Varicose Veins: Diagnosis and Treatment
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682 Varicose Veins: Diagnosis and Treatment
Jaqueline Raetz, Megan Wilson, and Kimberly Collins

The pathophysiology of varicose veins involves a genetic predisposition, incompetent valves, weakened vascular walls, and increased intravenous pressure. Established risk factors include family history of venous disease, female sex, older age, chronically increased intra-abdominal pressure, deep venous thrombosis, and arteriovenous shunting. Over the past 10 years, there has been a significant change in treatment recommendations for symptomatic varicose veins, largely because of the lack of evidence supporting the use of compression stockings and the rise of minimally invasive endovascular techniques. Current guidelines recommend endovenous thermal ablation as first-line therapy for nonpregnant patients, followed by endovenous sclerotherapy and surgery.

CME

689 Adolescent Substance Use and Misuse: Recognition and Management
Jessica A. Kulak and Kim S. Griswold

Adolescent use of illicit substances imposes burdens to all levels of society. The types of substances that adolescents use have changed over the past decade, with a decrease in alcohol and increase in marijuana and opioid use. Primary care physicians can help identify adolescents who use illicit substances; the American Academy of Pediatrics recommends several types of screening tools. A split-visit model encourages parents to participate in part of the clinical visit and allows adolescents to have confidential conversations with physicians. Evidence-based treatments range from school- and parent-based interventions to medication-assisted treatment. Motivational interviewing may be useful in addressing adolescent substance use. Prevention efforts can supplement cessation programs.

CME

699 Caregiver Care
Kristine Swartz and Lauren G. Collins

Caregiving is associated with physical, psychological, and financial burdens, and the demand for caregivers is expected to rise during the next few decades. Family physicians can offer practical, individualized interventions such as caregiver assessments that direct the caregiver to local area agencies on aging, websites, and respite care. Additionally, the caregiver’s quality of life can be increased by psychoeducation, skills training, and therapeutic counseling, all of which decrease the caregiver’s burden.

Patient information available online: Caregiver Care

CME
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1. To provide updates on the diagnosis and treatment of clinical conditions managed by family physicians.

2. To provide reference citations to support statements referring to clinical studies, new information, controversial material, specific quantitative data, and any other information not generally found in reference textbooks on the subject.

3. To provide balanced discussions of the strengths and weaknesses of diagnostic and treatment strategies (controversial or speculative material is identified).

4. To provide evidence-based guidelines or consensus viewpoint in preference to endorsement of any product by the American Academy of Family Physicians or the American Academy of Family Physicians, unless so stated. Advertising is accepted only if judged to be in harmony with the purpose of the journal; however, AFP reserves the right to reject any advertising at its sole discretion. Acceptance does not constitute endorsement by AFP or the American Academy of Family Physicians of a particular policy, product, procedure, or advertorial.

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Letters to the Editor

Medical Content Should Be Equitable and Inclusive of Diverse Populations

To the Editor: I am writing to bring your attention to the need for more racially inclusive language and equity-driven content in *American Family Physician* (AFP). For example, I was struck by the noninclusivity of one sentence in the article on vitamin D screening and supplementation in the February 15, 2018, issue. In the context of describing recommended dietary allowances of vitamin D, the authors wrote, “Sufficient sun exposure to produce a light-pink skin hue (one minimal erythema dose) is equivalent to 20,000 IU of oral vitamin D.” By writing about light-pink skin hue without qualifying the sentence, the authors implied that light pink is the only skin hue relevant to the reader. I suggest that sentences that apply only to a portion of the population be preceded by qualifiers, such as, “For those with light skin color, [...]” The sentence should then be followed by a statement relating the effects of sun exposure on vitamin D levels of people with darker skin colors.

The American Academy of Family Physicians has made efforts to reduce health disparities by launching the EveryONE project, which seeks to address the social determinants of health at the home and neighborhood levels (https://www.aafp.org/patient-care/social-determinants-of-health/cdhe/everyone-project.html). Eliminating health disparities requires a multipronged and multilevel approach involving every institution and sector of society. As one component, *AFP* is well positioned to help readers address inequities in our one-on-one patient encounters through improving the quality of care that we provide to marginalized groups. I have three suggestions:

1. Provide Continuing Medical Education (CME) content that uses inclusive language to guide care for all of our diverse patients. Language used in the journal should be inclusive of all skin colors, genders, ranges of able-bodiedness, and socioeconomic backgrounds that our patients represent.

2. Highlight the gaps in literature when research studies underrepresent marginalized groups. Consider making it a criterion for authors of *AFP* to critically apply a health equity lens and to make it transparent when a content area is lacking in generalizability.

3. Acknowledge and address the impact of implicit bias. One factor that contributes to health care disparities in the United States is implicit racial biases that affect physician-patient interactions and influence medical decision-making. One step toward reducing implicit biases is to make physicians aware of their susceptibility to biases so that engrained habits can be actively and intentionally dismantled. Wherever evidence for implicit biases negatively affecting care is available, *AFP* review articles can draw upon existing work and propose specific strategies to disrupt the perpetuation of biases from one generation of physicians to the next.

Shokoufeh Dianat, DO
San Francisco, Calif.
E-mail: Shokoufeh.Dianat@ucsf.edu

Author disclosure: No relevant financial affiliations.

References


 LETTERS TO THE EDITOR

In Reply: Thank you for your insightful comments. We agree that it is essential that topics covered in *AFP* be inclusive of diverse populations. Given the concise nature of our articles, the emphasis is often on practical evidence-based points that are supported in the existing literature rather than highlighting knowledge gaps and making recommendations for further research. We can certainly be more mindful of noninclusive language, but here are the ways we’ve already been addressing diversity and health equity in the journal:

1. A recent editorial on social determinants of health highlighted the EveryONE Project resources (https://www.aafp.org/afp/2019/0415/p476.html).

2. We’ve published articles on dermatologic conditions in skin of color (https://www.aafp.org/afp/2013/0615/p850.html and https://www.aafp.org/afp/2013/0615/p859.html) and a recent article on transgender care (https://www.aafp.org/afp/2018/1201/p645.html) that has been acknowledged as an important resource in other articles (https://www.medscape.com/viewarticle/909885#vp_1 [login required]).

3. We have an *AFP* By Topic collection of content on Care of Special Populations, including historically marginalized groups (https://www.aafp.org/afp/populations).

4. We constantly reevaluate medical terminology to make sure that it’s inclusive and does not promote implicit bias (e.g., “patient with opioid use disorder” instead of “opioid-dependent” or “opioid addict”).

As always, we appreciate reader feedback and your interest in making *AFP* applicable to all of the patients family physicians care for.

Sumi Sexton, MD, Editor-in-Chief

Kenny Lin, MD, MPH, Deputy Editor

References


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Preoperative Nutritional Optimization in Older Patients Reduces Complications

Original Article: Preoperative Assessment in Older Adults: A Comprehensive Approach

Issue Date: August 15, 2018

See additional reader comments at: https://www.aafp.org/afp/2018/0815/p224.html

To the Editor: This article is deserving of praise for its thoroughness and recognition of an important issue. I wish to reiterate the significance of nutrition and offer practical recommendations for nutritional optimization.

