vehicle crashes as opioids produce sedation and hinder or impair higher cognitive function. Evidence suggests higher risk with acute opioid use, but risk remains elevated throughout treatment with any opioid and reverses on cessation. Workers who operate motor vehicles/heavy equipment should be precluded from performing these or other safety-sensitive job functions while under treatment with opioids.

Sponsoring Organizations

American College of Occupational and Environmental Medicine

Sources

American College of Occupational and Environmental Medicine guidelines

References

Weiss MS, Bowden K, Branco F, et al. Opioids Guideline [Internet]. In: Hegmann K, ed. ACOEM's Occupational Medicine Practice Guidelines. 3rd ed revised. Westminster, CO: Reed Group Ltd. Forthcoming 2014 March. p. 11.

184

Don't provide long-term opioid therapy for chronic non-cancer pain in the absence of clear and documented benefits to functional status and quality of life.

Rationale and Comments

Long-term use of opioids is common in the post-acute and long-term care setting. The Society's 2018 Position Statement on the use of opioids states that nursing home practitioners who prescribe opioids should do so based on thoughtful interprofessional assessment indicating a clear indication for opioid use. For admitted residents on long-term opioid therapy for chronic pain (not for cancer, palliative care, or end-of-life), tapering plans should be individualized and should minimize symptoms of opioid withdrawal while maximizing pain treatment with non-pharmacologic therapies and non-opioid medications. Periodic review to evaluate risk factors for potential harms should be incorporated into the individualized plan of care. In addition, clinicians should offer alternative behavioral therapies, non-opioid analgesics, and other non-pharmacologic treatments whenever available and appropriate.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Centers for Disease Control and Prevention

References

Chou R, et al. The effectiveness and risks of long-term opioid therapy for chronic pain: a systematic review for a National Institutes of Health Pathways to Prevention Workshop. Ann Intern Med. 2015;162(4):276-286. Dowell D, et al. CDC guideline for prescribing opioids for chronic pain - United States, 2016. MMWR Recomm Rep. 2016;65(1):1-49. Pimentel CB, et al. New initiation of long-acting opioids in long-stay nursing home residents. J Am Geriatr Soc. 2016;64(9):1772-1778. Hunnicutt JN, et al. Prevalence of long-term opioid use in long-stay nursing home residents. J Am Geriatr Soc. 2018;66(1):48-55. Fain KM, et al. Frequency and predictors of analgesic prescribing in U.S. nursing home residents with persistent pain. J Am Geriatr Soc. 2017;65(2):286-293. Kaldy J. PALTC practitioners step up to address opioid crisis. Caring for the Ages. 2019;20(4):19. Berna C, et al. Tapering long-term opioid therapy in chronic noncancer pain: evidence and recommendations for everyday practice. Mayo Clin Proc. 2015;90(6):828-842.

460

Don't recommend prolonged or frequent use of over-the-counter (OTC) pain medications for headache.

Rationale and Comments

OTC medications are appropriate treatment for occasional headaches if they work reliably without intolerable side effects. Frequent use (especially of caffeine-containing medications) can lead to an increase in headaches, known as medication overuse headache (MOH). To avoid this, OTC medication should be limited to no more than two days per week. In addition to MOH, prolonged overuse of acetaminophen can cause liver damage, while overuse of nonsteroidal anti-inflammatory drugs can lead to gastrointestinal bleeding.

Sponsoring Organizations

American Headache Society

Sources

American Academy of Neurology guidelines

References

Bigal ME, Serrano D, Buse D, Scher A, Stewart WF, Lipton RB. Acute migraine medications and evolution from episodic to chronic migraine: a longitudinal population-based study. Headache. 2008 Sep;48(8):1157-68. Bigal ME, Lipton RB. Excessive acute migraine medication use and migraine progression. Neurology. 2008 Nov 25;71(22):1821-8. Zwart JA, Dyb G, Hagen K, Svebak S, Holmen J. Analgesic use: a predictor of chronic pain and medication overuse headache—the Head-HUNT Study. Neurology. 2003;61:160-4. Silberstein SD. Practice parameter: evidence-based guidelines for migraine headache (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2000;55:754-62.

161

Don't recommend surgical deactivation of migraine trigger points outside of a clinical trial.

Rationale and Comments

The value of this form of "migraine surgery" is still a research question. Observational studies and a small controlled trial suggest possible benefit. However, large multicenter, randomized controlled trials with long-term follow-up are needed to provide accurate estimates of the effectiveness and harms of surgery. Long-term side effects are unknown but potentially a concern.

Sponsoring Organizations

American Headache Society

Sources

Expert consensus

References

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159

Don't routinely obtain CT scanning of children with mild head injuries.

Rationale and Comments

A mild traumatic brain injury is a temporary loss of neurologic function resulting from a blunt blow to the head or an acceleration/deceleration injury. There are predictors that a more severe injury has occurred and CT scanning may be appropriate. In patients younger than age two, a persistent altered mental status, non-frontal scalp hematoma, loss of consciousness for five seconds or more, severe injury mechanism, palpable skull fracture, or not acting normally according to the parent may be signs of a more serious injury. In patients older than two, prolonged abnormal mental status, any loss of consciousness, history of vomiting, severe injury mechanism, clinical signs of basilar skull fracture, or severe headache may also necessitate CT imaging. Any patient with a traumatic injury to the head that has any neurologic deficits should also be imaged if no other cause can be determined.

Sponsoring Organizations

American Association of Neurological Surgeons and Congress of Neurological Surgeons

Sources

Prospective cohort studies

References

Kuppermann N, et al. Identification of children at very low risk of clinically important brain injuries after head trauma: a prospective cohort study. Lancet. 2009 Oct 3;374(9696):1160–70.

207

Don't routinely order sleep studies (polysomnogram) to screen for/diagnose sleep disorders in workers suffering from chronic fatigue/insomnia.

Rationale and Comments

Workers who suffer from fatigue, but do not have other sleep apnea symptoms (e.g., waking with a very sore or dry throat, loud snoring) or risk factors (obesity, neck diameter, fullness of soft tissues in the oropharynx), may not need a polysomnogram (sleep study). While a polysomnogram is an essential tool in diagnosing many sleep disorders, it is not usually necessary in assessing insomnia. If lack of sufficient sleep or the job schedule is affecting the patient's sleep patterns, then behavioral modification and attempts to modify the sleep schedule and improve sleep hygiene should be attempted first.

Sponsoring Organizations

American College of Occupational and Environmental Medicine

Sources

Expert consensus

References

Lerman SE, Eskin E, Flower DJ, George EC, Gerson B, Hartenbaum N, Hursh SR, Moore-Ede M; American College of Occupational and Environmental Medicine Presidential Task Force on Fatigue Risk Management. Fatigue risk management in the workplace. J Occup Environ Med. 2012 Feb;54(2):231–58.

191

Don't routinely prescribe or continue acetyl cholinesterase inhibitors or N-methyl-D-aspartate antagonists in patients with advanced dementia.

Rationale and Comments

Use of acetyl cholinesterase inhibitors in mild to moderate dementia or N-methyl-D-aspartate antagonists in moderate to severe dementia may help with BPSD but have not been shown to prolong life. Once an individual is institutionalized, review of the risks and benefits of the medications should be reviewed periodically and deprescribed when no longer demonstrating benefit to the patient. Acetyl cholinesterase inhibitors can worsen anorexia and N-methyl-D-aspartate receptor agonists are not indicated with severe renal insufficiency, both of which could be present in the older population.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Expert consensus

References

Tjia J, et al. Daily medication use in nursing home residents with advanced dementia. J Am Geriatr Soc. 2010;58(5):880-888. Pelosi AJ, et al. Role of cholinesterase inhibitors in dementia care needs rethinking. BMJ. 2006;333(7566):491-493. Deardorff WJ, et al. The use of cholinesterase inhibitors across all stages of Alzheimer's disease. Drugs Aging. 2015;32(7):537-547. Palmer JB, et al. Use of drugs with anticholinergic properties among nursing home residents with dementia: a national analysis of Medicare beneficiaries from 2007 to 2008. Drugs Aging. 2015;32(1):79-86. Colloca G, et al.; SHELTER project. Inappropriate drugs in elderly patients with severe cognitive impairment: results from the shelter study. PLoS One. 2012;7(10):e46669.

458

Don't routinely screen for brain aneurysms in asymptomatic patients without a family or personal history of brain aneurysms, subarachnoid hemorrhage, or genetic disorders that may predispose to aneurysm formation.

Rationale and Comments

Family history of aneurysmal subarachnoid hemorrhage increases an individual's risk of harboring an aneurysm. Screening patients without a family history or without a personal history of subarachnoid hemorrhage is not indicated.

Sponsoring Organizations

American Association of Neurological Surgeons and Congress of Neurological Surgeons

Sources

American Heart Association guidelines

References

Bederson JB, et al. Recommendations for the management of patients with unruptured intracranial aneurysms: a statement for healthcare professionals from the Stroke Council of the American Heart Association. Circulation 2000, 102 (18): 2300–8.

208

Don't routinely use B vitamin supplements for the treatment of polyneuropathy or neuropathic pain unless a deficiency exists.

Rationale and Comments

There is no indication for supplementing with B vitamins in patients with polyneuropathy unless a deficiency has been detected or is highly likely secondary to other medical factors (e.g., gastric bypass surgery). In addition to being an unnecessary expense, excessive vitamin B-6 can lead to toxicity and cause worsening neuropathy.

Sponsoring Organizations

American Association of Neuromuscular & Electrodiagnostic Medicine

Sources

Expert consensus

References

Bril V et al. Neurology. 2011 May 17;76(20):1758-65. Kulkantrakorn K. Neurol Sci. 2014 Nov;35(11):1827-30. Pluijims et al. Pain Pract. 2011 Mar-Apr;11(2):191-8.

334

Don't routinely use seizure prophylaxis in patients following ischemic stroke.

Rationale and Comments

Seizures may complicate the clinical course of patients who have suffered a stroke. However, there is no evidence that using prophylactic antiepileptic drugs prevents seizure occurrence. For patients who suffer a seizure after a stroke, seizure treatment may be required.

Sponsoring Organizations

American Association of Neurological Surgeons and Congress of Neurological Surgeons

Sources

Cochrane Database of Systematic Reviews

References

Kwan J, Wood E. Antiepileptic drugs for the primary and secondary prevention of seizures after stroke. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD005398. doi: 10.1002/14651858.CD005398.pub2.

209

Don't use anticholinergic medications concomitantly with cholinesterase inhibitors in patients with dementia.

Rationale and Comments

Anticholinergics (e.g., overactive bladder medications, first-generation antihistamines) competitively inhibit binding of the neurotransmitter acetylcholine, thus reducing the effects of acetylcholine. Cholinesterase inhibitors, used in the treatment of dementia, act by blocking the enzyme acetylcholinesterase, thereby inhibiting acetylcholine degradation. Therefore, pharmacologic actions of anticholinergics and cholinesterase inhibitors oppose each other. Concomitant use of anticholinergics with cholinesterase inhibitors reduces the effectiveness of antidementia drugs, the benefits of which are modest at best; concomitant use increases the risk of adverse effects of anticholinergics and may also increase the rate of functional and cognitive decline. Medications with anticholinergic properties are commonly prescribed to treat comorbidities associated with dementia and sometimes the adverse effects of cholinesterase inhibitors. Patients with dementia are sensitive to cognitive impairment induced by medications with anticholinergic properties. In general, it has been recognized that anticholinergics adversely affect cognition in older patients and even more so with concomitant dementia diagnosis.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

Cohort studies

References

Valladales-Restrepo LF, Duran-Lengua M, et al. Potentially inappropriate prescriptions of anticholinergics drugs in Alzheimer's disease patients. Geriatrics Gerontol Int. 2019;19(9):913-917. Ah Y-M, Suh Y, et al. Effect of anticholinergic burden on treatment modification, delirium and mortality in newly diagnosed dementia patients starting a cholinesterase inhibitor: a population-based study. Basic Clin Pharmacol Toxicol. 2019;124(6):741-748. Gill S, Mamdani M, et al. A prescribing cascade involving cholinesterase inhibitors and anticholinergic drugs. Arch Intern Med. 2005;165:808-813. Boudreau DM, Yu O, et al. Concomitant use of cholinesterase inhibitors and anticholinergics: prevalence and outcomes. J Am Geriatr Soc. 2011;59:2069-2076. Beier MT. Cholinesterase inhibitors and anticholinergic drugs: is the pharmacologic antagonism myth or reality? J Am Med Dir Assoc. 2005;6(6):413-414. Sink KM, Thomas J, et al. Dual use of bladder anticholinergics and cholinesterase inhibitors: long-term functional and cognitive outcomes. J Am Geriatr Soc. 2008;56:847-853. Narayan SW, Pearson S, et al. Anticholinergic medicines use among older adults before and after initiating dementia medicines. Br J Clin Pharmacol. 2019;85(9):1957-1963. Knight R, Khondoker M, et al. A systematic review and meta-analysis of the effectiveness of acetylcholinesterase inhibitors and memantine in treating the cognitive symptoms of dementia. Dement Geriatr Cogn Disord. 2018;45(3-4):131-151. 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. American Geriatrics Society 2019 updated AGS Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc. 2019;67(4):674-694.

485

Don't use opioids or butalbital for migraine except as a last resort.

Rationale and Comments

Opioid and butalbital treatment for migraine should be avoided because more effective, migraine-specific treatments are available. Frequent use of opioids and butalbital can worsen headaches. Opioids should be reserved for those with medical conditions precluding use of migraine-specific treatments or for those who fail these treatments.

Sponsoring Organizations

American Academy of Neurology

Sources

Institute for Clinical Systems Improvement|U.S. Headache Consortium guidelines

References

U.S. Headache Consortium guidelines. http://www.americanheadachesociety.org/professional_resources/us_headache_consortium_guidelines/. European Federation of Neurological Societies guideline on drug treatment of migraine. http://www.efns.org/fileadmin/user_ upload/guidline_papers/EFNS_guideline_2009_drug_treatment_of_migraine.pdf. Institute for Clinical Systems Improvement. Headache, diagnosis and treatment of. https://www.icsi.org/guidelines__ more/catalog_guidelines_and_more/catalog_guidelines/catalog_neurological_guidelines/headache/.

44

Don't use phenytoin or fosphenytoin to treat seizures caused by drug toxicity or drug withdrawal.

Rationale and Comments

With rare exceptions, phenytoin is ineffective for convulsions caused by drug or medication toxicity. Phenytoin has been demonstrated to be ineffective for the treatment of isoniazid-induced seizures and withdrawal seizures and may potentially be harmful when used to treat seizures induced by theophylline or cyclic antidepressants. First-line treatment of toxin-induced seizures and withdrawal seizures is benzodiazepines, followed by additional medications that act through agonism at the μ γ-aminobutyric acid A receptor, such as barbiturates.

Sponsoring Organizations

American College of Medical Toxicology |American Academy of Clinical Toxicology

Expert consensus

References

Goldberg MJ, Spector R, Miller G. Phenobarbital improves survival in theophylline-intoxicated rabbits. J Toxicol Clin Toxicol. 1986;24(3):203–11. Blake KV, Massey KL, Hendeles L, Nickerson D, Neims A. Relative efficacy of phenytoin and phenobarbital for the prevention of theophylline-induced seizures in mice. Ann Emerg Med. 1988 Oct;17(10):1024–8. Miller J, Robinson A, Percy AK. Acute isoniazid poisoning in childhood. Am J Dis Child. 1980 Mar;134(3):290–2. Saad SF, el-Masry AM, Scott PM. Influence of certain anticonvulsants on the concentration of gamma-aminobutyric acid in the cerebral hemispheres of mice. Eur J Pharmacol 1972 Mar;17(3):386–92. Okamoto M, Rosenberg HC, Boisse NR. Evaluation of anticonvulsants in barbiturate withdrawal. J Pharmacol Exp Ther. 1977 Aug;202(2):479–89. Chance JF. Emergency department treatment of alcohol withdrawal seizures with phenytoin. Ann Emerg Med. 1991 May;20:520–2. Sharma AN, Hoffman RJ. Toxin-related seizures. Emerg Med Clin North Am. 2011 Feb;29(1):125-39. Hung OL, Shih RD. Antiepileptic drugs: the old and the new. Emerg Med Clin North Am. 2011 Feb;29(1):141-50

268

Don't use polysomnography to diagnose restless legs syndrome, except rarely when the clinical history is ambiguous and documentation of periodic leg movements is necessary.

Rationale and Comments

Restless legs syndrome is a neurologic disorder that can be diagnosed based on a patient's description of symptoms and additional clinical history. Polysomnography generally does not provide additional information necessary to make the diagnosis. If a patient's clinical history for RLS is ambiguous, PSG to assess for periodic leg movements may be useful to help confirm an RLS diagnosis.

Sponsoring Organizations

American Academy of Sleep Medicine

Sources

Expert consensus

References

Kushida CA, Littner MR, Morgenthaler T, Alessi CA, Bailey D, Coleman J Jr, Friedman L, Hirshkowitz M, Kapen S, Kramer M, Lee-Chiong T, Loube DL, Owens J, Pancer JP, Wise M. Practice parameters for the indications for polysomnography and related procedures: an update for 2005. Sleep. 2005;28(4):499-521. American Academy of Sleep Medicine. International classification of sleep disorders, 3rd ed. Darien, Ill.: American Academy of Sleep Medicine; 2014.

234

Don't use three or more central nervous system–active medications (antidepressants, benzodiazepines, Z-drugs [zopiclone, eszopiclone, and zaleplon], opioids, gabapentinoids, antipsychotics, antiepileptics), especially in older adults.

Rationale and Comments

There is strong evidence linking the use of multiple central nervous system (CNS)–active medications with serious adverse drug events in older adults. Specifically, older adults taking multiple CNS-active medications are at an increased risk for falls and fractures. Furthermore, the combined use of opioids with gabapentinoids increases the risk of opioid-related death. There is high-quality evidence for avoiding the combined use of benzodiazepine receptor agonists (benzodiazepines or Z-drugs) and moderate evidence for avoiding combinations of other CNS-active medications. Despite these medications being considered potentially inappropriate in older adults who have a history of falls, many continue to take them after a serious injury. Benzodiazepines and Z-drugs have minimal effectiveness for sleep, and safer alternatives are available (e.g., for anxiety, consider selective serotonin reuptake inhibitors; for insomnia, consider treatment of underlying conditions interrupting sleep and cognitive behavior therapy). Maintaining patients on the lowest effective dose and evaluating periodically for deprescribing are prudent strategies to mitigate harm from CNS-active medications.

Sponsoring Organizations

American Society of Consultant Pharmacists

Sources

AGS guideline

References

Maust DT, Strominger J, Bynum JPW, et al. Prevalence of psychotropic and opioid prescription fills among community-dwelling older adults with dementia in the US. JAMA. 2020;324(7):706-708.
Kurdi A. Opioids and gabapentinoids utilisation and their related-mortality trends in the United Kingdom primary care setting, 2010-2019: a cross-national, population-based comparison study. Front Pharmacol. 2021;12:732345.
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Bykov K, Bateman BT, Franklin JM, et al. Association of gabapentinoids with the risk of opioid-related adverse events in surgical patients in the United States. JAMA Netw Open. 2020;3(12):e2031647.
Sutton EL. Insomnia. Ann Intern Med. 2021;174(3):ITC33-ITC48.
Maust DT, Strominger J, Kim HM, et al. Prevalence of central nervous system-active polypharmacy among older adults with dementia in the US. JAMA. 2021;325(10):952-961.

517

In the evaluation of simple syncope and a normal neurologic examination don't obtain brain imaging studies (CT or MRI).

Rationale and Comments

In patients with witnessed syncope, but with no suggestion of seizure and no report of other neurologic symptoms or signs, the likelihood of a central nervous system cause of the event is extremely low and patient outcomes are not improved with brain imaging studies.

Sponsoring Organizations

American College of Physicians

Sources

National Institute for Health and Clinical Excellence guidelines|American College of Radiology guidelines

References

ACR-ASNR Practice guideline for the performance of computed tomography (CT). 2010. http://www.asnr.org/sites/default/files/guidelines/CT_Brain.pdf. National Institute for Health and Clinical Excellence. Transient loss of consciousness in adults and young people. August 2010. http://guidance.nice.org.uk/CG109.

42

Do not routinely order electroencephalogram as part of initial syncope work-up.

See Cardiovascular.

Avoid CT of the head in asymptomatic adult patients in the emergency department with syncope, insignificant trauma, and a normal neurological evaluation.

See Emergency Medicine.

Don't have genetic testing for nerve and muscle diseases prior to having a discussion with your physician or a genetics professional.

See Genetic.

Avoid routine screening term-equivalent or discharge brain MRIs in preterm infants.

See Neonatalogy.

Don't routinely obtain a CT or MRI scan for infants with macrocephaly who are developmentally normal and clinically asymptomatic.

See Neonatalogy.

Don't prescribe opioid pain medication in pregnancy without fully weighing the risks to the woman and her fetus, and discussing these risks with the patient.

See Obstetric.

Avoid lumbar spine imaging in the emergency department for adults with non-traumatic back pain unless the patient has severe or progressive neurologic deficits or is suspected of having a serious underlying condition (such as vertebral infection, cauda equina syndrome, or cancer with bony metastasis).

See Orthopedic.

Avoid protracted use of passive or palliative physical therapeutic modalities for low-back pain disorders unless they support the goal(s) of an active treatment plan.

See Orthopedic.

Avoid routine use of opioids for treatment of knee osteoarthritis, hip osteoarthritis, low back pain, or rotator cuff injury.
See Orthopedic.

Avoid routinely using irreversible surgical procedures such as braces, occlusal equilibration, and restorations as the first treatment of choice in the management of temporomandibular joint disorders.
See Orthopedic.

Don't obtain spinal imaging for patients with acute low-back pain during the six weeks after onset in the absence of red flags.
See Orthopedic.

Don't order an electromyogram for low back pain unless there is leg pain or sciatica.
See Orthopedic.

Don't prescribe lumbar supports or braces for the long-term treatment or prevention of low-back pain.
See Orthopedic.

Don't use electromyography (EMG) and nerve conduction studies (NCS) to determine the cause of axial lumbar, thoracic or cervical spine pain.
See Orthopedic.

Don't use slings for individuals with a hemiplegic arm that place the arm in a flexor pattern for extended periods of time.
See Orthopedic.

Don't order hair analyses for "environmental toxins" in children with behavioral or developmental disorders, including autism.
See Pediatric.

Don't routinely order a head computed tomography to assess for shunt failure in children with hydrocephalus.
See Pediatric.

Don't routinely order electroencephalography on neurologically healthy children who have a simple febrile seizure.
See Pediatric.

Don't routinely test urine for metals and minerals in children with autistic behaviors. Toxicologic exposures have not been conclusively associated with the development of autistic behaviors in children. Testing for metals and minerals may be harmful if treatment is guided on the basis of these results.
See Pediatric.

Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.
See Pediatric.

Don't screen for carotid artery stenosis in asymptomatic adult patients.
See Preventive Medicine.

Don't provide long-term pain management without a psychosocial screening or assessment.
See Psychiatric and Psychologic.

Don't use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.
See Psychiatric and Psychologic.

Don't prescribe opioids for chronic pain management in patients with autoimmune disease.
See Rheumatologic.

Don't delay initiation of early subthreshold, symptom-limited aerobic exercise as rehabilitation for adolescents who have sustained an acute sport-related concussion.
See Sports Medicine.

Avoid opioid-only modalities for postoperative pain control.
See Surgical.

Don't continue opioid analgesia beyond the immediate postoperative period; prescribe the lowest effective dose and number of doses required to address the expected pain.
See Surgical.

Avoid elective, non–medically-indicated inductions of labor between 39 weeks 0 days and 41 weeks 0 days unless the cervix is deemed favorable.

Rationale and Comments

Ideally, labor should start on its own initiative whenever possible. Higher cesarean delivery rates result from inductions of labor when the cervix is unfavorable. Health care clinicians should discuss the risks and benefits with their patients before considering inductions of labor without medical indications.

Sponsoring Organizations

American Academy of Family Physicians|American College of Obstetricians and Gynecologists

Sources

Cochrane Database of Systematic Reviews|AAP/ACOG guidelines

References

American Academy of Pediatrics, American College of Obstetricians and Gynecologists. Guidelines for Perinatal Care. 6th ed. Elk Grove Village, Ill.: AAP; Washington, DC: ACOG; 2007. American College of Obstetricians and Gynecologists. Induction of labor. Practice bulletin no. 107. Obstet Gynecol. 2009;114:386-97. Gulmezoglu AM, et al. Induction of labour for improving birth outcomes for women at or beyond term. Cochrane Database Syst Rev. 2012;(6):CD004945.

46

Don't automatically initiate continuous electronic fetal heart rate monitoring during labor for women without risk factors; consider intermittent auscultation first.

Rationale and Comments

Continuous electronic FHR monitoring during labor, a routine procedure in many hospitals, is associated with an increase in cesarean and instrumental births without improving Apgar score, neonatal intensive care unit admission or intrapartum fetal death rates. Intermittent auscultation allows women more freedom of movement during labor, enhancing their ability to cope with labor pain and utilize gravity to promote labor progress. Upright positions and walking have been associated with shorter duration of first stage labor, fewer cesareans and reduced epidural use.

Sponsoring Organizations

American Academy of Nursing

Sources

Cochrane Database of Systematic Reviews

References

Alfirevic Z, Devane D, Gyte GM. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. Cochrane Database Syst Rev. 2013 May 31;5:CD006066. Creedon D, Akkerman D, Atwood L, Bates L, Harper C, Levin A, McCall C, Peterson D, Rose C, Setterlund L, Walkes B, Wingeier R. Management of labor. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2013 Mar. 66 p. Lawrence A, Lewis L, Hofmeyr GJ, Styles C. Maternal positions and mobility during first stage labour. Cochrane Database Syst Rev. 2013 Oct 9;10:CD003934.

218

Don't offer noninvasive prenatal testing to low-risk patients or make irreversible decisions based on the results of this screening test.

Rationale and Comments

NIPT has only been adequately evaluated in singleton pregnancies at high risk for chromosomal abnormalities (maternal age >35, positive screening, sonographic findings suggestive of aneuploidy, translocation carrier at increased risk for trisomy 13, 18, or 21, or prior pregnancy with a trisomy 13, 18, or 21). Its utility in low-risk pregnancies remains unclear. False-positive and false-negative results occur with NIPT, particularly for trisomy 13 and 18. Any positive NIPT result should be confirmed with invasive diagnostic testing prior to a termination of pregnancy. If NIPT is performed, adequate pretest counseling must be provided to explain the benefits and limitations.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Expert consensus

References

American College of Obstetricians and Gynecologists Committee on Genetics. Noninvasive prenatal testing for fetal aneuploidy. Committee Opinion No. 545. Obstet Gynecol. 2012 Dec;120(6):1532–4.

185

Don't perform antenatal testing on women with the diagnosis of gestational diabetes who are well controlled by diet alone and without other indications for testing.

Rationale and Comments

Monitoring of glucose levels and maintaining adequate glycemic control for gestational diabetes are paramount to decreasing adverse outcomes, including stillbirth. If nutritional modification and glucose monitoring alone control maternal glycemic status such that pharmacological therapy is not required, the risk of stillbirth due to uteroplacental insufficiency is not increased. Thus, the use of routine antepartum testing (e.g., biophysical profile or nonstress test) in the absence of other comorbidities is not indicated.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Retrospective cohort study

References

Rosenstein MG, Cheng YW, Snowden JM, Nicholson JM, Doss AE, Caughey AB. The risk of stillbirth and infant death stratified by gestational age in women with gestational diabetes. Am J Obstet Gynecol. 2012;206:309.e1-7.

295

Don't perform maternal serologic studies for cytomegalovirus (CMV) and toxoplasmosis as part of routine prenatal laboratory studies.

Rationale and Comments

Routine serologic screening of pregnant women for CMV and toxoplasmosis is not recommended due to poor predictive value of these tests and potential for harm due to false positive results. Serologic screening during pregnancy for both diseases should be reserved for situations in which there is clinical or ultrasound suspicion of maternal or fetal infection.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Expert consensus

References

Society for Maternal-Fetal Medicine (SMFM), Hughes BL, Gyamfi-Bannerman C. Society for Maternal-Fetal Medicine Consult Series #39: Diagnosis and antenatal management of congenital cytomegalovirus (CMV) infection. Am J Obstet Gynecol. 2016 (in press). American College of Obstetricians and Gynecologists. Practice Bulletin #151: Cytomegalovirus, Parvovirus B19, varicella zoster, and toxoplasmosis in pregnancy. Obstet Gynecol. 2015 Jun;125(6):1510-25.

297

Don't perform prenatal ultrasounds for non-medical purposes, for example, solely to create keepsake videos or photographs.

Rationale and Comments

Prenatal ultrasounds are an integral part of a woman's prenatal care. While obstetric ultrasound has an excellent safety record, the U.S. Food and Drug Administration considers keepsake imaging as an unapproved use of a medical device. The American Institute of Ultrasound in Medicine also discourages the non-medical use of ultrasound for entertainment purposes. Keepsake ultrasounds are not medical tests and should not replace a clinically performed sonogram.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

Expert consensus

References

ACOG Committee Opinion. Number 297, August 2004. Nonmedical use of obstetric ultrasonography. ACOG Committee on Ethics. Obstet Gynecol. 2004 Aug;104(2):423-4. U.S. Food and Drug Administration. Fetal keepsake videos. Available at: http://www.fda.gov/medicaldevices/Safety/AlertsandNotices/PatientAlerts/ucm064756.htm. Retrieved December 9, 2015. Abramowicz JS, Barnett SB; ISUOG; WFUMB. The safe use of non-medical ultrasound: a summary of the proceedings of the joint safety symposium of ISUOG and WFUMB. Ultrasound Obstet Gynecol. 2009 May;33(5):617-20. American Institute of Ultrasound in Medicine. Prudent use in pregnancy. Laurel (MD): AIUM; 2012. Available at: http://www.aium.org/officialstatements/33. Retrieved December 9, 2015. Chervenak FA, McCullough LB. An ethical critique of boutique fetal imaging: a case for the medicalization of fetal imaging. Am J Obstet Gynecol. 2005;192(1):31–3.

303

Don't perform routine cervical length screening for preterm birth risk assessment in asymptomatic women before 16 weeks of gestation or beyond 24 weeks of gestation.

Rationale and Comments

The predictive ability of cervical length measurement prior to 16 weeks of gestation for preterm birth risk assessment is limited. It should be performed, when indicated, between 16 and 24 weeks of gestation. Routine cervical length screening for preterm birth risk assessment in asymptomatic women beyond 24 weeks of gestation has not been proven to be effective.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Prospective cohort studies

References

Iams JD, Goldenberg RL, Meis PJ, Mercer BM, Moawad A, Das A, Thom E, McNellis D, Copper RL, Johnson F, Roberts JM. The length of the cervix and the risk of spontaneous premature delivery. National Institute of Child Health and Human Development Maternal Fetal Medicine Unit Network. N Engl J Med. 1996 Feb 29;334(9):567-72. Conoscenti G, Meir YJ, D'Ottavio G, Rustico MA, Pinzano R, Fischer-Tamaro L, Stampalija T, Natale R, Maso G, Mandruzzato G. Does cervical length at 13–15 weeks' gestation predict preterm delivery in an unselected population? Ultrasound Obstet Gynecol. 2003 Feb;21(2):128-34. Ozdemir I, Demirci F, Yucel O, Erkorkmaz U. Ultrasonographic cervical length measurement at 10-14 and 20-24 weeks gestation and the risk of preterm delivery. Eur J Obstet Gynecol Reprod Biol. 2007 Feb;130(2):176-9. Berghella V, Talucci M, Desai A. Does transvaginal sonographic measurement of cervical length before 14 weeks predict preterm delivery in high-risk pregnancies? Ultrasound Obstet Gynecol. 2003 Feb;21(2):140-4.

294

Don't perform serial cervical length measurement following cerclage placement.

Rationale and Comments

Although progressive cervical shortening after cerclage placement increases the risk of preterm birth, neither overall cervical length nor the length below the stitch correlates well with outcomes. Most importantly, there are currently no additional treatment options for a short cervix after cerclage (e.g., reinforcement suture does not improve outcomes). Although there may be theoretical psychological benefits to the patient and provider to visualize the stitch, there are insufficient data to suggest a clinical benefit of routine post-cerclage serial cervical length measurement.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Expert consensus

References

Society for Maternal-Fetal Medicine (SMFM). McIntosh J, Feltovich H, Berghella V, Manuck T. The role of routine cervical length screening in selected high- and low-risk women for preterm birth prevention. Am J Obstet Gynecol. 2016 Sep;215(3):B2-7. Baxter JK, Airoldi J, Berghella V. Short cervical length after history indicated cerclage: Is a reinforcing cerclage beneficial? Am J Obstet Gynecol. 2005;193:1204-7.

411

Don't perform third trimester Group B streptococcus (GBS) culture in patients with GBS bacteriuria during pregnancy.

Rationale and Comments

GBS bacteriuria at levels of 105 CFU/mL or greater, either symptomatic or asymptomatic, warrants acute treatment during pregnancy and indicates the need for intrapartum antibiotic prophylaxis at the time of birth, and thus no additional rectovaginal culture later in pregnancy is necessary. Identification of asymptomatic bacteriuria with GBS during pregnancy at a level less than 105 CFU/mL does not require maternal treatment during the antepartum period but is an indication for intrapartum prophylaxis at the time of birth.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

ACOG guidelines

References

Prevention of Group B streptococcal early-onset disease in newborns: ACOG Committee Opinion, number 797. Obstet Gynecol. 2020;135(2):e51-e72. Allen VM, Yudin MH. Management of group B streptococcal bacteriuria in pregnancy. J Obstet Gynaecol Can. 2018;40:e181-186. Baecher L, Grobman W. Prenatal antibiotic treatment does not decrease group B streptococcus colonization at delivery. Int J Gynaecol Obstet. 2008;101:125-128.

479

Don't place women, even those at high-risk, on activity restriction to prevent preterm birth.

Rationale and Comments

There are no studies documenting an improvement in outcomes in women at risk for preterm birth who are placed on activity restriction, including bed rest. There are multiple studies documenting untoward effects of routine activity restriction on the mother and family, including negative psychosocial effects. Therefore, activity restriction should not be routinely prescribed as a treatment to reduce preterm birth.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Society for Maternal-Fetal Medicine (SMFM) guideline

References

Society for Maternal-Fetal Medicine (SMFM), Habeber E, Sciscione A. SMFM Consult Activity Restriction in Pregnancy. Contemp Ob Gyn. 2014.

296

Don't prescribe opioid pain medication in pregnancy without fully weighing the risks to the woman and her fetus, and discussing these risks with the patient.

Rationale and Comments

In utero exposure to opioids can lead to risks for the infant, including neonatal abstinence syndrome and/or developmental deficits affecting behavior and cognition. Pregnant women's use of opioids dramatically increased from 1.19 per 1,000 hospital births in 2000 to 5.63 per 1,000 hospital births in 2009. Prescription opioids are among the most effective medications for the treatment of pain. However, regular or long-term use of opioids can create physical dependence and in some cases, addiction. Women who are prescribed, or continue to use, opioids during pregnancy may not understand the risks to themselves or their babies. Pregnant women and their fetuses are an inherently vulnerable population, and opioid dependence increases their vulnerability. Women using opioids during pregnancy were shown to have higher rates of depression, anxiety, and chronic medical conditions, as well as increased risks for preterm labor, poor fetal growth, and stillbirth. Women who used opioids during pregnancy were four times as likely to have a prolonged hospital stay compared to nonusers and incurred significantly more per-hospitalization cost. Neonatal abstinence syndrome occurs in newborns that are exposed to substances, typically opioids, while in their mothers' wombs. In utero exposure to these substances can cause a newborn to experience withdrawal symptoms after birth. Symptoms of neonatal abstinence syndrome vary depending on the type and amount of the substance that the mother used, how the mother and fetus metabolize the drug, and how long the mother used the drug. Symptoms of neonatal abstinence syndrome range from blotchy skin and sneezing, to respiratory complications, low birth weight, prematurity, feeding difficulties, extreme irritability, and seizures.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

Opioid abuse, dependence, and addiction in pregnancy. ACOG committee opinion number 524. Washington (DC): American College of Obstetricians and Gynecologists. 2012 May. Available from: http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Opioid-Abuse-Dependence-and-Addiction-in-Pregnancy. Criminalization of pregnant women with substance use disorders. J Obstet Gynecol Neonatal Nurs. 2015 Jan-Feb; 44(1), 155–7. Medication use in pregnancy: a public health concern. Atlanta (GA): Centers for Disease Control and Prevention. 2015 Jan 16 [cited 2016 May 15]. Available from: http://www.cdc.gov/pregnancy/meds/treatingfortwo/facts.html. Opioid painkillers widely prescribed among reproductive age women. Atlanta (GA): Centers for Disease Control and Prevention. 2015 Jan 22 [cited 2016 May 22]. Available from: http://www.cdc.gov/media/releases/2015/p0122-pregnancy-opioids.html. Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. JAMA. 2012 May 9;307(18):1934-40. Addressing prescription drug abuse in the United States: current activities and future opportunities. Washington (DC): Department of Health and Human Services. 2013 Sep. 36 p. Volkow ND. Prescription opioid and heroin use. Bethesda (MD): National Institute on Drug Abuse. 2014 Apr. Whiteman VE, Salemi JL, Mogos MF, Cain MA, Aliyu MH, Salihu HM. Maternal opioid drug use during pregnancy and its impact on perinatal morbidity, mortality, and the costs of medical care in the United States. J Pregnancy. 2014:906723.

308

Don't promote induction or augmentation of labor and don't induce or augment labor without a medical indication; spontaneous labor is safest for woman and infant, with benefits that improve safety and promote short- and long-term maternal and infant health.

Rationale and Comments

The rate of induction in the United States (23.4% of all births) has more than doubled since 1990. The increase is not thought to be attributable to a similar rise in medical conditions in pregnancy that warrant induction of labor. Researchers have demonstrated that induction of labor for any reason increases the risk for a number of complications for women and infants. Induced labor results in more postpartum hemorrhage than spontaneous labor, which increases the risk for blood transfusion, hysterectomy, placenta implantation abnormalities in future pregnancies, a longer hospital stay, and more hospital readmissions. Induction of labor is also associated with a significantly higher risk of cesarean birth. For infants, a number of negative health effects are associated with induction, including increased fetal stress and respiratory illness. Research on the risk-to-benefit ratio of elective augmentation of labor is limited. However, many of the risks associated with elective induction may extend to augmentation. In a recent systematic review, the authors found that women with slow progress in the first stage of spontaneous labor who underwent augmentation with exogenous oxytocin, compared with women who did not receive oxytocin, had similar rates of cesarean. Such results call into question a primary rationale for labor augmentation, which is the reduction of cesarean surgery. In addition to the serious health problems associated with non–medically indicated induction of labor, hospitals, insurers, providers, and women must consider a number of financial implications associated with the practice. In the United States, the average cost of an uncomplicated cesarean birth is 68% higher than the cost of an uncomplicated vaginal birth. Further, women who deliver vaginally have shorter hospital stays, fewer hospital readmissions, faster recoveries, and fewer infections than those who have cesareans.

Sponsoring Organizations

American Academy of Nursing

Sources

Cochrane Database of Systematic Reviews

References

Non-medically indicated induction and augmentation of labor. J Obstet Gynecol Neonatal Nurs. 2014 Sep-Oct;43(5):678-81. Bugg GJ, Siddiqui F, Thornton JG. Oxytocin versus no treatment or delayed treatment for slow progress in the fi stage of spontaneous labour. Cochrane Database Syst Rev. 2013 Jun 23;6:CD007123. Goer H, Roman A, Sakala A. Childbirth Connection. Vaginal or cesarean birth: What is at stake for women and babies? New York (NY): Childbirth Connection; 2012. 52 p. Available from: http://transform.childbirthconnection.org/reports/cesarean/. Institute for Safe Medication Practices. ISMP's list of high-alert medications. ISMP Medication Safety Alert. 2007;5(8)1-4. Available from: http://www.ismp.org/Newsletters/nursing/Issues/NurseAdviseERR200708.pdf. Martin JA, Hamilton BE, Ventura SJ, Osterman MJ, Wilson EC, Mathews TJ. Births: final data for 2010. Natl Vital Stat Rep. 2012 Aug 28;61(1):1-72. Moore J, Low LK. Factors that influence the practice of elective induction of labor: what does the evidence tell us? J Perinat Neonatal Nurs. 2012 Jul-Sep;26(3):242-50. Moore JE, Low LK, Titler MG, Dalton VK, Sampselle CM. Moving toward patient-centered: women's decisions, perceptions, and experiences of the induction of labor process. Birth. 2014 Jun;41(2):138-46. Zhang J, Troendle J, Reddy UM, Laughon SK, Branch DW, Burkman R, Landy HJ, Hibbard JU, Haberman S, Ramirez MM, Bailit JL, Hoff MK, Gregory KD, Gonzalez-Quintero VH, Kominiarek M, Learman LA, Hatjis CG, van Veldhuisen P; Consortium on Safe Labor. Contemporary cesarean delivery practice in the United States. Am J Obstet Gynecol. 2010 Oct; 203(4), 326.e1–326.e10.

307

Don't recommend delivery in a nondiabetic patient for suspected macrosomia before 39 0/7 weeks of gestation.

Rationale and Comments

Recommendations regarding the optimal timing of delivery seek to balance maternal and perinatal risks. Delivery before 39 0/7 weeks of gestation without medical indication has been associated with increased adverse perinatal outcomes compared to those at or beyond 39 weeks of gestation. For suspected macrosomia, the accuracy of estimated fetal weight using sonographic and clinical estimates is inherently imprecise. In addition, the data comparing delivery to expectant management for suspected macrosomia are inconsistent with regard to reducing the risk of shoulder dystocia, especially when weighed against the harms of early delivery. Given the imprecision in fetal weight assessment, the increase in adverse perinatal outcomes, and the limited data demonstrating benefit, delivery before 39 weeks of gestation is not recommended for suspected macrosomia in nondiabetic patients.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

ACOG guidelines

References

Parikh LI, Reddy UM, Männistö T, et al. Neonatal outcomes in early term birth. Am J Obstet Gynecol. 2014;211(3):265.e1-265.e11. American College of Obstetrics and Gynecology. Macrosomia: ACOG Practice Bulletin, Number 216. Obstet Gynecol. 2020;135(1):e18-e35.

477

Don't routinely exclude women with two prior low transverse cesarean deliveries from having the choice to undertake a trial of labor after cesarean.

Rationale and Comments

Although in some studies, women with two prior cesarean deliveries who attempt a trial of labor after cesarean have a higher rate of complications than women with one prior cesarean delivery, the absolute risk of any major complication remains low and the chance of achieving a vaginal birth are similar to those who have one prior cesarean. Given the risk of maternal morbidity and placenta accreta spectrum associated with multiple cesarean deliveries, a trial of labor should remain an option for women with two prior low transverse cesarean deliveries.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Expert consensus

References

Landon MB, Spong CY, et al.; National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Risk of uterine rupture with a trial of labor in women with multiple and single prior cesarean delivery. Obstet Gynecol. 2006;108(1):12-20. Macones GA, Cahill A, et al. Obstetric outcomes in women with two prior cesarean deliveries: is vaginal birth after cesarean delivery a viable option? Am J Obstet Gynecol. 2005;192(4):1223-8; discussion 1228-1229.

Don't routinely recommend activity restriction or bed rest during pregnancy for any indication.

Rationale and Comments

Bed rest or activity restriction has been commonly recommended for a variety of conditions in pregnancy including multiple gestation, intrauterine growth restriction, preterm labor, premature rupture of membranes, vaginal bleeding, and hypertensive disorders in pregnancy. However, information to date does not show an improvement in birth outcome with the use of bed rest or activity restriction, but does show an increase in loss of muscle conditioning and thromboembolic disease.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

Cochrane Database of Systematic Reviews

References

McCall CA, Grimes DA, Lyerly AD. "Therapeutic" bed rest in pregnancy: unethical and unsupported by data. Obstet Gynecol. 2013;121:1305–8. Fox NS, Gelber SE, Kalish RB, Chasen ST. The recommendation for bed rest in the setting of arrested preterm labor and premature rupture of membranes. Am J Obstet Gynecol. 2009;200:165.e1–165.e6. Grobman WA, Gilbert SA, Iams JD, Spong CY, Saade G, Mercer BM, et al. Activity restriction among women with a short cervix. Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units (MFMU) Network. Obstet Gynecol. 2013;121:1181–6. Maloni JA. Lack of evidence for prescription of antepartum bed rest. Expert Rev Obstet Gynecol. 2011;6:385–93. Brennan MC, Moore LE. Pulmonary embolism and amniotic fluid embolism in pregnancy. Obstet Gynecol Clin North Am. 2013;40:27–35. Promislow JH, Hertz-Picciotto I, Schramm M, Watt-Morse M, Anderson JJ. Bed rest and other determinants of bone loss during pregnancy. Am J Obstet Gynecol. 2004;191:1077–83. Merriam AA, Chichester M, Patel N, Hoffman MK. Bed rest and gestational diabetes: more reasons to get out of bed in the morning [abstract]. Obstet Gynecol. 2014;123(suppl 1):70S. Sosa CG, Althabe F, Belizán JM, Bergel E. Bed rest in singleton pregnancies for preventing preterm birth. Cochrane Database of Systematic Reviews 2015, Issue 3. Art. No.: CD003581. Sciscione AC. Maternal activity restriction and the prevention of preterm birth. Am J Obstet Gynecol. 2010;202:232.e1–e5.

Don't schedule non–medically-indicated (elective) inductions of labor or cesarean deliveries before 39 weeks 0 days gestational age.

Rationale and Comments

Delivery prior to 39 weeks 0 days has been shown to be associated with an increased risk of learning disabilities and a potential increase in morbidity and mortality. There are clear medical indications for delivery prior to 39 weeks and 0 days based on maternal and/or fetal conditions. A mature fetal lung test, in the absence of appropriate clinical criteria, is not an indication for delivery.

Sponsoring Organizations

American Academy of Family Physicians|American College of Obstetricians and Gynecologists

Sources

California Department of Public Health

References

Main E, et al. Elimination of nonmedically indicated (elective) deliveries before 39 weeks gestational age. California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care. Developed under contract #08-85012 with the California Department of Public Health; Maternal, Child and Adolescent Health Division. First edition published by March of Dimes, July 2010.

Don't screen asymptomatic pregnant women for subclinical hypothyroidism.

Rationale and Comments

Subclinical hypothyroidism is defined as an elevated serum TSH level in the presence of a normal free T4 level and is found in 2% to 5% of otherwise healthy pregnant women. Subclinical hypothyroidism is unlikely to progress to overt hypothyroidism during pregnancy. While some authorities and organizations have recommended routine screening for all pregnant women and subsequent treatment with levothyroxine, two recent, large (>100,000 women) prospective randomized clinical trials of screening and treatment for subclinical hypothyroidism demonstrated no effect of treatment on offspring IQ at age five years. Because treatment for subclinical hypothyroidism has not resulted in a beneficial effect on outcomes, routine screening for subclinical hypothyroidism is not currently recommended. Targeted screening for women at risk for overt hypothyroidism is still appropriate.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Randomized controlled trials

References

Thyroid disease in pregnancy. Practice Bulletin No. 148. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2015;125:996-1005. Lazarus JH, Bestwick JP, Channon S, Paradice R, Maina A, Rees R, et al. Antenatal thyroid screening and childhood cognitive function [published erratum appears in N Engl J Med. 2012;366:1650]. N Engl J Med. 2012;366:493-501. Society for Maternal-Fetal Medicine. Screening for thyroid disease during pregnancy. Contemporary OB/GYN; August 2012. https://www.smfm.org/publications/88-screening-for-thyroid-disease-in-pregnancy

Don't separate mothers and their newborns at birth unless medically necessary. Instead, help the mother to place her newborn in skin-to-skin contact immediately after birth and encourage her to keep her newborn in her room during hospitalization after the birth.