More than 50% of older surgical patients are thought to have malnutrition. Poor nutrition is associated with increased postoperative complications, prolonged length of hospitalization, and increased health care costs. In terms of modifiable preoperative risk factors, malnutrition is one of the few that is associated with poor surgical outcomes, including mortality. Although referral to a dietitian may be ideal for certain patients, there can be multiple barriers to implementation. Only one out of five patients receives any nutritional intervention in the preoperative and postoperative periods.

Herein lies an opportunity for the family physician to make two recommendations. The first is supplementation with arginine and fish oil, and the second is high-protein supplements taken two to three times daily (minimum of 18 g of protein per serving). Both may be obtained at local pharmacies or ordered online. Supplementation for a minimum of five days for low-risk patients and seven days for those at higher risk has been recommended. A patient at higher risk would have an albumin level of less than 3.0 g per dL (30 g per L) or would meet any of the following criteria: body mass index of less than 20 kg per m² if older than 65 years, unplanned weight loss of more than 10% of total body weight in the past six months, or eating less than 50% of a person’s normal diet in the past week. In addition, one could communicate that total protein content is more important than total caloric intake.

Daniel S. Orlovich, MD, PharmD

Stanford, Calif.

E-mail: dorlovic@stanford.edu

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Daniel S. Orlovich, MD, PharmD

Stanford, Calif.

E-mail: dorlovic@stanford.edu

Author disclosure: No relevant financial affiliations.

References

In Reply: Thank you for your comments on nutrition in older adults. Given the breadth of material we wanted to cover on the perioperative visit, we focused on our nutritional assessment and intervention recommendations on areas with the strongest supporting data. The study by Williams and Wischmeyer quoted by Dr. Orlovich in his letter looked primarily at colorectal and gastrointestinal surgical oncology programs; although they comprise a large number of surgeries that older adults undergo, they are not inclusive of all the types of surgeries in older adults.

Malnutrition increases length of hospital stay and related costs and is associated with an increased risk of adverse postoperative events. Assessment should include history of unintentional weight loss and documentation of baseline weight, height, and albumin level. If available, and if time permits, patients identified to have poor nutrition may benefit from referral to a dietitian for a comprehensive plan to optimize nutritional status. Nutrition recommendations may include modifications to diet, food consistency changes, and nutritional supplements. Compared with no intervention, dietary advice and/or nutritional supplements improve body weight, muscle bulk, and strength, although there is inconclusive evidence of improved survival. Patients with dentures should be reminded to bring them to the hospital to facilitate appropriate caloric intake postoperatively.1

Current studies are too heterogeneous and lack conclusive evidence that preoperative oral nutritional support with dietary supplements improves outcomes for patients undergoing surgery.2 Food and Drug Administration monitoring for nutritional supplements. Cost is also a major factor for older adults.

We agree that a focus on nutritional support and supplementation is an important area of further research, although it remains unclear whether it improves surgical outcomes or mortality for older adults when started before surgery.

Chandrika Kumar, MD, FACP
West Haven, Va.
E-mail: chandrika.kumar@yale.edu

Author disclosure: No relevant financial affiliations.

References

Corrections
Strength of evidence. The article, “The Pregnant Patient: Managing Common Acute Medical Problems” (November 1, 2018, p. 595), contained an error in the third sentence of the second paragraph of the “Common Symptoms During Pregnancy” section in the second column on page 597. This sentence stated that there was modest evidence that P6 acupressure can be a first-line therapy for nausea in patients who are pregnant, rather than stating the level of evidence was weak and that P6 acupressure can be a treatment option in this population. This sentence should have read, “There is weak evidence that P6 acupressure can also be a treatment option.” The online version of the article has been corrected.

Incorrect disease risk. The article, “The Pregnant Patient: Managing Common Acute Medical Problems” (November 1, 2018, p. 595), contained an error in the third sentence of the second paragraph of the “Dysuria” section in the first column on page 601 regarding the use of trimethoprim/sulfamethoxazole in pregnant patients and the associated risks to the newborn. This sentence should have read, “Trimethoprim/sulfamethoxazole is generally not recommended for use in pregnancy because of risks of neural tube defects in early pregnancy, as well as kernicterus in the newborn and permanent neonatal neurologic damage.” The online version of the article has been corrected.
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Academy Takes Aim at Maternal Mortality Crisis

Even as they are dropping worldwide, maternal mortality rates are rising in the United States.

Family physicians can play a key role in reversing the trend and the AAFP is working with partners on several fronts.

AAFP President John Cullen, M.D., of Valdez, Alaska, was scheduled to be a featured speaker May 11 during the March for Moms rally on the National Mall in Washington, D.C. The AAFP was a partner in the event, which aimed to raise awareness.

The rally was planned to occur in the wake of an advocacy day May 10 on Capitol Hill to address legislation on issues such as family leave and health disparities.

In addition, the AAFP aims to build a coalition of partners to address maternal mortality. Academy representatives met March 26 in Washington with representatives from the American College of Obstetricians and Gynecologists and the National Rural Health Association.

Both organizations are participating in the AAFP’s maternal mortality task force, which had its first meeting in April and is scheduled to meet again June 29. It is expected to report back to the COD when it meets Sept. 23-25 in Philadelphia.

Cullen also was scheduled to speak during a May 5 maternal safety meeting hosted by the CDC’s Division of Reproductive Health and ACOG during ACOG’s annual meeting in Nashville, Tenn., and to participate in a CMS forum on rural maternal health June 12 in Washington.


New CMS Initiative Draws on AAFP Payment Model

HHS has announced new payment models influenced, in part, by the AAFP’s Advanced Primary Care Alternative Payment Model and other physician input, with the intention of initiating valued-based transformation in primary care settings around the country.

AAFP Vice Speaker Russell Kohl, M.D., of Stilwell, Kan., joined HHS Secretary Alex Azar, CMS Administrator Seema Verma, M.P.H., and Adam Boehler, director of CMS’ Center for Medicare & Medicaid Innovation, on stage in Washington, D.C., for the April 22 unveiling of the models in the CMS Primary Cares Initiative.

Kohl said the initiative represents important movement toward acknowledging the vital role of primary care “by placing greater emphasis on the investments we make in family medicine and other primary care practices.”

CMMI designed the models with considerable stakeholder input, including ideas put forth in the AAFP’s APC-APM, which the Physician-Focused Payment Model Technical Advisory Committee had previously recommended that HHS begin testing.

The AAFP is analyzing the details of the CMS Primary Cares Initiative and will prepare an executive summary to help guide family physicians moving forward.


AAFP Advocates for State Primary Care Spending Bills

The AAFP and state chapters have thrown their support behind several efforts to increase spending on primary care.

In Oregon, where lawmakers in 2017 unanimously passed legislation requiring that 12% of all health spending go toward primary care, the Academy expressed support for a bill introduced this session that would maintain the 12% mandate while updating the law to solidify family medicine’s gains there the past few years. The Oregon AFP, meanwhile, submitted separate testimony supporting the updated law.

In Vermont, the AAFP and the state chapter endorsed legislation that would, the Academy said in a letter, “increase health care spending investment and transparency in primary care.”

And in Missouri, the AAFP and the state chapter have written to both chambers of the General Assembly to advocate for passage of twin bills that would require all health insurance carriers to report their annual health care medical expenditures and their total primary care medical expenditures to the state each year, for review by legislators.