Rationale and Comments

Keeping mothers and newborns together promotes maternal-infant attachment, early and sustained breastfeeding, and physiologic stability. Early initiation of skin-to-skin care and breastfeeding promotes optimal outcomes and can significantly reduce morbidity for healthy term and preterm or vulnerable newborns. Breastfeeding is the ideal form of infant nutrition and should be the societal norm. Given the numerous health benefits for infant and mother and the health care cost savings associated with breastfeeding, breastfeeding has become a global public health initiative that can improve the overall health of nations. Ideally, infants should be exclusively breastfed for the first six months of life; after the first six months, appropriate complementary foods should be introduced, and the infant should continue to breastfeed for one to two years, or longer as desired. Worldwide, the lives of an estimated 1.5 million children less than the age of five would be saved annually if all children were fed according to this standard.

Sponsoring Organizations

American Academy of Nursing

Sources

Randomized controlled trials

References

Section on Breastfeeding. Breastfeeding and the use of human milk. Pediatrics. 2012 Mar;129(3):e827-41. AWHONN position statement. Breastfeeding. J Obstet Gynecol Neonatal Nurs. 2015 Jan-Feb: 44(1);145-50. Brodribb W, Kruske S, Miller YD. Baby-friendly hospital accreditation, in-hospital care practices, and breastfeeding. Pediatrics. 2013 Apr;131(4):685-92. Conde-Agudelo A, Díaz-Rossello L. Kangaroo mother care to reduce morbidity and mortality in low birth weight infants. Cochrane Database Syst Rev. 2014 Apr 22;4:CD002771. Marín Gabriel MA, Llana Martín I, López Escobar A, Fernández Villalba E, Romero Blanco I, Touza Pol P. Randomized controlled trial of early skin-to-skin contact: effects on the mother and the newborn. Acta Paediatr. 2010 Nov;99(11):1630-4. Moore ER, Anderson GC. Randomized controlled trial of very early mother-infant skin-to-skin contact and breastfeeding status. J Midwifery Womens Health. 2007 Mar-Apr;52(2):116-25. Moore ER, Anderson GC, Bergman N. Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database Syst Rev. 2007 Jul 18;(3):CD003519. Breastfeeding key to saving children's lives: ten steps to successful breastfeeding highlighted during World Breastfeeding Week. Geneva (Switzerland): World Health Organization. 2010 Jul 30. Available from: http://www.who.int/mediacentre/news/notes/2010/breastfeeding_20100730/en/.

309

Don't use amniotic fluid index to make a diagnosis of oligohydramnios (in the third trimester).

Rationale and Comments

Amniotic fluid volume can be measured using either the amniotic fluid index or the deepest vertical pocket. Diagnosis of oligohydramnios based on an amniotic fluid index of <5 cm has been found to lead to a greater number of obstetric interventions without a significant benefit in improving perinatal outcomes when compared to use of a deepest vertical pocket of <2 cm for diagnosis.

Sponsoring Organizations

Society for Maternal-Fetal Medicine

Sources

Randomized controlled trials

References

Kehl S, Schelkle A, Thomas A, Puhl A, Meqdad K, Tuschy B, et al. Single deepest vertical pocket or amniotic fluid index as evaluation test for predicting adverse pregnancy outcome (SAFE trial): a multicenter, open-label, randomized controlled trial. Ultrasound Obstet Gynecol. 2016;47(6):674-9. Ultrasound in pregnancy. Practice Bulletin No. 175. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2016;128:e241-56. Antepartum fetal surveillance. Practice Bulletin No. 145. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2014;124:182-92.

414

Don't make irreversible decisions based on the results of cell-free DNA screening test.

See Genetic.

Don't test women for MTHFR mutations.

See Genetic.

In the evaluation of simple syncope and a normal neurologic examination don't obtain brain imaging studies (CT or MRI).

See Neurologic.

Don't initiate management of low-risk prostate cancer without discussing active surveillance.

Rationale and Comments

Patients with prostate cancer have a number of reasonable management options. These include surgery and radiation, as well as conservative monitoring without therapy in appropriate patients. Shared decision-making between the patient and the physician can lead to better alignment of patient goals with treatment and more efficient care delivery. The American Society for Radiation Oncology has published patient-directed written decision aids concerning prostate cancer and numerous other types of cancer. These types of instruments can give patients confidence about their choices, improving compliance with therapy.

Sponsoring Organizations

American Society for Radiation Oncology

Sources

Systematic review

References

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Don't routinely recommend follow-up mammograms more often than annually for women who have had radiotherapy following breast conserving surgery.

Rationale and Comments

Studies indicate that annual mammograms are the appropriate frequency for surveillance of breast cancer patients who have had breast conserving surgery and radiation therapy with no clear advantage to shorter interval imaging. Patients should wait 6-12 months after the completion of radiation therapy to begin their annual mammogram surveillance. Suspicious findings on physical examination or surveillance imaging might warrant a shorter interval between mammograms.

Sponsoring Organizations

American Society for Radiation Oncology

Sources

Cochrane Database of Systematic Reviews|American Society of Clinical Oncology guideline

References

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Don't treat low-risk clinically localized prostate cancer (e.g., Gleason score is less than 7, PSA less than 10.0 ng/mL, and tumor stage T2 or less) without discussing active surveillance as part of the shared decision-making process.

Rationale and Comments

The ultimate choice of treatment should be based on shared decision making and individualized to the patient's disease characteristics, his overall health, and his personal preferences. The disparity between prostate cancer incidence and mortality implies that many men may not benefit from definitive treatment of localized disease. For men with newly diagnosed low-risk prostate cancer, an active surveillance program represents a valid option that should be discussed. Active surveillance provides a monitored approach that can spare some men the potential risks of definitive treatment while selectively providing effective treatment for more aggressive cancers that warrant intervention.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

Sanda MG, Chen RC, Crispino T, Freedland S, Greene K, Klotz LH, Makarov DV, Nelson JB, Reston J, Rodrigues G, Sandler HM, Taplin ME, Cadeddu JA. Clinically Localized Prostate Cancer: AUA/ASTRO/SUO Guideline [INTERNET]. [Linthicum (MD)]: American Urological Association /American Society for Radiation Oncology/Society of Urologic Oncology; 2017 April [cited 2017 May 4]. Available from: www.auanet.org/guidelines/clinically-localized-prostate-cancer-new-(aua/astro/suo-guideline-2017).

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Don't obtain routine blood work (e.g., complete blood count, liver function tests) other than a carcinoembryonic antigen level during surveillance for colorectal cancer.

See Gastroenterologic.

Avoid treatment of CIN 1 in women under age 25.

See Gynecologic.

Don't perform annual cervical cytology (Pap test) or annual HPV screening of immunocompetent women with a history of negative screening.

See Gynecologic.

Don't perform cervical cytology (Pap test) or HPV screening in immunocompetent women under age 21.

See Gynecologic.

Don't perform colposcopy in patients treated for cervical cancer with Pap tests of low-grade squamous intraepithelial lesion or less.

See Gynecologic.

Don't perform Pap tests for surveillance of women with a history of endometrial cancer.

See Gynecologic.

Don't perform Pap tests in patients younger than 21 years or in women after hysterectomy for benign disease.

See Gynecologic.

Don't perform pelvic ultrasound in average risk women to screen for ovarian cancer.
See Gynecologic.

Don't perform routine annual cervical cytology screening (Pap tests) in women 30 to 65 years of age.
See Gynecologic.

Don't perform screening for cervical cancer in low-risk women aged 65 years or older and in women who have had a total hysterectomy for benign disease.
See Gynecologic.

Don't perform vaginal cytology (Pap test) or HPV screening in women who had hysterectomy (with removal of the cervix) for reasons other than high-grade cervical dysplasia (cervical intraepithelial neoplasia [CIN] 2/3) or cancer.
See Gynecologic.

Don't screen women older than 65 years for cervical cancer who have had adequate prior screening and are not otherwise at high risk for cervical cancer.
See Gynecologic.

Don't screen women younger than 30 years for cervical cancer with human papillomavirus (HPV) testing, alone or in combination with cytology.
See Gynecologic.

Don't treat patients who have mild cervical dysplasia of less than two years' duration.
See Gynecologic.

Don't use vancomycin or carbapenems empirically for neonatal intensive care patients unless an infant is known to have a specific risk for pathogens resistant to narrower-spectrum agents.
See Nephrologic.

Don't perform CT screening for lung cancer among patients at low risk for lung cancer.
See Preventive Medicine.

Don't perform screening mammography in asymptomatic patients with normal exams who have less than five-year life expectancy.
See Preventive Medicine.

Don't recommend screening for breast, colorectal or prostate cancer if life expectancy is estimated to be less than 10 years.
See Preventive Medicine.

Don't recommend screening for breast, colorectal, prostate, or lung cancers without considering life expectancy and the risks of testing, overdiagnosis, and overtreatment.
See Preventive Medicine.

Don't repeat colorectal cancer screening (by any method) for 10 years after a high-quality colonoscopy is negative in average-risk individuals.
See Preventive Medicine.

Don't routinely use breast MRI for breast cancer screening in average risk women.
See Preventive Medicine.

Don't screen for ovarian cancer in asymptomatic women at average risk.
See Preventive Medicine.

Don't screen for testicular cancer in asymptomatic adolescent and adult males.
See Preventive Medicine.

Don't screen low-risk women with cancer antigen (CA) 125 or ultrasound for ovarian cancer.
See Preventive Medicine.

Don't take a multi-vitamin, vitamin E, or beta-carotene to prevent cardiovascular disease or cancer.
See Preventive Medicine.

Don't use positron emission tomography/CT for cancer screening in healthy individuals.
See Preventive Medicine.

Don't use whole-body scans for early tumor detection in asymptomatic patients.
See Preventive Medicine.

Don't use sputum cytology to evaluate patients with peripheral lung lesions.
See Pulmonary.

Don't obtain computed tomography scan of the pelvis for asymptomatic men with low-risk clinically localized prostate cancer.
See Urologic.

Don't perform prostate-specific antigen (PSA) testing for prostate cancer screening in men with no symptoms of the disease when they are expected to live less than 10 years.
See Urologic.

Don't routinely perform PSA-based screening for prostate cancer.
See Urologic.

Don't routinely screen for prostate cancer using a prostate-specific antigen (PSA) test or digital rectal exam.
See Urologic.

Offer PSA screening for detecting prostate cancer only after engaging in shared decision making.
See Urologic.

Don't order antibiotics for adenoviral conjunctivitis.

Rationale and Comments

Adenoviral conjunctivitis and bacterial conjunctivitis are different forms of infection that can be diagnosed by the ophthalmologist by clinical signs and symptoms, and if needed, by cultures. Antibiotics are of use for patients with bacterial conjunctivitis, particularly with moderate to severe bacterial conjunctivitis. However, they are not useful for adenoviral conjunctivitis and the overuse of antibiotics can lead to the emergence of bacteria that don't respond readily to available treatments. In cases of diagnostic uncertainty, patients may be followed closely to see if their condition resolves on its own or if further treatment is required.

Sponsoring Organizations

American Academy of Ophthalmology

Sources

Cochrane Database of Systematic Reviews

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American Academy of Ophthalmology. Conjunctivitis preferred practice pattern. 2011. http://www.aao.org/ppp. Sheikh A, et al. Antibiotics versus placebo for acute bacterial conjunctivitis. Cochrane Database Syst Rev. 2006;(2):CD001211.

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Don't perform preoperative medical tests for eye surgery unless there are specific medical indications.

Rationale and Comments

For many, preoperative tests are not necessary and add costs because eye surgeries are not lengthy and don't pose serious risks. An electrocardiogram should be ordered if patients have heart disease. A blood glucose test should be ordered if patients have diabetes. A potassium test should be ordered if patients are on diuretics. In general, patients scheduled for surgery do not need medical tests unless the history or physical examination indicates the need for a test (e.g., like the existence of conditions noted above, heart disease, diabetes, use of diuretics, etc.). Institutional policies should consider these issues.

Sponsoring Organizations

American Academy of Ophthalmology

Sources

Cochrane Database of Systematic Reviews

References

Schein OD, et al. The value of routine preoperative medical testing before cataract surgery. N Engl J Med. 2000;342:168-75. Keay L, et al. Routine preoperative medical testing for cataract surgery. Cochrane Database Syst Rev. 2009;(2):CD007293. Bartley GB, et al. Preoperative medical examinations for patients undergoing ophthalmic surgery. Am J Ophthalmol. 1991;112:725-7. Imasogie N, et al. Elimination of routine testing in patients undergoing cataract surgery allows substantial savings in laboratory costs. A brief report. Can J Anesth. 2003;50:246-8. Bass EB, et al. Do ophthalmologists, anesthesiologists and internists agree about preoperative testing in health patients undergoing cataract surgery? Arch Ophthalmol. 1995;113:1248-56.

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Don't recommend vision therapy for patients with dyslexia.

Rationale and Comments

Dyslexia is a language-based learning disorder in which a person has trouble understanding written words. This occurs because the brain has a problem distinguishing and separating the sounds in spoken words, called a phonological deficit. Dyslexia is not due to a vision disorder. Children with dyslexia do not have any more visual problems than children without dyslexia. Vision therapy does not work for this population because the eyes are not the problem.

Sponsoring Organizations

American Association for Pediatric Ophthalmology and Strabismus

Sources

AAO/AAPOS/AACO guidelines

References

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Don't routinely order imaging for all patients with double vision.

Rationale and Comments

Many people with double vision, or diplopia, want a CT scan or MRI to see if it is caused by a brain tumor or other serious problem. Much of the time, following a comprehensive eye evaluation, neither test is necessary. The most common causes of double vision are refractive error, dry eyes, cataract and non-neurologic eye misalignment; all readily diagnosed by a complete exam. Only a minority of cases of diplopia result from problems within the brain.

Sponsoring Organizations

American Association for Pediatric Ophthalmology and Strabismus

Sources

Expert consensus

References

Lee MS. Diplopia: diagnosis and management. American Academy of Ophthalmology Focal points module. 2007:12.

126

Annual comprehensive eye exams are unnecessary for children who pass routine vision screening assessments.

See Pediatric.

Don't put asymptomatic children in weak reading glasses.

See Pediatric.

Avoid imaging studies (MRI, CT or X-rays) for acute low back pain without specific indications.

Rationale and Comments

Imaging for low back pain in the first six weeks after pain begins should be avoided in the absence of specific clinical indications (e.g., history of cancer with potential metastases, known aortic aneurysm, progressive neurologic deficit). Most low back pain does not need imaging and doing so may reveal incidental findings that divert attention and increase the risk of having unhelpful surgery.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

ACP/APS guidelines

Reference

Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. Lancet. 2009;373(9662):463–72. Chou R, Qaseem A, Snow V, Casey D, Cross JT, Shekelle P, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007;147(7):478–91. Davis PC, Wippold FJ, Brunberg JA, Cornelius RS, De La Paz RL, Dormont PD, Gray L, Jordan JE, Mukherji SK, Seidenwurm DJ, Turski PA, Zimmerman RD, Sloan MA. ACR appropriateness criteria on low back pain. J Am Coll Radiol. 2009;6(6):401–7. Kendrick D, Fielding K, Bentley E, Miller P, Kerslake R, Pringle M. The role of radiography in primary care patients with low back pain of at least 6 weeks duration: a randomized (unblended) controlled trial. Health Technol Assess. 2001;5(30):1–69. Miller P, Kendrick D, Bentley E, Fielding K. Cost-effectiveness of lumbar spine radiography in primary care patients with low back pain. Spine. 2002;27(20):2291–7.

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Avoid lumbar spine imaging in the emergency department for adults with non-traumatic back pain unless the patient has severe or progressive neurologic deficits or is suspected of having a serious underlying condition (such as vertebral infection, cauda equina syndrome, or cancer with bony metastasis).

Rationale and Comments

Low back pain without trauma is a common presenting complaint in the emergency department. Most of the time, such pain is caused by conditions such as a muscle strain or a bulging disc that cannot be identified on an X-ray or CT scan. When a patient has symptoms or physical findings of a serious or progressive neurological condition, or is suspected of having a serious underlying condition such as cancer or a spinal infection, imaging may be appropriate and may include plain X-rays or advanced imaging (e.g., MRI or CT scan). Diagnostic imaging does not accurately identify the cause of most low back pain and does not improve the time to recovery. The vast majority of cases of back pain in the emergency department are related to muscle strain or inflammation. As a result, routine imaging of the low back should be avoided in order to reduce ionizing radiation exposure and unnecessary cost.

Sponsoring Organizations

American College of Emergency Physicians

Sources

ACP/APS guidelines

References

Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007 Oct 2;147(7):478-91. Adult low back pain, 12th edition. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2006 Sep. 37 p. van Tulder M, Becker A, Bekkering T, Breen A, del Real MT, Hutchinson A, Koes B, Laerum E, Malmivaara A; COST B13 Working Group on Guidelines for the Management of Acute Low Back Pain in Primary Care. Chapter 3. European guidelines for the management of acute nonspecific low back pain in primary care. 2004. Eur Spine J. 2006 Mar;15 Suppl 2:S169-91. Australian Acute Musculoskeletal Pain Group. Evidence-based Management of Acute Musculoskeletal Pain. Acute Low Back Pain. Chapters 4 & 9, pg 25-62 and 183-188. 2003. Bussieres AE, Taylor JA, Peterson C. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults -an evidence-based approach part 3: spinal disorders. J Manipulative Physiol Ther. 2008 Jan;31(1):33-88. Tracey NG, Martin JB, McKinstry CS, Matthew BM. Guidelines for lumbar spine radiography in acute low back pain: effect of implementation in an accident and emergency department. Ulster Med J. 1994 Apr;63(1):12-17.

224

Avoid ordering MRI in patients with suspected acute Achilles tendon ruptures.

Rationale and Comments

MRI is expensive and can lead to treatment delays. History and physical exam findings can establish the diagnosis of acute Achilles tendon ruptures in nearly all instances. Physicians should reserve MRI for atypical presentations and subacute or neglected ruptures when preoperative planning is needed. When physicians prefer to use the rupture gap (i.e., apposition of tendon ends) as criteria for management (surgery versus conservative treatment), dynamic ultrasound can be easily substituted.

Sponsoring Organizations

American Podiatric Medical Association

Sources

Expert consensus

References

Singh D. Acute Achilles tendon rupture. BMJ. 2015;351:h4722. Garras DN, Raiken SM, Bhat SB, Taweel N, Karanjia H. MRI is unnecessary for diagnosing acute Achilles tendon ruptures: clinical diagnostic criteria. Clin Orthop Relat Res. 2012;470:2268-73. Wallace RG, Heyes GJ, Michael AL. The non-operative functional management of patients with a rupture of the tendo Achillis leads to low rates of re-rupture. J Bone Joint Surg Br. 2011;93:1362–66.

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Avoid protracted use of passive or palliative physical therapeutic modalities for low-back pain disorders unless they support the goal(s) of an active treatment plan.

Rationale and Comments

Passive physical therapeutic modalities are defined as those interventions applied to a patient with no active participation on the part of the patient. These include heat, cold, electrical stimulation, and ultrasound. These passive therapies can play an important role in facilitating patient participation in an active treatment program. However, the use of passive therapies untethered to the goal of increasing physical activity can be harmful, as it can lead to patient inactivity, prolonged recovery, and increased costs. For any patient with a low-back pain disorder to achieve an optimal clinical outcome, an essential element is to restore, maintain, or increase the level of physical activity. The evidence demonstrates that both general physical activity (e.g., walking, jogging, biking) and specific exercise regimens are effective in treating and preventing low-back pain and may lead to better outcomes when combined with spinal manipulation.

Sponsoring Organizations

American Chiropractic Association

Sources

Cochrane Database of Systematic Reviews|Agency for Healthcare Research and Quality

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Avoid routine use of continuous passive motion after knee arthroplasty.

Rationale and Comments

Two high-quality studies (Beaupre 2001, Denis 2006) and five moderate-quality studies (Can 2003, Chen 2013, Herbold 2014, MacDonald 2000, Montgomery 1996) compared the utilization of continuous passive motion during hospital stay to no utilization of continuous passive motion. The combined results provide strong evidence that the surgical outcomes for those who used continuous passive motion are not better than for those who did not use continuous passive motion. Five of the seven studies measured outcomes of physical function and quality of life. Beaupre, Denis, Herbold, and MacDonald found no significant differences in a gamut of outcomes (Western Ontario and McMaster Universities Osteoarthritis Index, 36-Item Short Form Health Survey, Timed "up + go", functional independence measure, and Knee Society Score). Chen reported better quality of life in the group that did not use continuous passive motion. Knee range of motion was investigated by Beaupre, Denis, and Chen. Meta-analysis showed no differences in knee range of motion. Complications were evaluated by Beaupre and Denis and were not statistically different between groups. Beaupra, Can, Chen, MacDonald, and Montgomery demonstrated that pain and stiffness were not decreased by continuous passive motion, whereas Denis reported significantly less pain in the continuous passive motion group (12 points difference in visual analog scale ranging from 0 to100). Meta-analysis from Denis, Herbold, and Montgomery showed no differences in length of hospital stay. One high-quality study (Lenssen 2008) demonstrated no statistically significant benefits in functional outcome scores or range of motion with the use of continuous passive motion in conjunction with physical therapy compared to physical therapy alone. The continuous passive motion was used for 17 consecutive days after surgery (about two weeks after discharge). Continuous passive motion should not be used routinely for every knee arthroplasty, as there have been no differences in active knee range of motion, pain, function, or quality of life (Harvey 2014). Continuous passive motion has been used after manipulation under anesthesia performed after knee surgery, although there are no studies to support this in the arthroplasty literature (Bram 2019).

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources

Cochrane Database of Systematic Reviews

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Avoid routine use of opioids for treatment of knee osteoarthritis, hip osteoarthritis, low back pain, or rotator cuff injury.

Rationale and Comments

The use of opioids is not recommended without a thorough evaluation, consideration of alternative medications and treatments, review of all current medications, and discussions of risks of opioid therapy and potential interactions with current medications for other conditions. Other treatment modalities are effective and avoid the risks associated with the use of opioids. Opioid prescriptions should be for a limited period with the lowest effective dose that provides meaningful pain relief and improved function with manageable side effects.

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources

Randomized controlled trials

References

Krebs EE, Gravely A, Nugent S, et al. Effect of opioid vs nonopioid medications on pain-related function in patients with chronic back pain or hip or knee osteoarthritis pain: the SPACE randomized clinical trial. JAMA. 2018;319(9):872-882. Webster BS, Verma SK, Gatchel RJ. Relationship between early opioid prescribing for acute occupational low back pain and disability duration, medical costs, subsequent surgery and late opioid use. Spine. 2007;32(19):2127-2132. Dowell D, Haegrich TM, Chou R. CDC guideline for prescribing opioids for chronic pain – United States, 2016. MMWR Recomm Rep. 2016;65(1):1-49. Qaseem A, Wilt TJ, McLean RM, Forciea MA. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2017;166(7):514-530. Kivitz AJ, Moskowitz RW, Woods E, Hubbard RC, Verburg KM, Lefkowith JB, Geis GS. Comparative efficacy and safety of celecoxib and naproxen in the treatment of osteoarthritis of the hip. J Int Med Res. 2001;29(6):467-479. Makarowski W, Zhao WW, Bevirt T, Recker DP. Efficacy and safety of the COX-2 specific inhibitor valdecoxib in the management of osteoarthritis of the hip: a randomized, double-blind, placebo-controlled comparison with naproxen. Osteoarthritis Cartilage. 2002;10(4):290-296. Svensson O, Malmenas M, Fajutrao L, Roos EM, Lohmander LS. Greater reduction of knee than hip pain in osteoarthritis treated with naproxen, as evaluated by WOMAC and SF-36. Ann Rheum Dis. 2006;65(6):781-784. Fishman RL, Kistler CJ, Ellerbusch MT, et al. Efficacy and safety of 12 weeks of osteoarthritic pain therapy with once-daily tramadol (Tramadol Contramid OAD). J Opioid Manag. 2007;3(5):273-280. Bookman AA,Williams KS, Shainhouse JZ. Effect of a topical Diclofenac solution for relieving symptoms of primary osteoarthritis of the knee: a randomized controlled trial. CMAJ. 2004;171(4):333-338. Fleischmann RM, Caldwell JR, Roth SH, Tesser JRP, Olson W, Kamin M. Tramadol for the treatment of joint pain associated with osteoarthritis: a randomized, double-blind, placebo-controlled trial. Current Therapeutic Research, Clinical & Experimental. 2001;62:113-128. Clendenen SR, Rajendran S, Kopacz DJ, Greengrass RA, Robards CB, Weinstein DM, Brodersen MP, Ortiguera CJ, Crook J, Logvinov II. Pregabalin as an adjunct to a multimodal analgesic regimen to achieve opioid sparing in arthroscopic rotator cuff repair. J Rom Anesth Terap Int. 2010;17:5-10. Han SS, Lee YH, Oh JH, Aminzai S, Kim SH. Randomized, controlled trial of multimodal shoulder injection or intravenous patient-controlled analgesia after arthroscopic rotator cuff repair. Knee Surg Sports Traumatol Arthrosc. 2013;21(12):2877-2883. Perdreau A, Joudet T. Efficacy of multimodal analgesia injection combined with corticosteroids after arthroscopic rotator cuff repair. Orthop Traumatol Surg Res. 2015;101(8 Suppl):S337-S345. Syed UAM, Aleem AW, Wowkanech C, Weekes D, Freedman M, Tjoumakaris F, Abboud JA, Austin LS. Neer Award 2018: the effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial. J Shoulder Elbow Surg. 2018;27(6):962-967.

Avoid routine use of therapy following carpal tunnel release.

Rationale and Comments

Routine postoperative therapy after carpal tunnel release was examined in two moderate-quality studies. These studies (Pomerance 2007 and Provinciali 2000) addressed the need for supervised therapy in addition to a home program in the early postoperative period. The studies compared in-clinic or therapist-supervised exercise programs in addition to a home program to a home program alone. The studies were somewhat limited by an incomplete description of who delivered home programs, exercise/education content and dosage, and treatment progression. Pomerance (2007) compared a two-week program directed by a therapist combined with a home program alone and found no additional benefit in terms of grip or pinch strength in comparison to the home program alone. Provinciali (2000) compared one-hour sessions over 10 consecutive days of in-clinic physiotherapy comprising a multimodal program with a home program that was progressed in terms of strength/endurance. No benefit was found in outcome when measured by a carpal tunnel syndrome-specific patient reported instrument.

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources

Randomized controlled trials

References

Pomerance J, Fine I. Outcomes of carpal tunnel surgery with and without supervised postoperative therapy. J Hand Surg Am. 2007;32(8):1159-1165. Provinciali L, Giattini A, Splendiani G, Logullo F. Usefulness of hand rehabilitation after carpal tunnel surgery. Muscle Nerve. 2000;23(2):211-216.

Avoid routinely performing arthroscopy with lavage and/or debridement in patients with a primary diagnosis of symptomatic osteoarthritis of the knee.

Rationale and Comments

None of the evidence we examined specifically included patients who had a primary diagnosis of meniscal tear, loose body, or other mechanical derangement, with concomitant diagnosis of osteoarthritis of the knee. The present recommendation does not apply to such patients. There were three studies that met the inclusion criteria for this recommendation. The Kirkley et al. and Kalunian et al. studies comparing arthroscopic lavage to placebo were rated as moderate strength and the Moseley et al. study comparing arthroscopic lavage to sham arthroscopic surgery was rated as high strength. Kirkley et al. reported that a large number of patients were not eligible for participation in their study (38%) largely due to the exclusion criteria of substantial knee malalignment. In some cases, patients declined participation. Kirkley et al. compared arthroscopic surgery to lavage and debridement combined with usual physical therapy and medical treatment, usual care. The authors used the pain, functional status, and other symptoms subscales of the Arthritis Self-Efficacy Scale and the McMaster-Toronto Arthritis Patient Preference Disability Questionnaire at multiple time points (ranging from three months to two years). Out of 20 outcomes, only two were statistically significant in favor of surgery with lavage. Differences in Arthritis Impact Measurement Scales pain scores were statistically significant at three months and differences in Arthritis Impact Measurement Scales-Other Arthritis Symptoms subscale scores remained significant after two years. In summary, this randomized controlled trial demonstrated no benefit of arthroscopic surgery compared to physical therapy and medical treatment for osteoarthritis of the knee. Kalunian et al. included a large number of enrolled patients from one institution with intraarticular crystals in their knee. They compared arthroscopic lavage with 3,000 mL saline to lavage with 250 mL saline. There were not any statistically significant differences in visual analog scale and Western Ontario and McMaster Universities Osteoarthritis Index pain scores between the two treatment groups. The Moseley et al. study raised questions regarding its limited sampling (mostly male veterans) as well as the number of potential study participants who declined randomization into a treatment group. In this randomized controlled trial, the effects of arthroscopy with debridement or lavage were not statistically significant in the vast majority of patient-oriented outcome measures for pain and function, at multiple time points from one week to two years following surgery. Collectively, the three included studies did not demonstrate clinical benefit of arthroscopic debridement or lavage. The work group also considered the potential risks to patients (anesthesia intolerance, infection, and venous thrombosis) associated with surgical intervention. It was agreed that the lack of evidence for treatment benefit and increased risks from surgery were sufficient reasons to recommend against arthroscopic debridement and/or lavage in patients with a primary diagnosis of osteoarthritis of the knee.

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources

Randomized controlled trials

References

Kirkley A, Birmingham TB, Litchfield RB, et al. A randomized trial of arthroscopic surgery for osteoarthritis of the knee. N Engl J Med. 2008;359(11):1097-1107. Kalunian KC, Moreland LW, Klashman DJ, et al. Visually-guided irrigation in patients with early knee osteoarthritis: a multicenter randomized, controlled trial. Osteoarthritis Cartilage. 2000;8(6):412-418. Moseley JB, O'Malley K, Petersen NJ, et al. A controlled trial of arthroscopic surgery for osteoarthritis of the knee. N Engl J Med. 2002;347(2):81-88.

Avoid routinely using irreversible surgical procedures such as braces, occlusal equilibration, and restorations as the first treatment of choice in the management of temporomandibular joint disorders.

Rationale and Comments

There is a lack of evidence that temporomandibular joint disorders (defined as musculoskeletal disorders, not the lesion of traumatic occlusion) are always progressive, and evidence exists that in many instances, patients with temporomandibular joint disorder have spontaneous remissions without treatment. Therefore, management is generally conservative and includes reversible strategies such as patient education, medications, physical therapy, and/or the use of occlusal appliances that do not alter the shape or position of the teeth or the alignment of the jaws.

Sponsoring Organizations

American Dental Association

Sources

Cochrane Database of Systematic Reviews

References

Aggarwal VR, Lovell K, Peters S, Javidi H, Joughin A, Goldthorpe J. Psychosocial interventions for the management of chronic orofacial pain. Cochrane Database Syst Rev. 2011 Nov 9;(11):CD008456. Al-Ani MZ, Davies SJ, Gray RJM, Sloan P, Glenny A-M. Stabilisation splint therapy for temporomandibular pain dysfunction syndrome. Cochrane Database Syst Rev. 2004;(1):CD002778. Treatment for Temporomandibular Joint Dysfunction: guidelines. Ottowa (ON): Canadian Agency for Drugs and Technologies in Health (CA); 2010 May 17. 6 p. De Boever JA, Nilner M, Orthlieb JD, Steenks MH; Educational Committee of the European Academy of Craniomandibular Disorders. Recommendations by the EACD for examination, diagnosis, and management of patients with temporomandibular disorders and orofacial pain by the general dental practitioner. J Orofac Pain. 2008 Summer;22(3):268-78. de Souza RF, Lovato da Silva CH, Nasser M, Fedorowicz Z, Al-Muharraqi MA. Interventions for the management of temporomandibular joint osteoarthritis. Cochrane Database Syst Rev. 2012 Apr 18;4:CD007261. Guidelines: diagnosis & management of temporomandibular disorders & related musculoskeletal disorders. Toronto (ON): Royal College of Dental Surgeons of Ontario (CA); 11 p. Ernst E, White AR. Acupuncture as a treatment for temporomandibular joint dysfunction: a systematic review of randomized trials. Arch Otolaryngol Head Neck Surg. 1999 Mar;125(3):269-72. Forssell H, Kalso EJ. Application of principles of evidence-based medicine to occlusal treatment for temporomandibular disorders: are there lessons to be learned? J Orofac Pain. 2004 Winter;18(1):9-22; discussion 23-32. de Souza RF, Lovato da Silva CH, Nasser M, Fedorowicz Z, Al-Muharraqi MA. Interventions for the management of temporomandibular joint osteoarthritis. Cochrane Database Syst Rev. 2012 Apr 18;4:CD007261. Koh H, Robinson PG. Occlusal adjustment for treating and preventing temporomandibular joint disorders. Cochrane Database Syst Rev. 2003;(1):CD003812. Luther F, Layton S, McDonald F. Orthodontics for treating temporomandibular joint (TMJ) disorders. Cochrane Database Syst Rev. 2010 Jul 7;(7):CD006541. de Leeuw R, Klasser GD. Orofacial pain: guidelines for assessment, diagnosis, and management. 5th Ed. Hanover Park: Quintessence Books; 2013. 312 p.

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Avoid use of orthopedic therapeutic biologics including platelet-rich plasma and stem cell treatment for foot and ankle problems without first considering established, conventional treatment options.

Rationale and Comments

Orthopedic therapeutic biologics (orthobiologics) comprise a variety of tissue grafts and autologous blood products that include platelet rich plasma and mesenchymal stem cell treatment. Surgeons bear responsibility to offer their patients efficacious, safe, and cost-effective treatments. Orthobiologic treatment can be costly and may not be covered by insurance. Patients can become financially vulnerable, especially when pursuing orthobiologic treatment that extends beyond its intended use, scientific support, or regulatory approval. Surgeons should be well versed in the scientific basis, techniques, potential risks, and regulatory status of orthobiologic treatments. Furthermore, surgeons should review the risks, benefits, and anticipated efficacy of orthobiologic therapy with patients in advance. Orthobiologic treatment options represent a rapidly expanding area of interest for both patients and providers, but remain relatively new and understudied. There is ongoing need for investigative research.

Sponsoring Organizations

American Orthopaedic Foot & Ankle Society

Sources

American Academy of Orthopaedic Surgeons guidelines

References

American Academy of Orthopaedic Surgeons. Position statement: innovation and novel technologies in orthopaedic surgery. Position statement 1185. 2020. https://www.aaos.org/globalassets/about/position-statements/1185---innovation-and-novel-technologies-in-orthopaedic-surgery-updated2020.pdf American Academy of Orthopaedic Surgeons. Position statement: use of emerging biologic therapies. Position statement 1187. 2020. https://www.aaos.org/globalassets/about/position-statements/1187-use-of-emerging-biologic-therapies-updated2020.pdf

467

Consider evaluating rotator cuff tears with ultrasound before ordering an MRI.

Rationale and Comments

Rotator cuff tears are one of the most common causes of shoulder pain. Determining rotator cuff integrity is pivotal in deciding between surgical and nonsurgical management. A combination of clinical history, physical examination, and imaging studies is needed to confirm the diagnosis. Given its comparable diagnostic accuracy, low cost, and convenience, high-frequency ultrasound may be considered prior to MRI, based on clinical determination via medical history, physical examination, and review of relevant imaging, for the evaluation of rotator cuff tears. Furthermore, the cost of MRI and some contraindications, like the presence of metal-mounted devices, could make ultrasound a better, more accessible option in certain clinical scenarios. A clinician skilled in diagnostic ultrasound could decide not to obtain an MRI for a rotator cuff tear if the diagnosis is clear after obtaining a good medical history, completing an adequate physical exam, and performing a good-quality diagnostic ultrasound. Ultrasound of the rotator cuff should be done by an experienced provider at a center with appropriate diagnostic ultrasound equipment.

Sponsoring Organizations

American Medical Society for Sports Medicine

Sources

Systematic review

References

Roy JS, Braën C, Leblond J, et al. Diagnostic accuracy of ultrasonography, MRI and MR arthrography in the characterisation of rotator cuff disorders: a systematic review and meta-analysis. Br J Sports Med. 2015;49(20):1316-1328. Okoroha KR, Fidai MS, Tramer JS, et al. Diagnostic accuracy of ultrasound for rotator cuff tears. Ultrasonography. 2019;38(3):215-220. Liang W, Wu H, Dong F, et al. Diagnostic performance of ultrasound for rotator cuff tears: a systematic review and meta-analysis. Med Ultrason. 2020;22(2):197-202.

507

Do not order follow-up X-rays for buckle (or torus) fractures if they are no longer tender or painful.

Rationale and Comments

Buckle (torus) fractures are very common injuries in young children, especially in the distal radius. The fracture is one of compression, where the metaphyseal bone impacts on itself, and actually becomes denser. These fractures are inherently stable and do not necessarily require a formal cast, unless severe pain or fracture instability necessitates a cast for four weeks. Instead immobilization with a simple wrist brace or removable splint is often preferable. The mild cortical angular deformity reliably remodels over time and requires no intervention or monitoring. If the fracture is non-tender to palpation at four weeks post-injury, no follow-up radiograph is required, and full activities may be resumed.

Sponsoring Organizations

American Academy of Pediatrics – Section on Orthopaedics and the Pediatric Orthopaedic Society of North America

Sources

Randomized controlled trials

References

Symons S. Rowsell M, Bhowal B, Diass JJ. Hospital versus home management of children with buckle factures of the distal radius: A prospective randomized trial. J Bone Joint Surg Br. 2001;83:556-560. Van Bosse HJ, Patel RJ, Thacker M, Sala DA. Minimalistic approach to treating wrist torus fractures. J Pediatric Orthop. 2005;25(4):495-500. Williams KG, Smith G, Luhmann SJ, Mao J, Gunn JD, Luhmann JD. A randomized controlled trial of cast versus splint for distal radial buckle fracture: An evaluation of satisfaction, convenience, and preference. Pediatric Emergency Care. 2013;29(5):555-559.

382

Don't cast or perform follow-up x-rays for isolated, nondisplaced or nonangulated distal radius buckle fractures that do not involve the physis and which have an intact cortex in children.

Rationale and Comments

Distal radius buckle fractures are one of the most common wrist fractures in children. These fractures are inherently stable and have an excellent prognosis. Radius buckle fractures can be safely treated with a Velcro removable wrist splint for three to four weeks, as long as the following conditions are met: 1) cortex is intact, 2) there are no fracture lines extending to the physis on any view, 3) there is no angulation or displacement of the fracture, 4) there are two or three inflection points seen in the cortex on either view that best represents the fracture, and 5) the parent can do a symptom check with instructions. Treating in a cast and repeating x-rays increases health care costs and radiation exposure for the patient. Parent satisfaction is also increased when these fractures are treated with a brace.

Sponsoring Organizations

American Medical Society for Sports Medicine

Sources

Expert consensus

References

Little KJ, Godfrey J, Cornwall R, et al. Increasing brace treatment for pediatric distal radius buckle fractures: using quality improvement methodology to implement evidence-based medicine. J Pediatr Orthop. 2019;39(8):e586-e591. Kuba MHM, Izuka BH. One brace: one visit: treatment of pediatric distal radius buckle fractures with a removable wrist brace and no follow-up visit. J Pediatr Orthop. 2018;38(6):e338-e342. West S, Andrews J, Bebbington A, et al. Buckle fractures of the distal radius are safely treated in a soft bandage: a randomized prospective trial of bandage versus plaster cast. J Pediatr Orthop. 2005;25(3):322-325.

508

Don't initially obtain x-rays for injured workers with acute non-specific low back pain.

Rationale and Comments

X-ray is unnecessary for the initial routine management of low back pain unless red flags are present. Even when red flags are suspected, it should not be mandatory to order an x-ray in all cases. There is also no reason, either medically or legally, to obtain low back x-rays as a "baseline" for work-related injuries.

Sponsoring Organizations

American College of Occupational and Environmental Medicine

Sources

American College of Occupational and Environmental Medicine guidelines

References

Talmage J, Belcourt R, Galper J, et al. Low back disorders. In: Hegmann K, ed. Occupational Medicine Practice Guidelines. 3rd ed. Elk Grove Village, Ill: American College of Occupational and Environmental Medicine; 2011. p. 336, 373, 376–7.

186

Don't obtain imaging (plain radiographs, MRI, CT, or other advanced imaging) of the spine in patients with non-specific acute low back pain and without red flags.

Rationale and Comments

Imaging of the spine in patients with acute low back pain during the early phase of symptom onset is unnecessary. Red flags that may indicate that early imaging of the spine is required can include neurological deficit such as weakness or numbness, any bowel or bladder dysfunction, fever, history of cancer, history of intravenous drug use, immunosuppression, steroid use, history of osteoporosis, or worsening symptoms.

Sponsoring Organizations

American Association of Neurological Surgeons and Congress of Neurological Surgeons

Sources

Systematic review

References

Chou R, et al. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007 Oct 2;147(7):478–91.

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Don't obtain spinal imaging for patients with acute low-back pain during the six weeks after onset in the absence of red flags.

Rationale and Comments

In the absence of red flags, evidence-based guidelines do not support the routine use of spinal imaging for patients with acute back pain of less than six weeks duration. Red flags include history of cancer, fracture or suspected fracture based on clinical history, progressive neurologic symptoms, and infection, as well as conditions that potentially preclude a dynamic thrust to the spine, such as osteopenia, osteoporosis, axial spondyloarthritis, and tumors. Unnecessary imaging incurs monetary cost, exposes the patient to ionizing radiation, and can result in labeling patients with conditions that are not clinically meaningful, creating a false sense of vulnerability and disability. Indeed, several studies have shown that the routine use of radiographs in the care of low-back pain may result in worse outcomes than without their use.

Sponsoring Organizations

American Chiropractic Association

Sources

Systematic review

References

Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. Lancet. 2009 Feb 7;373(9662):463-72. Bussières AE, Taylor JA, Peterson C. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults—an evidence-based approach—part 3: spinal disorders. J Manipulative Physiol Ther. 2008 Jan;31(1):33-88. Kendrick D, Fielding K, Bentley E, Miller P, Kerslake R, Pringle M. The role of radiography in primary care patients with low back pain of at least 6 weeks duration: a randomised (unblinded) controlled trial. Health Technol Assess. 2001;5(30):1-69. Vining RD, Potocki E, McLean I, Seidman M, Morgenthal AP, Boysen J, Goertz C. Prevalence of radiographic findings in individuals with chronic low back pain screened for a randomized controlled trial: secondary analysis and clinical implications. J Manipulative Physiol Ther. 2014 Nov-Dec;37(9):678-87. National Guideline Clearinghouse (NGC). Guideline summary: ACR Appropriateness Criteria® low back pain. In: National Guideline Clearinghouse (NGC) [Website]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); [2016 Jan 22]. Available from: https://www.guideline.gov/summaries/summary/49915. Brinjikji W, Luetmer PH, Comstock B, Bresnahan BW, Chen LE, Deyo RA, Halabi S, Turner JA, Avins AL, James K, Wald JT, Kallmes DF, Jarvik JG. Systematic literature review of imaging features of spinal degeneration in asymptomatic populations. AJNR Am J Neuroradiol. 2015 Apr;36(4):811-6.

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Don't order advanced imaging studies (MRI or CT) for most musculoskeletal conditions in a child until all appropriate clinical, laboratory, and plain radiographic examinations have been completed.

Rationale and Comments

History, physical examination, and appropriate radiographs remain the primary diagnostic modalities in pediatric orthopedics, as they are both diagnostic and prognostic for the great majority of pediatric musculoskeletal conditions. Examples of such conditions would include, but not be limited to, the workup of injury or pain (spine, knees, and ankles), possible infection, and deformity. MRI examinations and other advanced imaging studies are costly, frequently require sedation in the young child (five years old or less), and may not result in appropriate interpretation if clinical correlations cannot be made. Many conditions require specific MRI sequences or protocols best ordered by the specialist who will be treating the patient. Inappropriately obtained MRIs may need to be repeated in those circumstances. Additionally, a significant dose of radiation is delivered to the patient during a CT scan, so their utility in a specific case would be best confirmed prior to ordering. Therefore, in those conditions where advanced imaging is indicated, it has greater value when it is used to answer a specific question that arises from a thorough clinical and appropriate radiographic evaluation. Additionally, if you believe findings warrant additional advanced imaging, discuss with the consulting orthopedic surgeon to make sure the optimal studies are ordered.

Sponsoring Organizations

American Academy of Pediatrics – Section on Orthopaedics and the Pediatric Orthopaedic Society of North America

Sources

American College of Radiology guidelines

References

Piccolo CL, Galluzzo M, Ianniello S, Trinci M, Russo A, Rossi E, Zecconlini M, Laporta A, Guglielmi G, Muiele V. Pediatric musculoskeletal injuries: role of ultrasound and magnetic resonance imaging. Mesculoskelet Surg. 2017;101(suppl 1):85-102. LaBella CR, Hennrikus W, Hewett TE. Anterior cruciate ligament Injuries: diagnosis, treatment, and prevention. Pediatrics. 2014;133(5):e1437-e1450. Tuite MJ, Kransdort MJ, Beaman FD, Adler RS, Amini B, Appel M, Bernard SA, Dempsey ME, Fries IB, Greenspan BS, Khurana B, Mosher TJ, Walker EA, Ward RJ, Wessell DE, Weissman BN. ACR Appropriateness Criteria® Acute Trauma to the Knee. Available at https:acsearch.acr.org/docs/69419/Narrative/ American College of Radiology. Revised 2014. Deyle GD. The role of MRI in musculoskeletal practice: a clinical perspective. J Man Manip Ther. 2011;19(3):152-161. Bateni C, Bindra J, Haus B. MRI of sports injuries in children and adolescents: what's different from adults. Current Radiology Reports. 2014;2:45.

Don't order an electromyogram for low back pain unless there is leg pain or sciatica.

Rationale and Comments

Utilization of electromyogram studies for diagnosis of low back pain without leg pain is not supported. Electromyogram studies have good specificity for the detection of lumbosacral radiculopathy in sciatica patients when appropriate electrodiagnostic criteria are used.

Sponsoring Organizations

American Academy of Physical Medicine and Rehabilitation

Sources

Expert consensus

References

Tong HC. Specificity of needle electromyography for lumbar radiculopathy in 55- to 79-yr-old subjects with low back pain and sciatica without stenosis. Am J Phys Med Rehabil. 2011 Mar;90(3):233–8.

Don't order an imaging study for back pain without performing a thorough physical examination.

Rationale and Comments

A thorough history and physical examination are necessary to guide imaging decisions. Ordering spine imaging without obtaining a history and physical examination has not been shown to improve patient outcomes and increases costs.