Primary care spending legislation has been introduced in five other states, as well — Colorado, Hawaii, Maine, Washington and West Virginia — in some cases, gaining traction with chapter support.


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Rethinking Aspirin for the Primary Prevention of Cardiovascular Disease

Kenneth W. Lin, MD, MPH, Georgetown University Medical Center, Washington, District of Columbia
Jennifer Middleton, MD, MPH, OhioHealth Riverside Methodist Hospital, Columbus, Ohio

Administering aspirin during a heart attack or stroke can be lifesaving. The benefits of daily low-dose (81 mg) aspirin therapy to prevent recurrent cardiovascular disease (CVD) events are also well established.1 Aspirin’s routine use for primary prevention, however, has been the subject of controversy because of questionable benefits and increased bleeding risk.2,3 Aspirin therapy may reduce the relative risk of a first heart attack or stroke, but this benefit could be outweighed by the risk of gastrointestinal bleeding.4 According to a 2011-2012 national survey, one-third of Americans 40 years or older take a daily aspirin, including 28% of adults without known CVD;5 therefore, delineating these risks and benefits has significant implications.

The U.S. Preventive Services Task Force (USPSTF) currently recommends that adults 50 to 59 years of age start taking a daily low-dose aspirin if they have a 10% or greater 10-year CVD risk, do not have bleeding risk factors, and are willing to take a daily aspirin for at least 10 years. Adults 60 to 69 years of age with similar CVD risk may consider starting low-dose aspirin therapy but are at higher risk of bleeding and less likely to benefit overall, according to the USPSTF. The USPSTF found insufficient evidence to assess the balance of benefits and harms of starting low-dose aspirin therapy for primary prevention in adults younger than 50 or older than 69 years.6

Supporting evidence for the 2016 USPSTF recommendations included a systematic review of 11 randomized, controlled trials of aspirin therapy with myocardial infarction and stroke outcomes published between 1988 and 20147 with a review of major gastrointestinal bleeding and hemorrhagic strokes in trial participants.8 According to one member of the USPSTF at the time of the 2016 recommendation, the goal was to select adults at high enough cardiovascular risk that their expected benefit from aspirin therapy (including a possible reduction in the risk of developing colorectal cancer)9 would outweigh the harms of bleeding.9 However, in the decade or more since most of the trials analyzed by the USPSTF took place, fewer U.S. adults are smoking, and more have become eligible for statins and antihypertensives, which could have reduced aspirin’s incremental benefit. Also, the USPSTF review suggested that the presence of diabetes mellitus did not alter the effectiveness of aspirin therapy in reducing CVD events, but only three trials specifically recruited these patients.7

In 2014, the U.S. Food and Drug Administration, citing concerns about insufficient evidence, advised the general public against using low-dose aspirin therapy for primary prevention of heart attack or stroke.10 Indeed, three recent studies’ findings are more supportive of the U.S. Food and Drug Administration recommendation than the USPSTF recommendation. In the Aspirin to Reduce Risk of Initial Vascular Events (ARRIVE) trial, more than 12,000 European and U.S. adults 55 years or older without diabetes were randomized to take 100 mg of enteric-coated aspirin or placebo daily for a median follow-up of five years. The researchers for the ARRIVE trial enrolled participants determined to be at a moderate risk of CVD (participants’ mean atherosclerotic CVD risk score was 17.3% to 17.4%). With the caveat that less than 5% of participants had a cardiovascular event during the study, no difference occurred between the groups in a composite outcome of cardiovascular death, myocardial infarction, unstable angina, stroke, or transient ischemic attack. However, 1% of the aspirin group experienced gastrointestinal bleeding compared with only 0.5% of the placebo group (hazard ratio = 2.11; 95% confidence interval, 1.36 to 3.28).11

The aspirin-placebo comparison in the ARRIVE trial was mirrored by another trial, A Study of Cardiovascular Events in Diabetes, but this trial enrolled 15,000 adults 40 years or older with diabetes in U.K. primary care practices. After a mean follow-up of 7.4 years, a lower percentage of the aspirin group had experienced serious vascular events than the placebo group, but this benefit was offset by an increased percentage of major bleeding events. The researchers calculated a number needed to treat of 91 to prevent a vascular event and number needed to harm of 112 to cause a major bleeding event, from which they concluded that aspirin provided no net benefit.12

Finally, the Aspirin in Reducing Events in the Elderly trial examined the effect of five years of daily low-dose aspirin therapy on community-dwelling adults 70 years or older in the United States and Australia. There were no differences in the primary endpoint of disability-free survival (a composite of death, dementia, and persistent physical disability) or the prespecified secondary endpoint of CVD deaths, events, and hospitalizations.1314 However, the aspirin group had a significantly higher rate of major hemorrhage and higher all-cause mortality.15 A meta-analysis that pooled data from older primary prevention trials with these three new studies calculated a number needed to treat of 265 to prevent a composite cardiovascular outcome (cardiovascular mortality, nonfatal myocardial infarction, and nonfatal stroke) and number needed to harm of 210 to prevent a major bleeding event, suggesting that aspirin provided no net benefit.16 Studies
with an estimated population 10-year CVD risk of greater than 10% experienced a similar balance of benefits and harms (number needed to treat = 196; number needed to harm = 152).

Though not designed to determine whether long-term use of daily aspirin reduces colorectal cancer incidence or mortality, as other evidence has suggested, the new evidence should prompt the USPSTF to reevaluate their 2016 aspirin guideline. The new data do not exclude the possibility that aspirin may still benefit adults at very high CVD risk (e.g., 20% or more over 10 years) or those at lower risk who are unable to tolerate statins, but the data otherwise suggest that the risks of low-dose aspirin therapy for primary prevention outweigh any potential benefits. For most patients, we should be deprescribing aspirin for primary prevention of CVD. To prevent heart attacks and strokes, family physicians should focus instead on smoking cessation and lifestyle changes, controlling high blood pressure, and prescribing statins when indicated.

Editor’s Note: Portions of this editorial are adapted, with permission, from a previous Medscape commentary by Dr. Lin (https://www.medscape.com/viewarticle/902186; login required). Dr. Lin and Dr. Middleton are Deputy Editor and Contributing Editor, respectively, for AFP.

Address correspondence to Kenneth W. Lin, MD, MPH, at kenneth.lin@georgetown.edu. Reprints are not available from the authors.

Author disclosure: No relevant financial affiliations.

References

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American Family Physician 671
Close-ups
A Patient’s Perspective

My Kidney Donation: Unexpected Twists

Some years ago, a close family friend told me his chronic kidney disease had progressed and he would need a new kidney to avoid dialysis. I volunteered to donate my kidney, and as it turned out, I was a near perfect match. But, our celebration did not last long. While I was being worked up for surgery, the transplant team found some ureteral abnormalities that made me ineligible for the donation.

A few years later, I began experiencing flank pain, which was bad enough to send me to the emergency room. I was told my right kidney was no longer functional and would have to be removed. The surgery went smoothly. It was hard to believe that a nephrectomy could seem like minor surgery (although admittedly, recovery was slow).

Still, this was not the outcome I had hoped for: instead of losing my kidney to give life, my surgery brought me face-to-face with my own mortality. Fortunately, I am now in good health. I am working again and have rejoined my running group. To our great joy, my friend finally reached the top of the transplant list and is doing beautifully with his new kidney.—M.K.

Commentary
M.K.’s story brings to mind Johanna Shapiro’s definition of empathy: an engaged act in which “the physician must draw closer to the patient, putting the interests of others above those of self, even at some sacrifice to oneself.” M.K, a physician herself, is one of those people for whom altruism is a natural way of life. She inspires us to reenvision the reach of relationship-centered care, while reminding us that even when things do not turn out as we intend, we are all connected in unexpected ways.

Caroline Wellbery, MD

Resources
National Kidney Foundation: https://www.kidney.org/transplantation/beadonor

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This series is coordinated by Caroline Wellbery, MD, Associate Deputy Editor, with assistance from Amy Crawford-Faucher, MD; Jo Marie Reilly, MD; and Sanaz Majd, MD.
A collection of Close-ups published in AFP is available at https://www.aafp.org/afp/closeups.
CME Quiz

AAFP members and other physicians and health care professionals who receive the print version of AFP in their own name can submit responses for CME credit at https://www.aafp.org/afpquiz. Quiz questions are featured below for your convenience. This issue is approved for up to 6 Prescribed and AMA PRA Category 1 credits. The total credit for this issue is based on one credit for each article included in the Quiz. Credits may be claimed for one year from the date of this issue. Questions? Call 800-274-2237.

Articles

Varicose Veins: Diagnosis and Treatment (p. 682)

Q1. Which one of the following findings in the evaluation of varicose veins is an early sign of advanced venous disease? (check one)
   □ A. Throbbing.
   □ B. Hemodynamically significant external hemorrhage.
   □ C. Corona phlebectatica.
   □ D. Relief with leg elevation.

Q2. Which one of the following imaging modalities is the best way to evaluate varicose veins in preparation for an interventional procedure? (check one)
   □ A. Venography.
   □ B. Venous duplex ultrasonography.
   □ C. Plethysmography.
   □ D. Magnetic resonance imaging.

Q3. Which one of the following statements about the treatment of varicose veins is correct? (check one)
   □ A. Endovenous thermal ablation should be considered only after a trial of conservative treatment.
   □ B. Surgery is considered the best interventional treatment option.
   □ C. Sclerotherapy is better at maintaining saphenous vein occlusion at six months than endovenous laser ablation or surgery.
   □ D. Endovenous thermal ablation is considered first-line therapy for nonpregnant patients.

Adolescent Substance Use and Misuse: Recognition and Management (p. 689)

Q4. Which one of the following statements about adolescent substance use is correct? (check one)
   □ A. Traditional cigarette use is rising.
   □ B. Marijuana is the most commonly used substance.
   □ C. Hospitalization from prescription opioid poisoning is rising.
   □ D. Adolescent males have higher rates of nonmedical use of amphetamines and tranquilizers than adolescent females.

Q5. What is the U.S. Preventive Services Task Force and the American Academy of Family Physicians recommendation for primary care–based behavioral interventions to prevent or reduce illicit substance use or nonmedical pharmaceutical use in children or adolescents? (check one)
   □ A. Routinely recommended.
   □ B. Selectively recommended.
   □ C. Recommended against.
   □ D. Insufficient evidence to determine harms and benefits.

Q6. Which one of the following statements about the split-visit model is correct? (check one)
   □ A. Parents participate in the clinical visit for a limited time and then leave the room.
   □ B. Parents do not participate in the clinical visit.
   □ C. Parents stay in the room with the adolescent the whole time during the clinical visit.
CME QUIZ

Caregiver Care (p. 699)
Q7. Which one of the following statements about assessing caregiver needs and burdens is correct? (check one)

☐ A. A caregiver is defined as someone who spends more than 24 hours per week with the care recipient.
☐ B. Care recipients are less likely to provide reliable information when interviewed alone.
☐ C. Anyone who identifies as a caregiver should be offered an assessment.
☐ D. There are no validated tools available for assessing caregiver burden.

Q8. Which one of the following aspects of care is one of the most burdensome challenges for caregivers caring for people with heart failure? (check one)

☐ A. Managing pain.
☐ B. Enforcing dietary restrictions.
☐ C. Lifting.
☐ D. Behavior disturbances.

Q9. Which one of the following statements about caring for a person at the end of life is most accurate? (check one)

☐ A. The care recipient’s transfer to a long-term care facility has a positive effect on the caregiver’s burden.
☐ B. Caregivers are most likely to need intensified support for depression after the care recipient’s death.
☐ C. Early palliative care interventions for patients with serious illness improves quality of life.
☐ D. Life-prolonging interventions in the late stages of heart failure have been shown to relieve caregiver burden.

Cochrane for Clinicians

Anticoagulation for the Long-term Treatment of VTE in Patients with Cancer (p. 676)
Q10. Which one of the following statements about the prevention of recurrent venous thromboembolism (VTE) in patients with cancer is correct? (check one)

☐ A. Use of low-molecular-weight heparin (LMWH) reduces the risk of recurrent VTE to a greater extent than vitamin K antagonists.
☐ B. Use of LMWH reduces the risk of recurrent VTE to a greater extent than direct oral anticoagulants.
☐ C. Use of LMWH increases bleeding risk compared with direct oral anticoagulants.
☐ D. Use of LMWH increases bleeding risk compared with vitamin K antagonists.

Alternative Interventions for Chronic Prostatitis/Chronic Pelvic Pain Syndrome in Men (p. 677)
Q11. Which one of the following statements about nonpharmacologic therapies for men with long-standing pelvic pain and urinary symptoms is correct? (check one)

☐ A. Transrectal thermotherapy and physical therapy are likely to be clinically beneficial.
☐ B. Extracorporeal shock wave therapy and acupuncture are likely to be clinically beneficial.
☐ C. Prostatic massage improves prostatitis symptoms.
☐ D. There is high-quality evidence for the effectiveness of lifestyle modifications for urinary symptoms.

Practice Guidelines

Cancer Screening: ACS Releases Annual Summary of Recommendations (p. 719)
Q12. Which one of the following statements about the 2018 cancer screening recommendations from the American Cancer Society (ACS) is correct? (check one)

☐ A. Colorectal cancer screening should be offered at age 40 in average-risk patients.
☐ B. Lung cancer screening in high-risk patients should occur biannually after shared decision-making.
☐ C. Prostate cancer screening can be done at age 50 in average-risk patients who opt for testing after a physician-initiated discussion.
☐ D. Cervical cancer screening should occur before age 21 in those with early onset sexual activity.