Sponsoring Organizations

American Academy of Physical Medicine and Rehabilitation

Sources

Cochrane Database of Systematic Reviews

References

Chou R, Qaseem A, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Diagnostic imaging for low back pain: advice for high-value health care from the American College of Physicians. Ann Intern Med. 2011 Feb 1;154(3):181–9.

Don't order ankle or midfoot x-rays for patients older than six years without positive criteria, per the Ottawa ankle rules.

Rationale and Comments

Both children and adults commonly present to health care settings in outpatient clinics, urgent care clinics, and hospital emergency rooms with ankle and foot injuries. Multiple randomized controlled studies and meta-analyses have shown the high sensitivity of the Ottawa Ankle Rules to rule out fractures when criteria are not met, and thus avoid the need for imaging in the acute setting. Unnecessary imaging increases health care costs, patient wait times, and radiation exposure. It should be noted that there is much less data for application of the Ottawa Ankle Rules for children under the age of six years, due to fewer ankle and midfoot injuries in this patient population, as well as difficulty of children in this age group to walk independently.

Sponsoring Organizations

American Medical Society for Sports Medicine

Sources

Systematic review

References

•Beckenkamp PR, Lin CC, Macaskill P, et al. Diagnostic accuracy of the Ottawa Ankle and Midfoot Rules: a systematic review with meta-analysis. Br J Sports Med. 2017;51(6):504-510. •Can U, Ruckert R, Held U, et al. Safety and efficiency of the Ottawa Ankle Rule in a Swiss population with ankle sprains. Swiss Med Wkly. 2008;138(19-20):292-296. •Dowling S, Spooner CH, Liang Y, et al. Accuracy of Ottawa Ankle Rules to exclude fractures of the ankle and midfoot in children: a meta-analysis. Acad Emerg Med. 2009;16(4):277-287. •Stiell IG, Greenberg GH, McKnight RD, et al. A study to develop clinical decision rules for the use of radiography in acute ankle injuries. Ann Emerg Med. 1992;21(4):384-390. •Plint AC, Bulloch B, Osmond MH, et al. Validation of the Ottawa Ankle Rules in children with ankle injuries. Acad Emerg Med. 1999;6(10):1005-1009.

Don't order custom orthotics or shoe inserts for a child with minimally symptomatic or asymptomatic flat feet.

Rationale and Comments

Flexible flat feet are normal physiologic variants commonly found in children and adults. Unlike a painful or rigid flatfoot that requires further workup, if an arch is present when standing on tiptoe, the foot can be managed with observation or over-the-counter orthotics. The use of custom orthotic devices to provide support for the foot does not aid in the development of the arch.

Sponsoring Organizations

American Academy of Pediatrics – Section on Orthopaedics and the Pediatric Orthopaedic Society of North America

Sources

Expert consensus

References

Wenger DR, Mauldin D, Speck G. Morgan D, Lieber RL. Corrective shoes and inserts as treatment for flexible flatfoot in infants and children. J Bone Joint Surg Am. Jul;71(6):800-810. Staheli LT, Chew DE, Corbett M. The longitudinal arch: A survey of eight hundred and eighty-two feet in normal children and adults. J Bone Joint Surg Am. 1987;69(3):426-428.

Don't order radiographs or advise bracing or surgery for a child less than eight years of age with simple in-toeing gait.

Rationale and Comments

Mild in-toeing is usually a physiologic phenomenon reflecting ongoing maturation of the skeleton. Metatarsus adductus, femoral anteversion, and tibial torsion all contribute to in-toeing and tend to improve with growth. Simply monitoring gait for continued improvement at normal well child examination intervals is adequate until the age of seven or eight unless there is severe tripping and falling or asymmetry. It is not possible to alter the natural evolution using physical therapy, bracing or shoe inserts.

Sponsoring Organizations

American Academy of Pediatrics – Section on Orthopaedics and the Pediatric Orthopaedic Society of North America

Sources

Prospective cohort studies

References

Fabry G, Cheng LX, Molenaers G. Normal and abnormal torsional development in children. Clinical Orthopaedics and Related Research. 1994;(301):22-26. Fabry G, MacEwen GD, Sharnds AR, Jr. Torsion of the femur: A follow up study in normal and abnormal conditions. J Bone Joint Surg. Am. 1973;55(8):1726-1738. Lincoln TL. Suen PW. Common rotational variations in children. The Journal of the American Academy of Orthopaedic Surgeons. 2003;11(5):312-320. Staheli LT. Corbett M. Wyss C, King H. Lower-extremity rotational problems in children. Normal values to guide management. J Bone Joint Surg Am. 1985;67(1):39-47. Svenningsen S. Apalset K. Terjesen T, Anda S. Regression of femoral anteversion. A prospective study of in-toeing of children. Acta Orthopaedica Scandinavica. 1989;60(2):170-173.

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Don't perform imaging for low back pain within the first six weeks unless red flags are present. note: Red flags include, but are not limited to, severe or progressive neurologic deficits or when serious underlying conditions such as osteomyelitis are suspected.

Rationale and Comments

Imaging of the lumbar spine before six weeks does not improve outcomes, but does increase costs. Low back pain is the fifth most common reason for all physician visits.

Sponsoring Organizations

American Academy of Family Physicians|American College of Physicians

Sources

Cochrane Database of Systematic Reviews|Agency for Health Care Policy and Research

References

Agency for Health Care Policy and Research Cochrane Database of Systematic Reviews

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Don't perform repeat imaging to monitor patients' progress.

Rationale and Comments

With few exceptions (e.g., the long-term management of idiopathic scoliosis) radiographic findings should not be used as outcome measures for low-back pain. There is currently no data available to support a relationship between changes in alignment or other structural characteristics and patient improvement. This practice increases costs, exposes patients unnecessarily to ionizing radiation, and may distract from more meaningful outcomes. Furthermore, there is no known correlation between performing routine or repeat imaging studies to monitor a patient's condition and improved clinical outcomes or meaningful changes in patient management. Repeat imaging is appropriate only if strong clinical indications exist, such as a major change in diagnosis, documented worsening of symptoms, or significant progression of disease. Failure to respond to treatment is not an indication for repeat imaging.

Sponsoring Organizations

American Chiropractic Association

Sources

Systematic review

References

Brinjikji W, Luetmer PH, Comstock B, Bresnahan BW, Chen LE, Deyo RA, Halabi S, Turner JA, Avins AL, James K, Wald JT, Kallmes DF, Jarvik JG. Systematic literature review of imaging features of spinal degeneration in asymptomatic populations. AJNR Am J Neuroradiol. 2015 Apr;36(4):811-6. Matsumoto M, Okada E, Toyama Y, Fujiwara H, Momoshima S, Takahata T. Tandem age-related lumbar and cervical intervertebral disc changes in asymptomatic subjects. Eur Spine J. 2013 Apr;22(4):708-13. Okada E, Matsumoto M, Fujiwara H, Toyama Y. Disc degeneration of cervical spine on MRI in patients with lumbar disc herniation: comparison study with asymptomatic volunteers. Eur Spine J. 2011 Apr;20(4):585-91. Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. Lancet. 2009 Feb 7;373(9662):463-72. Kendrick D, Fielding K, Bentley E, Kerslake R, Miller P, Pringle M. Radiography of the lumbar spine in primary care patients with low back pain: randomised controlled trial. BMJ 2001 Feb 17; 322(7283): 400-5. Bussières AE, Taylor JA, Peterson C. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults-an evidence-based approach-part 3: spinal disorders. J Manipulative Physiol Ther. 2008 Jan;31(1):33-88. National Guideline Clearinghouse (NGC). Guideline summary: ACR Appropriateness Criteria® low back pain. In: National Guideline Clearinghouse (NGC) [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2001 Jul 31 [updated 2016 Jan 22; cited 2017 May 4]. Available from: https://www.guideline.gov/summaries/summary/49915.

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Don't prescribe bed rest for acute localized back pain without completing an evaluation.

Rationale and Comments

Prolonged bed rest (more than 2 days) in acute localized low back pain has not been shown to improve long-term function or pain. Bed rest prescriptions should be limited to less than 48 hours in patients with non-traumatic acute localized low back pain in the absence of traditional red flag signs, including, but not limited to, tumors, neurological issues, and weakness.

Sponsoring Organizations

American Academy of Physical Medicine and Rehabilitation

Sources

Cochrane Database of Systematic Reviews

References

Dahm KT, Brurberg KG, Jamtvedt G, Hagen KB. Advice to rest in bed versus advice to stay active for acute low-back pain and sciatica. Cochrane Database Syst Rev. 2010 Jun 16;(6):CD007612.

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Don't prescribe lumbar supports or braces for the long-term treatment or prevention of low-back pain.

Rationale and Comments

While there may be limited benefit in the short term, the prolonged use of lumbar supports is not supported by the literature for the treatment or prevention of low-back pain. Numerous systematic reviews have found limited to no value for their use in this context. The literature clearly demonstrates that such passive therapies are contrary to the currently accepted central principle of low-back pain care, which is that the patient must engage in an active rehabilitative regimen to achieve the best outcomes.

Sponsoring Organizations

American Chiropractic Association

Sources

Cochrane Database of Systematic Reviews

References

Kawchuk GN, Edgecombe TL, Wong AY, Cojocaru A, Prasad N; A non-randomized clinical trial to assess the impact of nonrigid, inelastic corsets on spine function in low back pain participants and asymptomatic controls. Spine J. 2015 Oct 1;15(10):2222-7. Morrisette DC, Cholewicki J, Logan S, Seif G, McGowan S; A randomized clinical trial comparing extensible and inextensible lumbosacral orthoses and standard care alone in the management of lower back pain. Spine (Phila Pa 1976). 2014 Oct 1;39(21):1733-42. van Duijvenbode I, Jellema P, van Poppel M, van Tulder MW. Lumbar supports for prevention and treatment of low back pain. Cochrane Database of Systematic Reviews 2008, Issue 2. Art. No.: CD001823. Chou R, Deyo R, Friedly J, et al. Noninvasive Treatments for Low Back Pain. Comparative Effectiveness Review No. 169. [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2016 Feb. (Comparative Effectiveness Reviews, No. 169.) [cited 2017 May 4]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK350276/ Qaseem A, Wilt TJ, McLean RM, Forciea MA; Clinical Guidelines Committee of the American College of Physicians. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. Ann Intern Med. 2017;166(7):514-530. Azadinia F, Ebrahimi E Takamjani, Kamyab M, Parnianpour M, Cholewicki J, Maroufi N. Can lumbosacral orthoses cause trunk muscle weakness? A systematic review of literature. Spine J. 2017,17(4):589-602.

333

Don't prescribe opiates in acute disabling low back pain before evaluation and a trial of other alternatives is considered.

Rationale and Comments

Early opiate prescriptions in acute disabling low back pain are associated with longer disability, increased surgical rates, and a greater risk of later opioid use. Opiates should be prescribed only after a physician evaluation by a licensed health care provider and after other alternatives are trialed.

Sponsoring Organizations

American Academy of Physical Medicine and Rehabilitation

Sources

Retrospective cohort study

References

Webster BS. Verma SK. Gatchel RJ. Relationship between early opioid prescribing for acute occupational low back pain and disability duration, medical costs, subsequent surgery and late opioid use. Spine. 2007 Sep 1;32(19):2127–32.

217

Don't recommend bed rest for low back pain. Patients should remain as active as possible and be encouraged to find positions of comfort and engage in activities that don't worsen symptoms during an acute episode.

Rationale and Comments

In patients with low back pain, bed rest has not been shown to be beneficial and has been shown to delay recovery.

Sponsoring Organizations

North American Spine Society

Sources

Cochrane Database of Systematic Reviews

References

Dahm KT, Brurberg KG, Jamtvedt G, Hagen KB. Advice to rest in bed versus advice to stay active for acute low-back pain and sciatica. Cochrane Database Syst Rev. 2010 Jun 16;(6):CD007612. McIntosh G, Hall H. Low back pain (acute). BMJ Clin Evid. 2011;2011:1102. Abdel Shaheed C, Maher CG, Williams KA, McLchlan AJ. Interventions available over the counter and advice for acute low back pain: systematic review and meta-analysis. J Pain. 2014;15(1):2-15. Casser HR, Seddigh S, Rauschmann M. Acute lumbar back pain. Dtsch Arztebl Int. 2016;113(13):223-234.

129

Don't recommend imaging of the spine within the first six weeks of an acute episode of low back pain in the absence of red flags.

Rationale and Comments

Red flags include, but are not limited to: trauma history, unintentional weight loss, immunosuppression, history of cancer, intravenous drug use, steroid use, fracture, infection, deformity, osteoporosis or osteopenia, progressive paresthesias or weakness involving the pelvis and lower extremities, urinary retention, saddle anesthesia, age > 50, focal neurologic deficit, and progression of symptoms.

Sponsoring Organizations

North American Spine Society

Sources

ACP/APS guidelines

References

Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007 Oct 2;147(7):478-91. Forseen S, Corey A. Clinical decision support and acute low back pain: evidence-based order sets. J Am Coll Radiol. 2012 Oct;9(10):704-12. Oliveira CB, Maher CG, Pinto RZ, et al. Clinical practice guidelines for the management of non-specific low back pain in primary care: an updated overview. Eur Spine J. 2018; doi: 10.1007/s00586-018-5673-2. [Epub ahead of print].

127

Don't routinely order x-ray for diagnosis of plantar fasciitis/heel pain in employees who stand or walk at work.

Rationale and Comments

As the diagnosis of plantar fasciitis is in most cases evident from the worker's history and physical examination, x-ray is not recommended for routine evaluations for plantar fasciitis except in cases where a serious underlying medical condition is suspected (e.g., fracture, infection)

Sponsoring Organizations

American College of Occupational and Environmental Medicine

Sources

American College of Occupational and Environmental Medicine guidelines

References

Haas N, Beecher P, Easly M, et al. Ankle and foot disorders. In: Hegmann K, ed. Occupational Medicine Practice Guidelines. 3rd ed. Elk Grove Village, Ill: American College of Occupational and Environmental Medicine; 2011. p. 1182.

187

Don't routinely use MRI to diagnose bone infection (osteomyelitis) in the foot.

Rationale and Comments

When the diagnosis of osteomyelitis can be reliably established by clinical means and/or serial plain film radiographs, MRI is generally unnecessary. Furthermore, MRI is particularly poor at differentiating osteomyelitis from benign postoperative marrow edema and from marrow edema due to Charcot arthropathy. Use of MRI in these instances can lead to a false positive interpretation and potentially harmful overtreatment.

Sponsoring Organizations

American Podiatric Medical Association

Sources

IDSA guideline

References

Lipsky BA, et al. 2012 Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. CID. 2012;54:132. Rogers LC, et al. The Charcot foot in diabetes. Diabetes Care. 2011;34:2123. Ledermann HP, et al. Pitfalls and limitations of magnetic resonance imaging in chronic posttraumatic osteomyelitis. Eur Radiol. 2000;10:1815-23.

328

Don't transfuse asymptomatic postoperative hip fracture patients with a hemoglobin higher than 8g/dL.

Rationale and Comments

Two high-strength studies (Carson et al. and Carson et al.) support this recommendation. Carson et al. (FOCUS trial) is the largest (n = 2,016) and most robust study to address transfusion threshold in hip fracture patients. FOCUS considered patient-centered and clinically important outcomes in a prospective, randomized, multicenter, controlled trial. This study showed that a restrictive transfusion threshold of hemoglobin 8g/dL in asymptomatic hip fracture patients with cardiovascular disease or risk factors resulted in no significant difference in primary or secondary outcomes at 30 or 60 days including mortality, independent walking ability, residence, other functional outcomes, cardiovascular events, or length of stay. Carson's 1998 trial was also a high-strength study and was the pilot study that led to FOCUS. Symptoms or signs that were considered indicative of anemia appropriate for transfusion were chest pain that was deemed to be cardiac in origin, congestive heart failure, and unexplained tachycardia or hypotension unresponsive to fluid replacement.

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources

Randomized controlled trials

References

Carson JL, Terrin ML, Noveck H, et al. Liberal or restrictive transfusion in high-risk patients after hip surgery. N Engl J Med. 2011;365(26):2453-2462. Carson JL, Terrin ML, Barton FB, et al. A pilot randomized trial comparing symptomatic vs. hemoglobin-level-driven red blood cell transfusions following hip fracture. Transfusion. 1998;38(6):522-529.

427

Don't use electromyography (EMG) and nerve conduction studies (NCS) to determine the cause of axial lumbar, thoracic or cervical spine pain.

Rationale and Comments

Electromyography and nerve conduction studies are measures of nerve and muscle function. They may be indicated when there is concern for a neurologic injury or disorder, such as the presence of leg or arm pain, numbness or weakness associated with compression of a spinal nerve. As spinal nerve injury is not a cause of neck, mid back, or low back pain, EMG/NCS have not been found to be helpful in diagnosing the underlying causes of axial lumbar, thoracic, and cervical spine pain.

Sponsoring Organizations

North American Spine Society

Sources

Expert consensus

References

Sandoval AE. Electrodiagnostics for low back pain. Phys Med Rehabil Clin N Am. 2010 Nov;21(4):767-76. NASS Evidence-Based Guideline: North American Spine Society (NASS). Diagnosis and treatment of degenerative lumbar spinal stenosis. Burr Ridge (IL): North American Spine Society (NASS); 2011. 104 p.

128

Don't use glucosamine and chondroitin to treat patients with symptomatic osteoarthritis of the knee.

Rationale and Comments

Both glucosamine and chondroitin sulfate do not provide relief for patients with symptomatic osteoarthritis of the knee.

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources

Randomized controlled trials

References

American Academy of Orthopaedic Surgeons. Clinical Practice Guideline on the Treatment of Osteoarthritis of the Knee (Non-Arthroplasty). Rosemont (IL): American Academy of Orthopaedic Surgeons, 2008 Dec. Available from: http://www.aaos.org/research/guidelines/OAKguideline.pdf. Altman RD, Marcussen KC. Effects of a ginger extract on knee pain in patients with osteoarthritis. Arthritis Rheum. 2001;44(11):2531-8. Bourgeois P, Chales G, Dehais J, Delcambre B, Kuntz JL, Rozenberg S. Efficacy and tolerability of chondroitin sulfate 1200 mg/day versus chondroitin sulfate 3 x 400 mg/day versus placebo. Osteoarthritis Cartilage. 1998;6 Suppl A:25-30. Bucsi L, Poor G. Efficacy and tolerability of oral chondroitin sulfate as a symptomatic slow-acting drug for osteoarthritis (SYSADOA) in the treatment of knee osteoarthritis. Osteoarthritis Cartilage. 1998;6 Suppl A:31-6. Cibere J, Kopec JA, Thorne A, Singer J, Canvin J, Robinson DB, Pope J, Hong P, Grant E, Esdaile JM. 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The efficacy and tolerability of glucosamine sulfate in the treatment of knee osteoarthritis: a randomized, double-blind, placebo-controlled trial. Curr Ther Res Clin Exper. 2009;70:185-96. Houpt JB, McMillan R, Wein C, Paget-Dellio SD. Effect of glucosamine hydrochloride in the treatment of pain of osteoarthritis of the knee. J Rheumatol. 1999;26(11):2423-30. Hughes R, Carr A. A randomized, double-blind, placebo-controlled trial of glucosamine sulphate as an analgesic in osteoarthritis of the knee. Rheumatology. 2002;41(3):279-84. Kahan A, Uebelhart D, De Vathaire F, Delmas PD, Reginster JY. Long-term effects of chondroitins 4 and 6 sulfate on knee osteoarthritis: the study on osteoarthritis progression prevention, a two-year, randomized, double-blind, placebo-controlled trial. Arthritis Rheum. 2009;60(2):524-33. Mazieres B, Combe B, Phan VA, Tondut J, Grynfeltt M. 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Richmond J, Hunter D, Irrgang J, Jones MH, Levy B, Marx R, Snyder-Mackler L, Watters WC, Haralson RH, Turkelson CM, Wies JL, Boyer KM, Anderson S, St Andre J, Sluka P, McGowan R; American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee (nonarthroplasty), JAAOS. 2009;17(9):591-600. Rindone JP, Hiller D, Collacott E, Nordhaugen N, Arriola G. Randomized, controlled trial of glucosamine for treating osteoarthritis of the knee. West J Med. 2000;172(2):91-4. Samson DJ, Grant MD, Ratko TA, Bonnell CJ, Ziegler KM, Aronson N. Treatment of primary and secondary osteoarthritis of the knee. Rockville (MD): Agency for Healthcare Research and Quality. 2007 Sep 1; Report No. 157. Tao QW, Xu Y, Jin DE, Yan XP. Clinical efficacy and safety of Gubitong Recipe in treating osteoarthritis of knee joint. Chin J Integr Med. 2009;15(6):458-61. Trc T, Bohmova J. Efficacy and tolerance of enzymatic hydrolysed collagen (EHC) versus glucosamine sulphate (GS) in the treatment of knee osteoarthritis (KOA). Int Orthop. 2011;35:341-8. Uebelhart D, Malaise M, Marcolongo R, De Vathaire F, Piperno M, Mailleux E, Fioravanti A, Matoso L, Vignon E. Intermittent treatment of knee osteoarthritis with oral chondroitin sulfate: a one-year, randomized, double-blind, multicenter study versus placebo. Osteoarthritis Cartilage. 2004;12(4):269-76. Zakeri Z, Izadi S, Bari Z, Soltani F, Narouie B, Ghasemi-Rad M. Evaluating the effects of ginger extract on knee pain, stiffness and difficulty in patients with knee osteoarthritis. J Med Plant Res. 2011;5(15):3375-9.

Don't use lateral wedge insoles to treat patients with symptomatic medial compartment osteoarthritis of the knee.

Rationale and Comments

In patients with symptomatic osteoarthritis of the knee, the use of lateral wedge or neutral insoles does not improve pain or functional outcomes. Comparisons between lateral and neutral heel wedges were investigated, as were comparisons between lateral wedged insoles and lateral wedged insoles with subtalar strapping. The systematic review concludes that there is only limited evidence for the effectiveness of lateral heel wedges and related orthoses. In addition, the possibility exists that those who do not use them may experience fewer symptoms from osteoarthritis of the knee.

Sponsoring Organizations

American Academy of Orthopaedic Surgeons

Sources Cochrane Database of Systematic Reviews

References

American Academy of Orthopaedic Surgeons. Clinical practice guideline on the treatment of osteoarthritis of the knee (non-arthroplasty). Rosemont (IL): American Academy of Orthopaedic Surgeons, 2008 Dec. Available from: http://www.aaos.org/research/guidelines/OAKguideline.pdf. Baker K, Goggins J, Xie H, Szumowski K, Lavalley M, Hunter DJ, Felson DT. A randomized crossover trial of a wedged insole for treatment of knee osteoarthritis. Arthritis Rheum. 2007;56(4):1198-203. Bennell KL, Bowles KA, Payne C, Cicuttini F, Williamson E, Forbes A, Hanna F, Davies-Tuck M, Harris A, Hinman RS. Lateral wedge insoles for medial knee osteoarthritis: 12 month randomized controlled trial. BMJ. 2011;342:d2912. Brouwer RW, Jakma TS, Verhagen AP, Verhaar JA, Bierma-Zeinstra SM. Braces and orthoses for treating osteoarthritis of the knee. Cochrane Database Syst Rev. 2005;1:CD004020. Maillefert JF, Hudry C, Baron G, Kieffert P, Bourgeois P, Lechevalier D, Coutaux A, Dougados M. Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis: a prospective randomized controlled study. Osteoarthritis Cartilage. 2001;9(8):738-45. Nigg BM, Emery C, Hiemstra LA. Unstable shoe construction and reduction of pain in osteoarthritis patients. Med Sci Sports Exerc. 2006;38(10):1701-8. Pham T, Maillefert JF, Hudry C, Kieffert P, Bourgeois P, Lechevalier D, Dougados M. Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis. A two-year prospective randomized controlled study. Osteoarthritis Cartilage. 2004;12(1):46-55. Richmond J, Hunter D, Irrgang J, Jones MH, Levy B, Marx R, Snyder-Mackler L, Watters WC, Haralson RH, Turkelson CM, Wies JL, Boyer KM, Anderson S, St Andre J, Sluka P, McGowan R; American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee (nonarthroplasty), JAAOS. 2009;17(9):591-600. Toda Y, Segal N, Kato A, Yamamoto S, Irie M. Effect of a novel insole on the subtalar joint of patients with medial compartment osteoarthritis of the knee. J Rheumatol. 2001;28:2705-10. Toda Y, Tsukimura N. A comparative study on the effect of the insole materials with subtalar strapping in patients with medial compartment osteoarthritis of the knee. Mod Rheumatol 2004;14(6):459-65. Toda Y, Segal N. Usefulness of an insole with subtalar strapping for analgesia in patients with medial compartment osteoarthritis of the knee. Arthritis Rheum. 2002;47:468-73. Toda Y, Tsukimura N. A six month follow-up of a randomized trial comparing the efficiency of a lateral-wedge insole with subtabalar strapping and in-shoe lateral-wedge insole in patients with varus deformity osteoarthritis of the knee. Arthritis Rheum. 2004;50:3129-36. Toda Y, Tsukimura N. A 2-year follow-up of a study to compare the efficiency of lateral-wedged insoles with subtalar strapping and in-shoe lateral-wedged insoles in patients with varus deformity osteoarthritis of the knee. Osteoarthritis Cartilage. 2006;14:231-7.

Don't use slings for individuals with a hemiplegic arm that place the arm in a flexor pattern for extended periods of time.

Rationale and Comments

Standard shoulder slings immobilize the upper extremity in a flexor pattern (i.e., a position of elbow flexion, and shoulder adduction and internal rotation). Utilizing a sling that places a person's hemiplegic arm in this position for extended periods of time increases the risk of contractures and pain, and limits active use of the extremity, thereby decreasing opportunities for neuroplastic changes that support an organic increase in function. Education should be provided to clients and caregivers on safe positioning of the hemiplegic arm during activity and at rest.

Sponsoring Organizations

American Occupational Therapy Association, Inc.

Sources

Randomized controlled trials

References

Gillen G, Nilsen DM. (2021). Upper extremity function and management. In Gillen G and Nilsen DM (eds.) Stroke rehabilitation: a function-based approach (5th ed.). St. Louis: Elsevier Science. van Bladel A, Lambrecht G, Oostra KM, et al. A randomized controlled trial on the immediate and long-term effects of arm slings on shoulder subluxation in stroke patients. Eur J Phys Rehabil Med. 2017;53(3):400-409.

490

Don't order a screening hip ultrasound to rule out developmental hip dysplasia or developmental hip dislocation if the baby has no risk factors and has a clinically stable hip examination.

See Neonatology.

Avoid prescribing antibiotics in the emergency department for uncomplicated sinusitis.

Rationale and Comments

Sinusitis is a common reason for patients to visit the emergency department. Most patients with acute sinusitis do not require antibiotic treatment, because approximately 98% of acute sinusitis cases are caused by a viral infection and resolve in 10-14 days without treatment. For some patients with sinusitis, antibiotics might be appropriate, such as those patients taking drugs that reduce the effectiveness of the immune system, those with prolonged, severe symptoms, or those with worsening symptoms. Antibiotics can cause many side effects and have potentially severe complications, and these risks usually outweigh the benefits of their use for sinusitis. In addition, inappropriate antibiotic use for sinusitis can contribute to the development of antibiotic-resistant infections and contributes to avoidable health care costs.

Sponsoring Organizations

American College of Emergency Physicians

Sources

IDSA/AAP guidelines

References

Sinusitis and antibiotics. Lancet Infect Dis. 2012 May;12(5):355. Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr, Infectious Diseases Society of America. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. Clin Infect Dis. 2012Apr;54(8):e72-e112. Ahovuo-Saloranta A, Rautakorpi UM, Borisenko OV, Liira H, Williams JW Jr, Mäkelä M. Antibiotics for acute maxillary sinusitis in adults. Cochrane Database Syst Rev. 2014 Feb 11;2:CD000243. Donnelly JP, Baddley JW, Wang HE. Antibiotic utilization for acute respiratory tract infections in U.S. emergency departments. Antimicrob Agents Chemother. 2014;58(3):1451-7. Tashima L, Piccirillo JF. Are antibiotics indicated for acute sinusitis? Laryngoscope. 2014 Sep;124(9):1979-80. Wald ER, Applegate KE, Bordley C, Darrow DH, Glode MP, Marcy SM, Nelson CE, Rosenfeld RM, Shaikh N, Smith MJ, Williams PV, Weinberg ST; American Academy of Pediatrics. American Academy of Pediatrics. Clinical practice guideline for the diagnosis and management of acute bacterial sinusitis in children aged 1 to 18 years. Pediatrics. 2013 Jul;132(1):e262-80. MacKenzie A. Balancing the benefits and risks of empirical antibiotics for sinusitis: A teachable moment. JAMA Intern Med. 2014 Aug 1;174(8):1221-2.

225

Don't obtain CT or MRI in patients with a primary complaint of hoarseness prior to examining the larynx.

Rationale and Comments

Examination of the larynx with mirror or fiberoptic scope is the primary method for evaluating patients with hoarseness. Imaging is unnecessary in most patients and is both costly and has potential for radiation exposure. After laryngoscopy, evidence supports the use of imaging to further evaluate 1) vocal fold paralysis or 2) a mass or lesion of the larynx.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

American Academy of Otolaryngology–Head and Neck Surgery Foundation practice guidelines

References

Schwartz SR, et al. Clinical practice guideline: hoarseness (dysphonia). Otolaryngol Head Neck Surg. 2009;141(3 suppl 2):S1-31.

55

Don't order CT scan of the head/brain for sudden hearing loss.

Rationale and Comments

CT scanning is expensive, exposes the patient to radiation, and offers no useful information that would improve initial management. CT scanning may be appropriate in patients with focal neurologic findings, a history of trauma, or chronic ear disease.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

American Academy of Otolaryngology–Head and Neck Surgery Foundation practice guidelines

References

Stachler RJ, et al. Clinical practice guideline: sudden hearing loss. Otolaryngol Head Neck Surg. 2012;146(3 suppl):S1-35.

54

Don't order imaging studies in patients with non-pulsatile bilateral tinnitus, symmetric hearing loss, and an otherwise normal history and physical examination.

Rationale and Comments

The utility of imaging procedures in primary tinnitus is undocumented; imaging is costly, has potential for radiation exposure, and does not change management.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

Practice guideline

References

Tunkel DE, Bauer CA, Sun GH, Rosenfeld RM, Chandrasekhar SS, Cunningham ER Jr, Archer SM, Blakley BW, Carter JM, Granieri EC, Henry JA, Hollingsworth D, Khan FA, Mitchell S, Monfared A, Newman CW, Omole FS, Phillips CD, Robinson SK, Taw MB, Tyler RS, Waguespack R, Whamond EJ. Clinical practice guideline: tinnitus. Otolaryngol Head Neck Surg. 2014;151(S2):S1-40.

240

Don't order more than one CT scan of the paranasal sinuses within 90 days to evaluate uncomplicated chronic rhinosinusitis patients when the paranasal sinus CT obtained is of adequate quality and resolution to be interpreted by the clinician and used for clinical decision-making and/or surgical planning.

Rationale and Comments

CT scanning is expensive, exposes the patient to ionizing radiation, and offers no additional information that would improve initial management. Multiple CT scans within 90 days may be appropriate in patients with complicated sinusitis or when an alternative diagnosis is suspected.

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

Practice guideline

References

Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, Brook I, Kumar KA, Kramper M, Orlandi RR, Palmer JN, Patel, ZM, Peters A, Walsh S, Corrigan MD. Clinical practice guideline: adult sinusitis. Otolaryngol Head Neck Surg. Expected April 2015.

241

Don't prescribe antibiotics for otitis media in children aged two to 12 years with nonsevere symptoms where the observation option is reasonable.

Rationale and Comments

The "observation option" refers to deferring antibacterial treatment of selected children for 48 to 72 hours and limiting management to symptomatic relief. The decision to observe or treat is based on the child's age, diagnostic certainty and illness severity. To observe a child without initial antibacterial therapy, it is important that the parent or caregiver has a ready means of communicating with the clinician. There also must be a system in place that permits reevaluation of the child.

Sponsoring Organizations

American Academy of Family Physicians

Sources

American Academy of Pediatrics guidelines

References

Lieberthal AS, Carroll AE, Chonmaitree T, Ganiats TG, Hoberman A, Jackson MA, Joffe MD, Miller DT, Rosenfeld RM, Sevilla XD, Schwartz RH, Thomas PA, Tunkel DE, American Academy of Pediatrics. The diagnosis and management of acute otitis media. Pediatrics. 2013 Mar;131(3):e964-99. Venekamp RP, Sanders S, Glasziou PP, Del Mar CB, Rovers MM. Antibiotics for acute otitis media in children. Cochrane Database Syst Rev. 2013 Jan 31;1:CD000219.

116

Don't prescribe oral antibiotics for uncomplicated external otitis.

Rationale and Comments

Oral antibiotics have significant adverse effects and have been shown to be no more effective than topical antibiotics. Avoidance of oral antibiotics can reduce the spread of antibiotic resistance and the risk of opportunistic infections.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

American Academy of Otolaryngology–Head and Neck Surgery Foundation practice guidelines

References

Rosenfeld RM, et al. Clinical practice guideline: acute otitis externa. Otolaryngol Head Neck Surg. 2006;134(4 suppl):S4-23.

52

Don't prescribe oral antibiotics for uncomplicated tympanostomy tube otorrhea.

Rationale and Comments

Oral antibiotics have significant adverse effects and have been shown to be no more effective than topical antibiotics. Avoidance of oral antibiotics can reduce the spread of antibiotic resistance and the risk of opportunistic infections.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

Randomized controlled trials

References

Goldblatt EL, et al. Topical ofloxacin versus systemic amoxicillin/clavulanate in purulent otorrhea in children with tympanostomy tubes. Int J Pediatr Otorhinolaryngol. 1998;46(1-2):91-101.

53

Don't routinely obtain radiographic imaging for patients who meet diagnostic criteria for uncomplicated acute rhinosinusitis.

Rationale and Comments

Imaging of the paranasal sinuses, including plain film radiography, CT, and MRI, is unnecessary in patients who meet the clinical diagnostic criteria for uncomplicated acute rhinosinusitis. Acute rhino-sinusitis is defined as up to four weeks of purulent nasal drainage (anterior, posterior, or both) accompanied by nasal obstruction, facial pain-pressure-fullness, or both. Imaging is costly and may expose patients to radiation. Imaging may be appropriate in patients with a complication of acute rhinosinusitis, patients with comorbidities that predispose them to complications, and patients in whom an alternative diagnosis is suspected.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

American Academy of Otolaryngology–Head and Neck Surgery Foundation practice guidelines

References

Rosenfeld RM, et al. Clinical practice guideline: adult sinusitis. Otolaryngol Head Neck Surg. 2007;137(3 suppl):S1-31.

51

Don't routinely perform sinonasal imaging in patients with symptoms limited to a primary diagnosis of allergic rhinitis alone.

Rationale and Comments

History, physical examination, and allergy testing are the cornerstones of diagnosis of allergic rhinitis. The utility of imaging for allergic rhinitis is unproven.

Sponsoring Organizations

American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

Practice guideline

References

Seidman MD, Gurgel RK, Lin SY, Schwartz SR, Baroody FM, Bonner JR, Dawson DE, Dykewicz MS, Hackell JM, Han JK, Ishman SL, Krouse HJ, Malekzadeh S, Mims JW, Omole FS, Reddy WD, Wallace DV, Walsh SA, Warren BE, Wilson MN, Nnacheta LC. Clinical practice guideline: allergic rhinitis. Otolaryngol Head Neck Surg. 2015;152(1 Suppl):S1-S43.

242

Don't routinely prescribe antibiotics for acute, mild to moderate sinusitis unless symptoms (which must include purulent nasal secretions and maxillary pain or facial or dental tenderness to percussion) last at least seven days or symptoms worsen after initial clinical improvement.

Rationale and Comments

Most cases of maxillary sinusitis in the ambulatory setting are caused by a viral infection that will resolve on its own. Despite consistent recommendations to the contrary, antibiotics are prescribed in more than 80% of outpatient visits for acute sinusitis. Sinusitis accounts for 16 million office visits and $5.8 billion in annual health care costs.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology|American Academy of Family Physicians|American Academy of Otolaryngology–Head and Neck Surgery Foundation

Sources

Cochrane Database of Systematic Reviews|Annals of Internal Medicine

References

Centers for Disease Control and Prevention Annals of Internal Medicine Ahovuo-Saloranta A, et al. Antibiotics for acute maxillary sinusitis. Cochrane Database Syst Rev. 2008;(2):CD000243.

50

Annual comprehensive eye exams are unnecessary for children who pass routine vision screening assessments.

Rationale and Comments

Early childhood vision screening done as part of routine well-child care accurately identifies most children with significant eye problems that are otherwise asymptomatic. Annual comprehensive eye examinations increase financial costs, a child's absence from school and parental time away from work, with no evidence that the comprehensive exam detects asymptomatic vision problems better than timely, methodical and recurrent screening efforts. Comprehensive eye exams are appropriate for children who do not pass a vision screening.

Sponsoring Organizations

American Association for Pediatric Ophthalmology and Strabismus

Sources

AAO/AAP/AAPOS guidelines

References

AAO/AAP/AAPOS/AACO. Eye examination in infants, children, and young adults by pediatricians. May 2007. Pediatrics. 2007;120:683-4. AAO/AAP/AAPOS. Vision screening for infants and children: a joint statement of the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology. 2007. Available from: http://www.aapos.org//client_data/files/2011/337_visionscreeningforinfantsandchildren2011.pdf. AAPOS vision screening recommendations. Available from: http://www.aapos.org//client_data/files/2013/595_aapos_visscreen.pdf.

124

Avoid administering nebulized medications by "blow by," or placing the mask or nebulizer tubing near the child's nose and mouth rather than securing the mask properly to the face. A T-piece with mouthpiece or face mask should be used instead.

Rationale and Comments

There are many different formulations of asthma medications for pediatric patients. Accurate delivery of each medication to a pediatric patient is extremely important. There is a high rate of error by caregivers and, unfortunately, by health care workers in health care settings. Small children and infants are especially challenging. During a nebulizer treatment, a well-fitting, properly-placed mask to the face is required in a quietly breathing, younger patient who is not crying. An older, cooperative child may use a T-piece with mouthpiece. If the drug being delivered can be converted to an inhaler and administered using a valved holding chamber with a face mask, this change should be considered. Finally, it is important to note that, if treatment failure is occurring with a nebulized inhaled steroid, it could be secondary to the family administering the medication using the "blow by" method by placing the mask or nebulizer tubing near the child's nose and mouth rather than securing the mask properly to the face. Studies have shown that there is a 40% to 85% decrease in aerosol delivery when a mask is held 2 cm away from a child's face while giving a nebulizer treatment.

Sponsoring Organizations

N/A

Sources

Expert consensus

References

Geller D. Comparing clinical features of the nebulizer, metered-dose inhaler, and dry powder inhaler. Respir Care. 2005;50(10):1313-1322. Geller D. Aerosol delivery of medication. In: Light M, ed. Pediatric Pulmonology. Elk Grove Village, IL: American Academy of Pediatrics; 2011:916-917. Rubin B. Nebulizer therapy for children: the device-patient interface. Respir Care. 2002;47(11):1314-1319. Rubin B. Bye-bye, blow-by. Respir Care. 2007;52(8):981.

445

Avoid instituting intravenous (IV) fluids before doing a trial of oral rehydration therapy in uncomplicated emergency department cases of mild to moderate dehydration in children.

Rationale and Comments

Many children who come to the emergency department with dehydration require fluid replacement. To avoid the pain and potential complications of an IV catheter, it is preferable to give these fluids by mouth. Giving a medication for nausea may allow patients with nausea and vomiting to accept fluid replenishment orally. This strategy can eliminate the need for an IV. It is best to give these medications early during the emergency department visit, rather than later, in order to allow time for them to work optimally.

Sponsoring Organizations

American College of Emergency Physicians

Sources

Cochrane Database of Systematic Reviews

References

Szajewska H, Gieruszcak-Bialek D, Dylag M. Meta-analysis: ondansetron for vomiting in acute gastroenteritis in children. Aliment Pharmacol Ther. 2007;25:393-400. Roslund G, Hepps T, McQuillen K. The role of oral ondanestron in children with vomiting as a result of acute gastritis/gastroenteritis who have failed oral rehydration therapy: a randomized controlled trial. Ann Emerg Med. 2008;52(1); 22-9. Hartling L, Bellemare S, Wiebe N, Russell K, Klassen TP, Craig W. Oral versus intravenous rehydration for treating dehydration due to gastroenteritis in children. Cochrane Database System Rev. 2006;19(3):CD004390.

138

Avoid ordering luteinizing hormone- and follicle-stimulating hormone and either estradiol or testosterone for children with pubic hair and/or body odor but no other signs of puberty.

Rationale and Comments

Premature adrenarche is usually the diagnosis and does not involve activation of the pituitary-gonadal axis but is due to an early increase in adrenal androgens. DHEA-S levels are elevated for age but do not alter the management of this common and generally benign condition.

Sponsoring Organizations

American Academy of Pediatrics – Section on Endocrinology

Sources

American Academy of Pediatrics guidelines

References

Kaplowitz P, Bloch C, the SECTION ON ENDOCRINOLOGY. Evaluation and Referral of Children with Signs of Early Puberty. Pediatrics. 2016;137(1):e20153732.

352

Avoid ordering screening tests looking for chronic illness or an endocrine cause, including complete blood count, cytidine monophosphate , insulinlike growth factor 1, thyroid tests, and celiac antibodies, in healthy children who are growing at or above the 3rd percentile for height with a normal growth rate (i.e., not crossing percentiles) and with appropriate weight gain.

Rationale and Comments

Even in children who are below the 3rd percentile for height with a normal history and physical exam, the incidence of newly diagnosed pathology was found to be only about 1%. In patients who have significant short stature (e.g. ≤ –2.5 standard deviation) or who are well below their genetic potential based on parental heights, tiered or sequential screening may be considered.

Sponsoring Organizations

American Academy of Pediatrics – Section on Endocrinology

Sources

Expert consensus

References

Sisley S, Trujillo MV, Khoury J, Backeljauw P. Low incidence of pathology detection and high cost of screening in the evaluation of asymptomatic short children. J Pediatr. 2013 Oct;163(4):1045-51.

353

Avoid ordering Vitamin D concentrations routinely in otherwise healthy children, including children who are overweight or obese.

Rationale and Comments

Although a 25-hydroxyvitamin D concentration, reflecting both vitamin D synthesis and intake, is the correct screening lab to monitor for vitamin D deficiency, current evidence is not sufficient to suggest that screening in otherwise healthy children who are overweight or obese is necessary or safe. Global consensus recommendations caution against population-based screening for vitamin D deficiency The U.S. Preventive Services Task Force also has noted that variability of current assays and unclear cutoffs for deficiency may lead to "misclassification" of persons as having vitamin D deficiency, and that this misclassification could outweigh any benefits if there are harms. The AAP report on Optimizing Bone Health in Children and Adolescents advises screening for vitamin D deficiency only in patients with disorders associated with low bone mass such as rickets and/or a history of recurrent, low-trauma fractures. It has been shown that children who are overweight or obese have a greater likelihood of having low vitamin D levels. If the history suggests an obese child has insufficient dietary intake of vitamin D (e.g., little milk intake), a vitamin D supplement should be recommended, which is more cost-effective than 25-hydroxyvitamin D measurements for both screening and monitoring therapy.

Sponsoring Organizations

American Academy of Pediatrics – Section on Endocrinology

Sources

Systematic review

References

Munns CF, Shaw N, Kiely M, Specker BL, Thacher TD, et al. Global Consensus Recommendation on Prevention and Management of Nutritional Rickets. J Clin Endocrinol Metab. 2016 Feb;101(2):394-415. Co-Published in Horm Res Paediatr. 2016;85(2):83-106. LeBlanc E, Chou R, Zakher B, et al. Screening for Vitamin D Deficiency: Systematic Review for the U.S. Preventive Services Task Force Recommendation [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2014 Nov. (Evidence Syntheses, No. 119.) Optimizing Bone Health in Children and Adolescents Golden N, Abrams S, Committee on Nutrition Pediatrics Sep 2014, 2014-2173. Turer CB, Lin H, Flores G. Prevalence of vitamin D deficiency among overweight and obese US children. Pediatrics December 2012;doi:10.1542/peds2012-1711.

354

Avoid referring most children with umbilical hernias to a pediatric surgeon until around age four to five years.

Rationale and Comments

Patients with umbilical hernias may safely be observed until at least age four years; at that point, pediatric surgical consultation is recommended to discuss surgical repair option. Special consideration for earlier consultation can be given in cases of parental concern. Umbilical hernias, resulting from failure of complete closure of the umbilical ring after birth, affect up to 25% of newborns. Unlike inguinal hernias, or umbilical hernias in adults, a majority of newborn umbilical hernias will close spontaneously – about 85% closure rate by age five years. Larger umbilical hernias – vaguely defined as those over 1.5 cm in diameter – have a lower likelihood of spontaneous closure. Complications of umbilical hernia, such as incarceration (where omentum or bowel is "stuck" in the hernia sac, estimated at 0.2% to 4.5%) or strangulation (where omentum or bowel is incarcerated and proceeds to suffer ischemic damage, estimated at less than 0.8%) are very rare; thus, the risk/benefit ratio in surgical closure of umbilical hernias strongly favors observation. Even markedly large or protuberant umbilical hernias (such as a proboscis, or elephant-trunk, type hernia) may undergo spontaneous closure and are not clearly associated with an increased risk of complications when not surgically closed. Nonoperative closure techniques such as umbilical strapping are generally ineffective, can lead to skin breakdown, and should be avoided. Complications following umbilical hernia repair in children are rare and may include infection (estimated at less than 1%) and recurrence (estimates ranging from 0.27% to 2.44%). Recurrence rates appear to be higher in children repaired at an early age (less than four years).

Sponsoring Organizations

American Academy of Pediatrics – Section on Surgery

Sources

Systematic review

References

Zens T, Nichol PF, et al. Management of asymptomatic pediatric umbilical hernias: a systematic review. J Pediatr Surg. 2017;52:1723-1731. Chirdan LB, Uba AF, Kidmas AT. Incarcerated umbilical hernia in children. Eur J Pediatr Surg. 2006 Feb;16(1):45-48. Yanagisawa S, Kato M, et al. Reappraisal of adhesive strapping as treatment for infantile umbilical hernia. Pediatr Int. 2016 May;58(5):363-368. Abdulhai SA, Glenn IC, Ponsky TA. Incarcerated pediatric hernias. Surg Clin North Am. 2017 Feb;97(1):129-145. Brown RA, Numanoglu A, Rode H. Complicated umbilical hernia in childhood. S Afr J Surg. 2006 Nov;44(4):136-137. Ireland A, Gollow I, Gera P. Low risk, but not no risk, of umbilical hernia complications requiring acute surgery in childhood. J Paediatr Child Health. 2014 Apr;50(4):291-293.

417

Avoid routinely ordering thyroid ultrasounds in children who have simple goiters or autoimmune thyroiditis.

Rationale and Comments

Limit this study to children who have asymmetric thyroid enlargement, palpable nodules, or concerning cervical lymphadenopathy. Ultrasound can detect nodules that elude palpation, and one prospective series found that 31.5% of patients with Hashimoto's thyroiditis will have thyroid nodules. The majority of these lesions, however, are not harmful. Overuse of ultrasonography results in needless health care costs and time expenditures for families. More importantly, insignificant findings can create anxiety within patients and parents who are fearful of thyroid cancer. In some cases, the abnormal findings will lead to additional radiographic studies, fine needle aspiration, or aggressive treatment of "pseudo-disease" that will not improve the health of patients. There is a known association of thyroid cancer with Hashimoto's thyroiditis, and a pathologic diagnosis of papillary carcinoma was made in 3% of patients in the study cited above. However, there is insufficient evidence to conclude that detecting nodules before they are palpable leads to better outcomes. It seems prudent, therefore, to perform a careful annual physical exam of the thyroid, as recommended for all children who are at increased risk of thyroid cancer. If that exam reveals asymmetry, palpable nodules, or significant cervical adenopathy, then ultrasonography is indicated.

Sponsoring Organizations

American Academy of Pediatrics – Section on Endocrinology

Sources

Expert consensus

References

Corrias A, Cassio A, Weber G, et al. Study Group for Thyroid Diseases of the Italian Society for Pediatric Endocrinology and Diabetology: Thyroid Nodules and Cancer in Children and Adolescents Affected by Autoimmune Thyroiditis. Arch Pediatr Adolesc Med. 2008;162(6):526-531. Francis G, Waguespack S, Bauer A, et al. Management Guidelines for Children with Thyroid Nodules and Differentiated Thyroid Cancer: Thyroid. 2015 Jul 1; 25(7): 716–759.

356

Cough and cold medicines should not be prescribed or recommended for respiratory illnesses in children younger than four years.

Rationale and Comments

Research has shown these products offer little benefit to young children, and can have potentially serious side effects. Many cough and cold products for children have more than one ingredient, increasing the chance of accidental overdose if combined with another product.

Sponsoring Organizations

American Academy of Pediatrics

Sources

American College of Chest Physicians guidelines

References

Carr BC. Efficacy, abuse, and toxicity of over-the-counter cough and cold medications in the pediatric population. Curr Opin Pediatr. 2006;18(2):184-8. Irwin RS, et al. Diagnosis and management of cough executive summary: ACCP evidence-based clinical practice guidelines. Chest. 2006;129(1 suppl):1S-23S. Isbister GK, et al. Restricting cough and cold medications in children. J Paediatr Child Health. 2012;48(2):91-8. Schaeffer MK, et al. Adverse events from cough and cold medication in children. Pediatrics. 2008;121(4):783-82. Sharfstein JM, et al. Over the counter but no longer under the radar–pediatric cough and cold medications. N Engl J Med. 2007;357(23):2321-4.

56

Don't apply continuous cardiac-respiratory or pulse oximetry monitoring to children and adolescents admitted to the hospital unless condition warrants continuous monitoring based on objectively scored cardiovascular, respiratory, and behavior parameters.

Rationale and Comments

Nurses use continuous electrocardiography (ECG), respiratory, and pulse oximetry monitoring to track patient vital signs and trends, and to help identify signs of patient status deterioration. However, when pulse oximetry and physiologic monitoring are used inappropriately, significant cost burdens can affect the entire healthcare system. In addition, the high number of alarm alerts and level of noise created by these alarms leads to alarm fatigue. When high levels of false alarms occur in the work environment, clinically significant alarms may be masked by being silenced or unrecognized when clinicians become desensitized. In addition to alarm fatigue, continuous bedside monitoring of pediatric patients can provide a false sense of security that the patient is "safer" and that the nurse will note status changes in a patient more easily when a bedside monitor is used. Continuous bedside monitoring should not be used in place of hourly safety checks. Focused nursing assessments using a standardized early warning tool should be used to monitor changes in a pediatric patient's status to identify deteriorations.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

Fuijkschot J, Vernhout B, Lemson J, Draaisma J, Validation of a paediatric early warning score: first results and implications of usage. European Journal of Pediatrics. 2015;174(1):15-21. Gazarian PK. Nurses' response to frequency and types of electrocardiography alarms in a non-critical care setting: a descriptive study. Int J Nurs Stud, 2014;51(2):190-197. Karnik A, Bonafide CP. A framework for reducing alarm fatigue on pediatric inpatient units. Hospital Pediatrics. 2015;5(3):160-163. Murray JS, Williams LA, Pignataro S, Volpe D. An integrative review of pediatric early warning system scores. Pediatric Nursing. 2015;41(4):165-174. Sendelbach S, Wahl S, Anthony A, Shotts P. Stop the noise: a quality improvement project to decrease electrocardiographic nuisance alarms. Crit Care Nurse. 2015;35(4):15-22. Watkins T, Whisman L, Booker P. Nursing assessment of continuous vital sign surveillance to improve patient safety on the medical/surgical unit. J Clin Nurs. 2016;25(1-2):278-281.

384

Don't apply continuous cardiac-respiratory or pulse oximetry monitoring to children and adolescents admitted to the hospital unless condition warrants continuous monitoring based on objectively scored cardiovascular, respiratory, and behavior parameters.

Rationale and Comments

Nurses use continuous electrocardiography (ECG), respiratory, and pulse oximetry monitoring to track patient vital signs and trends, and to help identify signs of patient status deterioration. However, when pulse oximetry and physiologic monitoring are used inappropriately, significant cost burdens can affect the entire healthcare system. In addition, the high number of alarm alerts and level of noise created by these alarms leads to alarm fatigue. When high levels of false alarms occur in the work environment, clinically significant alarms may be masked by being silenced or unrecognized when clinicians become desensitized. In addition to alarm fatigue, continuous bedside monitoring of pediatric patients can provide a false sense of security that the patient is "safer" and that the nurse will note status changes in a patient more easily when a bedside monitor is used. Continuous bedside monitoring should not be used in place of hourly safety checks. Focused nursing assessments using a standardized early warning tool should be used to monitor changes in a pediatric patient's status to identify deteriorations.

Sponsoring Organizations

American Academy of Nursing

Sources

Expert consensus

References

Fuijkschot J, Vernhout B, Lemson J, Draaisma J, Validation of a paediatric early warning score: first results and implications of usage. European Journal of Pediatrics. 2015;174(1):15-21. Gazarian PK. Nurses' response to frequency and types of electrocardiography alarms in a non-critical care setting: a descriptive study. Int J Nurs Stud, 2014;51(2):190-197. Karnik A, Bonafide CP. A framework for reducing alarm fatigue on pediatric inpatient units. Hospital Pediatrics. 2015;5(3):160-163. Murray JS, Williams LA, Pignataro S, Volpe D. An integrative review of pediatric early warning system scores. Pediatric Nursing. 2015;41(4):165-174. Sendelbach S, Wahl S, Anthony A, Shotts P. Stop the noise: a quality improvement project to decrease electrocardiographic nuisance alarms. Crit Care Nurse. 2015;35(4):15-22. Watkins T, Whisman L, Booker P. Nursing assessment of continuous vital sign surveillance to improve patient safety on the medical/surgical unit. J Clin Nurs. 2016;25(1-2):278-281.

537

Don't continue hospitalization in well-appearing febrile infants once bacterial cultures (i.e., blood, cerebrospinal, and/or urine) have been confirmed negative for 24 to 36 hours, if adequate outpatient follow-up can be assured.

Rationale and Comments

Routinely continuing hospitalization beyond 24 to 36 hours of confirmed negative bacterial cultures for well-appearing infants admitted for concern of serious bacterial infection does not improve clinical outcomes. Blood culture yield is highest in the first 12 to 36 hours after incubation with multiple studies demonstrating > 90% of pathogen cultures being positive by 24 hours. If adequate outpatient follow-up can be assured, discharging well-appearing febrile infants at 24 to 36 hours if cultures are confirmed to be negative will decrease length of stay, antibiotic exposure, and iatrogenic complications.

Sponsoring Organizations

Pediatric Hospital Medicine – SHM, AAP, APA

Sources

Retrospective cohort study

References

Vachani JG, et al. Current evidence on the evaluation and management of fever without a source in infants aged 0-90 days: a review. Rev Recent Clin Trials. 2017;12(4):240-245. Biondi EA, et al.; Pediatric Research in Inpatient Settings (PRIS) Network. Blood culture time to positivity in febrile infants with bactremia. JAMA Pediatr. 2014;168(9):844-849. Fielding-Singh V, et al. Ruling out bacteremia and bacterial meningitis in infants less than one month of age: is 48 hours of hospitalization necessary? Hosp Pediatr. 2013;3(4):355-361. Greenhow TL, et al. Changing epidemiology of bacteremia in infants aged 1 week to 3 months. Pediatrics. 2012;129(3):e590-596. Mahajan P, et al.; Febrile Infant Working Group of the Pediatric Emergency Care Applied Research Network (PECARN). Risk of bacterial coinfections in febrile infants 60 days old and younger with documented viral infections. J Pediatr. 2018;203:86-91.e2. Lefebvre CE, et al. Time to positivity of blood cultures in infants 0 to 90 days old presenting to the emergency department: is 36 hours enough? J Pediatric Infect Dis Soc. 2017;6(1):28-32.

462

Don't do CT for evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

Rationale and Comments

Although CT is accurate in the evaluation of suspected appendicitis in the pediatric population, ultrasound is nearly as good in experienced hands. Since ultrasound will reduce radiation exposure, ultrasound is the preferred initial consideration for imaging examination in children. If the results of the ultrasound exam are equivocal, it may be followed by CT. This approach is cost-effective, reduces potential radiation risks, and has excellent accuracy, with reported sensitivity and specificity of 94%.

Sponsoring Organizations

American College of Radiology

Sources

American College of Radiology Appropriateness Criteria

References

Wan MJ, et al. Acute appendicitis in young children: cost-effectiveness of US versus CT in diagnosis-a Markov decision analytic model. Radiology. 2009;250:378-86. Doria AS, et al. US or CT for diagnosis of appendicitis in children? A meta-analysis. Radiology. 2006;241:83-94. Garcia K, et al. Suspected appendicitis in children: diagnostic importance of normal abdominopelvic CT findings with nonvisualized appendix. Radiology. 2009;250:531-7. Krishnamoorthi R, et al. Effectiveness of a staged US and CT protocol for the diagnosis of pediatric appendicitis: reducing radiation exposure in the age of ALARA. Radiology. 2011;259:231-9. American College of Radiology. ACR Appropriateness Criteria: right lower quadrant pain/suspected appendicitis. http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonGastrointestinalImaging/RightLowerQuadrantPainDoc12.aspx. Frush DP, et al. Imaging of acute appendicitis in children: EU versus U.S. or US versus CT? A North American perspective. Pediatr Radiolo. 2009;39(5):500-5.

Don't do CT for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

Rationale and Comments

Although CT is accurate in the evaluation of suspected appendicitis in the pediatric population, ultrasound is the preferred initial consideration for imaging examination in children. If the results of the ultrasound exam are equivocal, it may be followed by CT. This approach is cost-effective, reduces potential radiation risks and has excellent accuracy, with reported sensitivity and specificity of 94% in experienced hands. Recognizing that expertise may vary, strategies including improving diagnostic expertise in community-based ultrasound and the development of evidence-based clinical decision rules are realistic goals in improving diagnosis without the use of CT scan.

Sponsoring Organizations

American College of Surgeons

Sources

American College of Radiology Appropriateness Criteria

References

Wan MJ, Krahn M, Ungar WJ, Caku E, Sung L, Medina LS, Doria AS. Acute appendicitis in young children: cost-effectiveness of US versus CT in diagnosis-a Markov decision analytic model. Radiology. 2009;250:378-86. Doria AS, Moineddin R, Kellenberger CJ, Epelman M, Beyene J, Schuh S, Babyn PS, Dick PT. US or CT for diagnosis of appendicitis in children? A meta-analysis. Radiology. 2006;241:83-94. Garcia K, Hernanz-Schulman M, Bennett DL, Morrow SE, Yu C, Kan JH. Suspected appendicitis in children: diagnostic importance of normal abdominopelvic CT findings with nonvisualized appendix. Radiology. 2009;250:531-7. Krishnamoorthi R, Ramarajan N, Wang NE, Newman B, Rubesova E, Mueller CM, Barth RA. Effectiveness of a staged US and CT protocol for the diagnosis of pediatric appendicitis: reducing radiation exposure in the age of ALARA. Radiology. 2011;259:231-9. Rosen MP, Ding A, Blake MA, Baker ME, Cash BD, Fidler JL, Grant TH, Greene FL, Jones B, Katz DS, Lalani T, Miller FH, Small WC, Spottswood S, Sudakoff GS, Tulchinsky M, Warshauer DM, Yee J, Coley BD, Expert Panel on Gastrointestinal Imaging. ACR Appropriateness Criteria® right lower quadrant pain -- suspected appendicitis. [Internet]. Reston (VA): American College of Radiology (ACR); 2010. 7 p. Frush DP, Frush KS, Oldham KT. Imaging of acute appendicitis in children: EU versus US or US versus CT? A North American perspective. Pediatr Radiolol. 2009;39(5):500-5. Saito JM, Yan Y, Evashwick TW, Warner BW, Tarr PI. Use and accuracy of diagnostic imaging by hospital type in pediatric appendicitis. Pediatrics. 2013;131(1):e37-44. Kharbanda AB, Stevenson MD, Macias CG, Sinclair K, Dudley NC, Bennett J, Bajaj L, Mittal MK, Huang C, Bachur RG, Dayan PS, and for the Pediatric Emergency Medicine Collaborative Research Committee of the American Academy of Pediatrics. Interrater reliability of clinical findings in children with possible appendicitis. Pediatrics. 2012;129(4):695-700.

Don't obtain screening laboratory tests in the medical clearance process of pediatric patients who require inpatient psychiatric admission unless clinically indicated.

Rationale and Comments

The incidence of mental health problems in children has increased in the last two decades, with suicide surpassing homicide as the second leading cause of death in teenagers. Most children with acute mental health issues do not have underlying medical etiologies for these symptoms. A large body of evidence in both adults and children has shown that routine laboratory testing without clinical indication is unnecessary and adds to health care costs. Any diagnostic testing should be based on a thorough history and physical examination. Universal requirements for routine testing should be abandoned.

Sponsoring Organizations

American Academy of Pediatrics – Section on Emergency Medicine and the Canadian Association of Emergency Physicians

Sources

Expert consensus

References

Thrasher TW, Rolli M, Redwood RS, et al. 'Medical clearance' of patients with acute mental health needs in the emergency department: a literature review and practice recommendations. WMJ. 2019;118(4):156-163.
Donofrio JJ, Horeczko T, Kaji A, et al. Most routine laboratory testing of pediatric psychiatric patients in the emergency department is not medically necessary. Health Aff (Millwood). 2015;34(5):812-818.
Chun TH. Medical clearance: time for this dinosaur to go extinct. Ann Emerg Med. 2014;63(6):676-677.
Donofrio JJ, Santillanes G, McCammack BD, et al. Clinical utility of screening laboratory tests in pediatric psychiatric patients presenting to the emergency department for medical clearance. Ann Emerg Med. 2014;63(6):666-675. e663.
Santillanes G, Donofrio JJ, Lam CN, et al. Is medical clearance necessary for pediatric psychiatric patients? J Emerg Med. 2014;46(6):800-807.
Santiago LI, Tunik MG, Foltin GL, et al. Children requiring psychiatric consultation in the pediatric emergency department—epidemiology, resource utilization, and complications. Pediatr Emerg Care. 2006;22(2):85-89.

Don't order a screening ECG prior to initiation of attention-deficit/hyperactivity disorder therapy in asymptomatic, otherwise healthy pediatric patients with no personal or family history of cardiac disease.

Rationale and Comments

Many pediatricians obtain ECGs in healthy patients with no personal or family history* of cardiac disease prior to initiating stimulant therapy for attention-deficit/hyperactivity disorder out of fear of triggering an adverse cardiovascular event or worsening a previously undiagnosed cardiovascular disease. However, the probability that such screening will lead to the diagnosis of cardiac disease is low. Furthermore, when ECG abnormalities are identified, they rarely warrant a change in planned attention-deficit/hyperactivity disorder therapy. As a result, obtaining the ECG increases health care costs and can increase stress for both the patient and family. If there is concern based on the history and physical examination, then a pediatric cardiology referral is a reasonable consideration. (*Family history should assess specifically for the following types of cardiovascular diseases: connective tissue disorders; cardiomyopathies; arrhythmias, including need for pacemaker or defibrillator implantation; storage diseases; sudden unexplained death; premature cardiovascular disease prior to the age of 50 years.)

Sponsoring Organizations

American Academy of Pediatrics – Section on Cardiology and Cardiac Surgery

Sources

American Academy of Pediatrics guidelines

References

Cooper WO, et al. ADHD drugs and serious cardiovascular events in children and young adults. N Engl J Med. 2011;365(20):1896-1904. Mahle WT, et al. Electrocardiographic screening in children with attention-deficit hyperactivity disorder. Am J Cardiol. 2009;104(9):1296-1299. Perrin JM, et al.; American Academy of Pediatrics, Black Box Working Group, Section on Cardiology and Cardiac Surgery. Cardiovascular monitoring and stimulant drugs for attention-deficit/hyperactivity disorder. Pediatrics. 2008;122(2):451-453. Shahani SA, et al. Attention deficit hyperactivity disorder screening electrocardiograms: a community-based perspective. Pediatr Cardiol. 2014;35(3):485-489. American Academy of Pediatrics, Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. ADHD: clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Pediatrics. 2011;128(5):1007-1022.

454

Don't order hair analyses for "environmental toxins" in children with behavioral or developmental disorders, including autism.

Rationale and Comments

The analysis of hair for a broad array of elements and chemicals as a way to diagnose the cause of childhood diseases such as autistic spectrum disorder has no scientific basis. Such assays may not be reliable: hair collection is not precise and it is a heterogeneous matrix; chemicals in hair may not be distributed evenly from the root up the shaft; the assays used may not be accurate technically; and hair can easily be contaminated by external residues of dust, shampoos, conditioners, or other hair treatments. Reports of finding of various metals, etc., can create severe anxiety in the families requiring further testing by other means. Historically, testing by standard means fail to verify the apparent exposure reported by hair analysis.

Sponsoring Organizations

American Academy of Pediatrics Council on Environmental Health

Sources

Expert consensus

References

Frisch M, Schwartz B. The pitfalls of hair analysis for toxicants in clinical practice: three case reports. Environ Heal Perspect. 2002;110(4):433-436. Harkins DK, Susten AS. Hair analysis: exploring the state of the science. Environ Health Perspect. 2003;111(4):576-578. Seidel S, Kreutzer R, et al. Assessment of commercial laboratories performing hair mineral analysis. JAMA. 2001;285(1):67-72. Yoshinaga J, Imai H, et al. Lack of significant positive correlations between elemental concentrations in hair and in organs. Sci Total Environ. 1990;99(1-2):125-135.

488

Don't order routine screening urinalysis in healthy, asymptomatic pediatric patients as part of routine well-child care.

Rationale and Comments

Research has shown that a high incidence of misinterpretation of positive screening urinalysis results leads to multiple testing and increased cost and family anxiety. This is counterbalanced by the low prevalence of chronic kidney disease and bladder cancer in children. One study showed that the calculated false positive/transient abnormality rate approaches 84%. These factors account for the low yield in detecting preventable and/or treatable problems in a healthy asymptomatic population with respect to cost and overall benefit. With consideration of the currently available evidence, we recommend limiting screening urinalysis in patients who are at high risk for chronic kidney disease, including but not necessarily limited to patients with a personal history of chronic kidney disease, acute kidney injury, congenital anomalies of the urinary tract, acute nephritis, hypertension, active systemic disease, prematurity, intrauterine growth retardation, or a family history of genetic renal disease, to improve the cost-benefit ratio.

Sponsoring Organizations

American Academy of Pediatrics – Section on Nephrology and the American Society of Pediatric Nephrology

Sources

Expert consensus

References

Committee on Practice and Ambulatory Medicine and Bright Futures Steering Committee. Recommendations for preventive pediatric health care. Pediatrics 2007;120(6):1376. Kaplan RE, Springate JE, Feld LG. Screening dipstick urinalysis: a time to change. Pediatrics.1997;100(6):919-921. Sekhar DL, Wang L, Hollenbeak CS, Widome MD, Paul IM. A Cost-effectiveness analysis of screening urine dipsticks in well-child care. Pediatrics. 2010;125(4):660-663. Hogg, R. Screening for CKD in children: a global controversy. Clin J Am Soc Neph. 2009;4:509-515.

359

Don't perform a bagged urine specimen for urine culture to confirm UTI in a child who has not been potty trained.

Rationale and Comments

Prospective studies on the use of a bag applied to the perineum for urine collection have shown a high incidence of false-positive culture results, ranging from 85% to 99%. Bagged specimens, when collected appropriately, may be used for screening urinalysis as a first step when a UTI is suspected. If there are signs of infection, a properly collected urine culture should then be obtained. For children under two years of age, it is recommended to perform sterile-technique urethral catheterization. Alternatively, suprapubic bladder aspiration has been shown to have the highest sensitivity but requires skilled providers with ultrasound guidance, so is often not practical. In older children with sphincteric control, mid-stream clean-catch collection is possible and reliable. American Academy of Pediatrics, American Academy of Family Physicians, and European Association of Urology guidelines each issue this recommendation with the support of quality A evidence.

Sponsoring Organizations

American Academy of Pediatrics - Section on Urology

Sources

European Association of Urology guidelines

References

Grabe M, Bartoletti R, Bjerklund Johansen TE, et al. European Association of Urology: guidelines on urological infections. March 2015. Koch VH, Zuccolotto SM. Infecção do trato urinário. Em busca das evidências [Urinary tract infection: a search for evidence]. J Pediatr (Rio J). 2003;79 Suppl 1:S97-S106.

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Don't perform heterophile antibody (monospot) testing to diagnose acute Epstein-Barr virus infection in children younger than five years.

Rationale and Comments

Approximately 40% of children younger than five years do not develop heterophile antibodies following primary Epstein-Barr virus (EBV) infection. If the heterophile is the only test ordered, the diagnosis may be missed. The U.S. Centers for Disease Control and Prevention has advised against heterophile testing in this age group because of a lack of specificity and the potential for false negative results. Testing in this age group should be a panel of EBV-specific serologic antibody immunoassays for viral capsid antigen immunoglobulin M and immunoglobulin G and Epstein-Barr nuclear antigen.

Sponsoring Organizations

American Society for Microbiology
American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

CDC guideline

References

Horwitz CA, Henle W, Henle G, et al. Clinical and laboratory evaluation of infants and children with Epstein-Barr virus-induced infectious mononucleosis: report of 32 patients (aged 10-48 months). Blood. 1981;57(5):933-938.
Centers for Disease Control and Prevention. Epstein-Barr virus and infectious mononucleosis. Accessed August 8, 2014. http://www.cdc.gov/epstein-barr/laboratory-testing.html
Committee on Infectious Diseases, American Academy of Pediatrics; Kimberlin DW, Barnett ED, eds. Red Book: 2021-2024 Report of the Committee on Infectious Diseases. 32nd ed. American Academy of Pediatrics; 2021;318-322.

521

Don't perform ultrasound on boys with cryptorchidism.

Rationale and Comments

Ultrasound has been found to have poor diagnostic performance in the localization of testes that cannot be felt through physical examination. Studies have shown that the probability of locating testes was small when using ultrasound, and there was still a significant chance that testes were present even after a negative ultrasound result. Additionally, ultrasound results are complicated by the presence of surrounding tissue and bowel gas present in the abdomen.

Sponsoring Organizations

American Urological Association

Sources

Systematic review and meta-analysis

References

Tasian G, et al. Diagnostic performance of ultrasound in nonpalpable cryptorchidism: a systematic review and meta-analysis. Pediatrics. 2011;127(1):119-28.

88

Don't place central lines or peripherally inserted PICCs in pediatric patients with advanced (Stage 3-5) chronic kidney disease/end-stage renal disease without consultation with pediatric nephrology due to goals to avoid adverse events, preserve long-term vascular access, and avoid unnecessary and costly procedures.

Rationale and Comments

Preservation of vascular access is critical for long-term dialysis patients. Placement of central and PICC lines has been associated with an increased incidence of complications including vascular injury, thrombosis, and central venous stenosis that can limit future use for dialysis access. Placement of central and PICC lines also potentially increases cost due to the treatment of complications from the lines, requirement for radiological tests to identify patent vessels for dialysis, and the necessity for repeat surgical procedures to create vascular access for dialysis. Studies in children are limited, but research about PICC lines demonstrates a 23-57% incidence of thrombosis in adults and increased complications in children who are exposed to multiple PICC line placements. Studies from adult patients have demonstrated the high risk of vascular injury after central line and PICC line placement. National guidelines from the Kidney Disease Outcomes Quality Initiative have recommended avoiding placement of central lines in chronic kidney disease patients, if possible, due to the high risk of complications. The recommendation to avoid central line placement is the basis of vascular access preservation in the "Fistula First Innovation" program for adult dialysis patients. National guidelines from the Kidney Disease Outcomes Quality Initiative state the following: "In patients with CKD stage 4 or 5, forearm and upper-arm veins suitable for placement of vascular access should not be used for venipuncture or for the placement of intravenous (IV) catheters, subclavian catheters, or peripherally inserted central catheter lines (PICCs). Because of the substantial risk for loss of useable upper-extremity veins and central venous stenosis with PICCs, the Work Group recommends strongly that PICCs not be used in patients with CKD". Special consideration may be necessary in emergency circumstances in which no other safe access is achievable.

Sponsoring Organizations

American Academy of Pediatrics – Section on Nephrology and the American Society of Pediatric Nephrology

Sources

Expert consensus

References

Yang RY, Moineddin R, Filipescu D, Parra D, Amaral J, John P, Temple M, Connolly B. Increased complexity and complications associated with multiple peripherally inserted central catheter insertions in children: the tip of the iceberg. J Vasc Interv Radiol. 2012;23:351-357. Costello JM, Clapper TC, Wypij D. Minimizing complications associated with percutaneous central venous catheter placement in children: recent advances. Pediatr Crit Care Med. 2013;14:273-283. KDOQI. Vascular access guidelines 2006. Am J Kidney Dis. 2006;48(suppl 1):S176-S247. McGill R, Ruthazer R, Meyer K, Miskulin D, Weiner D. Peripherally inserted central catheters and hemodialysis outcomes. Clin J Amer Soc Nephrol. 2016;11:1434-1440. Gonzalves CF, et al. Incidence of central venous stenosis and occlusion following upper extremity PICC and port placement. Cardiovasc Intervent Radiol. 2003;26:123-127. Forauer AR, Theoharis C. Histologic changes in the human vein wall adjacent to indwelling central venous catheters. J Vasc Interv Radiol. 2003;14:1163-1168.

363

Don't place peripherally inserted central catheters and/or use prolonged intravenous antibiotics in otherwise healthy children with infections that can be transitioned to an appropriate oral agent.

Rationale and Comments

Peripherally inserted central catheters (PICCs) are often used for children requiring long-term intravenous antibiotics. The most common infections for which PICCs are placed in children, however, respond well to orally administered antibiotics after a brief course of intravenous therapy. Following hospital discharge, up to 40% of children with PICCs will return to the emergency department with a PICC complication. Studies of children with complicated pneumonia, ruptured appendicitis, and osteomyelitis have demonstrated that, compared with oral conversion prior to hospital discharge, extended intravenous therapy with a PICC does not improve clinical cure rates but is often associated with PICC line complications.

Sponsoring Organizations

American Academy of Pediatrics – Committee on Infectious Diseases and the Pediatric Infectious Diseases Society

Sources

Expert consensus

References

Ruebner R, Keren R, Coffin S, et al. Complications of central venous catheters used for the treatment of acute hematogenous osteomyelitis. Pediatrics. 2006 Apr;117(4):1210-5. Kovacich A, Tamma PD, Advani S, et al. Peripherally Inserted Central Venous Catheter Complications in Children Receiving Outpatient Parenteral Antibiotic Therapy (OPAT). Infect Control Hosp Epidemiol. 2016 Apr;37(4):420-4. doi: 10.1017/ice.2015.317. Epub 2016 Jan 12. Keren R, Shah SS, Srivastava R et al. Comparative effectiveness of intravenous vs oral antibiotics for postdischarge treatment of acute osteomyelitis in children. JAMA Pediatr. 2015 Feb;169(2):120-8. doi: 10.1001/jamapediatrics.2014.2822. Rangel SJ, Anderson BR, Srivastava R, et al. Intravenous Versus Oral Antibiotics for the Prevention of Treatment Failure in Children With Complicated Appendicitis: Has the Abandonment of Peripherally Inserted Catheters Been Justified? Ann Surg. 2016 Jul 15. [Epub ahead of print] Shah SS, Srivastava R, Wu S, et al. Intravenous Versus Oral Antibiotics for Postdischarge Treatment of Complicated Pneumonia. Pediatrics. 2016 Dec;138(6). pii: e20161692. Epub 2016 Nov 17.

395

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Peripherally inserted central catheters (PICCs) are often used for children requiring long-term intravenous antibiotics. The most common infections for which PICCs are placed in children, however, respond well to orally administered antibiotics after a brief course of intravenous therapy. Following hospital discharge, up to 40% of children with PICCs will return to the emergency department with a PICC complication. Studies of children with complicated pneumonia, ruptured appendicitis, and osteomyelitis have demonstrated that, compared with oral conversion prior to hospital discharge, extended intravenous therapy with a PICC does not improve clinical cure rates but is often associated with PICC line complications.

Sponsoring Organizations

American Academy of Pediatrics – Committee on Infectious Diseases and the Pediatric Infectious Diseases Society

Sources

Expert consensus

References

Ruebner R, Keren R, Coffin S, et al. Complications of central venous catheters used for the treatment of acute hematogenous osteomyelitis. Pediatrics. 2006 Apr;117(4):1210-5. Kovacich A, Tamma PD, Advani S, et al. Peripherally Inserted Central Venous Catheter Complications in Children Receiving Outpatient Parenteral Antibiotic Therapy (OPAT). Infect Control Hosp Epidemiol. 2016 Apr;37(4):420-4. doi: 10.1017/ice.2015.317. Epub 2016 Jan 12. Keren R, Shah SS, Srivastava R et al. Comparative effectiveness of intravenous vs oral antibiotics for postdischarge treatment of acute osteomyelitis in children. JAMA Pediatr. 2015 Feb;169(2):120-8. doi: 10.1001/jamapediatrics.2014.2822. Rangel SJ, Anderson BR, Srivastava R, et al. Intravenous Versus Oral Antibiotics for the Prevention of Treatment Failure in Children With Complicated Appendicitis: Has the Abandonment of Peripherally Inserted Catheters Been Justified? Ann Surg. 2016 Jul 15. [Epub ahead of print] Shah SS, Srivastava R, Wu S, et al. Intravenous Versus Oral Antibiotics for Postdischarge Treatment of Complicated Pneumonia. Pediatrics. 2016 Dec;138(6). pii: e20161692. Epub 2016 Nov 17.

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Don't prescribe medication to treat childhood insomnia, which usually arises from parent-child interactions and responds to behavioral intervention.

Rationale and Comments

No medications are approved by the U.S. Food and Drug Administration for the treatment of pediatric insomnia. Because childhood insomnia usually arises due to parent-child interactions, treatment should involve efforts to improve relevant parent and child behavior, establish better sleep hygiene, and manage expectations. Basic environmental, scheduling, sleep practice, and physiological features should be optimized before hypnotic use is considered for children. When necessary, hypnotics should be used short term, with caution and close monitoring for efficacy and side effects. Some children with significant developmental delay or cognitive impairment may not respond to behavioral management and may benefit from judicious use of hypnotics.

Sponsoring Organizations

American Academy of Sleep Medicine

Sources

Expert consensus

References

Owens JA, Babcock D, Blumer J, Chervin R, Ferber R, Goetting M, Glaze D, Ivanenko A, Mindell J, Rappley M, Rosen C, Sheldon S. The use of pharmacotherapy in the treatment of pediatric insomnia in primary care: rational approaches. A consensus meeting summary. J Clin Sleep Med. 2005;1(1):49-59. Owens JA, Mindell JA. Pediatric Insomnia. Pediatr Clin N Am. 2011;58(3):555-69. Sheldon SH, Ferber R, Kryger MH, Gozal D, eds. Principles and Practice of Pediatric Sleep Medicine: second edition. London: Elsevier Saunders; 2012.

233

on't prescribe or administer oral liquid medications using teaspoon or tablespoon for measurement; use only mL when measuring with an approved dosing device (e.g., medication cup or oral syringe).

Rationale and Comments

Serious medication errors, including patient deaths, have occurred because oral liquids are prescribed and/or administered using English measurement units such as the teaspoon or tablespoon. For medical professionals, best practice is using units and volume when prescribing a single-agent liquid medication, to be sure the dose is clear; but for administering, use only mL for measuring the amount. Safety organizations and agencies such as the CDC and the Institute for Safe Medication Practices have recommended using only the metric system units (e.g., mL) for measurement and using a measuring device that contains only metric markings. Prescribing using the metric system and dispensing with a metric measuring device will help avoid these preventable errors.

Sponsoring Organizations

American Society of Health-System Pharmacists

Sources

Expert consensus

References

Varkey, P, et al. Multidisciplinary approach to inpatient medication reconciliation in an academic setting. Am J Health-Syst Pharm. 2007; 64:850-5. Najafzadeh M, et al. Economic value of pharmacist-led medication reconciliation for reducing medication errors after hospital discharge. Am J Manag Care 2016; 22:654-61. Lehnbom, EC, et al. Impact of medication reconciliation and review on clinical outcomes. Ann Pharmacother. 2014; 48:1298-1312. The Joint Commission. 2017 National Patient Safety Goals [Internet; cited 2017 Jan 21]. Available from: www.jointcommission.org/standards_information/npsgs.aspx.

341

Don't put asymptomatic children in weak reading glasses.

Rationale and Comments

Low "farsightedness" is a normal finding in children. Children can easily focus to see at near, with their large accommodative reserve. If the reading glasses prescription is low (less than +2.00 diopters), their innate ability to focus can be used to see clearly at both distance and near. If the eyes are not crossed, prescription of weak glasses is generally not necessary.

Sponsoring Organizations

American Association for Pediatric Ophthalmology and Strabismus

Sources

Expert consensus

References

Donahue SP. How often are spectacles prescribed to "normal" preschool children? J AAPOS. 2004;8:224-9.

123

Don't recommend nonfluoride toothpaste for infants and children.

Rationale and Comments

The benefit of fluoride-containing toothpaste arises from its topical effect on dental enamel by interrupting enamel demineralization caused by bacterial acids and enhancing remineralization of the enamel surface. Anti-caries (anti-cavities) benefit begins with eruption of the first primary tooth. Brushing with nonfluoridated toothpaste provides no anti-caries benefit. Use of recommended amounts of fluoride toothpaste minimizes risks of fluorosis, a whitish discoloration of enamel.

Sponsoring Organizations

American Dental Association

Sources

Systematic review

References

American Academy of Pediatric Dentistry. Guideline on Fluoride Therapy. Pediatr Dent 2014;36(6): 171-74. American Dental Association Council on Scientific Affairs. Fluoride toothpaste use for young children. J Am Dent Assoc. 2014 Feb;145(2):190-1. Wright JT, Hanson N, Ristic H, Whall CW, Estrich CG, Zentz RR. Fluoride toothpaste efficacy and safety in children younger than 6 years: a systematic review. J Am Dent Assoc. 2014 Feb;145(2):182-9.

312

Don't routinely order a head computed tomography to assess for shunt failure in children with hydrocephalus.

Rationale and Comments

Computed tomography (CT) scans have been used for diagnostic imaging for more than 40 years, but it should not be assumed that a head CT is always needed in an evaluation for shunt failure. Because CT is the usual mode of imaging for children with hydrocephalus, these patients have a much higher cumulative radiation exposure than the average population. Children have an increased risk of cancer with exposure to higher cumulative radiation doses. CT scans should be performed only when warranted to reduce exposure to radiation and decrease the risk for radiation-induced cancer. Consider using head ultrasonography when there is an open fontanel or a rapid sequence magnetic resonance imaging (MRI) scan to reduce the amount of ionizing radiation exposure to pediatric patients with a ventricular shunt. A rapid sequence MRI is less expensive than a formal MRI and comparable in cost to a CT scan. Sedation is not needed because the rapid sequence MRI is quick, which further reduces the costs and medical risks of sedation. A CT scan can be used for emergencies and if the child has implanted metal or a device that is not compatible with an MRI.

Sponsoring Organizations

American Association of Neuroscience Nurses, Society of Pediatric Nurses, & American Pediatric Surgical Nurses Association, Inc.

Sources

Expert consensus

References

Tekes A, Jackson EM, Ogborn J, et al. How to reduce head CT orders in children with hydrocephalus using the lean six sigma methodology: experience at a major quaternary care academic children's center. AJNR Am J Neuroradiol. 2016;37(6):990-996.
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Miglioretti DL, Johnson E, Williams A, et al. The use of computed tomography in pediatrics and the associated radiation exposure and estimated cancer risk. JAMA Pediatr. 2013;167(8):700-707.
Pearce MS, Salotti JA, Little MP, et al. Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study. Lancet. 2012;380(9840):499-505.
Ashley WW Jr, McKinstry RC, Leonard JR, et al. Use of rapid-sequence magnetic resonance imaging for evaluation of hydrocephalus in children. J Neurosurg. 2005;103(2 Suppl):124-130.
O'Neill BR, Pruthi S, Bains H, et al. Rapid sequence magnetic resonance imaging in the assessment of children with hydrocephalus. World Neurosurg. 2013;80(6):e307-e312.

Don't routinely order electroencephalography on neurologically healthy children who have a simple febrile seizure.

Rationale and Comments

Febrile seizures are the most commonly occurring seizures in the first 60 months of life. Caregiver anxiety can often lead to requests for neurodiagnostic testing. Attention should be directed at finding the cause of fever and treating it. Electroencephalography tests are costly and can increase caregiver and child anxiety without changing the outcome or course of treatment. Electroencephalography has not been shown to predict recurrence of febrile seizures or future epilepsy in patients with simple febrile seizures. Electroencephalography can be ordered for children who present with afebrile seizures and complex febrile seizures, and in children with neurological insult.

Sponsoring Organizations

American Academy of Nursing

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics Subcommittee on Febrile Seizures. (2011). Febrile seizures: guidelines for the neurodiagnostic evaluation of the child with a simple febrile seizure. Pediatrics, 127 (2), 389-394. El-Radhi, A., Sahib, A. (2015). Management of seizures in children. British Journal of Nursing. 24 (3), 152-155. Graves, R.C., Oehler, K., Tingle, L.E. (2012) Febrile seizures: risks, evaluation, and prognosis. American Family Physician. 15(85), 149-153. Harini, C., Nagarajan, E., Kimia, A., de Carvalho, R., An, S., Bergin, A., Takeoka, M., Pearl, P., Loddenkemper, T. (2015) Utility of initial EEG in first complex febrile seizure. Epilepsy and Behavior. 52 (PT A), 200-204. Oluwabusi, T., Sood, S.K. (2012) Update on the management of simple febrile seizures: Emphasis on minimal intervention. Current Opinion in Pediatrics. 24 (2) 259-265.

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Sponsoring Organizations

American Academy of Nursing

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics Subcommittee on Febrile Seizures. (2011). Febrile seizures: guidelines for the neurodiagnostic evaluation of the child with a simple febrile seizure. Pediatrics, 127 (2), 389-394. El-Radhi, A., Sahib, A. (2015). Management of seizures in children. British Journal of Nursing. 24 (3), 152-155. Graves, R.C., Oehler, K., Tingle, L.E. (2012) Febrile seizures: risks, evaluation, and prognosis. American Family Physician. 15(85), 149-153. Harini, C., Nagarajan, E., Kimia, A., de Carvalho, R., An, S., Bergin, A., Takeoka, M., Pearl, P., Loddenkemper, T. (2015) Utility of initial EEG in first complex febrile seizure. Epilepsy and Behavior. 52 (PT A), 200-204. Oluwabusi, T., Sood, S.K. (2012) Update on the management of simple febrile seizures: Emphasis on minimal intervention. Current Opinion in Pediatrics. 24 (2) 259-265.

Don't routinely test urine for metals and minerals in children with autistic behaviors. Toxicologic exposures have not been conclusively associated with the development of autistic behaviors in children. Testing for metals and minerals may be harmful if treatment is guided on the basis of these results.

Rationale and Comments

Thimerosol or ethylmercury have been used as preservatives in multidose vaccine vials and have been blamed for the increase in autism rates over the past two decades. However, studies have failed to show a causative link between environmental exposures and the development of these symptoms. As symptoms of autism occur early in childhood and, possibly, months to years after any potential exposure may have resulted in neurotoxicity, the likelihood of continued presence of such toxicant is low. Parents, however, may be desperate for answers and seek out alternative sources for information and receive advice to obtain laboratory analysis for minerals and metals as causative agents without insurance reimbursement. Finding an abnormal result has led to ill-advised treatments and death in some patients.

Sponsoring Organizations

American Academy of Pediatrics Council on Environmental Health

Sources

Cochrane Database of Systematic Reviews

References

Modabbernia A, Velthorst E, et al. Environmental risk factors for autism: an evidence-based review of systematic reviews and meta-analyses. Mol Autism. 2017;8:13. Baxter AJ, Krenzelok EP. Pediatric fatality secondary to EDTA chelation. Clin Toxicol. 2008;46(10):1083-1084. James S, Stevenson SW, et al. Chelation for autism spectrum disorder (ASD). Cochrane Database Syst Rev. 2015;(11):CD010766.

Don't routinely use CT to screen pediatric patients with suspected nephrolithiasis.

Rationale and Comments

Given the link between radiation exposure from CT in children and increased cancer risk, imaging test selection should adhere to the principle of ALARA (as low as reasonably achievable) to minimize radiation exposure. Ultrasonography is sufficiently sensitive and specific as an initial imaging test in pediatric patients with suspected urolithiasis. When ultrasound results are negative or indeterminate despite strong clinical suspicion or when proceeding with perioperative planning, CT using a low-dose protocol is an appropriate next step.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

Clinical Effectiveness Protocols for Imaging in the Management of Ureteral Calculous Disease: American Urological Association Technology Assessment, 2012; J Urol; April 2013;189(4):1203-1213; DOI: dx.doi.org/10.1016/j.juro.2012.10.031. Available from: www.jurology.com/article/S0022-5347(12)05259-7/fulltext. Assimos, Dean et al. Surgical Management of Stones: American Urological Association/Endourological Society Guideline, 2016; J Urol 196(4)1153-60. DOI: dx.doi.org/10.1016/j.juro.2016.05.090; www.jurology.com/article/S0022-5347(16)30531-6/abstract; www.auanet.org/common/pdf/education/clinical-guidance/Surgical-Management-of-Stones.pdf; www.guideline.gov/summaries/summary/50408.

Don't send periodic fever syndrome genetic panels prior to infectious and oncologic workup or in a patient without clear evidence of recurrent fever.

Rationale and Comments

Fever is a common complaint in the pediatric age group with infectious etiology as the most common followed by malignancy. Thorough history and physical exam in addition to diligent documentation of fever and accompanying symptoms can often help define underlying etiology, minimizing as well as targeting additional workup. Of note, most children with a periodic fever syndrome do not have a genetic mutation, and the most common periodic fever syndrome – PFAPA (periodic fever, adenitis, pharyngitis, aphthous ulcer) – is not associated with a monogenic mutation.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

Expert consensus

References

Antoon J, Peritz D, Parsons M, Skinner A, Lohr J. Etiology and resource use of fever of unknown origin in hospitalized children. Hosp Pediatr. 2018;8(3):135-140. Antoon J, Potisek N, Lohr J. Pediatric fever of unknown origin. Pediatr Rev. 2015;36(9):380-390. Chusid M. Fever of unknown origin in childhood. Pediatr Clin North Am. 2017;64(1):205-230. Gattorno M, Sormani M, D'Osualdo A, et al. A diagnostic score for molecular analysis of hereditary autoinflammatory syndromes with periodic fever in children. Arthritis Rheum. 2008;58(6):1823-1832. Tchernitchko D, Moutereau S, Legendre M, et al. Mefv analysis is of particularly weak diagnostic value for recurrent fevers in western European Caucasian patients. Arthritis Rheum. 2005;52(11):3603-3605.

Don't treat urinary incontinence in a child with pharmacotherapy (e.g., anticholinergics) before evaluating and treating constipation.

Rationale and Comments

The association of lower urinary tract dysfunction and constipation is termed bladder-bowel dysfunction. Of children with function constipation, 25% to 30% have daytime urinary incontinence. Treatment of constipation alone can eliminate daytime urinary incontinence in many patients. It has also been shown to reduce recurrent UTI. The clinical diagnosis of constipation can be made using the Rome IV criteria. Treatment strategies involve education, fecal disimpaction in many, prevention of re-accumulation with maintenance regimens, and close follow-up. If a child is started on anti-cholinergic medications, the bowel regimen must be continued to obviate worsening constipation.

Sponsoring Organizations

American Academy of Pediatrics - Section on Urology

Sources

Systematic review

References

Colombo JM, Wassom MC, Rosen JM. Constipation and encopresis in childhood. Pediatr Rev. 2015;36(9):392-402. van Summeren JJGT, Holtman GA, van Ommeren SC, et al. Bladder symptoms in children with functional constipation: a systematic review. J Pediatr Gastroenterol Nutr. 2018;67(5):552-560. Drossman DA. Functional gastrointestinal disorders: history, pathophysiology, clinical features and Rome IV [published online ahead of print, 2016 Feb 19]. Gastroenterology. 2016;S0016-5085(16)00223-7. Loening-Baucke V. Functional fecal retention with encopresis in childhood. J Pediatr Gastroenterol Nutr. 2004;38(1):79-84. Burgers RE, Mugie SM, Chase J, et al. Management of functional constipation in children with lower urinary tract symptoms: report from the Standardization Committee of the International Children's Continence Society. J Urol. 2013;190(1):29-36.

Don't use broad-spectrum antibiotics such as ceftriaxone for children hospitalized with uncomplicated CAP. Use narrow-spectrum antibiotics such as penicillin, ampicillin, or amoxicillin.

Rationale and Comments

Using broad-spectrum antibiotic therapy does not improve rates of treatment failure, improve length of stay, or decrease costs when compared with narrow-spectrum antibiotic therapy for children hospitalized with CAP. The use of narrow-spectrum antibiotics for children hospitalized with CAP can limit the development of multidrug-resistant organisms, while achieving similar or better outcomes.

Sponsoring Organizations

Society of Hospital Medicine (Pediatric)|American Academy of Pediatrics|Academic Pediatric Association

Sources

Retrospective cohort study

References

Bradley JS, et al.; Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. The management of community-acquired pneumonia in infants and children older than 3 months of age: clinical practice guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. Clin Infect Dis. 2011;53(7):e25-76. Williams DJ, et al. Narrow vs broad-spectrum antimicrobial therapy for children hospitalized with pneumonia. Pediatrics. 2013;132(5):e1141-1148. Queen MA, et al. Comparative effectiveness of empiric antibiotics for community-acquired pneumonia. Pediatrics. 2014;133(1):e23-29. Thomson J, et al. Hospital outcomes associated with guideline-recommended antibiotic therapy for pediatric pneumonia. J Hosp Med. 2015;10(1):13-18.

Don't use continuous pulse oximetry routinely in children with acute respiratory illness unless they are on supplemental oxygen.

Rationale and Comments

The utility of continuous pulse oximetry in pediatric patients with acute respiratory illness is not well established. Use of continuous pulse oximetry has been previously associated with increased admission rates and increase length of stay. The clinical benefit of pulse oximetry is not validated or well documented.