Answers to this issue’s quiz are on the inside back cover.
Antibiotic Prophylaxis in Patients with COPD

Robert Murrey Brown, MD, and Rory Spiegel, MD

Details for This Review

Study Population: Patients older than 40 years with spirometry-proven diagnosis of moderate to severe chronic obstructive pulmonary disease (COPD)

Efficacy End Points: COPD exacerbations, frequency of exacerbations, time to first exacerbation, and health-related quality of life as measured by the St. George’s Respiratory Questionnaire or the Chronic Respiratory Diseases Questionnaire

Harm End Points: Drug resistance as measured by microbial sensitivity, adverse drug effects, hospitalization, and all-cause mortality

Narrative: COPD is defined as persistent respiratory symptoms and airflow obstruction caused by alveolar and airway dysfunction resulting from exposure to noxious particles and gases. It is common throughout the world and is the third leading cause of death in the United States. Morbidity from COPD is costly, reducing the capacity for work and increasing the number of emergency department visits and hospitalizations. It can profoundly reduce quality of life, causing social isolation and depression. Viral infections account for most exacerbations, but bacterial colonization increases with the severity of COPD, and bacterial infections are more common in acute exacerbations.

In theory, antibiotics provide their benefit by decreasing bacterial growth, potentially limiting the inflammatory effects of the bacteria. Prophylactic antibiotics were routinely administered for cases of chronic bronchitis 30 years ago, but this practice declined amid concern for antibiotic resistance without evidence of efficacy.

The Cochrane group identified 14 randomized controlled trials of antibiotics compared with placebo, with end points of prevention of COPD exacerbations or improved quality of life. The studies were published or presented between 2001 and 2017 and included a total of 3,932 participants. Nine trials studied continuous macrolide antibiotic treatment (1,925 participants); two examined antibiotics administered three times weekly (176 participants); two studied pulsed antibiotics given three days per month or five days every eight weeks (1,732 participants), and one trial compared three arms: continuous doxycycline vs. azithromycin (Zithromax) administered three times weekly vs. moxifloxacin (Avelox) for five days every month (99 participants). The heterogeneity of the studies was moderate.

The number needed to treat to prevent one exacerbation of COPD was 8. The effect was evident only when patients received antibiotics at least three times weekly. There was no significant impact on the frequency of hospitalization, all-cause mortality, or quality of life.

Data reporting for adverse drug events and microbial resistance was inadequate for a formal meta-analysis. A single-study analysis of microbial resistance demonstrated a risk of rapid resistance to moxifloxacin in patients colonized with Pseudomonas. All but two studies, both of shorter duration (six months or less), demonstrated an increase in the minimum inhibitory concentration of bacteria cultured from sputum of patients exposed to prophylactic antibiotics.

Caveats: Optimization of preventive regimens, including long-acting muscarinic antagonists, long-acting beta agonists, inhaled corticosteroids, phosphodiesterase-4 inhibitors, and mucolytics, was not reported and potentially limited the validity of these results. In an attempt to control for this source of
bias, the authors examined studies published from 2005 to 2009, 2010 to 2014, and 2015 onward. Despite improvements in medical management of COPD over this period, the authors found no change in the effectiveness of antibiotic prophylaxis when examining earlier vs. later studies.

In addition, three studies were not double-blinded, eight did not clearly blind the outcome assessment, four were subject to attrition bias, one had selective reporting, and another was at unclear risk because no prospective trial registration or protocol could be evaluated. When the authors performed a sensitivity analysis, removing all trials at high risk of bias, the results were similar to the primary analysis.

This research fails to determine whether the modest potential benefits of prophylaxis outweigh the risk of resistance. Antibiotic prophylaxis is proposed to work by decreasing bacterial colonization, but slow-multiplying bacteria, such as those found in biofilms, are profoundly tolerant to antibiotics.10 Lengthy, multidrug regimens are required to kill these bacteria. Single-agent coverage may temporarily target rapidly multiplying bacteria and halt exacerbations, but lengthy courses with single agents may lead to resistance. Longer-term studies might uncover an increased cost and mortality for treating pneumonia in patients with COPD in which resistance has been worsened by ineffective chronic suppressive therapy.

Author disclosure: No relevant financial affiliations.

References
Measles Vaccine, Acute Appendicitis, Screening for Heart Disease, Abdominal Pain, Hyperhidrosis

What are the risks associated with delaying the first dose of MMR vaccine after 12 to 15 months of age?

Febrile seizures that occur seven to 10 days after the first dose of the measles, mumps, and rubella (MMR) vaccine are rare (0.04% of children between 12 and 15 months), but the risk is increased when the first dose is delayed after the recommended age. In a retrospective cohort study of 840,348 U.S. children who received measles vaccination between 2001 and 2011, those who received a measles vaccination at 16 to 23 months of age had a greater increase in seizure risk (relative risk = 6.5; 95% confidence interval, 5.3 to 8.1) than those who received a vaccination at 12 to 15 months of age (relative risk = 3.4; 95% confidence interval, 3.0 to 3.9), conferring an attributable risk of 5.5 additional cases per 10,000 vaccines given.

https://www.aafp.org/afp/2017/0615/p786.html
https://www.aafp.org/afp/2014/0515/p786.html

In children with recurrent abdominal pain, what characteristics can distinguish organic from nonorganic disease?

Organic disease is suggested by the presence of fever, vomiting, blood in the stool, more than three alarm symptoms, or history of urinary tract infections.


What is the first-line treatment for most persons with primary focal hyperhidrosis?

Topical 20% aluminum chloride (Drysol) should be used as first-line treatment in most cases of primary hyperhidrosis, regardless of severity and location. Iontophoresis may be effective as first- or second-line treatment for primary hyperhidrosis of the palms or soles.


How does intravenous antibiotic therapy for acute appendicitis in adults compare to initial appendectomy?

Antibiotic treatment for adults with appendicitis results in decreased complications, less sick leave or disability, and less need for pain medication compared with initial appendectomy. However, 40% of patients who receive antibiotic therapy will require appendectomy within one year.


Should asymptomatic patients be screened for heart disease with ECG?

Screening asymptomatic patients with electrocardiography (ECG) has an extremely low yield in detecting significant pathology and leads to many false-positive findings. The U.S. Preventive Services Task Force recommends against screening with ECG to predict coronary artery disease in low-risk patients and found insufficient evidence to assess the benefits and harms of screening in individuals at intermediate or high risk.


Tip for Using AFP at the Point of Care

Looking for more information about vaccines? You can find more in AFP’s Immunizations collection at https://www.aafp.org/afp/immunizations. Check out more than 60 other collections in AFP By Topic at https://www.aafp.org/afp/topics. When you find your favorite topics click “Add to Favorites” to add them to your personal Favorites list. Find a summary of the 2019 immunization schedules at https://www.aafp.org/afp/2019/0215/p264.html.

A collection of AFP Clinical Answers published in AFP is available at https://www.aafp.org/afp/answers. All AFP departments are available at https://www.aafp.org/afp/collections.
Anticoagulation for the Long-term Treatment of VTE in Patients with Cancer

Michael J. Arnold, MD, Uniformed Services University of the Health Sciences, Bethesda, Maryland
Noah Cooperstein, MD, Saint Louis University South-west Illinois Family Medicine Residency Program, O’Fallon, Illinois
Christopher Jonas, DO, Uniformed Services University of the Health Sciences, Bethesda, Maryland

Author disclosure: No relevant financial affiliations.

Clinical Question
What is the preferred anticoagulant for long-term prevention of recurring venous thromboembolism (VTE) in patients with cancer?