Sponsoring Organizations

Society of Hospital Medicine (Pediatric)

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics. Diagnosis and management of bronchiolitis. Pediatrics. 2006;118(4):1774-93. Schroeder AR, et al. Impact of pulse oximetry and oxygen therapy on length of stay in bronchiolitis hospitalizations. Arch Pediatr Adolesc Med. 2004;158(6):527-30. Hunt CE, et al. Longitudinal assessment of hemoglobin oxygen saturation in healthy infants during the first 6 months of life. J Pediatr. 1999;135(5):580-6. Alverson, et al. Multi-center randomized trial of pulse oximetry monitoring strategies for children hospitalized for bronchiolitis. Abstract presented at IDWeek 2012, Oct. 2012, San Diego, Calif.

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Don't use systemic corticosteroids in children younger than two years with an uncomplicated lower respiratory tract infection

Rationale and Comments

Published guidelines recommend that corticosteroid medications not be used routinely in the management of bronchiolitis. Furthermore, additional studies in patients with other viral lower respiratory tract infections have failed to demonstrate any benefits.

Sponsoring Organizations

Society of Hospital Medicine (Pediatric)

Cochrane Database of Systematic Reviews|American Academy of Pediatrics guidelines

References

American Academy of Pediatrics. Diagnosis and management of bronchiolitis. Pediatrics. 2006;118(4):1774-93. Klassen TP, et al. Dexamethasone in salbutamol-treated inpatients with acute bronchiolitis: a randomized, controlled trial. J Pediatr. 199;130(2):191-6. Patel H, et al. Glucocorticoids for acute viral bronchiolitis in infants and young children. Cochrane Database Syst Rev. 2004;(3):CD004878. De Boeck K, et al. Respiratory syncytial virus bronchiolitis: a double-blind dexamethasone efficacy study. J Pediatr. 1997;131(6):919-21. Von Woensel JBM, et al. Viral lower respiratory tract infection in infants and young children, BMJ. 2003;327(7405):36-40. Panickar J, et al. Oral prednisolone for preschool children with acute virus-induced wheezing. N Engl J Med. 2009;360(4):329-38.

71

Infant home apnea monitors should not be routinely used to prevent sudden infant death syndrome.

Rationale and Comments

There is no evidence that the use of infant home apnea monitors decreases the incidence of sudden infant death syndrome; however, they might be of value for selected infants at risk for apnea or cardiovascular events after discharge but should not be used routinely.

Sponsoring Organizations

American Academy of Pediatrics

Sources

Expert consensus

References

Moon RY; American Academy of Pediatrics Task Force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. Pediatrics. 2011 Nov;128(5):1030–9.

200

Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.

Rationale and Comments

CT scanning is associated with radiation exposure that may escalate future cancer risk. MRI also has associated risks from required sedation and high cost. The literature does not support the use of skull films in the evaluation of a child with a febrile seizure. Clinicians evaluating infants or young children after a simple febrile seizure should direct their attention toward identifying the cause of the child's fever.

Sponsoring Organizations

American Academy of Pediatrics

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics Subcommittee on Febrile Seizures. Guideline for the neurodiagnostic evaluation of the child with a simple febrile seizure. Pediatrics. 2011;127(2):389-94.

41

Don't perform routine preoperative hemostatic testing (PT, aPTT) in an otherwise healthy child with no prior personal or family history of bleeding.

Rationale and Comments

Preoperative hemostatic screening in healthy pediatric patients with no personal or family history of excessive bleeding does not effectively identify those who will have unexpected surgical bleeding. Artifacts or disorders that do not affect bleeding risk may be identified, such as factor XII deficiency or an infection-associated, transient lupus anticoagulant. Hemostatic testing adds cost and may introduce additional stress, either due to blood sampling or if a child has "abnormal" results.

Sponsoring Organizations

American Society of Hematology|American Society of Pediatric Hematology/Oncology

Sources

Expert consensus

References

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407

Don't initiate an outpatient hypertension workup in asymptomatic pediatric patients prior to repeating the blood pressure measurement.

See Cardiovascular.

Don't order an echocardiogram for the routine evaluation of pediatric chest pain in the absence of a concerning history or ECG abnormalities.

See Cardiovascular.

Don't order troponins for the routine evaluation of pediatric chest pain in the absence of a concerning history or ECG abnormalities.
See Cardiovascular.

Avoid the use of combination topical steroid antifungals for tinea corporis, Candida skin infections, and diaper dermatitis.
See Dermatologic.

Avoid the use of systemic (oral or injected) corticosteroids in most cases of atopic dermatitis.
See Dermatologic.

Avoid the routine use of whole-body CT scanning (pan-scanning) in pediatric trauma patients.
See Emergency Medicine.

Avoid routinely measuring thyroid function and/or insulin levels in children with obesity.
See Endocrinologic.

Avoid routine use of antireflux medications for treatment of symptomatic GERD or for treatment of apnea and desaturation in preterm infants.
See Gastroenterologic.

Avoid using acid blockers and motility agents such as metoclopramide (generic) for physiologic gastroesophageal reflux that is effortless, painless, and not affecting growth. Do not use medication in the so-called "happy-spitter."
See Gastroenterologic.

CT scans are not necessary in the routine evaluation of abdominal pain.
See Gastroenterologic.

Don't obtain abdominal radiographs for suspected constipation.
See Gastroenterologic.

Don't treat gastroesophageal reflux in infants routinely with acid suppression therapy.
See Gastroenterologic.

Avoid dependence on standard laboratory values for transfusion decisions; consideration of the patient's clinical status is requisite.
See Hematologic.

Don't order thrombophilia testing on children with venous access (i.e., peripheral or central) associated thrombosis in the absence of a positive family history.
See Hematologic.

Don't routinely repeat the labs hemoglobin and hematocrit in the hemodynamically normal pediatric patients with isolated blunt solid organ injury.
See Hematologic.

Don't transfuse packed red blood cells for iron deficiency anemia in asymptomatic pediatric patients when there is no evidence of hemodynamic instability or active bleeding.
See Hematologic.

Don't transfuse platelets in an asymptomatic (i.e., nonbleeding) pediatric patient (e.g., aplastic anemia, leukemia), with a platelet count > 10,000/mcL unless other signs and/or symptoms for bleeding are present, or if the patient is to undergo an invasive procedure.
See Hematologic.

Avoid routine continuation of antibiotic therapy beyond 48 hours for initially asymptomatic infants without evidence of bacterial infection.
See Infectious Disease.

Don't obtain comprehensive viral panel testing for patients who have suspected respiratory viral illnesses.
See Infectious Disease.

Don't prescribe IV antibiotics for predetermined durations for patients hospitalized with infections such as pyelonephritis, osteomyelitis and complicated pneumonia. Consider early transition to oral antibiotics.
See Infectious Disease.

Don't treat uncomplicated community-acquired pneumonia in otherwise healthy, immunized, hospitalized patients with antibiotic therapy broader than ampicillin.
See Infectious Disease.

Don't routinely obtain a CT or MRI scan for infants with macrocephaly who are developmentally normal and clinically asymptomatic.
See Neonatology.

CT scans are not necessary in the evaluation of minor head injuries.
See Neurologic.

Don't order laboratory testing or a computed tomography scan of the head for a patient with an unprovoked, generalized seizure or a simple febrile seizure who has returned to baseline mental status.
See Neurologic.

Don't routinely obtain CT scanning of children with mild head injuries.
See Neurologic.

Don't recommend vision therapy for patients with dyslexia.
See Ophthalmologic.

Do not order follow-up X-rays for buckle (or torus) fractures if they are no longer tender or painful.
See Orthopedic.

Don't cast or perform follow-up x-rays for isolated, nondisplaced or nonangulated distal radius buckle fractures that do not involve the physis and which have an intact cortex in children.
See Orthopedic.

Don't order advanced imaging studies (MRI or CT) for most musculoskeletal conditions in a child until all appropriate clinical, laboratory, and plain radiographic examinations have been completed.
See Orthopedic.

Don't order custom orthotics or shoe inserts for a child with minimally symptomatic or asymptomatic flat feet.
See Orthopedic.

Don't order radiographs or advise bracing or surgery for a child less than eight years of age with simple in-toeing gait.
See Orthopedic.

Don't prescribe antibiotics for otitis media in children aged two to 12 years with nonsevere symptoms where the observation option is reasonable.
See Otolaryngologic.

Don't prescribe oral antibiotics for uncomplicated tympanostomy tube otorrhea.
See Otolaryngologic.

Don't routinely prescribe antipsychotic medications as a first-line intervention for children and adolescents for any diagnosis other than psychotic disorders.
See Psychiatric and Psychologic.

Avoid stepping up asthma therapy (adding new drugs or going to higher doses) before assessing adherence, appropriateness of device, and technique with current asthma medications.
See Pulmonary.

Don't obtain radiographs in children with bronchiolitis, croup, asthma, or first-time wheezing.
See Pulmonary.

Don't order chest radiographs in children with uncomplicated asthma or bronchiolitis.
See Pulmonary.

Don't routinely use airway clearance therapy in conditions such as asthma, bronchiolitis, and pneumonia.
See Pulmonary.

Don't routinely use bronchodilators in children with bronchiolitis.
See Pulmonary.

Don't order ANA and other autoantibody testing on a child unless there is strong suspicion or specific signs of autoimmune disease.
See Rheumatologic.

Don't order rheumatoid factor alone, or as part of a "panel" or "cascade" in children to evaluate for rheumatologic disease such as juvenile idiopathic arthritis due to musculoskeletal complaints. Don't let laboratory results guide referral.
See Rheumatologic.

Don't prescribe opioids for chronic pain management in patients with autoimmune disease.
See Rheumatologic.

Don't delay initiation of early subthreshold, symptom-limited aerobic exercise as rehabilitation for adolescents who have sustained an acute sport-related concussion.
See Sports Medicine.

Avoid using CT scan as the first-line imaging modality in the evaluation of suspected appendicitis in children. Ultrasound should be done first with a CT scan or MRI considered in equivocal cases.
See Surgical.

Don't proceed with nonemergent major surgery until anemia is evaluated and treated.
See Surgical.

Reduce postoperative opioid requirements in pediatric patients by administering acetaminophen and/or NSAID medications in the perioperative period.
See Surgical.

Don't initiate a workup for hematuria or proteinuria before repeating an abnormal urine dipstick analysis.
See Urologic.

Don't perform diagnostic imaging to establish the diagnosis of cryptorchidism.
See Urologic.

Don't perform voiding cystourethrogram routinely in first febrile urinary tract infection (UTI) in children aged two to 24 months.
See Urologic.

Don't screen for UTI in asymptomatic patients who perform clean intermittent catheterization.
See Urologic.

Avoid colorectal cancer screening tests on asymptomatic patients with a life expectancy of less than 10 years and no family or personal history of colorectal neoplasia.

Rationale and Comments

Screening for colorectal cancer has been shown to reduce the mortality associated with this common disease; colonoscopy provides the opportunity to detect and remove adenomatous polyps, the precursor lesion to many cancers, thereby reducing the incidence of the disease later in life. However, screening and surveillance modalities are inappropriate when the risks exceed the benefit. The risk of colonoscopy increases with increasing age and comorbidities. The risk/benefit ratio of colorectal cancer screening or surveillance for any patient should be individualized based on the results of previous screening examinations, family history, predicted risk of the intervention, life expectancy, and patient preference.

Sponsoring Organizations

American College of Surgeons

Sources

U.S. Preventive Services Task Force|U.S. Multi-Society Task Force on Colorectal Cancer

Lieberman DA, Rex DK, Winawer SJ, Giardiello FM, Johnson DA, Levin TR; United States Multi-Society Task Force on Colorectal Cancer. Guidelines for colonoscopy surveillance after screening and polypectomy: a consensus update by the US Multi-Society Task Force on Colorectal Cancer. Gastroenterology. 2012;143(3):844-57. Warren JL, Klabunde CN, Mariotto AB, Meekins A, Topor M, Brown ML, Ransohoff DF. Adverse events after outpatient colonoscopy in the Medicare population. Ann Intern Med. 2009;150(12):849-57. U.S. Preventive Services Task Force. Screening for colorectal cancer: US Preventive Services Task Force Recommendation Statement. Ann Intern Med. 2008;149(9)627-37. Qaseem A, Denberg TD, Hopkins RH, Humphrey LL, Levine J, Sweet DE, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for colorectal cancer; a guidance statement from the American College of Physicians. Ann Intern Med. 2012;156(5);378-86.

100

Avoid TSH screening in annual well-visits for asymptomatic adults, regardless of age.

Rationale and Comments

TSH screening is a common ambulatory practice; however, no evidence finds routine screening improves patient care. Testing is appropriate when patients are considered at-risk or demonstrate subtle or direct signs of thyroid dysfunction upon physical evaluation.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

U.S. Preventive Services Task Force

Lefevre ML; U.S. Preventive Services Task Force. Screening for thyroid dysfunction: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2015;162(9):641. Surks MI, Ortiz E, Daniels GH, et al. Subclinical thyroid disease: scientific review and guidelines for diagnosis and management. JAMA. 2004;291(2):228-238. Donangelo I, Braunstein GD. Update on subclinical hyperthyroidism. Am Fam Physician. 2011;83(8):933-938.

450

Avoid use of ultrasound for routine surveillance of carotid arteries in the asymptomatic healthy population at any time.

Rationale and Comments

The presence of a bruit alone does not warrant serial duplex ultrasounds in low-risk, asymptomatic patients, unless significant stenosis is found on the initial duplex ultrasound. The presence of asymptomatic severe carotid artery disease in the general population yields a risk of neurologic event, which is <2%. Even in patients who have a bruit, if no other risk factors exist, the incidence is only 2%. Age (over 65), coronary artery disease, need for coronary bypass, symptomatic lower extremity arterial occlusive disease, history of tobacco use, and high cholesterol would be appropriate risk factors to prompt ultrasound in patients with a bruit. Otherwise, these ultrasounds may prompt unnecessary and more expensive and invasive tests, or even unnecessary surgery. In general population-based studies, the prevalence of severe carotid stenosis is not high enough to make bruit alone an indication for carotid screening. With these facts in mind, screening should be pursued only if a bruit is associated with other risk factors for stenosis and stroke, or if the primary care physician determines a patient is at increased risk for carotid artery occlusive disease.

Sponsoring Organizations

Society for Vascular Surgery

Sources

Society for Vascular Surgery guidelines

References

Ricotta JJ, Aburahma A, Ascher E, Eskandari M, Faries P, Lal BK; Society for Vascular Surgery. Updated Society for Vascular Surgery guidelines for management of extracranial carotid disease. J Vasc Surg. 2011;54(3):e1-31. Jacobowitz GR, Rockman CB, Gagne PJ, Adelman MA, Lamparello PJ, Landis R, Riles TS. A model for predicting occult carotid artery stenosis: screening is justified in a selected population. J Vasc Surg. 2003;38(4):705-9. Qureshi AI, Janardhan V, Bennett SE, Luft AR, Hopkins LN, Guterman LR. Who should be screened for asymptomatic carotid artery stenosis? Experience from the Western New York stroke screening program. J Neuroimaging. 2001;11(2):105-11.

237

Don't continue medications based solely on the medication history unless the history has been verified with the patient by a medication-use expert (e.g., a pharmacist) and the need for continued therapy has been established.

Rationale and Comments

The patient or caregiver should be the sole source of truth when taking the medication history. The patient or caregiver should be interviewed by someone with medication-use knowledge, ideally a pharmacist, and medications should be continued only if there is an associated patient indication. If a pharmacist is not available, then at a minimum, the health care worker taking the history should have access to robust drug information resources. The history should include the drug name, dose, units, frequency, and the last dose taken; and indication if available.

Sponsoring Organizations

American Society of Health-System Pharmacists

Sources

Expert consensus

References

ASHP statement on the role of the pharmacist in medication reconciliation [Internet]. Available from: www.ashp.org/DocLibrary/BestPractices/SpecificStMedRec.aspx. Najafzadeh M, et al. Economic value of pharmacist-led medication reconciliation for reducing medication errors after hospital discharge. Am J Manag Care 2016;22:654-61. Varkey, P, et al. Multidisciplinary approach to inpatient medication reconciliation in an academic setting. Am J Health-Syst Pharm. 2007; 64:850-5. Lehnbom, EC, et al. Impact of medication reconciliation and review on clinical outcomes. Ann Pharmacother. 2014; 48:1298-1312. The Joint Commission. 2017 National Patient Safety Goals [Internet; cited 2017 Jan 21]. Available from: www.jointcommission.org/standards_information/npsgs.aspx.

339

Don't forget to routinely assess activity levels and recommend appropriate physical activity to your patients.

Rationale and Comments

Leading an active lifestyle has wide-ranging health benefits for people of all ages. Specifically, studies have shown a decrease in all-cause mortality associated with increasing levels of energy expenditure (i.e., kcal per week). It has also been shown to decrease risk of coronary artery disease, diabetes, hypertension, many types of cancers, and a host of other medical conditions with strong, consistent epidemiologic evidence and moderately strong supporting evidence from clinical trials. Benefits on bone health and mental health have also been demonstrated. In the United States, cardiovascular disease alone accounts for an estimated $214 billion per year in health care expenses, and causes $138 billion in lost productivity at work, according to the CDC. Preventing cardiovascular disease, as well as other conditions, can potentially decrease both the use of health care resources and the associated cost. Practitioners should routinely assess physical activity levels and recommend safe and appropriate activity to patients. The potential risks associated with a well-designed exercise program that accounts for age, baseline fitness level, and medical history/comorbidities are low, and far exceeded by the potential benefits. Some studies have also shown that exercise prescriptions increase physical activity levels and quality of life.

Sponsoring Organizations

American Medical Society for Sports Medicine

Sources

Prospective cohort studies

References

•Peterson, DM. The benefits and risks of aerobic exercise. UpToDate. Updated January 15, 2021. Accessed March 29, 2022. •Franklin BA, Sallis RE, O'Connor FG. Exercise prescription and guidance for adults. Updated March 2, 2022. Accessed March 29, 2022. •Sui X, LaMonte MJ, Laditka JN, et al. Cardiorespiratory fitness and adiposity as mortality predictors in older adults. JAMA. 2007;298(21):2507-2516. •Janssen I, Jolliffe CJ. Influence of physical activity on mortality in elderly with coronary artery disease. Med Sci Sports Exerc. 2006;38(3):. •Hoffmann TC, Maher CG, Briffa T, et al. Prescribing exercise interventions for patients with chronic conditions. CMAJ. 2016;188(7):510-518. •Proper KI, Singh AS, van Mechelen W, et al. Sedentary behaviors and health outcomes among adults: a systematic review of prospective studies. Am J Prev Med. 2011;40(2):174-182. •Lemaitre RN, Siscovick DS, Raghunathan TE, et al. Leisure-time physical activity and the risk of primary cardiac arrest. Arch Intern Med. 1999;159(7):686-690. •Mandsager K, Harb S, Cremer P, et al. Association of cardiorespiratory fitness with long-term mortality among adults undergoing exercise treadmill testing. JAMA Netw Open. 2018;1(6):e183605. Published 2018 Oct 5. •Grandes G, Sanchez A, Sanchez-Pinilla RO, et al. Effectiveness of physical activity advice and prescription by physicians in routine primary care: a cluster randomized trial. Arch Intern Med. 2009;169(7):694-701. •Yaman H, Atay E. The effect of exercise prescription of primary care physician on the quality of life in patients. London J Prim Care (Abingdon). 2018;10(4):93-98. Published 2018 Apr 25. •Lobelo F, Muth ND, Hanson S, et al.; Council on Sports Medicine and Fitness; Section on Obesity. Physical activity assessment and counseling in pediatric clinical settings. Pediatrics. 2020;145(3):e20193992.

505

Don't initiate medications to treat symptoms, adverse events, or side effects without determining if an existing therapy or lack of adherence is the cause, and whether a dosage reduction, discontinuation of a medication, or another medication is warranted.

Rationale and Comments

New medications should not be initiated without taking into consideration patient compliance with their preexisting medication and whether their current dose is effective at controlling/treating symptoms. Medications are often prescribed to treat symptoms that are really side effects of other medications without determining if the preexisting medication is truly needed or could be discontinued.

Sponsoring Organizations

American Society of Health-System Pharmacists

Sources

Expert consensus

References

Schiff GD, et al. Promoting more conservative prescribing. JAMA 2009;301:865-7. Schiff GD, et al. Principles of conservative prescribing. Arch Intern Med. 2011;171:1433-40. Shane, R and Abramowitz, PW. Choosing Wisely: Pharmacy's role in effective use of medications. Am J Health-Syst Pharm. 2015; 72:1529-30. doi.org/10.2146/ajhp150324.

337

Don't order annual electrocardiography or any other cardiac screening for asymptomatic, low-risk patients.

Rationale and Comments

There is little evidence that detection of coronary artery stenosis improves health outcomes in asymptomatic patients at low risk of coronary heart disease. False-positive test results are likely to lead to harm through unnecessary invasive procedures, overtreatment, and misdiagnosis. Potential harms of routine annual screening exceed the potential benefit.

Sponsoring Organizations

American Academy of Family Physicians|American College of Physicians

Sources

U.S. Preventive Services Task Force

References

U.S. Preventive Services Task Force. Screening for coronary heart disease with electrocardiography. http://www.uspreventiveservicestaskforce.org/uspstf/uspsacad.htm.

2

Don't order coronary artery calcium scoring for screening purposes on low-risk asymptomatic individuals except for those with a family history of premature coronary artery disease.

Rationale and Comments

Net reclassification of risk by coronary artery calcium scoring, when added to clinical risk scoring, is least effective in low-risk individuals.

Sponsoring Organizations

Society of Cardiovascular Computed Tomography

Sources

American Heart Association guidelines

References

Budoff MJ, et al. Assessment of coronary artery disease by cardiac computed tomography. Circulation. 2006;114(16): 1761-91. Shaw LJ, et al. Prognostic value of cardiac risk factors and coronary artery calcium screening for all-cause mortality. Radiology. 2003;228(3):826–33.

4

Don't order low back x-rays as part of a routine preplacement medical examination.

Rationale and Comments

Preplacement medical examinations are conducted to determine an individual's ability to perform the job's essential functions. Routine low back x-rays are costly, result in unnecessary radiation exposure, do not address the worker's abilities and do not predict future injuries.

Sponsoring Organizations

American College of Occupational and Environmental Medicine

Sources

American College of Occupational and Environmental Medicine guidelines

References

Talmage J, Belcourt R, Galper J, et al. Low back disorders. In: Hegmann K, ed. Occupational Medicine Practice Guidelines. 3rd ed. Elk Grove Village, Ill: American College of Occupational and Environmental Medicine; 2011. p. 377.

188

Don't perform CT screening for lung cancer among patients at low risk for lung cancer.

Rationale and Comments

Low dose chest CT screening for lung cancer has the potential to reduce lung cancer death in patients at high risk (i.e., individuals aged 55 to 74 with at least a 30-pack-year history of tobacco use, who are either still smoking or quit within the past 15 years). However, CT screening for lung cancer also has the potential to cause a number of adverse effects (e.g., radiation exposure, high false-positive rate, harms related to downstream evaluation of pulmonary nodules, overdiagnosis of indolent tumors). Thus, screening should be reserved for patients at high risk of lung cancer and should not be offered to individuals at low risk of lung cancer.

Sponsoring Organizations

American College of Chest Physicians/American Thoracic Society

Sources

U.S. Preventive Services Task Force

References

Aberle DR, Adams AM, Berg CD, Black WC, Clapp JD, Fagerstrom RM, Gareen IF, Gatsonis C, Marcus PM, Sicks JD. Reduced lung-cancer mortality with low-dose computed tomographic screening. N Engl J Med. 2011;365(5):395-409. Bach PB, Mirkin JN, Oliver TK, Azzoli CG, Berry DA, Brawley OW, Byers T, Colditz GA, Gould MK, Jett JR, Sabichi AL, Smith-Bindman R, Wood DE, Qaseem A, Detterbeck FC. Benefits and harms of CT screening for lung cancer: a systematic review. JAMA. 2012;307(22):2418-29. Veronesi G, Maisonneuve P, Bellomi M, Rampinelli C, Durli I, Bertolotti R, Spaggiari L. Estimating overdiagnosis in low-dose computed tomography screening for lung cancer: a cohort study. Ann Intern Med. 2012;157(11):776-84. Humphrey LL, Deffebach M, Pappas M, Baumann C, Artis K, Mitchell JP, Zakher B, Fu R, Slatore CG. Screening for lung cancer with low-dose computed tomography: a systematic review to update the U.S. Preventive Services Task Force recommendation. Ann Intern Med. 2013 Sep 17;159(6):411-20.

156

Don't perform pelvic exams on asymptomatic nonpregnant women, unless necessary for guideline-appropriate screening for cervical cancer.

Rationale and Comments

Screening pelvic examinations, except for the purpose of performing cervical cancer screening at recommended intervals, have not led to reduction in mortality or morbidity, and expose asymptomatic women to unnecessary invasive testing. Noninvasive options to screen for sexually transmitted infections are now available as alternatives to endocervical cultures. Screening pelvic examinations also add unnecessary costs to the health care system, included expenses from evaluations of false-positive findings. These pelvic exams can even lead to unnecessary surgery.

Sponsoring Organizations

American Academy of Family Physicians

Sources

American College of Physicians guidelines

References

AAFP Clinical Preventive Service Recommendation: The AAFP recommends against screening pelvic exams in asymptomatic women. (2017) http://www.aafp.org/patient-care/clinicalrecommendations/all/screening-pelvic-exam.html. Annals of Internal Medicine: Screening Pelvic Examination in Adult Women: A Clinical Practice Guideline from the American College of Physicians (Endorsed by the AAFP) http://annals.org/aim/fullarticle/1884537/screening-pelvic-examination-adult-women-clinical-practice-guideline-from-american.

368

Don't perform population-based screening for 25-OH-vitamin D deficiency.

Rationale and Comments

Vitamin D deficiency is common in many populations, particularly in patients at higher latitudes, during winter months, and in those with limited sun exposure. Over-the-counter vitamin D supplements and increased summer sun exposure are sufficient for most otherwise healthy patients. Laboratory testing is appropriate in higher risk patients when results will be used to institute more aggressive therapy (e.g., osteoporosis, chronic kidney disease, malabsorption, some infections, obese individuals).

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Endocrine Society guidelines

References

Sattar N, et al. Increasing requests for vitamin D measurement: costly, confusing, and without credibility. Lancet. 2012;379:95-6. Bilinski K, et al. The rising cost of vitamin D testing in Australia: time to establish guidelines for testing. Med J Aust. 2012;197(2):90. Lu C. Pathology consultation on vitamin D testing: clinical indications for 25(OH) vitamin D measurement [letter to the editor]. Am J Clin Pathol. 2012;137:831. Holick M, et al. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2011;96(7):1911-30.

67

Don't perform routine general health checks for asymptomatic adults.

Rationale and Comments

Routine general health checks are office visits between a health professional and a patient exclusively for preventive counseling and screening tests. In contrast to office visits for acute illness, specific evidence-based preventive strategies, or chronic care management such as treatment of high blood pressure, regularly scheduled general health checks without a specific cause including the "health maintenance" annual visit, have not shown to be effective in reducing morbidity, mortality or hospitalization, while creating a potential for harm from unnecessary testing.

Sponsoring Organizations

Society of General Internal Medicine

Sources

Cochrane Database of Systematic Reviews

References

Krogsboll LT, Jorgensen KJ, Gronhoj Larsen C, Gotzsche PC. General health checks in adults for reducing morbidity and mortality from disease: Cochrane systematic review and meta-analysis. BMJ. 2012;345:e7191. Boulware LE, Marinopoulos S, Phillips KA, Hwang CW, Maynor K, Merenstein D, Wilson RF, Barnes GJ, Bass EB, Powe NR, Daumit GL. Systematic review: the value of the periodic health evaluation. Ann Intern Med. 2007 Feb 20;146(4):289-300. United States Preventive Services Task Force. Guide to clinical preventative services: an assessment of the effectiveness of 169 interventions. Baltimore: Williams & Wilkins, 1989. Candian Task Force on the Periodic Health Examination. The periodic health examination. CMAJ. 1979;121(9):1193-254.

106

Don't perform screening mammography in asymptomatic patients with normal exams who have less than five-year life expectancy.

Rationale and Comments

Mammography identifies breast cancers at early stages and has demonstrated benefits in reducing mortality and morbidity from a breast cancer diagnosis. There is minimal benefit of screening mammography in women with life expectancies of < five years. Additionally, there is a risk of false positives and potential procedures that do not provide patients improved outcomes.

Sponsoring Organizations

American Society of Breast Surgeons – Benign Breast Disease

Sources

Expert consensus

References

Schonberg MA, Breslau ES, McCarthy EP. Targeting of mammography screening according to life expectancy in women aged 75 and older. J Am Geriatr Soc. 2013;61:388-395. Walter LC, Schonberg MA. Screening mammography in older women: a review. JAMA. 2014;311:1336-1347.

357

Don't recommend cancer screening in adults with life expectancy of less than 10 years.

Rationale and Comments

Screening for cancer can be lifesaving in otherwise healthy at-risk patients. While screening tests lead to a mortality benefit, which emerges years after the test is performed, they expose patients to immediate potential harms. Patients with life expectancies of less than 10 years are unlikely to live long enough to derive the distant benefit from screening. However, these patients are in fact more likely to experience the harms since patients with limited life expectancy are more likely to be frail and more susceptible to complications of testing and treatments. Therefore, the balance of potential benefits and harms does not favor recommending cancer screening in patients with life expectancies of less than 10 years.

Sponsoring Organizations

Society of General Internal Medicine

Sources

U.S. Preventive Services Task Force

References

Lee SJ, Boscardin WJ, Stijacic-Cenzer I, Conell-Price J, O'Brien S, Walter LC. Time lag to benefit after screening for breast and colorectal cancer: meta-analysis of survival data from the United States, Sweden, United Kingdom, and Denmark. BMJ. 2012 Jan 8;345:e8441. Moyer VA, U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force Recommendation Statement. Ann Intern Med. 2012 Jul 17;157(2):120-34. Schröder FS, Hugosson J, Roobol, MJ, Tammela TL, Ciatto S, Nelen V, Kwiatkowski M, Lujan M, Lilja H, Zappa M, Denis LJ, Recker F, Páez A, Määttänen L, Bangma CH, Aus G, Carlsson S, Villers A, Rebillard X, van der Kwast T, Kujala PM, Blijenberg BG, Stenman UH, Huber A, Taari K, Hakama M, Moss SM, de Koning HJ, Auvinen A; ERSPC Investigators. Prostate-cancer mortality at 11 years of follow-up. N Engl J Med. 2012 Mar 15;366(11):981-90. Whitlock EP, Lin JS, Liles E, Beil TL, Fu R. Screening for colon cancer: a targeted updated systematic review for the U.S. Preventive Services Task Force. Ann Intern Med. 2008 Nov 4;149(9):638-58. Walter LC and Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. JAMA. 2001 Jun 6;285(21):2750-6.

108

Don't recommend screening for breast, colorectal or prostate cancer if life expectancy is estimated to be less than 10 years.

Rationale and Comments

Many patients residing in the long-term care setting are elderly and frail, with multimorbidity and limited life expectancy. Although research evaluating the impact of screening for breast, colorectal, and prostate cancer in older adults in general and long-term care residents in particular is scant, available studies suggest that multimorbidity and advancing age significantly alter the risk-benefit ratio. Preventive cancer screenings have both immediate and longer term risks (e.g., procedural and psychological risks, false positives, identification of cancer that may be clinically insignificant, treatment-related morbidity and mortality). Benefits of cancer screening occur only after a lag time of 10 years (colorectal or breast cancer) or more (prostate cancer). Patients with a life expectancy shorter than this lag time are less likely to benefit from screening. Discussing the lag time ("When will it help?") with patients is at least as important as discussing the magnitude of any benefit ("How much will it help?"). Prostate cancer screening by PSA testing is not recommended for asymptomatic patients because of a lack of life-expectancy benefit. One-time screening for colorectal cancer in older adults who have never been screened may be cost-effective; however, it should not be considered after age 85 and for most long-term care patients older than 75 the burdens of screening likely outweigh any benefits.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Expert consensus

References

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Don't recommend screening for breast, colorectal, prostate, or lung cancers without considering life expectancy and the risks of testing, overdiagnosis, and overtreatment.

Rationale and Comments

Cancer screening is associated with short-term risks, including complications from testing, overdiagnosis, and treatment of tumors that would not have led to symptoms. For prostate cancer, 1,055 older men would need to be screened and 37 would need to be treated to avoid one death in 11 years. For breast and colorectal cancer, 1,000 older adults would need to be screened to prevent one death in 10 years. For lung cancer, much of the evidence for benefit from low dose CT screening for smokers is from healthier, younger patients younger than 65 years. Further, although screening 1,000 persons would avoid four lung cancer deaths in six years, 273 persons would have an abnormal result requiring 36 to get an invasive procedure with eight persons experiencing complications.

Sponsoring Organizations

American Geriatrics Society

Sources

U.S. Preventive Services Task Force

References

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189

Don't repeat colorectal cancer screening (by any method) for 10 years after a high-quality colonoscopy is negative in average-risk individuals.

Rationale and Comments

A screening colonoscopy every 10 years is the recommended interval for adults without increased risk of colorectal cancer, beginning at 50 years of age. Published studies indicate the risk of cancer is low for 10 years after a high-quality colonoscopy fails to detect neoplasia in this population. Therefore, following a high-quality colonoscopy with normal results the next interval for any colorectal screening should be 10 years following that normal colonoscopy.

Sponsoring Organizations

American Gastroenterological Association

Sources

U.S. Multi-Society Task Force on Colorectal Cancer

References

Winawer S, et. al. Colorectal cancer screening and surveillance: clinical guidelines and rationale—update based on new evidence. Gastroenterology. 2003;124(2):544-60. Rex DK, et. al. Quality indicators for colonoscopy. Gastrointest Endosc. 2006;63(4 suppl):S16-28.

64

Don't routinely avoid influenza vaccination in egg-allergic patients.

See Allergy and Immunologic

Don't routinely measure 1,25-dihydroxyvitamin D unless the patient has hypercalcemia or decreased kidney function.

Rationale and Comments

Many practitioners become confused when ordering a vitamin D test. Because 1,25-dihydroxyvitamin D is the active form of vitamin D, many practitioners think that measuring 1,25-dihydroxyvitamin D is an accurate means to estimate vitamin D stores and test for vitamin D deficiency, which is incorrect. Current Endocrine Society guidelines recommend screening for vitamin D deficiency in individuals at risk for deficiency. Serum levels of 1,25-dihyroxyvitamin D have little or no relationship to vitamin D stores but rather are regulated primarily by parathyroid hormone levels, which in turn are regulated by calcium and/or vitamin D. In vitamin D deficiency, 1,25-dihydroxyvitamin D levels go up, not down. Unregulated production of 1,25-dihydroxyvitamin D (i.e., sarcoidosis, granulomatous diseases) is an uncommon cause of hypercalcemia; this should be suspected if blood calcium levels are high and parathyroid hormone levels are low and confirmed by measurement of 1,25-dihydroxyvitamin D. The enzyme that activates vitamin D is produced in the kidney, so blood levels of 1,25-dihydroxyvitamin D are sometimes of interest in patients on dialysis or with end-stage kidney disease. There are few other circumstances, if any, where 1,25-dihydroxyvitamin D testing would be helpful. Serum 25-hydroxyvitamin D levels may be overused, but when trying to assess vitamin D stores or diagnose vitamin D deficiency (or toxicity), 25-hydroxyvitamin D is the correct test.

Sponsoring Organizations

The Endocrine Society/American Association of Clinical Endocrinologists

Sources

Endocrine Society guidelines

References

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140

Don't routinely order coronary CT angiography for screening asymptomatic individuals.

Rationale and Comments

Coronary CT angiography findings of coronary artery disease stenosis severity rarely offer incremental discrimination over coronary artery calcium scoring in asymptomatic individuals.

Sponsoring Organizations

Society of Cardiovascular Computed Tomography

Sources

ACC/AHA guidelines|U.S. Preventive Services Task Force

References

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5

Don't routinely repeat dual energy x-ray absorptiometry (DEXA) scans more often than once every two years.

Rationale and Comments

Initial screening for osteoporosis should be performed according to National Osteoporosis Foundation (NOF) recommendations. The optimal interval for repeating DEXA scans is uncertain, but because changes in bone density over short intervals are often smaller than the measurement error of most DEXA scanners, frequent testing (e.g., < 2 years) is unnecessary in most patients. Even in high-risk patients receiving drug therapy for osteoporosis, DEXA changes do not always correlate with probability of fracture. Therefore, DEXA should only be repeated if the result will influence clinical management or if rapid changes in bone density are expected. Recent evidence also suggests that healthy women 67 years and older with normal bone mass may not need additional DEXA testing for up to 10 years provided osteoporosis risk factors do not significantly change.

Sponsoring Organizations

American College of Rheumatology

Sources

U.S. Preventive Services Task Force|National Osteoporosis Foundation

References

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66

Don't routinely use breast MRI for breast cancer screening in average risk women.

Rationale and Comments

MRI screening should be reserved for those at increased risk. Women considered at high risk include: known BRCA gene mutation carriers; first-degree relatives of known BRCA gene mutation carriers; those with a lifetime risk exceeding 20% as measured by risk-assessment tools based primarily on family history of breast cancer; and those with a clinical history associated with a significant risk for breast cancer, including women who received mantle radiation before the age of 30.

Sponsoring Organizations

Society of Surgical Oncology

Sources

American Cancer Society guidelines

References

Saslow D, Boetes C, Burke W, Harms S, Leach MO, Lehman CD, Morris E, Pisano E, Schnall M, Sener S, Smith RA, Warner E, Yaffe M, Andrews KS, Russell CA; American Cancer Society Breast Cancer Advisory Group. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. CA Cancer J Clin. 2007 Mar-Apr;57(2):75-89. Erratum in: CA Cancer J Clin. 2007 May-Jun;57(3):185. Mulder RL, Kremer LC, Hudson MM, Bhatia S, Landier W, Levitt G, Constine LS, Wallace WH, van Leeuwen FE, Ronckers CM, Henderson TO, Dwyer M, Skinner R, Oeffinger KC; International Late Effects of Childhood Cancer Guideline Harmonization Group. Recommendations for breast cancer surveillance for female survivors of childhood, adolescent, and young adult cancer given chest radiation: a report from the International Late Effects of Childhood Cancer Guideline Harmonization Group. Lancet Oncol. 2013 Dec;14(13):e621-9.

314

Don't screen for carotid artery stenosis in asymptomatic adult patients.

Rationale and Comments

There is good evidence that for adult patients with no symptoms of carotid artery stenosis the harms of screening outweigh the benefits. Screening could lead to nonindicated surgeries that result in serious harms, including death, stroke, and myocardial infarction.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force

References

American Academy of Family Physicians. Screening for carotid artery stenosis policy. http://www.aafp.org/online/en/home/ clinical/exam/carotidartery.html. U.S. Preventive Services Task Force. Screening for carotid artery stenosis. http://www.uspreventiveservicestaskforce.org/uspstf/uspsacas.htm. Wolff T, et al. Screening for asymptomatic carotid artery stenosis. Evidence synthesis no. 50. Rockville, Md.: Agency for Healthcare Research and Quality; 2007. http://www.ncbi.nlm.nih.gov/books/NBK33504/.

68

Don't screen for genital herpes simplex virus infection in asymptomatic adults, including pregnant women.

Rationale and Comments

Serologic testing for herpes simplex virus infection has low specificity and a high false-positive rate, and no confirmatory test is currently available. The serologic tests cannot determine site of infection. Given the prevalence of the infection in the United States, positive predictive value of the test is estimated at about 50%. A positive test can cause considerable anxiety and disruption of personal relationships.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force

References

American Academy of Family Physicians Clinical Preventive Services Recommendation: The AAFP recommends against routine serological screening for genital herpes simplex virus infection in asymptomatic adolescents and adults, including those who are pregnant. (2016) http://www.aafp.org/patient-care/clinical-recommendations/all/genital-herpes.html. Feltner C, Grodensky C, Ebel C, Middleton JC, Harris RP, Ashok M, Jonas DE. Serologic Screening for Genital Herpes: An Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. JAMA. 2016;316(23):2531.

370

Don't screen for ovarian cancer in asymptomatic women at average risk.

Rationale and Comments

In population studies, there is only fair evidence that screening of asymptomatic women with serum cancer antigen 125 level and/or transvaginal ultrasound can detect ovarian cancer at an earlier stage than it can be detected in the absence of screening. Because of the low prevalence of ovarian cancer and the invasive nature of interventions required after a positive screening test, the potential harms of screening outweigh the potential benefits.

Sponsoring Organizations

American College of Obstetricians and Gynecologists

Sources

U.S. Preventive Services Task Force

References

Screening for ovarian cancer: recommendation statement. Ann Fam Med. 2004;2:260-2. Barton MB, et al. Screening for ovarian cancer: evidence update for the U.S. Preventive Services Task Force reaffirmation recommendation statement. AHRQ publication no. 12-05165-EF3. Rockville, Md.: Agency for Healthcare Research and Quality; April 2012. Partridge E, et al. Results from four rounds of ovarian cancer screening in a randomized trial. Obstet Gynecol 2009;113:775-82. American College of Obstetricians and Gynecologists. The role of the obstetrician–gynecologist in the early detection of epithelial ovarian cancer. Committee opinion no. 477. Obstet Gynecol. 2011;117:742-6.

61

Don't screen for testicular cancer in asymptomatic adolescent and adult males.

Rationale and Comments

There is no benefit to screening for testicular cancer due to the low incidence of disease and high cure rates of treatment, even in patients who have advanced disease. There are potential harms associated with screening, which include false-positive results, anxiety, and harms from diagnostic tests or procedures.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force

References

American Academy of Family Physicians Clinical Preventive Services Recommendation: The American Academy of Family Physicians recommends against screening for testicular cancer in asymptomatic adolescent or adult males (2011) http://www.aafp.org/patient-care/clinical-recommendations/all/testicular-cancer.html. U.S. Preventive Services Task Force. Final Recommendation Statement: Testicular Cancer: Screening. Rockville (MD): U.S. Preventive Services Task Force. 2011.

371

Don't screen low-risk women with cancer antigen (CA) 125 or ultrasound for ovarian cancer.

Rationale and Comments

CA-125 and ultrasound in low-risk, asymptomatic women have not led to diagnosis of ovarian cancer in earlier stages of disease or reduced ovarian cancer mortality. False-positive results of either test can lead to unnecessary procedures, which have risks of complication.

Sponsoring Organizations

Society of Gynecologic Oncology

Sources

U.S. Preventive Services Task Force

References

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144

Don't take a multi-vitamin, vitamin E, or beta-carotene to prevent cardiovascular disease or cancer.

Rationale and Comments

Vitamin supplementation is a multi-billion dollar industry ($28.1 billion in 2010) in the United States, much of which is taken with the intention to prevent cardiovascular disease or cancer. However, there is insufficient evidence to demonstrate benefit from multivitamin supplementation to prevent cardiovascular disease or cancer. Adequate evidence demonstrates that supplementation with vitamin E and beta-carotene in healthy populations specifically has no benefit on cardiovascular disease or cancer. Beta-carotene is also associated with increased risks of lung cancer in smokers and people who have been exposed to asbestos.

Sponsoring Organizations

American College of Preventive Medicine

Sources

U.S. Preventive Services Task Force

Nutrition Business Journal. NBJ's supplement business report: an analysis of markets, trends, competition and strategy in the U.S. dietary supplement industry. New York, NY: 2011. Moyer; U.S Preventive Services Task Force. Vitamin, mineral, and multivitamin supplements for the primary prevention of cardiovascular disease and cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2014;160(8):558-64.

248

Don't use expensive medications when an equally effective and lower-cost medication is available.

Rationale and Comments

On average, the cost of a generic drug is 80–85% lower than the brand-name product, although generic drugs are required to have the same active ingredients and strength, and similar effectiveness as brand-name drugs. Studies estimate that for every 10% increase in the use of generic cholesterol drugs, Medicare costs could be reduced by $1 billion annually.

Sponsoring Organizations

American College of Preventive Medicine

Sources

Expert consensus

References

Hoadley JF, Merrell K, Hargrave E, Summer L. In Medicare Part D plans, low or zero copays and other features to encourage the use of generic statins work, could save billions. Health Affairs (Millwood). 2012;31(10):2266-75. Mohler, PJ. New drugs: how to decide which ones to prescribe. Fam Pract Manag. 2006;13(6):33-5 Shrank WH, Hoang T, Ettner SL, Glassman PA, Nair K, DeLapp D, Dirstine J, Avorn J, Asch SM. The implications of choice: prescribing generic or preferred pharmaceuticals improves medication adherence for chronic conditions. Arch Intern Med. 2006;166(3):332-7. Facts about generic drugs [Internet]. Silver Spring, MD: U.S. Food and Drug Administration; 2012 [updated 2012 Sep 19; cited 2014 Dec 5].Available from: http://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingGenericDrugs/ucm167991.htm.

251

Don't use homeopathic medications, non-vitamin dietary supplements or herbal supplements as treatments for disease or preventive health measures.

See Alternative Medicine

Don't use positron emission tomography/CT for cancer screening in healthy individuals.

Rationale and Comments

The likelihood of finding cancer in healthy adults is extremely low (around 1%), based on studies using positron emission tomography/CT for screening. Imaging without clear clinical indication is likely to identify harmless findings that lead to more tests, biopsy, or unnecessary surgery.

Sponsoring Organizations

Society of Nuclear Medicine and Molecular Imaging

Sources

Expert consensus

References

Lee JW, et al. Cancer screening using 18F-FDG PET/CT in Korean asymptomatic volunteers: a preliminary report. Ann Nucl Med. 2009;23(7):685-91. Minamimoto R, et al. Analysis of various malignant neoplasms detected by FDG-PET cancer screening program: based on a Japanese Nationwide Survey. Ann Nucl Med. 2011;25(1):45-54.

62

Don't use whole-body scans for early tumor detection in asymptomatic patients.

Rationale and Comments

Whole-body scanning with a variety of techniques (magnetic resonance imaging, single-photon emission computed tomography, positron emission tomography, CT) is marketed by some to screen for a wide range of undiagnosed cancers. However, there are no data suggesting that these imaging studies will improve survival or improve the likelihood of finding a tumor (estimated tumor detection is less than 2% in asymptomatic patients screened). Whole-body scanning has a risk of false-positive findings that can result in unnecessary testing and procedures with additional risks, including considerable exposure to radiation with positron emission tomography and CT, a very small increase in the possibility of developing cancer later in life, and accruing additional medical costs as a result of these procedures. Whole-body scanning is not recommended by medical professional societies for individuals without symptoms, nor is it a routinely practiced screening procedure in healthy populations.

Sponsoring Organizations

American College of Preventive Medicine

Sources

Expert consensus

References

Ladd SC. Whole-body MRI as a screening tool? Eur J Radiol. 2009;70(3):452-62. Schmidt G, Dinter D, Reiser MF, Schoenberg SO. The uses and limitations of whole-body magnetic resonance imaging. Dtsch Arztebl Int. 2010;107(22):383-9. Full-Body CT Scans – What You Need to Know, Radiation-Emitting Products. U.S. Department of Health and Human Services [Internet]. Silver Spring, MD: U.S. Food and Drug Administration; 2010 [updated 2010 Apr 6; cited 2014 Dec 5]. Available from: http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115340.htm.

250

Don't routinely order expanded lipid panels (particle sizing, nuclear magnetic resonance) as screening tests for cardiovascular disease.

See Cardiovascular.

Avoid treatment of CIN 1 in women under age 25.
See Gynecologic.

Don't perform cervical cytology (Pap test) or HPV screening in immunocompetent women under age 21.
See Gynecologic.

Don't perform Pap tests in patients younger than 21 years or in women after hysterectomy for benign disease.
See Gynecologic.

Don't perform pelvic ultrasound in average risk women to screen for ovarian cancer.
See Gynecologic.

Don't perform routine annual cervical cytology screening (Pap tests) in women 30 to 65 years of age.
See Gynecologic.

Don't perform screening for cervical cancer in low-risk women aged 65 years or older and in women who have had a total hysterectomy for benign disease.
See Gynecologic.

Don't perform vaginal cytology (Pap test) or HPV screening in women who had hysterectomy (with removal of the cervix) for reasons other than high-grade cervical dysplasia (cervical intraepithelial neoplasia [CIN] 2/3) or cancer.
See Gynecologic.

Don't screen women older than 65 years for cervical cancer who have had adequate prior screening and are not otherwise at high risk for cervical cancer.
See Gynecologic.

Don't screen women younger than 30 years for cervical cancer with human papillomavirus (HPV) testing, alone or in combination with cytology.
See Gynecologic.

Don't treat patients who have mild cervical dysplasia of less than two years' duration.
See Gynecologic.

Don't use herpes simplex virus (HSV) polymerase chain reaction testing for genital HSV infection screening in adults and adolescents. Real-time HSV polymerase chain reaction testing should only be used to confirm herpes diagnosis in patients with suspected herpes.
See Infectious Disease.

Don't use vancomycin or carbapenems empirically for neonatal intensive care patients unless an infant is known to have a specific risk for pathogens resistant to narrower-spectrum agents.
See Nephrologic.

Annual comprehensive eye exams are unnecessary for children who pass routine vision screening assessments.
See Pediatric.

Don't order routine screening urinalysis in healthy, asymptomatic pediatric patients as part of routine well-child care.
See Pediatric.

Don't recommend nonfluoride toothpaste for infants and children.
See Pediatric.

Don't use dual energy x-ray absorptiometry (DEXA) to screen for osteoporosis in women younger than 65 years or in men younger than 70 years with no risk factors. note: Risk factors include, but are not limited to, fractures after 50 years of age, prolonged exposure to corticosteroids, diet deficient in calcium or vitamin D, cigarette smoking, alcoholism, and thin/small build.
See Rheumatologic.

Don't perform prostate-specific antigen (PSA) testing for prostate cancer screening in men with no symptoms of the disease when they are expected to live less than 10 years.
See Urologic.

Don't routinely perform PSA-based screening for prostate cancer.
See Urologic.

Don't routinely screen for prostate cancer using a prostate-specific antigen (PSA) test or digital rectal exam.
See Urologic.

Offer PSA screening for detecting prostate cancer only after engaging in shared decision making.

See Urologic.

Avoid use of hypnotics as primary therapy for chronic insomnia in adults; instead offer cognitive behavioral therapy, and reserve medication for adjunctive treatment when necessary.

Rationale and Comments

Cognitive behavioral therapy for chronic insomnia involves a combination of behavioral modification, such as stimulus control and sleep restriction, and cognitive strategies, such as replacement of unrealistic fears about sleep with more positive expectations. In clinical trials, cognitive behavioral therapy is generally as effective as or more effective than hypnotics at improving sleep, and can be effective over an extended period of time without side effects associated with hypnotics. Some patients may benefit from a limited course of hypnotics while cognitive behavioral therapy for chronic insomnia is initiated. Patients who have successfully used hypnotics for extended periods and are reluctant to discontinue their current treatment regimen may be reasonable candidates for continued pharmacologic treatment.

Sponsoring Organizations

American Academy of Sleep Medicine

Sources

Randomized controlled trials

References

Edinger JD, Wohlgemuth WK, Radtke RA, Marsh GR, Quillian RE. Cognitive behavioral therapy for treatment of chronic primary insomnia: a randomized controlled trial. JAMA. 2001;285(14):1856-64. Sivertsen B, Omvik S, Pallesen S, et al. Cognitive behavioral therapy vs zopiclone for treatment of chronic primary insomnia in older adults: a randomized controlled trial. JAMA. 2006;295(14):2851-8. Morin CM, Vallières A, Guay B, et al. Cognitive behavioral therapy, singly and combined with medication, for persistent insomnia: a randomized controlled trial. JAMA. 2009;301(19):2005-15.

232

Don't administer "prn" (i.e., as needed) sedative, antipsychotic, or hypnotic medications to prevent and/or treat delirium without first assessing for, removing, and treating the underlying causes of delirium and using nonpharmacologic delirium prevention and treatment approaches.

Rationale and Comments

The most important step in treating delirium is identifying, removing, and treating the underlying cause(s) of delirium. Delirium is often a direct physiological consequence of another medical condition, substance intoxication or withdrawal, or exposure to a toxin, or is due to multiple etiologies. Clinicians should therefore perform a detailed history and physical exam, order appropriate laboratory/diagnostic tests, conduct a thorough medication review, and discontinue any potentially deliriogenic medications. Because numerous medications or medication classes are associated with the development of delirium (e.g., benzodiazepines, anticholinergics, diphenhydramine, sedative-hypnotics), their administration on a prn basis should be avoided if possible. Moreover, due to the potential for harm and lack of sufficient evidence supporting the safety and efficacy of antipsychotics for the prevention and treatment of delirium, these medications should be administered only at the lowest effective dose, for the shortest amount of time, in patients who are severely agitated and/or at risk for harming themselves and/or others. In terms of delirium prevention, it is recommended health systems should implement multicomponent, nonpharmacologic interventions that are delivered consistently throughout hospitalization by the interdisciplinary team.

Sponsoring Organizations

American Academy of Nursing

Sources

American Geriatrics Society guidelines

References

American Geriatrics Society abstracted clinical practice guideline for postoperative delirium in older adults. J Am Geriatr Soc. 2015 Jan;63(1):142-50. Diagnostic and statistical manual of mental disorders. (5th ed.). Washington (DC): American Psychiatric Association. 2013. Barr J, Fraser GL, Puntillo K, Ely EW, Gélinas C, Dasta JF, Davidson JE, Devlin JW, Kress JP, Joffe AM, Coursin DB, Herr DL, Tung A, Robinson BR, Fontaine DK, Ramsay MA, Riker RR, Sessler CN, Pun B, Skrobik Y, Jaeschke R; American College of Critical Care Medicine. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. Crit Care Med. 2013 Jan;41(1):263-306. Campbell N, Boustani MA, Ayub A, Fox GC, Munger SL, Ott C, Guzman O, Farber M, Ademuyiwa A, Singh R. Pharmacological management of delirium in hospitalized adults—a systematic evidence review. J Gen Intern Med. 2009 Jul;24(7):848-53. By the American Geriatrics Society 2015 Beers Criteria Update Expert Panel. American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc. 2015 Nov;63(11):2227-46. Hawkins SB, Bucklin M, Muzyk AJ. Quetiapine for the treatment of delirium. J Hosp Med. 2013 Apr;8(4):215-20. Inouye SK, Marcantonio ER, Metzger ED. Doing damage in delirium: the hazards of antipsychotic treatment in elderly persons. Lancet Psychiatry. 2014 Sep 1;1(4):312-5.

310

Don't prescribe antipsychotic medications for behavioral and psychological symptoms of dementia (BPSD) in individuals with dementia without an assessment for an underlying cause of the behavior.

Rationale and Comments

Careful differentiation of cause of the symptoms (physical or neurological versus psychiatric, psychological) may help better define appropriate treatment options. The therapeutic goal of the use of antipsychotic medications is to treat patients who present an imminent threat of harm to self or others, or are in extreme distress–not to treat nonspecific agitation or other forms of lesser distress. Treatment of BPSD in association with the likelihood of imminent harm to self or others includes assessing for and identifying and treating underlying causes (including pain; constipation; and environmental factors such as noise, being too cold or warm, etc.), ensuring safety, reducing distress and supporting the patient's functioning. If treatment of other potential causes of the BPSD is unsuccessful, antipsychotic medications can be considered, taking into account their significant risks compared to potential benefits. When an antipsychotic is used for BPSD, it is advisable to obtain informed consent.

Sponsoring Organizations

American Medical Directors Association

Sources

American Medical Directors Association guidelines and systematic reviews

References

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Don't prescribe antipsychotic medications to patients for any indication without appropriate initial evaluation and appropriate ongoing monitoring.

Rationale and Comments

Metabolic, neuromuscular, and cardiovascular side effects are common in patients receiving antipsychotic medications for any indication, so thorough initial evaluation to ensure that their use is clinically warranted, and ongoing monitoring to ensure that side effects are identified, are essential. "Appropriate initial evaluation" includes the following: (a) thorough assessment of possible underlying causes of target symptoms including general medical, psychiatric, environmental or psychosocial problems; (b) consideration of general medical conditions; and (c) assessment of family history of general medical conditions, especially of metabolic and cardiovascular disorders. "Appropriate ongoing monitoring" includes re-evaluation and documentation of dose, efficacy and adverse effects; and targeted assessment, including assessment of movement disorder or neurological symptoms; weight, waist circumference and/or body mass index; blood pressure; heart rate; blood glucose level; and lipid profile at periodic intervals.

Sponsoring Organizations

American Psychiatric Association

Sources

American Psychiatric Association guidelines

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Don't provide long-term pain management without a psychosocial screening or assessment.

Rationale and Comments

There is a high probability that any person with a chronic pain syndrome has a concomitant psychological disorder, most notably depression and/or anxiety. The relationship between chronic pain and depression/anxiety is well established. The causal arrow between pain and these disorders can point in either direction and over time may form a positive feedback loop between these two elements. Screening tools are available that will aid in the detection of potential depression/anxiety, and, when indicated, a referral may be most appropriate for more extensive evaluation and treatment. In addition, lesser psychological factors such as catastrophizing and fear avoidance behavior may interfere with a patient's recovery and should be recognized by the clinician. Recognizing indicators of patient psychosocial health behavioral factors can affect a patient's recovery and/or compliance with treatment and may decrease the risk of developing chronic illness/pain. Tools such as the StarTBack 9 screening tool, PHQ-9 depression scale, and the Fear Avoidance Belief Questionnaire are examples.

Sponsoring Organizations

American Chiropractic Association

Sources

Expert consensus

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Don't routinely prescribe antipsychotic medications as a first-line intervention for children and adolescents for any diagnosis other than psychotic disorders.

Rationale and Comments

Recent research indicates that use of antipsychotic medication in children has nearly tripled in the past 10 to 15 years, and this increase appears to be disproportionate among children with low family income, minority children, and children with externalizing behavior disorders (i.e., rather than schizophrenia, other psychotic disorders and severe tic disorders). Evidence for the efficacy and tolerability of antipsychotic medications in children and adolescents is inadequate and there are notable concerns about weight gain, metabolic side effects, and a potentially greater tendency for cardiovascular changes in children than in adults.

Sponsoring Organizations

American Psychiatric Association

Sources

Cochrane Database of Systematic Reviews|American Academy of Child and Adolescent Psychiatry guidelines

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114

Don't routinely prescribe antipsychotic medications as a first-line intervention for insomnia in adults.

Rationale and Comments

There is inadequate evidence for the efficacy of antipsychotic medications to treat insomnia (primary or due to another psychiatric or medical condition), with the few studies that do exist showing mixed results.

Sponsoring Organizations

American Psychiatric Association

Sources

Agency for Healthcare Research and Quality

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Don't routinely prescribe two or more antipsychotic medications concurrently.

Rationale and Comments

Research shows that use of two or more antipsychotic medications occurs in 4% to 35% of outpatients and 30% to 50% of inpatients. However, evidence for the efficacy and safety of using multiple antipsychotic medications is limited, and risk for drug interactions, noncompliance, and medication errors is increased. Generally, the use of two or more antipsychotic medications concurrently should be avoided except in cases of three failed trials of monotherapy, which included one failed trial of clozapine where possible, or where a second antipsychotic medication is added with a plan to cross-taper to monotherapy.

Sponsoring Organizations

American Psychiatric Association

Sources

American Psychiatric Association guidelines

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Don't use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

Rationale and Comments

People with dementia often exhibit aggression, resistance to care and other challenging or disruptive behaviors. In such instances, antipsychotic medicines are often prescribed, but they provide limited and inconsistent benefits, while posing risks, including over sedation, cognitive worsening, and increased likelihood of falls, strokes, and mortality. Use of these drugs in patients with dementia should be limited to cases where non-pharmacologic measures have failed and patients pose an imminent threat to themselves or others. Identifying and addressing causes of behavior change can make drug treatment unnecessary.

Sponsoring Organizations

American Geriatrics Society

Sources

American Geriatrics Society guidelines|National Institute for Health and Clinical Excellence guidelines

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Don't use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

Rationale and Comments

Behavioral and psychological symptoms of dementia are defined as the noncognitive symptoms and behaviors, including agitation or aggression, anxiety, irritability, depression, apathy, and psychosis. Evidence shows that risks (e.g., cerebrovascular effects, mortality, parkinsonism or extrapyramidal signs, sedation, confusion and other cognitive disturbances, and increased body weight) tend to outweigh the potential benefits of antipsychotic medications in this population. Clinicians should limit the use of antipsychotic medications to cases where nonpharmacologic measures have failed and the patients' symptoms may create a threat to themselves or others. This item is also included in the American Geriatric Society's list of recommendations for "Choosing Wisely."

Sponsoring Organizations

American Psychiatric Association

Sources

Cochrane Database of Systematic Reviews|Agency for Healthcare Research and Quality

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Don't wake patients at night for routine care; redesign workflow to promote sleep at night.

Rationale and Comments

Inadequate sleep in hospitalized patients has been associated with poor outcomes, including high blood pressure, hyperglycemia, immune dysfunction, and delirium. Environmental factors (e.g., noise, light disruptions), care-related factors (e.g., blood draws, vital signs), and patient factors (e.g., illness, pain) all contribute to sleep disruption. It is generally recommended that nonpharmacologic interventions be the first line of prevention. Although data are limited, multifaceted interventions targeting modifiable factors including nighttime interventions to decrease noise and light, group care activities, and minimizing unnecessary patient contact (i.e., decreasing vital sign frequency, blood draws) may improve sleep quality and duration. Nonpharmacologic sleep aids (e.g., earplugs, eye masks, relaxation techniques) can be easily adopted and may provide some benefit.

Sponsoring Organizations

Society of Hospital Medicine – Adult Hospital Medicine

Sources

Cochrane review

References

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Avoid polysomnography in chronic insomnia patients unless symptoms suggest a comorbid sleep disorder.

See Neurologic.

Don't use three or more central nervous system–active medications (antidepressants, benzodiazepines, Z-drugs [zopiclone, eszopiclone, and zaleplon], opioids, gabapentinoids, antipsychotics, antiepileptics), especially in older adults.

See Neurologic.

Don't obtain screening laboratory tests in the medical clearance process of pediatric patients who require inpatient psychiatric admission unless clinically indicated.

See Pediatric.

Don't order hair analyses for "environmental toxins" in children with behavioral or developmental disorders, including autism.

See Pediatric.

Don't routinely test urine for metals and minerals in children with autistic behaviors. Toxicologic exposures have not been conclusively associated with the development of autistic behaviors in children. Testing for metals and minerals may be harmful if treatment is guided on the basis of these results.

See Pediatric.

Avoid CT pulmonary angiography in emergency department patients with a low-pretest probability of pulmonary embolism and either a negative Pulmonary Embolism Rule-Out Criteria or a negative D-dimer.

Rationale and Comments

Advances in medical technology have increased the ability to diagnose even small blood clots in the lung. Now, the most commonly used test is known as a CT pulmonary angiogram. It is readily available in most hospitals and emergency rooms. However, disadvantages of the CT pulmonary angiogram include patient exposure to radiation, the use of dye in the veins that can damage kidneys, and high cost. Studies have demonstrated that certain findings in a patient's medical history put them at very low risk for having a blood clot in the lung. In some cases, a blood test called a D-dimer may be additionally used to screen for the possibility of a clot. If patient historical factors and physical examination findings are negative, along with a negative D-dimer (if the physician chooses to order it), evidence shows that the risk of an undiagnosed blood clot is the same as if the patient had a negative CT pulmonary angiogram. Such a strategy saves the risk of radiation, kidney injury and the high cost of a CT pulmonary angiogram.

Sponsoring Organizations

American College of Emergency Physicians

Sources

AAFP/ACP guidelines

References

Quaseem A, Snow V, Barry P, Hornbake ER, Rodnick JE, Tobolic T, Ireland B, Segal J, Bass E, Weiss KB, Green L, Owens DK; Joint American Academy of Family Physicians/American College of Physicians Panel on Deep Venous Thrombosis/Pulmonary Embolism. Current diagnosis of venous thromboembolism in primary care: a clinical practice guideline from the American Academy of Family Physicians and the American College of Physicians. Ann Fam Med. 2007 Jan-Feb;5(1):57-62. Corwin MT, Donohoo JH, Partridge R. Do emergency physicians use serum D-dimer effectively to determine the need for CT when evaluating patients for pulmonary embolism? A review of 5,344 consecutive patients. AJR Am J Roentgenol. 2009 May;192(5):1319-23. Torbicki A, Perrier A, Konstantinides S, Agnelli G, Galiè N, Pruszczyk P, Bengel F, Brady AJ, Ferreira D, Janssens U, Klepetko W, Mayer E, Remy-Jardin M, Bassand JP; ESC Committee for Practice Guidelines (CPG).Guidelines on the diagnosis and management of acute pulmonary embolism. European Heart J. 2008 Sep;29(18):2276–315. Kline JA, Webb WB, Jones AE, Hernandez-Nino J. Impact of a rapid rule-out protocol for pulmonary embolism on the rate of screening, missed cases, and pulmonary vascular imaging in an urban US emergency department. Ann Emerg Med. 2004 Nov;44(5):490-502. Tiesman NA, Cheung PT, Frazee B. Is the ordering of imaging for suspected venous thromboembolism consistent with D-dimer result? Ann Emerg Med. 2009 Sep;54(3):442-6. Kline JA, Courtney DM, Kabrhel C, Moore CL, Smithline HA, Plewa MC, Richman PB, O'Neil BJ, Nordenholz K. Prospective multicenter evaluation of the pulmonary embolism rule-out criteria. J Thromb Haemost. 2008 May;6(5):772-80. Physician Fee Schedule Search. Washington (DC): Centers for Medicare & Medicaid Services; [updated 2-14 Oct 1; cited 2014 Oct 2]. Available from: http://www.cms.gov/apps/physician-fee-schedule/search/search-results.aspx?Y=2&T=0&HT=0&CT=3&H1=71275&M=4. Fesmire FM, Brown M, Espinosa JA, Shih RD, Silvers SM, Wolf SJ, Decker WW; American College of Emergency Physicians. Critical issues in the evaluation and management of adult patients presenting to the emergency department with suspected pulmonary embolism. Ann Emerg Med. 2011 Jun;57(6):628-52. Venkatesh AK, Kline JA, Courtney M, Camargo CA, Plewa MC, Nordenholz KE, Moore CL, Richman PB, Smithline HA, Beam DM, Kabrhel C. Evaluation of pulmonary embolism in the emergency department and consistency with a national quality measure. Arch Intern Med. 2012 Jul 9;172(13):1028-32.

223

Avoid stepping up asthma therapy (adding new drugs or going to higher doses) before assessing adherence, appropriateness of device, and technique with current asthma medications.

Rationale and Comments

The 2007 Expert Panel report from the National Asthma Education and Prevention Program discusses in detail the importance of monitoring asthma control in pediatric patients, stepping up therapy, and stepping down therapy, when appropriate. There are key evaluations that should occur before stepping up therapy. Providers should first review with the family how they are administering the present asthma medications to determine whether the asthma controller is being administered properly and effectively for the age of the patient. Another evaluation is to confirm adherence both by discussion with the family and learning the refill history from the pharmacy. It is also important to explore other barriers to adherence for the patient and family. There is no reason to step up to a higher-dose steroid inhaler or to a combination therapy if the patient is not receiving the lower-dose asthma controller with the correct technique and frequency.

Sponsoring Organizations

N/A

Sources

National Asthma Education and Prevention Program guideline

References

National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Bethesda, MD: National Heart, Lung, and Blood Institute; 2007. Weinberger M. Asthma. In: Light M, ed. Pediatric Pulmonology. Elk Grove Village, IL: American Academy of Pediatrics; 2011:250-261. Yawn BP. The role of the primary care physician in helping adolescent and adult patients improve asthma control. Mayo Clin Proc. 2011;86(9):894-902.

443

Avoid using a CT angiogram to diagnose pulmonary embolism (PE) in young women with a normal chest radiograph; consider a radionuclide lung study ("V/Q study") instead.

Rationale and Comments

When the clinical question is whether or not pulmonary emboli are present, a V/Q study can provide the answer with lower overall radiation dose to the breast than can CT angiography, even when performed with a breast shield.

Sponsoring Organizations

Society of Nuclear Medicine and Molecular Imaging

Sources

Expert consensus

References

International Commission on Radiological Protection report 53 (http://www.icrp.org/publication.asp?id=ICRP%20Publication%2053) and 80 (http://www.icrp.org/publication.asp?id= ICRP%20Publication%2080). McCollough, et al. Strategies for reducing radiation dose in CT. Radiol Clin North Am. 2009;47:27-40. Hurwitz, et al. Radiation dose savings for adult pulmonary embolus 64-MDCT using bismuth breast shields, lower peak kilovoltage, and automatic tube current modulation. AJR Am J Roentgenol. 2009;192:244-53. Stein EG, et al. Success of a safe and simple algorithm to reduce use of CT pulmonary angiography in the emergency department. AJR Am J Roentgenol. 2010;194:392-7. Parker MS, et al. Female breast radiation exposure during CT pulmonary angiography. AJR Am J Roentgenol. 2005;185: 1228-33. Niemann T, et al. Imaging for suspected pulmonary embolism in pregnancy-what about the fetal dose? A comprehensive review of the literature. Insights Imaging. 2010;1:361-72. Freeman LM, et al. V/Q scintigraphy: alive, well and equal to the challenge of CT angiography. Eur J Nucl Med Mol Imaging. 2009;36:499-504. Brenner DJ, et al. Computed tomography—an increasing source of radiation exposure. N Engl J Med. 2007;357:2277-84. Freeman LM, et al. The current and continuing role of ventilation-perfusion scintigraphy in evaluating patients with suspected pulmonary embolism. Semin Nucl Med. 2008;38(6): 432-40. Burns SK, et al. Diagnostic imaging and risk stratification of patients with acute pulmonary embolism. Cardiol Rev. 2012;20(1):15-24.

76

Don't delay progress toward liberation from mechanical ventilation.

Rationale and Comments

Although mechanical ventilation is frequently lifesaving, it is also associated with numerous complications. Discontinuation of mechanical ventilation support is frequently the rate-limiting step in ICU discharge. Current guidelines recommend removing patients from mechanical ventilation support as soon possible, utilizing mechanical ventilation liberation and sedation interruption protocols in concert with structured multidisciplinary rounds.

Sponsoring Organizations

Society of Critical Care Medicine

Sources

Expert consensus

References

Devlin JW, et al. Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. Crit Care Med: 2018;46(9):e825-e873.

474

Don't diagnose or manage asthma without spirometry.

Rationale and Comments

Clinicians often rely solely upon symptoms when diagnosing and managing asthma, but these symptoms may be misleading and be from alternate causes. Therefore, spirometry is essential to confirm the diagnosis in those patients who can perform this procedure. Recent guidelines highlight spirometry's value in stratifying disease severity and monitoring control. History and physical exam alone may over- or underestimate asthma control. Beyond the increased costs of care, repercussions of misdiagnosing asthma include delaying a correct diagnosis and treatment.

Sponsoring Organizations

American Academy of Allergy, Asthma and Immunology

Sources

National Asthma Education and Prevention Expert Panel report

References

National Asthma Education and Prevention Expert Panel Report 3: Guidelines for the diagnosis and management of asthma. NIH Publication no. 08-5846. October 2007. Li J, et al. Attaining asthma control. A practice parameter. J Allergy Clin Immunol. 2005;115:S3-11. Global strategy for asthma management and prevention: GINA executive summary. Eur Respir J. 2008;31:143-78. Fuhlbrigge A, et. al. FEV1 is associated with risk of asthma attacks in a pediatric population. J Allergy Clin Immunol. 2001;107:61-6. Magadle R. The risk of hospitalization and near-fatal and fatal asthma in relation to the perception of dyspnea. Chest. 2002;121:329-33.

73

Don't image for suspected pulmonary embolism (PE) without moderate or high pretest probability.

Rationale and Comments

While deep venous thrombosis (DVT) and PE are relatively common clinically, they are rare in the absence of elevated blood D-dimer levels and certain specific risk factors. Imaging, particularly CT pulmonary angiography, is a rapid, accurate, and widely available test, but has limited value in patients who are very unlikely, based on serum and clinical criteria, to have significant value. Imaging is helpful to confirm or exclude PE only for such patients, not for patients with low pretest probability of PE.

Sponsoring Organizations

American College of Radiology

Sources

American College of Emergency Physicians guidelines|European Society of Cardiology guidelines

References

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75

Don't maintain a peripheral capillary oxygen saturation of higher than 96% when using supplemental oxygen, except for carbon monoxide poisoning, cluster headaches, sickle cell crisis, or pneumothorax.

Rationale and Comments

Ideal oxygen saturation levels for patients getting supplemental oxygen therapy is at or below 96%. The overuse of supplemental oxygen has been shown to increase mortality in numerous studies of patients with a variety of critical illnesses, including cardiac arrest, stroke, and trauma, as well as after emergency surgery. Higher oxygen levels may be needed for those with certain medical conditions such as carbon monoxide poisoning or special types of headaches such as cluster headaches, sickle cell crisis, or pneumothorax. An important caveat to this recommendation is the higher incidence of occult hypoxemia, defined as an arterial oxygen saturation of less than 88% with a pulse oximetry measurement of 92% to 96%, in Black patients compared with White patients.

Sponsoring Organizations

Society of Hospital Medicine – Adult Hospital Medicine

Sources

Systematic review

References

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511

Don't obtain radiographs in children with bronchiolitis, croup, asthma, or first-time wheezing.

Rationale and Comments

Respiratory illnesses are among the most common reasons for pediatric emergency department visits, with wheezing being a frequently encountered clinical finding. For children presenting with first-time wheezing or with typical findings of asthma, bronchiolitis, or croup, radiographs rarely yield important positive findings and expose patients to radiation, increased cost of care, and prolonged emergency department length of stay. National and international guidelines emphasize the value of the history and physical examination in making an accurate diagnosis and excluding serious underlying pathology. Radiography performed in the absence of significant findings has been associated with the overuse of antibiotics. Radiographs should not be routinely obtained in these situations unless findings such as significant hypoxia, focal abnormalities, prolonged course of illness, or severe distress are present. If wheezing is occurring without a clear atopic etiology or upper respiratory tract infection symptoms (e.g., rhinorrhea, nasal congestion, fever), appropriate diagnostic imaging should be considered on a case-by-case basis.

Sponsoring Organizations

American Academy of Pediatrics – Section on Emergency Medicine and the Canadian Association of Emergency Physicians

Sources

AAP guideline

References

Ralston SL, Lieberthal AS, Meissner HC, et al. Clinical practice guideline: the diagnosis, management, and prevention of bronchiolitis. Pediatrics. 2014;134(5):e1474-e1502.
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Shah SN, Bachur RG, Simel DL, et al. Does this child have pneumonia? The rational clinical examination systematic review. JAMA. 2017;318(5):462-471.
Schuh S, Lalani A, Allen U, et al. Evaluation of the utility of radiography in acute bronchiolitis. J Pediatr. 2007;150(4):429-433.
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530

Don't order chest radiographs in children with uncomplicated asthma or bronchiolitis.

Rationale and Comments

National guidelines articulate a reliance on physical examination and patient history for diagnosis of asthma and bronchiolitis in the pediatric population. Multiple studies have established limited clinical utility of chest radiographs for patients with asthma or bronchiolitis. Omission of the use of chest radiography will reduce costs, but not compromise diagnostic accuracy and care.

Sponsoring Organizations

Society of Hospital Medicine (Pediatric)

Sources

American Academy of Pediatrics guidelines|National Heart, Lung and Blood Institute guidelines

References

American Academy of Pediatrics. Diagnosis and management of bronchiolitis. Pediatrics. 2006;118(4):1774-93. National Heart, Lung and Blood Institute. Guidelines for the diagnosis and management of asthma. 2007. http://www.nhlbi.nih.gov/guidelines/asthma/. Dawson, KP, et al. The chest radiograph in acute bronchiolitis. J Paediatr Child. 1990;26(4):209-11. Roback MG, et al. Chest radiograph in the evaluation of first time wheezing episodes: review of current clinical efficacy. Pediatr Emerg Care. 1998;14(3):181-4.

69

Don't order daily chest radiography in hospitalized patients unless there are specific clinical indications.

Rationale and Comments

Patients in intensive care units have historically had daily chest x-rays as part of routine management. Evidence suggests that this does not lead to change in management, unless there are specific clinical indications to obtain a chest x-ray. The use of routine daily chest x-rays leads to unnecessary test utilization, unwarranted exposure to radiation, and downstream testing.

Sponsoring Organizations

Society of Hospital Medicine – Adult Hospital Medicine

Sources

Systematic review

References

Ganapathy A, Adhikari NK, Spiegelman J, et al. Routine chest x-rays in intensive care units: a systematic review and meta-analysis. Crit Care. 2012;16(2):R68.
Oba Y, Zaza T. Abandoning daily routine chest radiography in the intensive care unit: meta-analysis. Radiology. 2010;255(2):386-395.
Keveson B, Clouser RD, Hamlin MP, et al. Adding value to daily chest x-rays in the ICU through education, restricted daily orders and indication-based prompting. BMJ Open Qual. 2017;6(2):e000072.

514

Don't perform chest CT (CT angiography) to evaluate for possible pulmonary embolism in patients with a low clinical probability and negative results of a highly sensitive D-dimer assay.

Rationale and Comments

Clinical practice guidelines for pulmonary embolism indicate that the cost and potential harms of CT angiography (including radiation exposure and the possibility of detecting and treating clinically insignificant pulmonary emboli with anticoagulation) outweigh the benefits for patients with a low pretest probability of pulmonary embolism. In patients with a low clinical prediction score (e.g., Wells or Geneva score) followed by a negative D-dimer measured with a high sensitivity test (e.g., enzyme-linked immunosorbent assay [ELISA]), pulmonary embolism is effectively excluded and no further imaging is indicated for pulmonary embolism evaluation.

Sponsoring Organizations

American College of Chest Physicians/American Thoracic Society

Sources

AAFP/ACP guidelines

References

Fesmire FM, Brown MD, Espinosa JA, Shih RD, Silvers SM, Wolf SJ, Decker WW. Critical issues in the evaluation and management of adult patients presenting to the emergency department with suspected pulmonary embolism. Ann Emerg Med. 2011;57(6):628-652, e675. Qaseem A, Snow V, Barry P, Hornbake ER, Rodnick JE, Tobolic T, Ireland B, Segal JB, Bass EB, Weiss KB, Green L, Owens DK; Joint American Academy of Family Physicians/American College of Physicians Panel on Deep Venous Thrombosis/Pulmonary Embolism. Current diagnosis of venous thromboembolism in primary care: a clinical practice guideline from the American Academy of Family Physicians and the American College of Physicians. Ann Intern Med. 2007 Mar 20;146(6):454-8. Torbicki A, Perrier A, Konstantinides S, Agnelli G, Galiè N, Pruszczyk P, Bengel F, Brady AJ, Ferreira D, Janssens U, Klepetko W, Mayer E, Remy-Jardin M, Bassand JP; ESC Committee for Practice Guidelines (CPG). Guidelines on the diagnosis and management of acute pulmonary embolism: the Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC). Eur Heart J. 2008;29(18):2276-315. The Christopher Study Investigators. Effectiveness of managing suspected pulmonary embolism using an algorithm combining clinical probability, D-dimer testing, and computed tomography. JAMA. 2006;295:172-9. Roy P-M, Colombet I, Durieux P, Chatellier G, Sors H, Meyer G. Systematic review and meta-analysis of strategies for the diagnosis of suspected pulmonary embolism. BMJ. 2005;331:259. Anderson DR, Kahn SR, Rodger MA, Kovacs MJ, Morris T, Hirsch A, Lang E, Stiell I, Kovacs G, Dreyer J, Dennie C, Cartier Y, Barnes D, Burton E, Pleasance S, Skedgel C, O'Rouke K, Wells PS. Computed tomographic pulmonary angiography vs ventilation-perfusion lung scanning in patients with suspected pulmonary embolism: A randomized controlled trial. JAMA. 2007;298(23):2743-53. Wiener RS, Schwartz LM, Woloshin S. Time trends in pulmonary embolism in the United States: evidence of overdiagnosis. Arch Intern Med. 2011;171(9):831-7.

155

Don't perform CT surveillance for evaluation of indeterminate pulmonary nodules at more frequent intervals or for a longer period of time than recommended by established guidelines.

Rationale and Comments

Clinical practice guidelines for pulmonary nodule evaluation (such as those issued by the Fleischner Society or the American College of Chest Physicians) suggest that intensity of surveillance should be guided by the likelihood of malignancy. In patients with no prior history of cancer, solid nodules that have not grown over a two-year period have an extremely low risk of malignancy (although longer follow-up is suggested for ground-glass nodules). Similarly, intensive surveillance (e.g., repeating CT scans every three months for two years or more) has not been shown to improve outcomes such as lung cancer mortality. Meanwhile, extended or intensive surveillance exposes patients to increased radiation and prolonged uncertainty.

Sponsoring Organizations

American College of Chest Physicians/American Thoracic Society

Sources

American College of Chest Physicians guidelines

References

MacMahon H, Austin JH, Gamsu G, Herold CJ, Jett JR, Naidich DP, Patz EF Jr, Swensen SJ; Fleischner Society. Guidelines for management of small pulmonary nodules detected on CT scans: a statement from the Fleischner Society. Radiology. 2005;237(2):395-400. Gould MK, Donington J, Lynch WR, Mazzone, Midthun DE, Naidich DP, Wiener RS. Evaluation of patients with pulmonary nodules: When is it lung cancer?: ACCP evidence-based clinical practice guidelines (3rd edition). Chest. 2013 May;143(5):e93. Smith-Bindman R, Lipson J, Marcus R, Kim KP, Mahesh M, Gould R, Berrington de González A, Miglioretti DL. Radiation dose associated with common computed tomography examinations and the associated lifetime attributable risk of cancer. Arch Intern Med. 2009;169(22):2078-86. Wiener RS, Gould MK, Woloshin S, Schwartz LM, Clark JA. What do you mean, a spot? A qualitative analysis of patients' reactions to discussions with their doctors about pulmonary nodules. Chest. 2012 Jul 17. doi: 10.1378/chest.12–1095. [Epub ahead of print].

153

Don't perform positive airway pressure retitration studies in asymptomatic, adherent patients with sleep apnea and stable weight.

Rationale and Comments

Retitration of positive airway pressure is not indicated for adult obstructive sleep apnea patients with stable weight whose symptoms are well-controlled by their current positive airway pressure treatment. Follow-up polysomnography or retitration is indicated for adult patients who are again symptomatic despite the continued, proper use of positive airway pressure, especially if they have gained substantial weight (e.g., 10% of original weight) since the last titration study. A new diagnostic polysomnography or retitration may be indicated for patients who have lost substantial weight, to determine whether positive airway pressure treatment is still necessary.

Sponsoring Organizations

American Academy of Sleep Medicine

Sources

American Academy of Sleep guidelines

References

Kushida CA, Littner MR, Morgenthaler T, Alessi CA, Bailey D, Coleman J Jr, Friedman L, Hirshkowitz M, Kapen S, Kramer M, Lee-Chiong T, Loube DL, Owens J, Pancer JP, Wise M. Practice parameters for the indications for polysomnography and related procedures: An update for 2005. Sleep. 2005;28(4):499-521. Epstein LJ, Kristo D, Strollo PJ Jr, Friedman N, Malhotra A, Patil SP, Ramar K, Rogers R, Schwab RJ, Weaver EM, Weinstein MD; Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. J Clin Sleep Med. 2009;5(3):263-76.

Don't routinely use airway clearance therapy in conditions such as asthma, bronchiolitis, and pneumonia.

Rationale and Comments

There is little evidence that airway clearance techniques play any significant role in the management of children with an acute respiratory problem or, chronically, in the outpatient setting for any condition other than bronchiectasis. Airway clearance techniques appear to be safe and somewhat effective for children with stable bronchiectasis and suppurative chronic bronchitis (such as cystic fibrosis) and may account for improvements in sputum expectoration, selected measures of lung function, symptoms, and health-related qualities of life. Common strategies for maintaining a clear airway in patients who have chronically impaired clearance of pulmonary secretions include 1) chest percussion alone; 2) chest percussion combined with proper positioning and postural drainage; 3) augmentation of the patient's own cough; 4) manually-assisted coughing, active cycle of breathing technique, forced expiratory technique, and autogenic drainage; and 5) positive pressure therapy with the use of Flutter valves®, positive expiratory pressure therapy, intermittent positive pressure breathing, intrapulmonary percussive ventilation, high-frequency chest wall compression, and even continuous positive airway pressure. In both Cochrane and Hayes reviews, chest physical therapy techniques did not appear to reduce the overall severity of disease for bronchiectasis but there may be reduction in the rate of progression of disease and improvement in the health-related qualities of life noted above. There may be some advantages to certain techniques and devices in neuromuscular disease with impaired ability to expectorate airway secretions, both acutely and chronically. Physicians should not routinely prescribe airway clearance techniques in previously healthy children with acute bronchiolitis, pneumonia, or an exacerbation of asthma.

Sponsoring Organizations

N/A

Sources

Cochrane Database of Systematic Reviews

References

Hayes Reviews: (Publication Date: March 28, 2014/Annual Review: Mar 15, 2017). High-Frequency Chest Wall Compression for Diseases Other than Cystic Fibrosis. (Publication Date: April 30, 2015/Annual Review: April 4, 2017). CoughAssist Mechanical Insufflation-Exsufflation Device (Philips Respironics) for Respiratory Insufficiency. (Publication Date: April 21, 2016). Intrapulmonary Percussive Ventilation for Home Use in Children. Lee AL, Burge AT, Holland AE. Airway clearance techniques for bronchiectasis. Cochrane Database Syst Rev. 2015;(11):CD008351. Figuls MR, Gine-Garriga M, Rugeles CG, Perrotta C, Vilaro J. Chest physiotherapy for acute bronchiolitis in pediatric patients between 0 and 24 months old. Cochrane Database Syst Rev. 2016;(2):CD004873. Gajdos V, Katsahian S, Beydon N, et al. Effectiveness of chest physiotherapy in infants hospitalized with acute bronchiolitis: a multicenter, randomized, controlled trial. PLoS Med. 2010;7(9):e1000345. De Boeck K, Vermeulen F, Vreys M, Moens M, Proesmans M. Airway clearance techniques to treat acute respiratory disorders in previously healthy children: where is the evidence? Eur J Pediatr. 2008;167(6):607-612. Strickland SL, Rubin BK, Drescher GS, et al. AARC clinical practice guideline: effectiveness of nonpharmacologic airway clearance therapies in hospitalized patients. Respir Care. 2013;58(12):2187-2193. Panitch HB. Respiratory implications of pediatric neuromuscular disease. Respir Care. 2017;62(6):826-848.

Don't routinely use bronchodilators in children with bronchiolitis.

Rationale and Comments

Published guidelines do not advocate the routine use of bronchodilators in patients with bronchiolitis. Comprehensive reviews of the literature have demonstrated that the use of bronchodilators in children admitted to the hospital with bronchiolitis has no effect or any important outcomes. There is limited demonstration of clear impact of bronchodilator therapy upon the course of disease. Additionally, providers should consider the potential impact of adverse events upon the patient.

Sponsoring Organizations

Society of Hospital Medicine (Pediatric)

Sources

Cochrane Database of Systematic Reviews|American Academy of Pediatrics guidelines

References

American Academy of Pediatrics. Diagnosis and management of bronchiolitis. Pediatrics. 2006;118(4):1774-93. Gadomski AM, et al. Bronchodilators for bronchiolitis. Cochrane Database Syst Rev. 2010;(12):CD001266.

Don't use long-acting beta-agonist (LABA)/steroid combination drugs as initial therapy for intermittent or mild persistent asthma.

Rationale and Comments

LABA medications provide sustained bronchodilation over a 12- to 24-hour period after delivery. For the treatment of asthma, they are supplied in combination with an inhaled steroid medication via a metered dose inhaler or dry powder inhaler. Children with intermittent asthma have only occasional need for bronchodilators and do not benefit from the use of LABAs on a daily basis. Children with mild persistent asthma are usually well-controlled with a single agent – either a leukotriene modifier or a low-dose inhaled corticosteroid medication. The addition of a LABA is not recommended in these circumstances and should be reserved for children with moderate persistent or severe persistent asthma.

Sponsoring Organizations

N/A

Sources

Global Initiative for Asthma guidelines|National Asthma Education and Prevention Program guideline

References

National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Bethesda, MD: National Heart, Lung, and Blood Institute; 2007. Global Initiative for Asthma. Global Strategy for Asthma Management and Prevention, 2016. www.ginasthma.org

Don't use sputum cytology to evaluate patients with peripheral lung lesions.

Rationale and Comments

Sputum cytology is not effective for evaluating peripheral lesions. For peripheral lesion evaluation, consider alternative diagnostic approaches (e.g., image guided needle aspiration).

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Demay RM, The Art & Science of Cytopathology. Chicago, IL: ASCP Press; 1996. Felten MK, Knoll L, Schikowsky C, et al. Is it useful to combine sputum cytology and low-dose spiral computed tomography for early detection of lung cancer in formerly asbestos-exposed power industry workers? J Occup Med Tox. 2014; 9(14): 1-9. Katz RL, Zaidi TM, Fernandez RL, et al. Automated detection of genetic abnormalities combined with cytology in sputum is a sensitive predictor of lung cancer. Mod Pathol. 2008; 21(8): 950-960. Read C, Janes S, George J, Spiro S. Early lung cancer: Screening and detection. Prim Care Respir J. 2006; 15(6): 332-336. Xiang D, Zhang B, Doll D, Shen K, Kloecker G, Freter C. Lung cancer screening: From imaging to biomarker. Biomarker Res. 2013; 1(4): 1-9. Usman AM, Miller J, Peirson L, Fitzpatrick-Lewis D, Kenny M, Sherifali D, Raina P. Screening for lung cancer: a systematic review and meta-analysis. Prev Med [Internet] 2016 Aug. [Cited 2017 July 14]; 89:301-14.

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For patients recently discharged on supplemental home oxygen following hospitalization for an acute illness, don't renew the prescription without assessing the patient for ongoing hypoxemia.

Rationale and Comments

Hypoxemia often resolves after recovery from an acute illness, and continued prescription of supplemental oxygen therapy incurs unnecessary cost and resource use. At the time that supplemental oxygen is initially prescribed, a plan should be established to re-assess the patient no later than 90 days after discharge. Medicare and evidence-based criteria should be followed to determine whether the patient meets criteria for supplemental oxygen.

Sponsoring Organizations

American College of Chest Physicians/American Thoracic Society

Sources

Expert consensus

References

Croxton T, Baily W, for the NHLBI working group on Long-Term Oxygen Treatment in COPD. Report of a National Heart, Lung, and Blood Institute and Centers for Medicare and Medicaid Services Workshop. Long-term oxygen treatment in chronic obstructive pulmonary disease: recommendations for future research. Am J Respir Crit Care Med. 2006;174:373-8. O'Driscoll B, Howard L, Davison A. BTS guideline for emergency oxygen use in adult patients. Thorax. 2008;63 Suppl 6:vi1-68. MacNee W. Prescription of oxygen: still problems after all these years. Am J Respir Crit Care Med. 2005;172:517-22.

154

In patients with a low pretest probability of venous thrombo-embolism, obtain a high-sensitive D-dimer measurement as the initial diagnostic test; don't obtain imaging studies as the initial diagnostic test.

Rationale and Comments

In patients with low pretest probability of venous thromboembolism as defined by the Wells prediction rules, a negative high-sensitivity D-dimer measurement effectively excludes venous thromboembolism and the need for further imaging studies.

Sponsoring Organizations

American College of Physicians

Sources

American Academy of Family Physicians|American College of Physicians|American College of Emergency Physicians guidelines

References

American College of Emergency Physicians. Evaluation and management of adult emergency department patients with suspected pulmonary embolism. January 2011. http://www.acep.org/Content.aspx?id=80332. 2008 European Society of Cardiology. Acute pulmonary embolism (diagnosis and management of). 2008. http://www.escardio.org/guidelines-surveys/esc-guidelines/Pages/acute-pulmonary-embolism.aspx. Snow V, et al. Management of venous thromboembolism. Ann Intern Med. 2007;146:204-10. Scottish Intercollegiate Guidelines Network. Prevention and management of venous thromboembolism. http://www.sign.ac.uk/guidelines/fulltext/122/index.html.

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Don't order routine follow-up chest imaging for post-acute and long-term care residents with CAP whose symptoms have resolved within five to seven days.

See Infectious Disease.

Don't treat uncomplicated community-acquired pneumonia in otherwise healthy, immunized, hospitalized patients with antibiotic therapy broader than ampicillin.

See Infectious Disease.

Avoid routine daily chest radiographs without an indication for intubated infants.

See Neonatology.

Avoid routine use of pneumograms for pre-discharge assessment of ongoing and/or prolonged apnea of prematurity.

See Neonatology.

Don't prescribe high-dose dexamethasone (0.5mg/kg per day) for the prevention or treatment of bronchopulmonary dysplasia in preterm infants.

See Neonatology.

Don't routinely order sleep studies (polysomnogram) to screen for/diagnose sleep disorders in workers suffering from chronic fatigue/insomnia.

See Neurologic.

Avoid administering nebulized medications by "blow by," or placing the mask or nebulizer tubing near the child's nose and mouth rather than securing the mask properly to the face. A T-piece with mouthpiece or face mask should be used instead.

See Pediatric.

Don't use broad-spectrum antibiotics such as ceftriaxone for children hospitalized with uncomplicated CAP. Use narrow-spectrum antibiotics such as penicillin, ampicillin, or amoxicillin.

See Pediatric.

Don't use continuous pulse oximetry routinely in children with acute respiratory illness unless they are on supplemental oxygen.

See Pediatric.

Don't use systemic corticosteroids in children younger than two years with an uncomplicated lower respiratory tract infection.

See Pediatric.

Don't perform CT screening for lung cancer among patients at low risk for lung cancer.

See Preventive Medicine.

Prior to cardiac surgery, there is no need for pulmonary function testing in the absence of respiratory symptoms.

See Surgical.

Don't order an erythrocyte sedimentation rate to look for inflammation in patients with undiagnosed conditions. Order a C-reactive protein to detect acute phase inflammation.