Evidence-Based Answer
Low-molecular-weight heparin (LMWH), vitamin K antagonists, and direct oral anticoagulants, when used to prevent recurrent VTE, have a similar impact on all-cause mortality. Compared with vitamin K antagonists, LMWH reduces recurrent VTE in patients with cancer (number needed to treat = 19), with similar adverse event profiles.1 (Strength of Recommendation: A, consistent, good-quality patient-oriented evidence.) Direct oral anticoagulants reduce VTE risk to the same extent as LMWH but at an increased risk of major bleeding (number needed to harm = 34).1 (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers
Patients with cancer have an annual VTE risk of 1.3%, which is six times higher than patients without cancer.2 The risk of VTE recurrence in patients with cancer can reach 29% at one year, leading to recommendations for long-term anticoagulation.3 Cancer also conveys a high risk of major bleeding—up to 20% at one year for patients with both cancer and VTE.4 This Cochrane review evaluated the safety and effectiveness of long-term anticoagulation to prevent VTE recurrence in patients with cancer.1

Sixteen randomized controlled trials involving 5,167 patients with cancer and diagnostically confirmed initial VTE were identified. Patients of all ages with solid or hematologic cancers at any stage were studied. The primary outcome was all-cause mortality; secondary outcomes included recurrent symptomatic VTE and major bleeding. The review evaluated large, multicenter trials and local studies with as few as 35 patients. Most multicenter trials were multinational, whereas the single-center trials were conducted in North America or Europe. Studies varied greatly in the medications used within each class. The larger studies were funded by the sponsoring pharmaceutical company.

Five studies that included 1,781 patients compared LMWH and vitamin K antagonists. There was no difference in mortality between groups. LMWH reduced recurrent symptomatic VTE compared with vitamin K antagonists (number needed to treat = 19; 95% CI, 14 to 34) in patients with cancer, with no difference in major bleeding between the two groups. One study reported no difference in thrombocytopenia between patients receiving LMWH and those receiving vitamin K antagonists.

Four studies with a total of 1,031 patients compared direct oral anticoagulants and vitamin K antagonists and found similar mortality rates, recurrent symptomatic VTE rates, and bleeding events between the groups. Data were low quality because of imprecise reporting and inclusion criteria.

Two studies compared LMWH and direct oral anticoagulants, but only one study, which included 1,016 patients, contained data sufficient for analysis. Mortality risk was similar between the groups, and there was no significant difference in recurrent symptomatic VTE between the direct oral anticoagulant and LMWH treatment.
arms (relative risk = 0.69; 95% CI, 0.47 to 1.01). Patients using direct oral anticoagulants had an increased risk of major bleeding events compared with patients using LMWH (number needed to harm = 34; 95% CI, 13 to 2,439).

A recent systematic review concluded that direct oral anticoagulants do not significantly reduce VTE recurrence compared with LMWH, but they do increase major bleeding. Guidelines from the American Society of Clinical Oncology, the American College of Chest Physicians, the European Society for Medical Oncology, and the National Institute for Health and Care Excellence recommend LMWH as first-line treatment for recurrent VTE in patients with cancer, which is consistent with the results of this Cochrane review.

The practice recommendations in this activity are available at http://www.cochrane.org/CD006650.

**Editor’s Note:** The numbers needed to treat and to harm, and the corresponding confidence intervals, were calculated by the authors based on raw data provided in the original Cochrane review.

**The views** expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of the Air Force, Uniformed Services University of the Health Sciences, Department of Defense, or the U.S. government.

**References**


**Alternative Interventions for Chronic Prostatitis/Chronic Pelvic Pain Syndrome in Men**

Anne L. Mounsey, MD, and Elizabeth Parks, MD, University of North Carolina, Chapel Hill, North Carolina

**Author disclosure:** No relevant financial affiliations.

**Clinical Question**

Are nonpharmacologic therapies safe and effective for men with long-standing pelvic pain and lower urinary tract symptoms, also known as chronic prostatitis/chronic pelvic pain syndrome?

**Evidence-Based Answer**

In men with chronic pelvic pain and urinary dysfunction who have not responded to standard medical management, extracorporeal shock wave therapy reduces symptoms and increases quality of life. Acupuncture may also provide benefit to some patients. (Strength of Recommendation: B, based on limited-quality patient-oriented evidence.)

Circumcision, transrectal thermotherapy, and physical activity demonstrated a statistically but not clinically

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**SUMMARY TABLE: COMPARE ANTICOAGULANTS TO PREVENT RECURRENT VTE AND MAJOR BLEEDING IN PATIENTS WITH CANCER**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control</th>
<th>Outcomes</th>
<th>NNT/NNH</th>
<th>Number of participants (number of studies)</th>
<th>Quality of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMWH</td>
<td>Vitamin K antagonists</td>
<td>Recurrent VTE</td>
<td>NNT = 19 (95% CI, 14 to 34) Favored LMWH</td>
<td>1,781 (5 RCTs)</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major bleeding</td>
<td>No difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct oral anticoagulants</td>
<td>Vitamin K antagonists</td>
<td>Recurrent VTE</td>
<td>No difference</td>
<td>No difference</td>
<td>1,031 (4 RCTs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major bleeding</td>
<td>No difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct oral anticoagulants</td>
<td>LMWH</td>
<td>Recurrent VTE</td>
<td>No difference</td>
<td>1,016 (1 RCT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major bleeding</td>
<td>NNH = 34 (95% CI, 13 to 2,439)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LMWH = low-molecular-weight heparin; NNH = number needed to harm; NNT = number needed to treat; RCT = randomized controlled trial; VTE = venous thromboembolism.
significant reduction in symptoms. It is unclear whether lifestyle modifications or prostatic massage provides any benefit. Most nonpharmacologic interventions are not associated with an increased risk of adverse events. (Strength of Recommendation: B, based on limited-quality patient-oriented evidence.)

**Practice Pointers**

Prostatitis is a common disorder affecting 10% to 14% of men in the United States, and it accounts for 1% of primary care visits each year. Chronic prostatitis/chronic pelvic pain syndrome, defined as pelvic pain and lower urinary tract symptoms lasting more than three months, is a diagnosis of exclusion and comprises most cases. Men typically present with pain in the lower abdomen, perineum, testicles, or penis, as well as urinary symptoms and sexual dysfunction, including ejaculatory pain. The variety of presentations likely reflects the unclear etiology of this disease.

As such, there is no standard first-line pharmacologic intervention. Antibiotics, nonsteroidal anti-inflammatory drugs, pregabalalin (Lyrica), alpha blockers, and 5-alpha reductase inhibitors are most commonly used, and response to medical management is often limited.

This Cochrane review of 38 randomized controlled trials involving 3,290 men evaluated the effectiveness of several nonpharmacologic interventions for chronic prostatitis/chronic pelvic pain syndrome. Participants were younger than 50 years. In 11 of 12 studies included in this meta-analysis, previous pharmacologic therapy had been unsuccessful. The primary outcome was the previously validated 13-question, 43-point National Institutes of Health–Chronic Prostatitis Symptom Index (NIH-CPSI) scale, which assessed pain, urinary symptoms, and quality of life. On this scale, the minimal clinically important difference is considered a six-point reduction from baseline.

Extracorporeal shock wave therapy applied at the perineum demonstrated significant improvement in NIH-CPSI score vs. sham procedure at six weeks in three studies (mean difference [MD] = –6.18; 95% CI, –7.46 to –4.89), but this effect was no longer present at 12 and 24 weeks. Moderate evidence in one study supported improvement in sexual dysfunction with extracorporeal shock wave therapy vs. control.