Rationale and Comments

C-reactive protein is a more sensitive and specific reflection of the acute phase of inflammation than is the erythrocyte sedimentation rate. In the first 24 hours of a disease process, the C-reactive protein will be elevated, whereas the erythrocyte sedimentation rate may be normal. If the source of inflammation is removed, the C-reactive protein will return to normal within a day or so, whereas the erythrocyte sedimentation rate will remain elevated for several days until excess fibrinogen is removed from the serum.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Crowson CS, Rahman MU, Matteson EL. Which measure of inflammation to use? A comparison of erythrocyte sedimentation rate and C-reactive protein measurements from randomized clinical trials of golimumab in rheumatoid arthritis. J Rheumatol. 2009;36(8):1606-10. Wu AH, Lewandrowski K, Gronowski AM, Grenache DG, Sokoll LJ, Magnani B. Antiquated tests within the clinical pathology laboratory. Am J Manag Care. 2010;16(9):e220-7. Black S, Kushner I, Samols D. C-reactive protein. J Biol Chem. 2004:279(47):48487-90. Henriquez-Camacho C, Losa J. Biomarkers for sepsis. Biomed Res Int. 2014;2014:547818. Lelubre C, Anselin S, Zouaoui Boudjeltia K, Biston P, Piagnerelli M. Interpretation of C-reactive protein concentrations in critically ill patients. Biomed Res Int. 2013;2013:124021.

243

Don't order ANA and other autoantibody testing on a child unless there is strong suspicion or specific signs of autoimmune disease.

Rationale and Comments

The ANA has a high sensitivity for only one disease, systemic lupus erythematosus, but has very poor specificity for systemic lupus erythematosus and every other rheumatic disease. Therefore, it is not useful or indicated as a general screen of autoimmunity. A positive ANA may occur secondary to polyclonal activation of the immune system following an infection, or it may be positive without any identifiable reason/disease in up to 32% of the population. Limiting patients on which to order ANA would reduce unnecessary physician visits and laboratory expenses, as well as parental anxiety. "Lupus panels" and other similar panels should also not be ordered without concerns for specific autoimmune disease. Additionally, since the ANA may always be positive and may fluctuate in titer, it is not recommended to retest it unless there is some new clinical concern.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

Expert consensus

References

Cabral DA, Petty RE, Fung M, Malleson PN. Persistent antinuclear antibodies in children without identifiable inflammatory rheumatic or autoimmune disease. Pediatrics. 1992;89(3):441-444. Deane PMG, Liard G, Siegel DM, Baum J. The outcome of children referred to a pediatric rheumatology clinic with a positive antinuclear antibody test but without an autoimmune disease. Pediatrics. 1995;95(6):892-895. Hilario MOE, Len CA, Roja SC, Terreri MT, Almeida G, Andrade LEC. Frequency of antinuclear antibodies in healthy children and adolescents. Clinical Pediatrics. 2004;43:637-642. Malleson PN, Sailer M, Mackinnon MJ. Usefulness of antinuclear antibody testing to screen for rheumatic disease. Arch Dis Child. 1997;77:299-304.

403

Don't order antinuclear antibody and extractable nuclear antigen unless the patient is suspected to have a connective tissue disease.

Rationale and Comments

Testing for antinuclear antibody (ANA) and extractable nuclear antigen (ENA) should be avoided in the investigation of widespread pain or fatigue alone. Instead, testing should be performed only in patients suspected to have a diagnosis of a connective tissue disease (e.g., lupus, rheumatoid arthritis). ANA positivity can be as high as 20% in patients with nonrheumatic conditions and healthy individuals. For this reason, proper pretest probability is important, and false-positive results may lead to further unnecessary testing. Repeat testing is also not recommended unless the clinical picture changes significantly.

Sponsoring Organizations

American Society for Clinical Laboratory Science
American Society for Clinical Pathology

Sources

ACR guideline

References

Tozzoli R, Bizzaro N, Tonutti E, et al. Guidelines for the laboratory use of autoantibody tests in the diagnosis and monitoring of autoimmune rheumatic diseases. Am J Clin Pathol. 2002;117(2):316-24.
Solomon DH, Kavanaugh AJ, Schur PH, et al. Evidence-based guidelines for the use of immunologic tests: antinuclear antibody testing. Arthritis Rheum. 2002;47(4):434-44.
Ferrari R. Evaluation of the Canadian Rheumatology Association Choosing Wisely recommendation concerning anti-nuclear antibody (ANA) testing. Clin Rheumatol. 2015;34(9):1551-1556.

537

Don't order autoantibody panels unless positive antinuclear antibodies (ANA) and evidence of rheumatic disease.

Rationale and Comments

Up to 50% of children develop musculoskeletal pain. There is no evidence that autoantibody panel testing in the absence of history or physical exam evidence of a rheumatologic disease enhances the diagnosis of children with isolated musculoskeletal pain. Autoantibody panels are expensive; evidence has demonstrated cost reduction by limiting autoantibody panel testing. Thus, autoantibody panels should be ordered following confirmed ANA positivity or clinical suspicion that a rheumatologic disease is present in the child.

Sponsoring Organizations

American College of Rheumatology—Pediatric Rheumatology

Sources

Agency for Healthcare Research and Quality

References

Wong KO, Bond K, Homik J, Ellsworth JE, Karkhaneh M, Ha C, Dryden DM. Antinuclear antibody, rheumatoid factor, and cyclic-citrullinated peptide tests for evaluating musculoskeletal complaints in children. Comparative Effectiveness Review No. 50. AHRQ Publication No. 12-EHC015-EF. Rockville, Md.: Agency for Healthcare Research and Quality. March 2012.
Cabral DA, Petty RE, Fung M, Malleson PN. Persistent antinuclear antibodies in children without identifiable inflammatory rheumatic or autoimmune disease. Pediatrics. 1992;89:441-4. Deane PM, Liard G, Siegel DM, Baum J. The outcome of children referred to a pediatric rheumatology clinic with a positive antinuclear antibody test but without an autoimmune disease. Pediatrics. 1995;95:892-5. McGhee JL, Burks FN, Sheckels JL, Jarvis JN. Identifying children with chronic arthritis based on chief complaints: absence of predictive value for musculoskeletal pain as an indicator of rheumatic disease in children. Pediatrics. 2002;110:354-9. Man A, Shojania K, Phoon C, Pal J, Hudoba de Badyn M, Pi D, Lacaille D. An evaluation of autoimmune antibody testing patterns in a Canadian health region and an evaluation of a laboratory algorithm aimed at reducing unnecessary testing. Clin Rheumatol. 2012; doi:10.1007/s10067-012-2141-y.

151

Don't order rheumatoid factor alone, or as part of a "panel" or "cascade" in children to evaluate for rheumatologic disease such as juvenile idiopathic arthritis due to musculoskeletal complaints. Don't let laboratory results guide referral.

Rationale and Comments

Juvenile idiopathic arthritis is a clinical diagnosis, and laboratory studies are used to prognosticate severity. Only 10% to 30% of children with juvenile idiopathic arthritis have a positive rheumatoid factor compared to the majority of adults with rheumatoid arthritis. The relevance of other antibodies such as anti-cyclic citrullinated peptide has not been established in the pediatric population. Additionally, rheumatoid factor is nonspecific and can be positive in other diseases, infections, or healthy individuals, and these labs are typically expensive. Patients may still have juvenile idiopathic arthritis despite a negative rheumatoid factor, and a positive test with no clinical disease causes significant parental anxiety and may result in additional unnecessary testing.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

Expert consensus

References

Groot N, Heijstek M, Wulffraat N. Agarwal M, Sawhney S. Laboratory tests in pediatric rheumatology. Indian J Pediatr. 2010;77(9):1011–6. Dalrymple A. Laboratory evaluation in pediatric autoimmune disease. Pediatr Rev. 2015;36(11):496. Ingegnoli F, Castelli R, Gualtierotti R. Rheumatoid factors: clinical applications. Hindawi. 2013;35(6):727–34. Smolen, Josef S, Aletaha, Daniel, McInnes, Iain B. Rheumatoid arthritis. The Lancet. 2016;338(10055):2023-2038. Wong KO, Bond K, Homik J, Ellsworth JE, Karkhaneh M, Ha C, Dryden DM. Antinuclear antibody, rheumatoid factor, and cyclic-citrullinated peptide tests for evaluating musculoskeletal complaints in Children. Comparative Effectiveness Review No. 50 (Prepared by the University of Alberta Evidence-based Practice Center under Contract No. HHSA 290 2007 10021 I). AHRQ Publication No. 12-EHC015-EF. Rockville, MD: Agency for Healthcare Research and Quality. March 2012. Effectivehealthcare.ahrq.gov/reports/final.cfm.

406

Don't prescribe biologics for rheumatoid arthritis before a trial of methotrexate (or other conventional nonbiologic disease-modifying antirheumatic drugs [DMARDs]).

Rationale and Comments

High-quality evidence suggests that methotrexate and other conventional nonbiologic DMARDs are effective in many patients with rheumatoid arthritis. Initial therapy for rheumatoid arthritis should be a conventional nonbiologic DMARD unless these are contraindicated. If a patient has had an inadequate response to methotrexate with or without other nonbiologic DMARDs during an initial three-month trial, then biologic therapy can be considered. Exceptions include patients with high disease activity AND poor prognostic features (functional limitations, disease outside the joints, seropositivity, or bony damage), where biologic therapy may be appropriate first-line treatment.

Sponsoring Organizations

American College of Rheumatology

Sources

American College of Rheumatology guidelines

References

Singh JA, et al. 2012 update of the 2008 American College of Rheumatology recommendations for the use of disease-modifying antirheumatic drugs and biologic agents in the treatment of rheumatoid arthritis. Arthritis Care Res (Hoboken). 2012;64(5):625-39. Smolen JS, et al. EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs. Ann Rheum Dis. 2012;69(6):964-75.

79

Don't prescribe opioids for chronic pain management in patients with autoimmune disease.

Rationale and Comments

Opioids are generally acceptable in pediatric medicine for short-term pain control associated with surgery or trauma. They are not recommended for treatment of chronic pain. Research has shown morphine and similar medications are not superior to ibuprofen and have significantly more adverse effects (e.g., opioid dependence and withdrawal symptoms). Adverse effects may occur after as few as five days of use. Use of opioids for medical purposes in adolescence also increases the risk for long-term use and misuse in adulthood. Opioids do not reduce inflammation from active arthritis and should be reserved for short-term use in cases of severe pain secondary to joint damage. Long-term pain control should be addressed with a multidisciplinary approach combining pharmacologic, behavioral, and exercise-based modalities.

Sponsoring Organizations

American Academy of Pediatrics – Section on Rheumatology

Sources

Cochrane Database of Systematic Reviews

References

Eccleston C, Cooper T, Fisher E, Anderson B, Wilkinson N. Non-steroidal anti-inflammatory drugs (NSAIDs) for chronic non-cancer pain in children and adolescents. Cochrane Database Syst Rev. 2017;2(8). Galinkin J, Koh J, Committee on Drugs, Section on Anesthesiology and Pain Medicine, American Academy of Pediatrics. Recognition and management of iatrogenically induced opioid dependence and withdrawal in children. Pediatrics. 2014;133(1):152-155. Gmuca S, Sherry D. Fibromyalgia: treating pain in the juvenile patient. Paediatr Drugs. 2017;19(4):325-338. Miech R, Johnston L, O'Malley P, Keyes K, Heard K. Prescription opioids in adolescence and future opioid misuse. Pediatrics. 2015;136(5):e1169-e1177. Poonai N, Datoo N, Ali S, et al. Oral morphine versus ibuprofen administered at home for postoperative orthopedic pain in children: A randomized controlled trial. CMAJ. 2017;10(189(40)):E1252-E1258.

402

Don't test antinuclear antibodies (ANA) subserologies without a positive ANA and clinical suspicion of immune-mediated disease.

Rationale and Comments

Tests for ANA subserologies (including antibodies to double-stranded DNA, Smith, RNP, SSA, SSB, Scl-70, centromere) are usually negative if the ANA is negative. Exceptions include anti-Jo1, which can be positive in some forms of myositis, or occasionally, anti-SSA, in the setting of lupus or Sjögren syndrome. Broad testing of autoantibodies should be avoided; instead, the choice of autoantibodies should be guided by the specific disease under consideration.

Sponsoring Organizations

American College of Rheumatology

American College of Rheumatology guidelines

Kavanaugh A, et al. Guidelines for clinical use of the antinuclear antibody test and tests for specific autoantibodies to nuclear antigens. Arch Pathol Lab Med. 2000;124(1):71-81. Solomon DH, et al. Evidence-based guidelines for the use of immunologic tests: antinuclear antibody testing. Arthritis Rheum. 2002;47(4):434-44. Tozzoli R, et al. Guidelines for the laboratory use of autoantibody tests in the diagnosis and monitoring of autoimmune rheumatic diseases. Am J Clin Pathol. 2002;117(2):316-24.

78

Don't test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history and appropriate exam findings

Rationale and Comments

The musculoskeletal manifestations of Lyme disease include brief attacks of arthralgia or intermittent or persistent episodes of arthritis in one or a few large joints at a time, especially the knee. Lyme testing in the absence of these features increases the likelihood of false-positive results and may lead to unnecessary follow-up and therapy. Diffuse arthralgias, myalgias, or fibromyalgia alone are not criteria for musculoskeletal Lyme disease.

Sponsoring Organizations

American College of Rheumatology

Sources

CDC, IDSA guidelines

References

Guidelines and statements made by the Centers for Disease Control and Centers for Disease Control and Prevention. Lyme disease diagnosis and treatment. http://www.cdc.gov/lyme/ diagnosistreatment/index.html. American College of Physicians. Guidelines for laboratory evaluation in the diagnosis of Lyme disease. Ann Intern Med. 1997;127(12):1106-8. Hu LT. Lyme disease. Ann Intern Med. 2012;157(3):ITC2-1. Wormser GP, et al. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis. Clin Infect Dis. 2006;43(9):1089-134.

77

Don't test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history and appropriate exam findings.

Rationale and Comments

The musculoskeletal manifestations of Lyme disease include brief attacks of arthralgia or intermittent or persistent episodes of arthritis in one or a few large joints at a time, especially the knee. Lyme testing in the absence of these features increases the likelihood of false-positive results and may lead to unnecessary follow-up and therapy. Diffuse arthralgias, myalgias or fibromyalgia alone are not criteria for musculoskeletal Lyme disease.

Sponsoring Organizations

American College of Rheumatology—Pediatric Rheumatology

Sources

Infectious Diseases Society of America guidelines|Centers for Disease Control and Prevention

References

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152

Don't use dual energy x-ray absorptiometry (DEXA) to screen for osteoporosis in women younger than 65 years or in men younger than 70 years with no risk factors. note: Risk factors include, but are not limited to, fractures after 50 years of age, prolonged exposure to corticosteroids, diet deficient in calcium or vitamin D, cigarette smoking, alcoholism, and thin/small build.

Rationale and Comments

Not cost-effective in younger, low-risk patients, but cost-effective in older patients.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force|American Association of Clinical Endocrinologists|American College of Preventive Medicine|National Osteoporosis Foundation

References

U.S. Preventive Services Task Force American Association of Clinical Endocrinology American College of Preventive Medicine National Osteoporosis Foundation

65

Don't delay initiation of early subthreshold, symptom-limited aerobic exercise as rehabilitation for adolescents who have sustained an acute sport-related concussion.

Rationale and Comments

Concussions represent 70% to 90% of all traumatic brain injuries, creating an increasingly major and costly health concern. In adolescent athletes, sports-related concussions account for an estimated 2.2 million emergency department visits per year in the United States. The historic standard for treatment of sports-related concussions consists of physical and cognitive rest until symptoms resolve, followed by a stepwise gradual return to activity. However, the current consensus among experts is that there is insufficient evidence for prescribing complete physical and cognitive rest until asymptomatic after acute sports-related concussions. Moreover, unnecessary delays in activity initiation for athletes may have detrimental effects on physical fitness and mental health, leading to additional subspecialist consultations and more extensive use of medical resources, driving up the cost. Thus, we recommend initiating early subthreshold, symptom-limited aerobic exercise as rehabilitation for adolescents who have sustained an acute sports-related concussion, especially given the overwhelming amount of recent high-quality, data-driven evidence sufficiently demonstrating symptomatic improvement and decreased recovery time with this strategy.

Sponsoring Organizations

American Medical Society for Sports Medicine

Sources

Systematic review

References

Langevin P, Frémont P, Fait P, et al. Aerobic exercise for sport-related concussion: a systematic review and meta-analysis. Med Sci Sports Exerc. 2020;52(12):2491-2499. Powell C, McCaulley B, Scott Brosky Z, et al. The effect of aerobic exercise on adolescent athletes post-concussion: a systematic review and meta-analysis. Int J Sports Phys Ther. 2020;15(5):650-658. Carter KM, Pauhl AN, Christie AD. The role of active rehabilitation in concussion management: a systematic review and meta-analysis. Med Sci Sports Exerc. 2021;53(9):1835-1845. Leddy JJ, Haider MN, Ellis M, et al. Exercise is medicine for concussion. Curr Sports Med Rep. 2018;17(8):262-270.

509

Don't routinely order a screening ECG as part of a sports preparticipation examination in asymptomatic, otherwise healthy patients with no personal or family history of cardiac disease.

Rationale and Comments

Routine screening ECGs for preparticipation sports clearance are not currently recommended by the American Heart Association. Instead, it is recommended that the American Heart Association's 14-point screening guidelines, or the American Academy of Pediatrics' "Preparticipation Physical Evaluation," be used in conjunction with a targeted personal history, family history, and thorough physical examination. The goal is to identify warning signs or signs that raise suspicion of cardiovascular diseases that place certain athletes at risk of sudden cardiac death. These individuals should be referred for further evaluation by a pediatric cardiologist who may order an ECG or an echocardiogram as part of the work-up. Routine ECG screening of healthy pediatric patients with no personal or family history of cardiac disease has demonstrated a high false-positive rate and has not been found to reduce mortality from sudden cardiac death. In addition, it can also lead to unnecessary secondary evaluations. ECG screening should be performed in those patients with a strong family history of conditions likely to cause sudden cardiac arrest or death.

Sponsoring Organizations

American Academy of Pediatrics – Section on Cardiology and Cardiac Surgery

Sources

ACC/AHA guidelines|American Academy of Pediatrics guidelines

References

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Avoid routine use of opioids for treatment of knee osteoarthritis, hip osteoarthritis, low back pain, or rotator cuff injury.

See Orthopedic.

Don't routinely repeat dual energy x-ray absorptiometry (DEXA) scans more often than once every two years.

See Preventive Medicine.

Avoid ordering MRI in patients with suspected acute Achilles tendon ruptures.

See Orthopedic.

Consider evaluating rotator cuff tears with ultrasound before ordering an MRI.

See Orthopedic.

Don't forget to routinely assess activity levels and recommend appropriate physical activity to your patients.

See Preventive Medicine.

Avoid admission or preoperative chest x-rays for ambulatory patients with unremarkable history and physical exam.

Rationale and Comments

Performing routine admission or preoperative chest x-rays is not recommended for ambulatory patients without specific reasons suggested by the history and/or physical examination findings. Only 2% of such images lead to a change in management. Obtaining a chest radiograph is reasonable if acute cardiopulmonary disease is suspected or there is a history of chronic stable cardiopulmonary disease in a patient older than 70 years who has not had chest radiography within six months.

Sponsoring Organizations

American College of Physicians|American College of Radiology

Sources

American College of Radiology Appropriateness Criteria

References

American College of Radiology. ACR Appropriateness Criteria: routine admission and preoperative chest radiography. http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/RoutineAdmissionandPreoperativeChestRadiographyDoc6.aspx. Gomez-Gil E, et al. Lack of clinical relevance of routine chest radiography in acute psychiatric admissions. Gen Hosp Psychiatry. 2002; 24(2):110-3. Archer C, et al. Value of routine preoperative chest x-rays: a meta-analysis. Can J Anaesth. 1993; 40(11):1022-17. Munro J, et al. Routine preoperative testing: a systematic review of the evidence. Health Technol Assessment. 1997;1(12):i-iv; 1-62. Grier DJ, et al. Are routine chest radiographs prior to angiography of any value? Clin Radiol. 1993;48(2):131-3. Gupta SD, et al. Routine chest radiography in the elderly. Age Ageing. 1985;14(1):11-4. American College of Radiology. ACR Appropriateness Criteria: routine chest radiographs in ICU patients. http://www.acr.org/ SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/RoutineChestRadiographDoc7.aspx.

Avoid admission or preoperative chest x-rays for ambulatory patients with unremarkable history and physical exam.

Rationale and Comments

Performing routine admission or preoperative chest x-rays is not recommended for ambulatory patients without specific reasons suggested by the history and/or physical examination findings. Only 2% of such images lead to a change in management. Obtaining a chest radiograph is reasonable if acute cardiopulmonary disease is suspected or there is a history of chronic stable cardiopulmonary diseases in patients older than age 70 who have not had chest radiography within six months.

Sponsoring Organizations

American College of Surgeons

Sources

American College of Radiology Appropriateness Criteria

References

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Avoid opioid-only modalities for postoperative pain control.

Rationale and Comments

Opioid overdose has become one of the leading causes of injury related death in the United States and can be linked to the rising rates of opioid prescriptions. Many patients report unused opioid prescriptions following surgery, and there is a growing call for better standardization of opioid prescribing practices. Surgeons should utilize additional strategies such as locoregional anesthetic blocks and nonopioid medications (acetaminophen, NSAIDS, and gabapentoids) for pain management where possible.

Sponsoring Organizations

Society of American Gastrointestinal and Endoscopic Surgeons

Sources

Systematic review

References

Bicket, MC et al., 2017. Prescription Opioid Analgesics Commonly Unused After Surgery: A Systematic Review. JAMA surgery, 152(11), pp.1066–1071. Dart, RC, Severtson, SG, Bucher-Bartelson, B, 2015. Trends in opioid analgesic abuse and mortality in the United States. The New England Journal of Medicine, 372(16), pp.1573–1574. Derry, CJ, Derry, S, Moore, RA, 2013. Single dose oral ibuprofen plus paracetamol (acetaminophen) for acute postoperative pain. Cochrane database of systematic reviews (Online), (6), p.CD010210. Hill, MV et al., 2017. Guideline for Discharge Opioid Prescriptions after Inpatient General Surgical Procedures. Journal of the American College of Surgeons.

Avoid routine preoperative testing for low-risk surgeries without a clinical indication.

Rationale and Comments

Most preoperative tests (typically a complete blood count, prothrombin time and partial thromboplastin time, basic metabolic panel, and urinalysis) performed on elective surgical patients are normal. Findings influence management in under 3% of patients tested. In almost all cases, no adverse outcomes are observed when clinically stable patients undergo elective surgery, irrespective of whether an abnormal test is identified. Preoperative testing is appropriate in symptomatic patients and those with risks factors for which diagnostic testing can provide clarification of patient surgical risk.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Cochrane Database of Systematic Reviews

References

Keay L, et al. Routine preoperative medical testing for cataract surgery. Cochrane Database Syst Rev. 2012;(3):CD007293. Katz R, et al. Survey study of anesthesiologists' and surgeons' ordering of unnecessary preoperative laboratory tests. Anesth Analg. 2011;112(1):207-12. Munro J, et al. Routine preoperative testing: a systematic review of the evidence. Health Technol Assessment. 1997;1(12):i-iv, 1-62. Reynolds TM. National Institute for Health and Clinical Excellence guidelines on preoperative tests: the use of routine preoperative tests for elective surgery. Ann Clin Biochem. 2006;43:13-16. Capdenat Saint-Martin E, et al. Description of local adaptation of national guidelines and of active feedback for rationalizing preoperative screening in patients at low risk from anaesthetics in a French university hospital. Qual Health Care. 1998;7:5-11.

Avoid routine prothrombin time and partial thromboplastin time preoperative screens on patients who are asymptomatic; use instead a history-based bleeding assessment test.

Rationale and Comments

The 1989 Medical Necessity Project of the Blue Cross and Blue Shield Association, endorsed by the American College of Physicians, found that at least 70% of prothrombin time and partial thromboplastin time tests were not clinically indicated. Subsequently, nine observational studies, including three prospective trials, reported that prothrombin time and partial thromboplastin time positive predictive values for bleeding complications ranged from 0.03 to 0.22, whereas computed 95% confidence intervals for each assay generates a 2.5% false-positive rate. A review of 27,737 prothrombin time and partial thromboplastin time results over two decades showed that only 8% of prothrombin times and partial thromboplastin times were clinically indicated based on current or prior patient history of bleeding. A study of general hospital unregulated coagulation screening requests produced few abnormal results with no evidence that they were associated with an increased bleeding risk. In this study, all bleeding cases could be attributed to an underlying condition. The risk of intraoperative bleeding is best predicted from a careful history that includes a questionnaire-based bleeding assessment test.

Sponsoring Organizations

American Society for Clinical Laboratory Science

Sources

Prospective cohort studies

References

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Avoid the routine use of ultrasound in evaluating clinically apparent inguinal hernia.

Rationale and Comments

The diagnosis of, and subsequent treatment decisions for, palpable abdominal wall hernias are reliably made by patient history and physical examination alone. While the use of ultrasonography has been shown to be of some benefit in the diagnosis of occult hernias, there is no place for its routine use in the setting of a clearly palpable defect, as it only adds unnecessary cost and treatment delay with no useful contribution to definitive surgical care.

Sponsoring Organizations

Society of American Gastrointestinal and Endoscopic Surgeons

Sources

Society of American Gastrointestinal and Endoscopic Surgeons guideline

References

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Avoid unnecessary perioperative fasting for elective general surgical procedures.

Rationale and Comments

Fasting after midnight used to be the standard of care before surgery, with thought to reduce pulmonary aspiration risk with an empty stomach. There is adequate data that prolonged fasting is associated with increased perioperative insulin resistance, delayed recovery, and poorer outcomes. Based on this, the American Society of Anesthesiologists and other organizations recommend refraining from solid food for six hours before surgery, while intake of clear fluids is permitted until two hours before surgery.

Sponsoring Organizations

Society of American Gastrointestinal and Endoscopic Surgeons

Sources

Cochrane Database of Systematic Reviews

References

McLeod R, Fitzgerald W, Sarr M; Members of the Evidence Based Reviews in Surgery Group. Canadian Association of General Surgeons and American College of Surgeons evidence based reviews in surgery. 14. Preoperative fasting for adults to prevent perioperative complications. Can J Surg. 2005;48(5):409-411. Brady M, Kinn S, Stuart P. Preoperative fasting for adults to prevent perioperative complications. Cochrane Database Syst Rev. 2003;(4):CD004423. Maltby JR, Pytka S, Watson NC, et al. Drinking 300 mL of clear fluid two hours before surgery has no effect on gastric fluid volume and pH in fasting and non-fasting obese patients. Can J Anaesth. 2004;51(2):111-115.

Avoid using CT scan as the first-line imaging modality in the evaluation of suspected appendicitis in children. Ultrasound should be done first with a CT scan or MRI considered in equivocal cases.

Rationale and Comments

Although CT is the most accurate radiologic modality for the evaluation of appendicitis, ultrasound should be the preferred initial evaluation in children. This modality is cost effective, avoids radiation exposure, and has excellent accuracy, with a reported sensitivity and specificity of 94% in experienced hands. When the ultrasound is equivocal, decision guidelines based on clinical findings as well as radiologic findings may assist in determining the need for cross-sectional imaging. Other options to consider prior to CT scan may include an evaluation by a surgeon, observation with serial exams, repeat ultrasound after a period of observation, and MRI, which has been shown to have similar diagnostic accuracy as CT.

Sponsoring Organizations

American Academy of Pediatrics – Section on Surgery

Sources

American College of Radiology guidelines

References

Doria AS, Moineddin R, et al. US or CT for diagnosis of appendicitis in children and adults? A meta-analysis. Radiology. 2006;241:83-94. Krishnamoorthi R, Ramarajan N, et al. Effectiveness of a staged US and CT protocol for the diagnosis of pediatric appendicitis: reducing radiation exposure in the age of ALARA. Radiology. 2011;259:231-239. Smith MP, Katz DS, et al. Expert Panel on Gastrointestinal Imaging. ACR Appropriateness Criteria right lower quadrant pain--suspected appendicitis. Ultrasound Q. 2015 June;31(2):85-91. Samuel M. Pediatric appendicitis score. J Ped Surg. 2002;37(6):877-881. Nielsen JW, Boomer L, et al. Reducing computed tomography scans for appendicitis by introduction of a standardized and validated ultrasonography report template. J Pediatr Surg. 2015;50:144-148. Aspelund G, Fingeret A, et al. Ultrasonography/MRI versus CT for diagnosing appendicitis. Pediatrics. 2014 Apr;133(4):586-593.

Don't continue opioid analgesia beyond the immediate postoperative period; prescribe the lowest effective dose and number of doses required to address the expected pain.

Rationale and Comments

The use of opioid analgesia for pain is often appropriate in surgical patient care. However, due to the emergence of opioid use disorder as a public health epidemic, the appropriate use of opioid therapy must begin with adherence to minimum prescribing in terms of dose, duration, and quantity.

Sponsoring Organizations

American Urological Association

Sources

Centers for Disease Control and Prevention

References

Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1):1–49. DOI: dx.doi.org/10.15585/mmwr.rr6501e1; www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm.

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Don't discharge patients presenting emergently with acute cholecystitis without first offering laparoscopic cholecystectomy.

Rationale and Comments

Surgeons often debate the timing of cholecystectomy in patients with acute cholecystitis. Evidence suggests that cholecystectomy during the index hospitalization is both safe and cost-effective. Interval cholecystectomy may be associated with higher chance of requiring open surgery or readmission, increasing costs. Finally, patients with acute cholecystitis who are discharged without undergoing surgery may have a higher risk of presenting with complications of cholelithiasis, which can be more morbid than the initial presentation.

Sponsoring Organizations

Society of American Gastrointestinal and Endoscopic Surgeons

Sources

Society of American Gastrointestinal and Endoscopic Surgeons guideline

References

SAGES guideline for the clinical application of laparoscopic biliary tract surgery. Available at https://www.sages.org/publications/guidelines/guidelines-for-the-clinical-application-of-laparoscopic-biliarytract-surgery/. Cheruvu, CVN, Eyre-Brook, IA, 2002. Consequences of prolonged wait before gallbladder surgery. Annals of the Royal College of Surgeons of England, 84(1), pp.20–22. de Mestral, C. et al., 2013. A population-based analysis of the clinical course of 10,304 patients with acute cholecystitis, discharged without cholecystectomy. The journal of trauma and acute care surgery, 74(1), pp.26–30– discussion 30–1. de Mestral C, Hoch JS, Laupacis A, et al. Early Cholecystectomy for Acute Cholecystitis Offers the Best Outcomes at the Least Cost: A Model-Based Cost-Utility Analysis. J Am Coll Surg. 2016;222(2):185-194.

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Don't obtain baseline laboratory studies in patients without significant systemic disease (ASA I or II) undergoing low-risk surgery—specifically complete blood count, basic or comprehensive metabolic panel, coagulation studies when blood loss (or fluid shifts) is/are expected to be minimal.

Rationale and Comments

Performing routine laboratory tests in patients who are otherwise healthy is of little value in detecting disease. Evidence suggests that a targeted history and physical exam should determine whether preprocedure laboratory studies should be obtained. The current recommendation from the 2003 ASA amendment that all female patients of childbearing age be offered pregnancy testing rather than required to undergo testing has provided individual physicians and hospitals the opportunity to set their own practices and policies relating to preoperative pregnancy testing. Some institutions respect the right of a patient to refuse testing after a thorough explanation of the anesthetic risks during pregnancy and the required signing of a waiver. The avoidance of the routine administration of the pregnancy test was therefore excluded from our top five preoperative recommendations. The risk specifically related to the surgical procedure could however modify the above preoperative recommendation to obtain laboratory studies and when the need arises; the decision to implement should include a joint decision between the anesthesiologists and surgeons. This should be applicable to all outpatient surgery.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

American Society of Anesthesiologists guidelines

References

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130

Don't perform routine preoperative testing before low-risk surgical procedures.

Rationale and Comments

Preoperative assessment is expected before all surgical procedures. This assessment includes an appropriately directed and sufficiently comprehensive history and physical examination, and, in some cases, properly includes laboratory and other testing to help direct management and assess surgical risk. However, preoperative testing for low-risk surgical procedures (such as cataract extraction) results in unnecessary delays and adds to significant avoidable costs and should be eliminated.

Sponsoring Organizations

Society of General Internal Medicine

Sources

Cochrane Database of Systematic Reviews

References

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107

Don't perform surgery for asymptomatic vaginal exposure of monofilament mesh.

Rationale and Comments

Vaginal exposure of mesh used in surgery for the treatment of pelvic organ prolapse or urinary incontinence is a known complication of such surgeries. Although symptomatic exposure may require treatment, evidence suggests that asymptomatic mesh exposure can be safely watched without surgery to avoid the risks and complications associated with surgery for mesh exposure. Longitudinal expectant management is a reasonable alternative.

Sponsoring Organizations

American Urogynecologic Society

Sources

ACOG guidelines

References

American College of Obstetricians and Gynecologists. Committee opinion no. 694: management of mesh and graft complications in gynecologic surgery. Obstet Gynecol. 2017;129(4):e102-e108. Deffieux X, Thubert T, de Tayrac R, Fernandez H, Letouzey V. Long-term follow-up of persistent vaginal polypropylene mesh exposure for transvaginally placed mesh procedures. Int Urogynecol J. 2012;23(10):1387-1390. Kobashi KC, Govier FC. Management of vaginal erosion of polypropylene mesh slings. J Urol. 2003;169(6):2242-2243.

435

Don't place, or leave in place, peripherally inserted central catheters for patient or provider convenience.

Peripherally inserted central catheters (PICCs) are commonly used devices in contemporary medical practice that are associated with two costly and potentially lethal health care-acquired complications: central-line associated bloodstream infection and venous thromboembolism. Given the clinical and economic consequences of these complications, placement of PICCs should be limited to acceptable indications (long-term intravenous antibiotics, total parenteral nutrition, chemotherapy and frequent blood draws). PICCs should be promptly removed when acceptable indications for their use ends.

Sponsoring Organizations

Society of General Internal Medicine

Sources

Systematic review and meta-analysis

References

Chopra V, Anand S, Krein SL, Chenoweth C, Saint S. Bloodstream infection, venous thrombosis, and peripherally inserted central catheters: reappraising the evidence. Am J Med. 2012;125(8):733-74. Chopra V, Anand S, Hickner A, Buist M, Rogers MA, Saint S, Flanders SA. Risk of venous thromboembolism associated with peripherally inserted central catheters: a systematic review and meta-analysis. Lancet. 2013 May 17; pii: S0140-6736(13)60592-9. ePub ahead of print. Safdar N, Maki DG. Risk of catheter-related bloodstream infection with peripherally inserted central venous catheters used in hospitalized patients. Chest. 2005;128(2):489-95. Tejedor SC, Tong D, Stein J, Payne C, Dressler D, Xue W, Steinberg JP. Temporary central venous catheter utilization patterns in a large tertiary care center: tracking the "Idle central venous catheter". Infect Control Hosp Epidemiol. 2012 Jan;33(1):50-57.

109

Don't proceed with elective surgery in patients with properly diagnosed and correctable anemia until the anemia has been appropriately treated.

Rationale and Comments

Anemia is common, presenting in approximately one-third of patients undergoing elective surgery. There is often the misconception that anemia is harmless, when, in fact, it is independently associated with significant morbidity and mortality that can be as high as 30-40% in certain patient populations. Treatment of anemia improves patient readiness for surgery, aids in management of comorbid conditions, decreases length of stay and readmission rates, and reduces transfusion risks. Treatment modalities may include nutritional supplementations, such as iron, B12 and folate, changes in medication, management of chronic inflammatory conditions or previously undiagnosed malignancy, or other interventions based on the etiology.

Sponsoring Organizations

Society for the Advancement of Blood Management

Sources

Expert consensus

References

Mursallana KM, Tamim HM, Richards T, et al. Preoperative anaemia and post operative outcomes in non-cardiac surgery: a retrospective cohort study. Lancet. 2011;378(9800):1396-4007. Koch C, Li L, Sun Z, et al. Hospital-acquired anemia: prevalence, outcomes, and healthcare implications. J Hosp Med. 2013;8(9):506-512. Beattie WS, Karkouti K, Wijeysundera DN, Tait G, et al. Risk associated with preoperative anemia in non-cardiac surgery; a single-center cohort study. Anesthesiology. 2009;110(3):574-581. Munoz M, Acheson AG, Aurbach M, et al. International consensus on peri-operative anemia and iron deficiency. Anaesthesia. 2017;72:233-247. Gombotz, Zacharowski, Spahn (eds.). Patient Blood Management. Thieme Publishers, 2016.

364

Don't proceed with nonemergent major surgery until anemia is evaluated and treated.

Rationale and Comments

Anemia is a global health problem with an incidence of up to 25% in neonates, infants, and children. An independent association between preoperative anemia and postoperative morbidity and mortality has been reported. Expert consensus guidelines recommend screening three to six weeks before major elective surgery. Targeted preventative and therapeutic strategies, which may include iron supplementation, to improve the hematologic status of patients with anemia prior to surgery could reduce blood transfusions, improve safety, and decrease costs.

Sponsoring Organizations

Society for the Advancement of Patient Blood Management: Pediatric and Neonatal Medicine

Sources

Expert consensus

References

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495

Don't routinely administer colloid (dextrans, hydroxylethyl starches, albumin) for volume resuscitation without appropriate indications.

Rationale and Comments

There is no evidence from multiple randomized controlled trials and recent reviews/meta-analyses that resuscitation with colloids reduces the risk of death compared to crystalloids. Colloids offer no survival benefit and are considerably more expensive than crystalloids; their continued routine use in clinical practice should therefore be questioned. Recent perioperative data on the use of colloids in certain populations remain controversial; nevertheless, there is consensus on the avoidance of the routine use of colloids for volume resuscitation in the general surgical population given the overwhelming amount of evidence in the literature of possible harm when used in un-indicated patients. Health care providers should refer to the current evolving literature when faced with specific conditions like sepsis, traumatic brain injury, acute renal injury and burns thereby creating a forum for discussion among the care providers of the efficacy of such a treatment in that individual patient. Nevertheless, it is important to note that the endpoint in most studies is mortality and morbidity. There is insufficient data to adequately address the need of colloids over crystalloids for other endpoints of interest like hypotension, need for blood transfusion, length of hospital stay, etc. Further research may be required to delineate the existence of any particular benefits of colloids over crystalloids.

Sponsoring Organizations

American Society of Anesthesiologists

Sources

Cochrane Database of Systematic Reviews

References

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, Pasternak LR, Arens JF, Caplan RA, Connis RT, Fleisher LA, Flowerdew R, Gold BS, Mayhew JF, Nickinovich DG, Rice LJ, Roizen MF, Twersky RS. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. Anesthesiology. 2012 Mar;116(3):522–38. Perel P, Roberts I, Pearson M. Colloid versus crystalloid for fluid resuscitation in critically ill patients (Review). The Cochrane Collaboration, the Cochrane Library 2009;3. Perel P, Roberts I, Ker K. Colloids versus crystalloids for fluid resuscitation in critically ill patients. Cochrane Database Syst Rev. 2013 Feb 28;2. Perel P, Roberts I. Colloids versus crystalloids for fluid resuscitation in critically ill patients. Cochrane Database Syst Rev. 2012 Jun 13;6. Perel P, Roberts I. Colloids versus crystalloids for fluid resuscitation in critically ill patients. Cochrane Database Syst Rev. 2011 Mar 16;(3):CD000567. Perel P, Roberts I. Colloids versus crystalloids for fluid resuscitation in critically ill patients. Cochrane Database Syst Rev. 2007 Oct 17;(4):CD000567. Roberts I, Alderson P, Bunn F, Chinnock P, Ker K, Schierhout G. Colloids versus crystalloids for fluid resuscitation in critically ill patients. Cochrane Database Syst Rev. 2004 Oct 18;(3):CD000567. Kruer RM Ensor CR. Colloids in the intensive care unit. Am J Health Syst Pharm. 2012 Oct 1;69(19):1635–42. NATA: Network for Advancement and Transfusion Alternatives. Crystalloids versus colloids: the controversy [Internet]. NATA. 2013 [cited 2013 Sep 20]. Available from: http://www.nataonline.com/np/158/crystalloids-versus-colloids-controversy. Reinhart K, Perner A, Sprung CL, Jaeschke R, Schortgen F, Johan Groeneveld AB, Beale R, Hartog CS; European Society of Intensive Care Medicine. Consensus statement of the ESICM task force on colloid volume therapy in critically ill patients. Intensive Care Med. 2012;38(3):368-83.

Don't routinely use graduated compression stockings in surgical patients as mechanical prophylaxis for preventing venous thromboembolism (VTE) after surgery, but do consider using intermittent pneumatic compression devices.

Rationale and Comments

Thromboembolic disease is a significant cause of complications and mortality in hospitalized patients and a growing public health issue. Although anyone can develop a VTE, research shows that half of the VTE events in the outpatient setting are directly linked to a recent hospitalization. Many of these events can be prevented through pharmacological and/or mechanical VTE prophylaxis. Current guidelines that recommend mechanical devices demonstrate a preference for intermittent pneumatic compression-pc devices with no recommendations for graduated compression stockings, except for women at high risk for VTE after cesarean delivery. These intermittent pneumatic compression-pc devices minimize adverse effects to skin, promote patient comfort, and permit clinician assessment compared to graduated compression stockings.

Sponsoring Organizations

American Academy of Nursing

Sources

Cochrane Database of Systematic Reviews|American College of Chest Physicians guidelines|American College of Physicians guidelines

References

Dunn N, Ramos R. Preventing venous thromboembolism: the role of nursing with intermittent pneumatic compression. Am J Crit Care. 2017; 26(2):164-167. Guyatt GH, Akl EA, Crowther M, Gutterman DD, Schuünemann HJ; American College of Chest Physicians Antithrombotic Therapy and Prevention of Thrombosis Panel. Executive summary: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012; 141(2 suppl):7S-47S. Kakkos SK, Caprini JA, Geroulakos N, Stansby G, Reddy DJ, Ntouvas I. Combined intermittent compression and pharmacologic prophylaxis for prevention of venous thromboembolism. Cochrane Database of Systematic Review. 2016, Issue 9. No: CD005258. Qaseem A, Chou R, Humphrey LL, Starkey M, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Venous thromboembolism prophylaxis in hospitalized patients: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2011;155(9):625-32. Raskob GE, Silverstein R, Bratzler DW, Heit JA, White RH. Surveillance for deep vein thrombosis and pulmonary embolism: recommendations from a national workshop. Am J Prev Med. 2010;38(4 Ssuppl):S502-9.

Don't use a broad spectrum antimicrobial agent for perioperative prophylaxis or continue prophylaxis after the incision is closed for uncomplicated clean and clean-contaminated procedures.

Rationale and Comments

When indicated, the timely administration of perioperative antibiotics can reduce postoperative infections when narrow-spectrum antibiotics (e.g., cefazolin) are given before surgery. Perioperative prophylaxis should not be continued after the incision is closed for uncomplicated clean and clean-contaminated procedures (i.e., respiratory, gastrointestinal, or genitourinary sites are breached but without infection or inflammation; clean contaminated procedure is when you cross the respiratory, gastrointestinal, or urogenital tract without gross contamination.) Broad-spectrum antibiotics and longer durations of therapy have not been shown to be more beneficial, and these practices contribute to the development of antimicrobial resistance and the emergence of pathogenic organisms (e.g., Clostridium difficile). Both the dose and timing of perioperative antibiotic administration are important for optimal effect. Many studies show poor adherence to published guidelines on use of perioperative antibiotics, which emphasizes the need for ongoing quality improvement approaches in this area.

Sponsoring Organizations

American Academy of Pediatrics – Committee on Infectious Diseases and the Pediatric Infectious Diseases Society

Sources

Centers for Disease Control and Prevention

References

Berrios-Torres S, Umscheid C, Bratzler D, et al. Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017. JAMA Surg. doi:10.1001/ jamasurg.2017.0904. Bratzler DW, Dellinger P, Olsen KM et al. Clinical practice guidelines for antimicrobial prophylaxis in surgery. Am J Health Syst Pharm. 2013:70:195-283. European Centre for Disease Prevention and Control. Systematic review and evidence-based guidance on perioperative antibiotic prophylaxis. Stockholm: ECDC: 2013. Doi 10.2900/85936. TSteinberg JP, Braun BI, Hellinger WC et al. Timing of antimicrobial prophylaxis and the risk of surgical site infections: results from the Trial to Reduce Antimicrobial Prophylaxis Errors. Ann Surg. 2009;250: 10-6. doi: 10.1097/SLA.0b013e3181ad5fca. Ranji Sr, Shetty K, Posley KA et al. Prevention of Healthcare-Associated Infections. Vol 6 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, editors. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290 02-0017). AHRQ Publication No. 04(07)-0051-6. Rockville, MD: Agency for Healthcare Research and Quality. January 2007.

Don't use whirlpools for wound management.

Rationale and Comments

Whirlpools are a non-selective form of mechanical debridement. Utilizing whirlpools to treat wounds predisposes the patient to risks of bacterial cross-contamination, damage to fragile tissue from high turbine forces, and complications in extremity edema when arms and legs are treated in a dependent position in warm water. Other more selective forms of hydrotherapy should be utilized, such as directed wound irrigation or a pulsed lavage with suction.

Sponsoring Organizations

American Physical Therapy Association

Sources

Institute for Clinical Systems Improvement guideline

References

Institute for Clinical Systems Improvement (ICSI). Pressure ulcer prevention and treatment protocol. Health care protocol. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2012 Jan. 88 p. Association for the Advancement of Wound Care (AAWC) venous ulcer guideline. Malvern (PA): Association for the Advancement of Wound Care (AAWC); 2010 Dec. 7 p. Water use in hydrotherapy tanks [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. 2009 Aug 10 [cited 2014 Apr 23]. Available from: http://www.cdc.gov/healthywater/other/medical/hydrotherapy.html. Berrouane YF, McNutt LA, Buschelman BJ. Outbreak of severe pseudomonas aeruginosa infections caused by a contaminated drain in a whirlpool bathtub. Clin Infect Dis. 2000;31(6):1331–7. McCulloch J, Boyd VB. The effects of whirlpool and the dependent position on lower extremity volume. J Orthop Sports Phys Ther. 1992;16(4):169–73.

212

Prior to cardiac surgery, there is no need for pulmonary function testing in the absence of respiratory symptoms.

Rationale and Comments

Pulmonary function tests can be helpful in determining risk in cardiac surgery, but patients with no pulmonary disease are unlikely to benefit and do not justify testing. Symptoms attributed to cardiac disease that are respiratory in nature should be better characterized with pulmonary function tests.

Sponsoring Organizations

Society of Thoracic Surgeons

Sources

Expert consensus

References

Shahian DM, et al. The society of thoracic surgeons 2008 cardiac surgery risk models: Part 1–coronary artery bypass grafting surgery. Ann Thorac Surg. 2009;88:S2-22. O'Brien SM, et al. The society of thoracic surgeons 2008 cardiac surgery risk models: Part 2–isolated valve surgery. Ann Thorac Surg. 2009;88:S23-42. Ried M, et al. Mild-to-moderate COPD as a risk factor for increased 30-day mortality in cardiac surgery. Thorac Cardiovasc Surg. 2010;58:387-91. Adabag AS, et al. Preoperative pulmonary function and mortality after cardiac surgery. Am Heart J. 2010;159(4):691-7.