Three high-quality studies (N = 204) found that acupuncture vs. a sham procedure likely improved symptoms at six to eight weeks (NIH-CPSI score MD = –5.79; 95% CI, –7.32 to –4.26). One study demonstrated persistent benefit at 24 weeks. However, there was no improvement in sexual dysfunction. In two lower-quality studies with inadequate blinding (N = 78), acupuncture provided statistical benefit (MD = –4.09; 95% CI, –6.87 to –1.30) compared with pharmacotherapy (i.e., levofloxacin [Levaquin], ibuprofen, or pollen extract).

Of the other interventions evaluated, few provided meaningful benefit. In one study of 700 men, circumcision provided statistical benefit on the NIH-CPSI score (MD = –3.00; 95% CI, –3.82 to –2.18) without a significant increase in adverse events at 12 weeks of follow-up. In one study of transrectal thermotherapy alone vs. medical therapy and another study of transrectal thermotherapy plus medical therapy vs. medical therapy alone, transrectal thermotherapy provided statistical, but not clinical, improvement (MD = –2.5; 95% CI, –3.8 to –1.2 and MD = –4.34; 95% CI, –5.65 to –3.04, respectively). Interestingly, in one low-quality study, physical activity reduced pain and increased quality of life, but worsened urinary symptoms. Prostatic massage, ultrasound, myofascial trigger point release, transurethral thermotherapy, transurethral needle ablation, and sono-electromagnetic therapy did not improve prostatitis symptoms. Evidence for the effectiveness of biofeedback, lifestyle modifications, laser therapy, tibial nerve stimulation, and transcutaneous electrical nerve stimulation was very low-quality because of the potentially high risk of bias.

Consensus guidelines suggest using individualized, symptom-based treatment for chronic prostatitis/chronic pelvic pain syndrome. Multimodal therapy is recommended because of the complex nature of this syndrome similar to other chronic pain disorders. Evidence for nonpharmacologic interventions is generally limited, and many of the interventions are expensive and not widely available. Yet, given the desperate situation of many patients in whom standard medical management has failed, even small improvements in symptoms may be beneficial. Therefore, family physicians should consider extracorporeal shock wave therapy and acupuncture for the management of chronic prostatitis/chronic pelvic pain syndrome.

**The practice** recommendations in this activity are available at http://www.cochrane.org/CD012551.

**References**

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Varicose veins are twisted, dilated veins most commonly located on the lower extremities. The exact pathophysiology is debated, but it involves a genetic predisposition, incompetent valves, weakened vascular walls, and increased intravenous pressure. Risk factors include family history of venous disease; female sex; older age; chronically increased intra-abdominal pressure due to obesity, pregnancy, chronic constipation, or a tumor; and prolonged standing. Symptoms of varicose veins include a heavy, achy feeling and an itching or burning sensation; these symptoms worsen with prolonged standing. Potential complications include infection, leg ulcers, stasis changes, and thrombosis. Conservative treatment options include external compression; lifestyle modifications, such as avoidance of prolonged standing and straining, exercise, wearing nonrestrictive clothing, modification of cardiovascular risk factors, and interventions to reduce peripheral edema; elevation of the affected leg; weight loss; and medical therapy. There is not enough evidence to determine if compression stockings are effective in the treatment of varicose veins in the absence of active or healed venous ulcers. Interventional treatments include external laser thermal ablation, endovenous thermal ablation, endovenous sclerotherapy, and surgery. Although surgery was once the standard of care, it largely has been replaced by endovenous thermal ablation, which can be performed under local anesthesia and may have better outcomes and fewer complications than other treatments. Existing evidence and clinical guidelines suggest that a trial of compression therapy is not warranted before referral for endovenous thermal ablation, although it may be necessary for insurance coverage. (Am Fam Physician. 2019;99(11):682-688. Copyright © 2019 American Academy of Family Physicians.)
Varicose veins are common on the lower extremities, with widely varying estimates of prevalence.² A recent study found that telangiectasias occur in 43% of men and 55% of women, and varicose veins occur in 16% of men and 29% of women.³ In a population with a mean age of 60 years, the prevalence of CEAP classification C₀ to C₆ is 29%, 29%, 23%, 10%, 9%, 1.5%, and 0.5%, respectively.⁴

Etiology
Venous disease resulting in valvular reflux appears to be the underlying cause of varicose veins.⁵ The exact pathophysiology is debated, but it involves a genetic predisposition, incompetent valves, weakened vascular walls, and increased intravenous pressure. In most cases, the valvular dysfunction is presumed to be caused by a loss of elasticity in the vein wall, with failure of the valve leaflets to fit together. Rather than blood flowing from distal to proximal and superficial to deep, failed or incompetent valves allow blood to flow in the reverse direction. With increased pressure on the affected venous system, the larger veins may become elongated and tortuous. Shear stress on venous endothelial cells due to reversed or turbulent blood flow and inflammation are also important etiologic factors for venous disease.⁶

Varicose veins in the legs may involve the main axial superficial veins (the great saphenous vein and the small saphenous vein or their superficial tributaries).⁷ Established risk factors for varicose veins include family history of venous disease; female sex; older age; chronically increased intra-abdominal pressure due to obesity, pregnancy, chronic constipation, or a tumor; prolonged standing; deep venous thrombosis causing damage to valves and secondary revascularization; and arteriovenous shunting.⁸⁻⁹

Diagnosis

CLINICAL PRESENTATION
The clinical presentation of varicose veins varies, and some patients may be asymptomatic.¹⁰ Localized symptoms may be unilateral or bilateral and include pain, burning, itching, and tingling at the site of the varicose veins. Generalized symptoms consist of aching, heaviness, cramping, throbbing, restlessness, and swelling in the legs.⁷¹¹ Symptoms are often worse at the end of the day, especially after prolonged standing, and usually resolve when patients sit and elevate their legs. Women are significantly more likely than men to report lower limb symptoms.¹² Patients are more likely to have symptoms and increasing severity of symptoms with increasing CEAP clinical class (C₀ to C₆).⁶

Although varicose veins may cause varying degrees of discomfort or cosmetic concern, they are rarely associated with significant complications. Signs of a more serious underlying vascular insufficiency may include changes in skin pigmentation, eczema, infection, superficial thrombophlebitis, venous ulceration, loss of subcutaneous tissue, and lipodermatosclerosis (a decrease in