87

Reduce postoperative opioid requirements in pediatric patients by administering acetaminophen and/or NSAID medications in the perioperative period.

Rationale and Comments

Multimodal analgesia is recommended in the management of children for their perioperative pain. Significant decreases in opioid consumption can be achieved with the concurrent use of NSAIDs and/or acetaminophen in infants and children undergoing surgery of moderate or major severity, especially within the first 24 hours following surgery. The use of NSAIDs during the first 24 hours of postoperative care also reduced the incidence of nausea and vomiting. In addition to decreasing the possibility of narcotic dependence, avoidance of opioids confers added benefits of reducing the incidence of postoperative nausea and constipation and aiding in early ambulation.

Sponsoring Organizations

American Academy of Pediatrics – Section on Surgery

Sources

Meta-analysis

References

Wong I, St John-Green C, Walker SM. Opioid-sparing effects of perioperative paracetamol and nonsteroidal anti-inflammatory drugs in children. Paediatric Anaesthesia. 2013 Jun;23(6):475-495. Michelet D, Andreu-Gallien J, et al. A meta-analysis of use of nonsteroidal anti-inflammatory drugs for pediatric postoperative pain. Anesthesia Analgesia. 2012 Feb;114(2):393-406. Brasher C, Gafsous B, et al. Postoperative pain management in children and infants: an update. Pediatric Drugs. 2014 April;16(2):129-140. Ceelie I, de Wildt SN, et al. Effect of intravenous paracetamol on postoperative morphine requirements in neonates and infants undergoing major noncardiac surgery. JAMA. 2013 Jan 9;309(2):149-154.

418

Avoid cardiovascular stress testing for patients undergoing low-risk surgery.

See Cardiovascular.

Avoid echocardiograms for preoperative/perioperative assessment of patients with no history or symptoms of heart disease.

See Cardiovascular.

Don't initiate routine evaluation of carotid artery disease prior to cardiac surgery in the absence of symptoms or other high-risk criteria.

See Cardiovascular.

Don't obtain baseline diagnostic cardiac testing (transthoracic/esophageal echocardiography) or cardiac stress testing in asymptomatic stable patients with known cardiac disease (e.g., coronary artery disease, valvular disease) undergoing low or moderate risk noncardiac surgery.

See Cardiovascular.

Don't order coronary artery calcium scoring for preoperative evaluation for any surgery, irrespective of patient risk.

See Cardiovascular.

Don't perform cardiac imaging as a preoperative assessment in patients scheduled to undergo low- or intermediate-risk noncardiac surgery.

See Cardiovascular.

Don't perform stress cardiovascular magnetic resonance (CMR) as a preoperative assessment in patients scheduled to undergo low-risk, noncardiac surgery.

See Cardiovascular.

Don't use interventions (including surgical bypass, angiogram, angioplasty or stent) as a first line of treatment for most patients with intermittent claudication.

See Cardiovascular.

Patients who have no cardiac history and good functional status do not require preoperative stress testing prior to noncardiac thoracic surgery.

See Cardiovascular.

Avoid other imaging tests apart from ultrasound for the initial evaluation of patients with suspected gallstone disease.

See Gastroenterologic.

Avoid routine cholecystectomy for patients with asymptomatic cholelithiasis.

See Gastroenterologic.

Don't order a Type & Crossmatch for patients undergoing procedures that have minimal anticipated blood loss, historically low fraction of transfusion use, and a low transfusion index (ratio of transfused units to patients).

See Hematologic.

Don't continue surgical prophylactic antibiotics after the patient has left the operating room.

See Infectious Disease.

Don't routinely use topical antibiotics on a surgical wound.

See Infectious Disease.

Avoid using opioids for the treatment of mild, acute pain. For moderate to severe acute pain, if opioids are used, they should be in conjunction with nonopioid methods with the lowest effective dose for the shortest required duration.

See Neurologic.

Don't perform preoperative medical tests for eye surgery unless there are specific medical indications.

See Ophthalmologic.

Avoid referring most children with umbilical hernias to a pediatric surgeon until around age four to five years.

See Pediatric.

Don't do CT for evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

See Pediatric.

Don't do CT for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

See Pediatric.

Don't perform routine preoperative hemostatic testing (PT, aPTT) in an otherwise healthy child with no prior personal or family history of bleeding.

See Pediatric.

Avoid ordering CT of the abdomen and pelvis in young otherwise healthy emergency department patients (age <50) with known histories of kidney stones, or ureterolithiasis, presenting with symptoms consistent with uncomplicated renal colic.

Rationale and Comments

Kidney stones can cause severe pain (called renal colic) and nausea, which can usually be relieved with medication. Most stones pass spontaneously in the urine in a few days, though kidney stones often do recur. CT scans may be needed to diagnose kidney stones, and rule out other problems that may mimic the pain of kidney stones. Many patients in the emergency department who are less than 50 years old and who have symptoms of recurrent kidney stones do not need a CT scan unless these symptoms persist or worsen, or if there is a fever or a history of severe obstruction with previous stones. CT scans of patients in the ED with symptoms of recurrent kidney stones usually do not change treatment decisions, and the cost and radiation exposure can often be avoided in these cases. Close follow-up by a primary care physician or specialist is necessary.

Sponsoring Organizations

American College of Emergency Physicians

Sources

Expert consensus

References

Ha M, MacDonald RD. Impact of CT scan in patients with first episode of suspected nephrolithiasis. J Emerg Med. 2004 Oct;27(3):225-31. Ripollés T, Agramunt M, Errando J, Martínez MJ, Coronel B, Morales M. Suspected ureteral colic: plain film and sonography versus unenhanced helical CT. A prospective study in 66 patients. Eur Radiol. 2004 Jan;14(1):129-36. Pfister SA, Deckart A, Laschke S, Dellas S, Otto U, Buitrago C, Roth J, Wiesner W, Bongartz G, Gasser TC. Unenhanced helical computed tomography vs intravenous urography in patients with acute flank pain: accuracy and economic impact in a randomized prospective trial. Eur Radiol. 2003 Nov;13(11):2513-20. Katz SI, Saluja S, Brink JA, Forman HP. Radiation dose associated with unenhanced CT for suspected renal colic: impact of repetitive studies. AJR Am J Roentgenol. 2006 Apr;186(4):1120-4.

Avoid ordering follow-up urine cultures after treatment for an uncomplicated urinary tract infection in patients that show evidence of clinical resolution of infection.

Rationale and Comments

Studies have shown that clinical resolution of infection is adequate for determining effectiveness of antibiotic therapy after treatment for a urinary tract infection.

Sponsoring Organizations

American Academy of Pediatrics – Section on Nephrology and the American Society of Pediatric Nephrology

Sources

American Academy of Pediatrics guidelines

References

American Academy of Pediatrics, Committee on Quality Improvement, Subcommittee on Urinary Tract Infection. Practice parameter: the diagnosis, treatment, and evaluation of the initial urinary tract infection in febrile infants and young children. Pediatrics. 1999;103:843-852. Bachir R. Nonresponders: prolonged fever among infants with urinary tract infections. Pediatrics. 2000;105:E59. Currie ML, Mitz L, Raasch CS, Greenbaum LA. Follow-up urine cultures and fever in children with urinary tract infection. Arch Pediatr Adolesc Med. 2003;157:1237-1240. Oreskovic NM, Sembrano EU. Repeat urine cultures in children who are admitted with urinary tract infections. Pediatrics. 2007;119(2):e325-329.

Avoid presumptive antibiotic treatment of recurrent UTIs in women without first obtaining a urinalysis (culture and sensitivity).

Rationale and Comments

Although women with uncomplicated, infrequent UTIs can be treated empirically based on symptoms, women with recurrent UTIs (≥ 3 UTIs in one year, or ≥ 2 in six months) should have a pretreatment urine specimen to document episodes and guide treatment. The use of vaginal, but not oral, estrogen in postmenopausal women is effective in reducing recurrent cystitis and should be used whenever possible. IDSA guidelines regarding cystitis should dictate treatment, accounting for antimicrobial resistance and potential ecological adverse effects.

Sponsoring Organizations

American Urogynecologic Society

Sources

American Urological Association guidelines|IDSA guideline|ACOG guidelines

References

Brubaker L, Carberry C, Nardos R, Carter-Brooks C, Lowder JL. American Urogynecologic Society best-practice statement: recurrent urinary tract infection in adult women. Female Pelvic Med Reconstr Surg. 2018;24(5):321-335. Anger J, Lee U, Ackerman AL, et al. Recurrent uncomplicated urinary tract infections in women: AUA/CUA/SUFU guideline. 2019;202(2):282-289. American College of Obstetricians and Gynecologists. ACOG practice bulletin no. 91: treatment of urinary tract infections in nonpregnant women. Obst Gynecol. 2008;111:785-794. Gupta K, Hooton TM, Naber K, et al. International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: a 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. Clin Infect Dis. 2011;52(5):e103-e120.

Avoid using a fluoroquinolone antibiotic for the first-line treatment of uncomplicated UTIs in women.

Rationale and Comments

For women with uncomplicated UTIs (defined as premenopausal, non-pregnant women with no known urologic abnormalities or comorbidities), fluoroquinolone antibiotics should not be considered first-line treatment. Although fluoroquinolones are efficacious in three-day regimens, they have a higher risk of ecological adverse events, such as increasing multidrug resistant organisms. Thus, fluoroquinolones should only be used for the treatment of acute UTIs for women who should not be prescribed nitrofurantoin, trimethoprim-sulfamethoxazole, or fosfomycin.

Sponsoring Organizations

American Urogynecologic Society

Sources

Infectious Diseases Society of America guidelines

References

Gupta K, Hooton TM, Naber KG, Wullt B, Colgan R, Miller LG, Moran GJ, Nicolle LE, Raz R, Schaeffer AJ, Soper DE; Infectious Diseases Society of America; European Society for Microbiology and Infectious Diseases. International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. Clin Infect Dis. 2011 Mar 1;52(5):e103-20. Hooton TM. Clinical practice. Uncomplicated urinary tract infection. N Engl J Med. 2012 Mar 15;366(11):1028-37.

Avoid using anticholinergic medication to treat overactive bladder in women older than 70 years.

Rationale and Comments

Anticholinergic medications block acetylcholine at muscarinic receptors, which are present throughout the body. These medications have many side effects, including impaired cognition, drowsiness, and constipation. Several cohort studies have raised concern regarding an association between higher exposure to anticholinergics and increased risk of dementia. Given this, beta-3 agonists or third-line therapies should be preferentially utilized when possible. When anticholinergics cannot be avoided, the lowest effective dose of anticholinergic should be used, and consideration should be given to decreasing the dose of other concurrent anticholinergic medications.

Sponsoring Organizations

American Urogynecologic Society

Sources

Expert consensus

References

AUGS consensus statement: Association of Anticholinergic Medication Use and Cognition in Women with Overactive Bladder. Female Pelvic Med Reconstr Surg. 2017;23(3):177-178. Gray SL, Anderson ML, Dublin S, et al. Cumulative use of strong anticholinergics and incident dementia: a prospective cohort study. JAMA Intern Med. 2015;175(3):401-407. Risacher SL, McDonald BC, Tallman EF, et al. Association between anticholinergic medication use and cognition, brain metabolism, and brain atrophy in cognitively normal older adults. JAMA Neurol. 2016;73(6):721-732. Richardson K, Fox C, Maidment I. Anticholinergic drugs and risk of dementia: case-control study. BMJ. 2018 Apr 25;361:k1315. Coupland CAC, Hill T, Dening T, Morriss R, Moore M, Hippisley-Cox J. Anticholinergic drug exposure and the risk of dementia: a nested case-control study. JAMA Intern Med. 2019;179(8):1084-1093. Welk B, McArthur E. Increased risk of dementia among patients with overactive bladder treated with an anticholinergic medication compared to a beta-3 agonist: a population-based cohort study. BJU Int. 2020;126(1):183-190. Wang YC, Chen YL, Huang CC. Cumulative use of therapeutic bladder anticholinergics and the risk of dementia in patients with lower urinary tract symptoms: a nationwide 12-year cohort study. BMC Geriatr. 2019;19(1):380. Andre L, Gallini A, Montastruc F. Association between anticholinergic drug exposure and cognitive function in longitudinal studies among individuals over 50 years old: a systematic review. Eur J Clin Pharmacol. 2019;75(12):1631-1644.

434

Don't diagnose microhematuria solely on the results of a urine dipstick (macroscopic urinalysis).

Rationale and Comments

Microhematuria is defined only on urine microscopy: three or more red blood cells per high-powered field on microscopy of a properly collected urinary specimen. Urine dipsticks positive for hemoglobin should be confirmed with urine microscopy, as false positive dipsticks are common. Performing radiographic and cystoscopic evaluation is unnecessary in the absence of microscopically confirmed microhematuria.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

Diagnosis, evaluation and follow-up of Asymptomatic Microhematuria (AMH) in adults: American Urological Association Guideline, 2012 [Internet]. Linthicum (MD): American Urological Association; 2012 [cited 2014 Nov 4]. Available from: www.auanet.org/education/guidelines/asymptomatic-microhematuria.cfm.

275

Don't initiate a workup for hematuria or proteinuria before repeating an abnormal urine dipstick analysis.

Rationale and Comments

Abnormal dipstick urinalysis needs to be repeated due to the high incidence of false positive tests. Abnormal urine testing results are often due to difficulties in obtaining a non-contaminated urine specimen or transient abnormalities seen with acute illnesses. Repeating a urinalysis prior to initiation of a full evaluation can decrease the need for additional testing, as described below: • Repeat a clean catch urinalysis with microscopy x 3 for patients noted to have microscopic hematuria to look for evidence of chronic hematuria. • Repeat urinalysis as a first a.m. void along with a urine protein/creatinine ratio in patients noted to have proteinuria on a random urinalysis.

Sponsoring Organizations

American Academy of Pediatrics – Section on Nephrology and the American Society of Pediatric Nephrology

Sources

Expert consensus

References

Meyers KEC. Evaluation of hematuria in children. Urol Clin North Amer. 2004;31:559-573. Lieu TA, Grasmeder HM 3rd, Kaplan BS. An approach to the evaluation and treatment of microscopic hematuria. Pediatr Clin North Amer. 1991;38:579-592. Dodge WF, West EF, Smith EH, Bruce Harvey 3rd. Proteinuria and hematuria in schoolchildren: epidemiology and early natural history. J Pediatr. 1976;88:327-347.

360

Don't obtain a urine culture unless there are clear signs and symptoms that localize to the urinary tract.

Rationale and Comments

Chronic asymptomatic bacteriuria is frequent in the long-term care setting, with prevalence as high as 50%. A positive urine culture in the absence of localized urinary tract infection (UTI) symptoms (i.e., dysuria, frequency, urgency) is of limited value in identifying whether a patient's symptoms are caused by a UTI. Colonization (a positive bacterial culture without signs or symptoms of a localized UTI) is a common problem in long-term care facilities that contributes to the overuse of antibiotic therapy in this setting, leading to an increased risk of diarrhea, resistant organisms and infection due to Clostridium difficile. An additional concern is that the finding of asymptomatic bacteriuria may lead to an erroneous assumption that a UTI is the cause of an acute change of status, hence failing to detect or delaying the more timely detection of the patient's more serious underlying problem. A patient with advanced dementia may be unable to report urinary symptoms. In this situation, it is reasonable to obtain a urine culture if there are signs of systemic infection such as fever (increase in temperature of equal to or greater than 2°F [1.1°C] from baseline) leukocytosis, or a left shift or chills in the absence of additional symptoms (e.g., new cough) to suggest an alternative source of infection.

Sponsoring Organizations

American Medical Directors Association

Sources

Infectious Diseases Society of America guidelines

References

Stone ND, Ashraf MS, Calder J, Crnich CJ, Crossley K, Drinka PJ, Gould CV, Juthani-Mehta M, Lautenbach E, Loeb M, MacCannell T, Malani TN, Mody L, Mylotte JM, Nicolle LE, Roghmann MC, Schweon SJ, Simor AE, Smith PW, Stevenson KB, Bradley SF. Surveillance definitions of infections in long-term care facilities: revisiting the McGeer Criteria. Infec Control Hosp Epidemiol. 2012;33(10):965-77. Drinka P. Treatment of bacteriuria without urinary signs, symptoms, or systemic infectious illness (S/S/S). J Am Med Dir Assoc. 2009 Oct;10(8):516-9. Arinzon Z, Peisakh A, Shuval I, Shabat S, Berner YN. Detection of urinary tract infection (UTI) in long-term care setting: is the multireagent strip an adequate diagnostic tool? Arch Gerontol Geriatr. 2009 Mar-Apr;48(2):227-31. High KP, Bradley SF, Gravenstein S, Mehr DR, Quagliarello VJ Richards C, Yoshikawa TT. Clinical practice guideline for the evaluation of fever and infection in older adult residents of long-term care facilities: 2008 update by the Infectious Diseases Society of America. J Am Geriatr Soc. 2009 Mar;57(3):375-94. Zabarsky TF, Sethi AK, Donskey CJ. Sustained reduction in inappropriate treatment of asymptomatic bacteriuria in a long-term care facility through an educational intervention. Am J Infect Control. 2008 Sep;36(7):476-80. Richards CL Jr. Infection control in long-term care facilities. J Am Med Dir Assoc. 2007 Mar;8(3 Suppl):S18-25. Ducharme J, Neilson S, Ginn JL. Can urine cultures and reagent test strips be used to diagnose urinary tract infection in elderly emergency department patients without focal urinary symptoms? CJEM. 2007 Mar;9(2):87-92. Loeb M, Brazil K, Lohfeld L, McGeer A, Simor A, Stevenson K, Zoutman D, Smith S, Liu X, Walter SD. Effect of a multifaceted intervention on number of antimicrobial prescriptions for suspected urinary tract infections in residents of nursing homes: cluster randomized controlled trial. BMJ. 2005 Sep 24;331(7518):669. Loeb M, Brazil K, Lohfeld L, McGeer A, Simor A, Stevenson K, Walter S, Zoutman D. Optimizing antibiotics in residents of nursing homes: protocol of a randomized trial. BMC Health Serv Res. 2002 Sep 3;2(1):17. Nicolle LE. Urinary tract infection in geriatric and institutionalized patients. Curr Opin Urol. 2002 Jan;12(1):51-5. Boscia JA, Kobasa WD, Abrutyn E, Levison ME, Kaplan AM, Kaye D. Lack of association between bacteriuria and symptoms in the elderly. Am J Med. 1986 Dec;81(6):979-82. Nicolle LE, Bentley D, Garibaldi R, Neuhaus E, Smith P. SHEA Long-Term Care Committee. Antimicrobial use in long-term-care facilities. Infect Control Hosp Epidemiol. 1996;17:119-28. High KP, Bradley SF, Gravenstein S, Mehr DR, Quagliarello VJ, Richards C, Yoshikawa TT. Clinical practice guideline for the evaluation of fever and infection in older adult residents of long-term care facilities: 2008 update by the Infectious Diseases Society of America. Clin Infect Dis 2009;48:149-71.

96

Don't obtain computed tomography scan of the pelvis for asymptomatic men with low-risk clinically localized prostate cancer.

Rationale and Comments

Computed tomography scan of the pelvis is very unlikely to provide actionable information in men with low-risk prostate cancer (one commonly accepted definition of low-risk prostate cancer is Gleason score less than 7, PSA less than 20.0 ng/mL, and tumor stage of T2 or less). Magnetic resonance imaging of the pelvis may be useful in some men considering active surveillance.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

American Urological Association Prostate-Specific Antigen best practice statement, 2013 Revision [Internet]. Linthicum (MD): American Urological Association; 2013 [cited 2014 Nov 4]. Available from: www.auanet.org/education/guidelines/prostate-specific-antigen.cfm.

273

Don't obtain urine cytology or urine markers as a part of the routine evaluation of the asymptomatic patient with microhematuria.

Rationale and Comments

Insufficient evidence exists for the use of urine cytology and urine markers in the routine evaluation of the asymptomatic patient with microhematuria, including bladder tumor antigen assays, nuclear matrix protein assays, and fluorescent in situ hybridization assays to detect chromosomal alterations. The psychological stress and unnecessary diagnostic procedures that could result from a false positive test outweigh the potential benefits to these patients.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

Diagnosis, Evaluation and Follow-Up of Asymptomatic Microhematuria (AMH) in Adults: American Urological Association Guideline, 2012. Available from: http://www.auanet.org/guidelines/asymptomatic-microhematuria-(2012-reviewed-and-validity-confirmed-2016).

345

Don't order creatinine or upper-tract imaging for patients with benign prostatic hyperplasia.

Rationale and Comments

When an initial evaluation shows only the presence of lower urinary tract symptoms, if the symptoms are not significantly bothersome to the patient or if the patient doesn't desire treatment, no further evaluation is recommended. Such patients are unlikely to experience significant health problems in the future due to their condition and can be seen again if necessary. While the patient can often tell the provider if the symptoms are bothersome enough that he desires additional therapy, another possible option is to use a validated questionnaire to assess symptoms. For example, if the patient completes the International Prostate Symptom Scale and has a symptom score of 8 or greater, this is considered to be "clinically" bothersome.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

American Urological Association. Management of the benign prostatic hyperplasia clinical practice guideline. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines.cfm?sub=bph.

90

Don't order urine cultures unless patients have symptoms consistent with UTI.

Rationale and Comments

Urine cultures should only be requested from patients who have clinical signs of UTI. Routine culture of urine in asymptomatic individuals may detect asymptomatic bacteriuria, which is commonly found in certain populations. Screening for asymptomatic bacteriuria has no clinical benefit and may result in harm. Testing for asymptomatic bacteriuria should only be pursued in specific populations such as pregnant women and individuals who are about to undergo urologic procedures that involve mucosal disruption.

Sponsoring Organizations

American Society for Microbiology

Sources

IDSA guideline

References

Weiskopf J, Scott S. Asymptomatic bacteriuria, what are you treating? JAMA Intern Med. 2015;175(3):344-345. Nicolle LE, Gupta K, Bradley SF, et al. Clinical practice guideline for the management of asymptomatic bacteriuria: 2019 update by the Infectious Diseases Society of America. Clin Infect Dis. 2019;68(10):e83-e110.

442

Don't perform cystoscopy, urodynamics or diagnostic renal and bladder ultrasound in the initial work-up of an uncomplicated overactive bladder patient.

Rationale and Comments

The initial evaluation of an uncomplicated patient presenting with symptoms should include history, physical examination and urinalysis. In some cases, urine culture, post-void residual urine assessment and bladder diaries may be helpful. More invasive testing should be reserved for complex patients, patients who have failed initial therapies (i.e., behavioral therapies and medications), or patients who have abnormal findings on their initial evaluation.

Sponsoring Organizations

American Urogynecologic Society

Sources

American Urological Association guidelines

References

Gormley EA, Lightner DJ, Burgio KL, Chai TC, Clemens JQ, Culkin DJ, Das AK, Foster HE Jr, Scarpero HM, Tessier CD, Vasavada SP; American Urological Association; Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction. Diagnosis and treatment of overactive bladder (non neurognic) in adults: AUA/SUFU guideline. J Urol. 2012 Dec 1;188(6 Suppl):2455-63.

270

Don't perform diagnostic imaging to establish the diagnosis of cryptorchidism.

Rationale and Comments

Referring providers should not perform or order ultrasound or other imaging modalities in the evaluation of boys with cryptorchidism prior to referral, as these studies rarely assist in decision-making. This is a standard in the American Urological Association Guideline statements with Grade B strength of evidence, based on strong observational studies. More than 70% of cryptorchid testes are palpable on examination by an experienced provider. Ultrasound has a sensitivity of 45% and specificity of 78% for localization of a nonpalpable undescended testis. CT imaging is usually avoided due to the risks of ionizing radiation. MRI has greater sensitivity and specificity compared with ultrasound, but is deferred by higher costs and the possible need for anesthesia. As there is no test that is sufficiently accurate, safe, and accessible to confirm testicular absence, a surgical exploration such as diagnostic laparoscopy or open exploration is the first-line choice for both diagnostic and therapeutic purposes for nonpalpable testes.

Sponsoring Organizations

American Academy of Pediatrics - Section on Urology

Sources

Systematic review and meta-analysis

References

Kolon TF, Herndon CD, Baker LA, et al. Evaluation and treatment of cryptorchidism: AUA guideline. J Urol. 2014;192(2):337-345. Tasian GE, Copp HL. Diagnostic performance of ultrasound in nonpalpable cryptorchidism: a systematic review and meta-analysis. Pediatrics. 2011;127(1):119-128. Kanaroglou N, To T, Zhu J, et al. Inappropriate use of ultrasound in management of pediatric cryptorchidism. Pediatrics. 2015;136(3):479-486.

498

Don't perform prostate-specific antigen (PSA) testing for prostate cancer screening in men with no symptoms of the disease when they are expected to live less than 10 years.

Rationale and Comments

Since PSA levels in the blood have been linked with prostate cancer, many doctors have used repeated PSA tests in the hope of finding "early" prostate cancer in men with no symptoms of the disease. Unfortunately, PSA is not as useful for screening as many have hoped because many men with prostate cancer do not have high PSA levels, and other conditions that are not cancer (such as benign prostate hyperplasia) can also increase PSA levels. Research has shown that men who receive PSA testing are less likely to die specifically from prostate cancer. However when accounting for deaths from all causes, no lives are saved, meaning that men who receive PSA screening have not been shown to live longer than men who do not have PSA screening. Men with medical conditions that limit their life expectancy to less than 10 years are unlikely to benefit from PSA screening as their probability of dying from the underlying medical problem is greater than the chance of dying from asymptomatic prostate cancer.

Sponsoring Organizations

American Society of Clinical Oncology

Sources

American College of Physicians|U.S. Preventive Services Task Force|American Urological Association guidelines

References

Raghavan D. PSA – Please Stop Agonizing (over prostate-specific antigen interpretation). Mayo Clin Proc. 2013 Jan;88:1-3. Schroder FH, Hugosson J, Roobol MJ, Tammela TL, Ciatto S, Nelen V, Kwiatkowski M, Lujan M, Lilja H, Zappa M, Denis LJ, Recker F, Páez A, Määttänen L, Bangma CH, Aus G, Carlsson S, Villers A, Rebillard X, van der Kwast T, Kujala PM, Blijenberg BG, Stenman UH, Huber A, Taari K, Hakama M, Moss SM, de Koning HJ, Auvinen A; ERSPC Investigators. Prostate-cancer mortality at 11 years of follow-up. N Engl J Med. 2012 Mar 15;366(11):981-90. Hugosson J, Carlsson S, Aus G, Bergdahl S, Khatami A, Lodding P, Pihl C-G, Stranne J, Holmberg E, Lilja H. Mortality results from the Goteborg randomized population based prostate-cancer screening trial. Lancet Oncol. 2010 Aug;11(8):725-32. Andriole GL, Crawford ED, Grubb RL III, Buys SS, Chia D, Church TR, Fouad MN, Gelmann EP, Kvale PA, Reding DJ, Weissfeld JL, Yokochi LA, O'Brien B, Clapp JD, Rathmell JM, Riley TL, Hayes RB, Kramer BS, Izmirlian G, Miller AB, Pinsky PF, Prorok PC, Gohagan JK, Berg CD; PLCO Project Team. Mortality results form a randomized prostate-cancer screening trial. N Engl J Med. 2009 Mar 26;360(1):1310-9. Moyer VA; U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2012 Jul 17;157(2):1-15. Qaseem A, Barry MJ, Denberg TD, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for prostate cancer: A guidance statement from the Clinical Guidelines Committee of the American College of Physicians. Ann Intern Med. 2013 May 21;158(10):761-9. Carter HB, Albertson PC, Barry MJ, Etzioni R, Freedland SJ, Greene KL, Holmberg L, Kantoff P, Konety BR, Murad MH, Penson DF, Zietman AL. Early detection of prostate cancer: AUA Guideline. J Urol. 2013 Aug;190(2):419-26. Basch E, Oliver TK, Vickers A, Thompson I, Kantoff P, Parnes H, Loblaw DA, Roth B, Williams J, Nam RK. Screening for prostate cancer with prostate-specific antigen testing: American Society of Clinical Oncology provisional clinical opinion. J Clin Oncol. 2012 Aug 20;30(24):3020-5.

147

Don't perform urine cytology for routine hematuria investigation.

Rationale and Comments

Urine cytology has little value in the diagnosis of common causes of hematuria. Routine urine cytology is costly and of limited clinical value as a first-line investigation for all patients with hematuria. Because this test has low sensitivity for diagnosing low-grade superficial urothelial malignancy, a negative test does not rule out malignancy. Although urine cytology has reasonable specificity when positive, it is impossible to localize a tumor based on urine cytology alone. A positive test would require further invasive investigation including upper urinary tract imaging and flexible cystoscopy.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Expert consensus

References

Mishriki SF, Aboumarzouk O, Vint R, et al. Routine urine cytology has no role in hematuria investigations. J Urol. 2013;189(4):1255-1258. Viswanath S, Zelhof B, Ho E, et al. Is routine urine cytology useful in the haematuria clinic? Ann R Coll Surg Engl. 2008;90(2):153-155.

449

Don't perform voiding cystourethrogram routinely in first febrile urinary tract infection (UTI) in children aged two to 24 months.

Rationale and Comments

The risks associated with radiation (plus the discomfort and expense of the procedure) outweigh the risk of delaying the detection of the few children with correctable genitourinary abnormalities until their second UTI.

Sponsoring Organizations

American Academy of Family Physicians

Sources

National Institute for Health and Clinical Excellence guidelines|American Academy of Pediatrics guidelines|American College of Radiology guidelines

References

Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, Roberts KB. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. Pediatrics. 2011 Sep;128(3):595-610. American College of Radiology , Society for Pediatric Radiology, Society of Nuclear Medicine. ACR-SPR-SNM practice guideline for the performance of adult and pediatric radionuclide cystography [Internet]. Reston (VA): American College of Radiology; 2010. 5 p. National Institute for Health and Clinical Excellence, National Collaborating Centre for Women's and Children's Health (UK). Urinary tract infection in children: diagnosis, treatment and long-term management. London: RCOG Press; August 2007. 429 p. Westwood ME, Whiting PF, Cooper J, Watt IS, Kleijnen J. Further investigation of confirmed urinary tract infection (UTI) in children under five years: a systematic review. BMC Pediatrics. 2005 Mar 15;5:2.

117

Don't place an indwelling urinary catheter to manage urinary incontinence.

Rationale and Comments

The most common source of bacteremia in the post-acute and long-term care setting is the bladder when an indwelling urinary catheter is in use. The federal Healthcare Infection Control Practices Advisory Committee recommends minimizing urinary catheter use and duration of use in all patients. Specifically, the Healthcare Infection Control Practices Advisory Committee recommends not using a catheter to manage urinary incontinence in the post-acute and long-term care setting. Appropriate indications for indwelling urinary catheter placement include acute retention or outlet obstruction, to assist in healing of deep sacral or perineal wounds in patients with urinary incontinence, and to provide comfort at the end of life if needed.

Sponsoring Organizations

Society for Post-Acute and Long-Term Care Medicine

Sources

Infectious Diseases Society of America guidelines

References

CMS Manual System Pub. 100-07 State Operations Provider Certification. Transmittal 8. Revision of Appendix PP–Section 483.25(d)–Urinary Incontinence, Tags F315 and F316. Centers for Medicare and Medicaid Services, U.S. Department of Health and Human Services; 2005 Jun 28 [cited 2014 Dec 31]. Available from: https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/downloads/r8som.pdf. Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA; Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. Infect Control Hosp Epidemiol. 2010 Apr;31(4):319-26. Hooton TM, Bradley SF, Cardenas DD, Colgan R, Geerlings SE, Rice JC, Saint S, Schaeffer AJ, Tambayh PA, Tenke P, Nicolle LE; Infectious Diseases Society of America. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. Clin Infect Dis. 2010 Mar;50(5):625-63.

263

Don't place or maintain a urinary catheter in a patient unless there is a specific indication to do so.

Rationale and Comments

Catheter-associated urinary tract infections are among the most common health care–associated infections in the United States. Most catheter-associated urinary tract infections are related to urinary catheters, so the infections can largely be prevented by reduced use of indwelling urinary catheters and catheter removal as soon as possible. Catheter-associated urinary tract infections are responsible for an increase in U.S. health care costs and can lead to more serious complications in hospitalized patients.

Sponsoring Organizations

American Academy of Nursing

Sources

Centers for Disease Control and Prevention

References

Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA; Healthcare Infection Control Practices Advisory Committee (HICPCA). Guideline for prevention of Catheter-Associated Urinary Tract Infections 2009. Centers for Disease Control. Atlanta (GA); 2009. 67 p. Andreessen L, Wilde MH, Herendeen P. Preventing catheter-associated urinary tract infections in acute care: the bundle approach. J Nurs Care Qual. 2012 Jul-Sep;27(3):209-17. Saint S, Greene MT, Kowalski CP, Watson SR, Hofer TP, Krein SL. Preventing catheter-associated urinary tract infection in the United States: a national comparative study. JAMA Intern Med. 2013 May 27;173(10):874-9. Tenke P, Köves B, Johansen TE. An update on prevention and treatment of catheter-associated urinary tract infections. Curr Opin Infect Dis. 2014 Feb;27(1):102-7.

221

Don't place, or leave in place, urinary catheters for incontinence or convenience or monitoring of output for non–critically ill patients (acceptable indications: critical illness, obstruction, hospice, perioperatively for < 2 days for urologic procedures; use weights instead to monitor diuresis

Rationale and Comments

Catheter-associated urinary tract infections are the most common (frequently occurring) health care–acquired infection. Use of urinary catheters for incontinence or convenience without proper indication or specified optimal duration of use increases the likelihood of infection and is commonly associated with greater morbidity, mortality and health care costs. Published guidelines suggest that hospitals and long-term care facilities should develop, maintain, and promulgate policies and procedures for recommended catheter insertion indications, insertion and maintenance techniques, discontinuation strategies, and replacement indications.

Sponsoring Organizations

Society of Hospital Medicine (Adult)

Sources

IDSA guideline, Joint Commission

References

Hooton TM, et al. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults. Clin Infect Dis. 2010;50(5):625-63. Saint S, et al. Catheter-associated urinary tract infection and the Medicare rule changes. Ann Intern Med. 2009;150(12):877-84. Centers for Medicare & Medicaid Services,Joint Commission.Standards for hospital care, surgical Care Improvement Project (SCIP), SCIP-Inf-9; Performance measure name: urinary catheter removed on postoperative day 1 (POD 1) or postoperative day 2 (POD 2) with day of surgery being day zero. 2013. 2013 Joint Commission National Hospital Inpatient Quality Measures Specification Manual, version 4.11.

92

Don't prescribe antimicrobials to patients using indwelling or intermittent catheterization of the bladder unless there are signs and symptoms of urinary tract infection.

Rationale and Comments

Antibiotics in the absence of signs and symptoms (which may include fever; altered mental status or malaise with no other cause; flank or pelvic pain; flank or suprapubic tenderness; hematuria; dysuria, urinary urgency or frequency; and, in spinal cord injury patients, increased spasticity, autonomic dysreflexia, or sense of unease) is not efficacious and risks inducing resistance to antimicrobials. This applies to both indwelling and intermittent catheterization of the bladder. The major exception is patients needing periprocedural antimicrobials. Additionally, initial placement of a suprapubic tube requires a skin puncture or incision and therefore antibiotics should be considered.

Sponsoring Organizations

American Urological Association

Sources

Infectious Diseases Society of America guidelines

References

Diagnosis, prevention, and treatment of Catheter-Associated Urinary Tract Infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. [Internet]. Arlington (VA): Infectious Diseases Society of America; 2010 [cited 2014 Nov 4]. Available from: www.auanet.org/common/pdf/education/clinical-guidance/UTI-in-Adults.pdf.

272

Don't prescribe testosterone therapy unless there is laboratory evidence of testosterone deficiency.

Rationale and Comments

With the increased incidence of obesity and diabetes, there may be increasing numbers of older men with lower testosterone levels that do not fully meet diagnostic or symptomatic criteria for hypogonadism. Current clinical guidelines recommend making a diagnosis of androgen deficiency only in men with consistent symptoms and signs coupled with unequivocally low serum testosterone levels. Serum testosterone should only be ordered in patients exhibiting signs and symptoms of androgen deficiency.

Sponsoring Organizations

American Society for Clinical Pathology

Sources

Endocrine Society guidelines

References

Layton JB, Li D, Meier CR, Sharpless JL, Stürmer T, Jick SS, Brookhart MA. Testosterone lab testing and initiation in the United Kingdom and the United States, 2000 to 2011. J Clin Endocrinol Metab. 2014;99(3):835-42. Bhasin D, Cunningham GF, Hayes FJ, Matsumoto AM, Snyder PJ, Swerdloff RS, Montori VM; Task Force, Endocrine Society. Testosterone therapy in adult men with androgen deficiency syndromes: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2010;95(6):2536-59. Liverman CT, Blaze DG, eds. Testosterone and aging: clinical research directions. Washington, DC: The National Academies Press; 2004.

245

Don't prescribe testosterone to men with erectile dysfunction who have normal testosterone levels.

Rationale and Comments

While testosterone treatment is shown to increase sexual interest, there appears to be no significant influence on erectile function. The information available in studies to date is insufficient to fully evaluate testosterone's efficacy in the treatment of men with erectile dysfunction who have normal testosterone levels.

Sponsoring Organizations

American Urological Association

Sources

American Urological Association guidelines

References

American Urological Association. Management of erectile dysfunction clinical practice guideline. http://www.auanet.org/content/clinical-practice-guidelines/clinical-guidelines.cfm?sub=ed.

89

Don't routinely perform cystoscopy or imaging in asymptomatic, never-smoking women younger than 50 years with microscopic hematuria who have less than 25 RBC per high power field.

Rationale and Comments

Asymptomatic hematuria in women is common but less likely to be associated with a urinary tract malignancy compared with men. Data support changing the evaluation requirements for microscopic hematuria in this low-risk group of women. Organizations that do not risk-stratify based on gender may continue to recommend more aggressive diagnostic evaluation in low-risk women.

Sponsoring Organizations

American Urogynecologic Society

Sources

Systematic review

References

Committee on Gynecologic Practice, American Urogynecologic Society. Committee opinion no. 703: asymptomatic microscopic hematuria in women. Obstet Gynecol. 2017;129(6):1153-1154. Jeppson PC, Jakus-Waldman S, Yazdany T, et al. American Urogynecologic Society Systematic Review: Microscopic Hematuria as a Screening Tool for Urologic Malignancies in Women [published online ahead of print, 2019 Apr 12]. Female Pelvic Med Reconstr Surg. 2019;10.1097/SPV.0000000000000726. Davis R, Jones JS, Barocas DA, et al. Diagnosis, evaluation and follow-up of asymptomatic microhematuria (AMH) in adults: AUA guideline. J Urol. 2012;188(6 Suppl):2473-2481. (reviewed and reaffirmed in 2016) Lippmann QK, Slezak JM, Menefee SA, Ng CK, Whitcomb EL, Loo RK. Evaluation of microscopic hematuria and risk of urologic cancer in female patients. Am J Obstet Gynecol. 2017;216:146.e1-146.e7. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2017. CA Cancer J Clin. 2017;67:7-30.

437

Don't routinely perform PSA-based screening for prostate cancer.

Rationale and Comments

More than 1,000 symptom-free men need to be screened for prostate cancer to save one additional life. As a result, increased harms and medical costs due to widespread screening of asymptomatic men are believed to outweigh the benefits of routine screening. There is a high likelihood of having a false-positive result, leading to worry, decreased quality of life, and unnecessary biopsies when many of these elevated PSAs are caused by enlarged prostates and infection instead of cancer. This recommendation pertains to the routine screening of most men. In rare circumstances, such as a strong family history of prostate and related cancers, screening may be appropriate.

Sponsoring Organizations

American College of Preventive Medicine

Sources

USPSTF/ACPM/ACP guidelines

References

Lim LS, Sherin K; ACPM Prevention Practice Committee. Screening for prostate cancer in U.S. men ACPM position statement on preventive practice. Am J Prev Med. 2008;34(2):164-70. Moyer; U.S Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2012;157(2):120-34. Qaseem A, Barry MJ, Denberg TD, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for prostate cancer: a guidance statement from the Clinical Guidelines Committee of the American College of Physicians. Ann Intern Med. 2013;158(10):761-9.

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Don't routinely screen for prostate cancer using a prostate-specific antigen (PSA) test or digital rectal exam.

Rationale and Comments

There is convincing evidence that PSA-based screening leads to substantial overdiagnosis of prostate tumors. Many tumors will not harm patients, while the risks of treatment are significant. Physicians should not offer or order PSA screening unless they are prepared to engage in shared decision making that enables an informed choice by patients.

Sponsoring Organizations

American Academy of Family Physicians

Sources

U.S. Preventive Services Task Force

References

American Academy of Family Physicians. Prostate cancer [Internet]. Leawood (KS): American Academy of Family Physicians; 2012 [cited 2013 Jul 23]. Available from: http://www.aafp.org/patient-care/clinical-recommendations/all/prostate-cancer.html. U.S. Preventive Services Task Force. Screening for prostate cancer. Rockville (MD): U.S. Preventive Services Task Force. 2012 May. 16 p.

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Don't screen for UTI in asymptomatic patients who perform clean intermittent catheterization.

Rationale and Comments

Guidance has been published by the American Urological Association, European Association of Urology, and the Infectious Diseases Society of America that discourage both the screening for and treatment of asymptomatic bacteriuria in nonpregnant patients, including children. Children who perform clean intermittent catheterization may have urinary tract colonization of bacteria sometimes considered to be pathogenic. Typical symptoms of UTI include fever, chills, and/or pain (dysuria, abdominal, flank, suprapubic). Changes in urinary consistency, such as cloudy urine, odor, or sediment, are commonly described, but can be normal in isolation based on hydration and emptying. Atypical symptoms of UTI can include malaise, lethargy, and anorexia. In children with neurological abnormalities, such as those with neurogenic bladder, UTIs may present with atypical symptoms; however, these symptoms should also prompt providers to assess for constipation and other systemic pathologies. Low-grade fever and pyuria in the absence of any other UTI symptoms does not necessarily indicate urinary infection, so clinicians must carefully exclude other sources of fever. A multitude of studies have concluded that the treatment of asymptomatic bacteriuria contributes to the widespread problem of resistant bacterial strains.

Sponsoring Organizations

American Academy of Pediatrics - Section on Urology

Sources

IDSA/AUA guidelines

References

Averch T, Stoffel J, Goldman HB, et al. Catheter-associated urinary tract infections: definitions and significance in the urologic patient. 2014 white paper guidelines. American Urological Association. Accessed November 20, 2019. https://www.auanet.org/guidelines/catheter-associated-urinary-tract-infections Nicolle LE, Gupta K, Bradley SF, et al. Clinical practice guideline for the management of asymptomatic bacteriuria: 2019 update by the Infectious Diseases Society of America. Clin Infect Dis. 2019;68(10):1611-1615. Grabe M, Bartoletti R, Bjerklund Johansen TE, et al. European Association of Urology: guidelines on urological infections. March 2015. Gerber D, Forster CS, Hsieh M. The role of the genitourinary microbiome in pediatric urology: a review. Curr Urol Rep. 2018;19(1):13.

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Don't treat an elevated prostate-specific antigen (PSA) with antibiotics for patients not experiencing other symptoms.

Rationale and Comments

It had previously been suggested that a course of antibiotics might lead to a decrease in an initially raised PSA and reduce the need for prostate biopsy; however, there is a lack of clinical studies to show that antibiotics actually decrease PSA levels. It should also be noted that a decrease in PSA does not indicate an absence of prostate cancer. There is no information available on the implications of deferring a biopsy following a decrease in PSA.

Sponsoring Organizations

American Urological Association

Sources

Randomized controlled trials

References

Heldwein FL, et al. Antibiotics and observation have a similar impact on asymptomatic patients with a raised PSA. BJU Int. 2011;107(10):1576-81. Stopliglia RM, et al. Prostate specific antigen and prostate cancer diagnosis: antibiotic versus placebo prospective randomized clinical trial. J Urol.2010;183(3):940-4.

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Don't treat uncomplicated cystitis in women with fluoroquinolones if other oral antibiotic treatment options exist.

Rationale and Comments

Due to serious potential side effects associated with the use of fluoroquinolone antibiotics, these drugs should not be prescribed as first-line therapy for uncomplicated cystitis in women. Their use should be reserved for situations where recommended first-line antibiotic therapies, such as nitrofurantoin or sulfa-trimethoprim, are contraindicated.

Sponsoring Organizations

American Urological Association

Sources

Expert consensus

References

FDA Drug Safety Communication: FDA advises restricting fluoroquinolone antibiotic use for certain uncomplicated infections; warns about disabling side effects that can occur together, July 26 2016; www.fda.gov/Drugs/DrugSafety/ucm500143.htm. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. Clin Infect Dis (2011) 52 (5): e103-e120. DOI: doi.org/10.1093/cid/ciq257; www.idsociety.org/uploadedFiles/IDSA/Guidelines-Patient_Care/PDF_Library/Uncomp%20UTI.pdf.

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Offer PSA screening for detecting prostate cancer only after engaging in shared decision making.

Rationale and Comments

Shared decision making (between health care provider and patient and, in some cases, family members) is an excellent strategy for making health care decisions when there is more than one medically reasonable option. Since both screening and not screening may be reasonable options, depending on the particular situation, shared decision making is recommended.

Sponsoring Organizations

American Urological Association

Sources

Expert consensus

References

Early detection of prostate cancer: American Urological Association guideline, 2013 [Internet]. Linthicum (MD): American Urological Association; 2013 [cited 2014 Nov 4]. Available from: www.auanet.org/education/guidelines/prostate-cancer-detection.cfm.

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Avoid placing indwelling urinary catheters in the emergency department for either urine output monitoring in stable patients who can void, or for patient or staff convenience.

See Emergency Medicine.

Don't prescribe testosterone or testosterone products to men contemplating/ attempting to initiate pregnancy.

See Endocrinologic.

Don't prescribe testosterone therapy unless there is biochemical evidence of testosterone deficiency.

See Endocrinologic.

Don't treat asymptomatic bacteruria with antibiotics.

See Infectious Disease.

Don't perform newborn clamp circumcision in boys with anatomic penile anomalies including hypospadias, chordee, penile torsion, or penoscrotal webbing, without first consulting with a urologist.

See Neonatology.

Don't initiate management of low-risk prostate cancer without discussing active surveillance.

See Oncologic.

Don't treat low-risk clinically localized prostate cancer (e.g., Gleason score is less than 7, PSA less than 10.0 ng/mL, and tumor stage T2 or less) without discussing active surveillance as part of the shared decision-making process.

See Oncologic.

Don't perform a bagged urine specimen for urine culture to confirm UTI in a child who has not been potty trained.

See Pediatric.

Don't perform ultrasound on boys with cryptorchidism.

See Pediatric.

Don't routinely use CT to screen pediatric patients with suspected nephrolithiasis.

See Pediatric.

Don't treat urinary incontinence in a child with pharmacotherapy (e.g., anticholinergics) before evaluating and treating constipation.

See Pediatric.

Don't screen for testicular cancer in asymptomatic adolescent and adult males.

See Preventive Medicine.

Don't routinely recommend follow-up mammograms more often than annually for women who have had radiotherapy following breast conserving surgery.

See Oncologic.