### SORT: KEY RECOMMENDATIONS FOR PRACTICE

<table>
<thead>
<tr>
<th>Clinical recommendation</th>
<th>Evidence rating</th>
<th>References</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is not enough evidence to determine if compression stockings are effective in the treatment of varicose veins in the absence of active or healed venous ulcers.</td>
<td>B</td>
<td>7, 15, 19–21</td>
<td>Based on a Cochrane review and clinical guidelines based on systematic reviews; consensus guidelines and expert opinion</td>
</tr>
<tr>
<td>Horse chestnut seed extract (Aesculus hippocastanum) and other phlebotonics may ease the symptoms of varicose veins, but long-term studies of the safety and effectiveness of phlebotonics are lacking.</td>
<td>B</td>
<td>23–25</td>
<td>Based on systematic reviews/Cochrane review of lower-quality RCTs</td>
</tr>
<tr>
<td>Referral for interventional treatment of symptomatic varicose veins in nonpregnant patients should not be delayed for a trial of external compression. Interventional treatment should be offered if valvular reflux is documented.</td>
<td>C</td>
<td>7, 15</td>
<td>Clinical guidelines based on systematic reviews; consensus guidelines and expert opinion</td>
</tr>
<tr>
<td>Endovascular laser ablation may be better tolerated than sclerotherapy and surgery, with fewer adverse effects and equal effectiveness.</td>
<td>B</td>
<td>30, 31</td>
<td>Based on a Cochrane review of lower-quality RCTs and an RCT on quality-of-life outcomes</td>
</tr>
</tbody>
</table>

RCT = randomized controlled trial.
A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to https://www.aafp.org/afpsort.
lower leg circumference due to chronic inflammation, fibrosis, and contraction of the skin and subcutaneous tissues). Although rare, hemodynamically significant external hemorrhage resulting from the perforation of a varicose vein has been reported.13

**IMAGING STUDIES**

When venous disease is severe or interventional therapy is being considered, venous duplex ultrasonography is the modality of choice.2,15 Duplex ultrasonography is a simple, noninvasive,
painless, and readily available modality that can assess the anatomy and physiology of the lower extremity venous system. It can help determine which saphenous junctions are incompetent, the diameter of the junctions, the extent of reflux, and the location and size of other incompetent perforating veins. It can also assess for acute and occult deep venous thrombosis and superficial thrombophlebitis. Reflux is defined as a retrograde flow duration of more than 350 milliseconds in the perforating veins, more than 500 milliseconds in the superficial and deep calf veins, and more than 1,000 milliseconds in the femoropopliteal veins.\textsuperscript{16,17}

Other imaging modalities, such as computed tomography, magnetic resonance imaging, venography, and plethysmography, are used only if venous ultrasonography is inconclusive or for more complex surgical situations.\textsuperscript{7}

## Treatment

Use of the CEAP classification system is important for diagnosis but does not provide guidance for treatment decisions. Treatment options for varicose veins include conservative management and interventional therapies such as thermal ablation, endovenous sclerotherapy, and surgery (\textit{Table 2}).\textsuperscript{7,15,18}

The decision to proceed with treatment and the choice of treatment are based on symptoms and patient preferences. Other considerations include cost, potential for complications, availability of resources, insurance reimbursement, and physician training. The presence or absence of deep venous insufficiency and the characteristics of the affected veins can also help guide treatment.\textsuperscript{17}

Over the past 10 years, there has been a significant change in the recommendations for treatment of symptomatic varicose veins. This is in large part because of the lack of evidence supporting the use of compression stockings and the rise of minimally invasive endovascular techniques.

### CONSERVATIVE MANAGEMENT

Conservative treatment options include external compression; lifestyle modifications, such as

\begin{table}[h]
\centering
\caption{Treatment Options for Varicose Veins}
\begin{tabular}{|l|l|}
\hline
\textbf{Treatment} & \textbf{Comments} \\
\hline
\textbf{Conservative measures} & \\
Compression (e.g., bandages, support stockings, intermittent pneumatic compression devices) & Compression stockings can provide relief from discomfort, although evidence is lacking; external compression is first-line treatment only in pregnant women \\
Elevation of the affected leg & May improve symptoms in some patients \\
Lifestyle modifications & Examples include avoidance of prolonged standing and straining, exercise, wearing nonrestrictive clothing, modification of cardiovascular risk factors, and interventions to reduce peripheral edema \\
Weight loss & Weight loss may improve symptoms in patients who are obese \\
Phlebotonics & Most are available as dietary supplements (often with multiple agents in one supplement) and are sold over the counter in the United States; horse chestnut seed extract (\textit{Aesculus hippocastanum}) may provide symptomatic relief, but long-term studies are lacking \\
\hline
\textbf{Interventional} & \\
Thermal ablation & \\
External laser thermal ablation & Works best for telangiectasias \\
Endovenous thermal ablation (using a laser or radio waves) & Used for larger vessels, including the greater saphenous vein \\
Endovenous sclerotherapy & A variety of agents may be used, including hypertonic saline, sodium tetradecyl (Sotradecol), and polidocanol (Varithena) \\
Surgery (ligation and stripping or phlebectomy with multiple small incisions) & Although surgery has historically been the most widely recommended treatment option, a growing body of literature does not consistently support surgery as the best interventional treatment option; updated surgical techniques use small incisions to reduce scarring, blood loss, and complications and limit removal of the superficial axial veins from the groin to knee, and may be performed under local or regional anesthesia \\
\hline
\end{tabular}
\end{table}
VARICOSE VEINS

avoidance of prolonged standing and straining, exercise, wearing nonrestrictive clothing, modification of cardiovascular risk factors, and interventions to reduce peripheral edema; elevation of the affected leg; weight loss; and phlebotonics. These measures are recommended for patients who are not candidates for endovenous or surgical management, do not desire intervention, or are pregnant.7,15

Compression has long been recommended as initial therapy for varicose veins. However, there is not enough evidence to determine if compression stockings are effective in the treatment of varicose veins in the absence of active or healed venous ulcers.7,19-21 The 2013 National Institute for Health and Care Excellence clinical guidelines recommend offering external compression only if interventional treatment is ineffective and as first-line therapy only in pregnant women.15

In some cases, a trial of external compression may be required by insurance companies before approval of interventional treatments. Although the optimal length and pressure for effective treatment has not been determined, typical recommendations include wearing 20 to 30 mm Hg elastic compression stockings with a gradient of decreasing pressure from the distal to proximal extremity.22

Phlebotonics are oral and topical therapies that may increase venous tone, improve capillary hyperpermeability, and decrease blood viscosity with the goal of decreasing symptoms of chronic venous insufficiency.23 They include flavonoids or other compounds often extracted from plants, such as rutin (also called rutoside), diosmin, hidrosmin, disodium flavodate, French maritime pine bark extract (Pycnogenol), grape seed extract, and horse chestnut seed extract (Aesculus hippocastanum). Diosmiplex (Vasculera) is the only prescription formulation available in the United States.23 Diosmiplex is derived from orange rinds and is categorized as a medical food, not a drug. The usual dosage is 630 mg daily.

Horse chestnut seed extract appears to be safe and effective in reducing pain, edema, and pruritus from chronic venous insufficiency when used for two to 16 weeks. The common dosage is 300 mg twice daily or 50 mg of escin, the active compound.24 There is moderate-quality evidence that other phlebotonics may improve edema and possibly decrease symptoms such as cramps, restless legs, and paresthesia.25

Most phlebotonics are available as dietary supplements in the United States, and many formulations contain multiple phlebotonics in a single supplement. Long-term studies of the safety and effectiveness of phlebotonics for the treatment of varicose veins are lacking.25

INTERVENTIONAL TREATMENTS

Thermal Ablation. Thermal ablation destroys damaged veins using an external laser or via endovenous catheter using a laser (endovenous laser ablation) or radio waves (radiofrequency ablation). External laser thermal ablation works best for telangiectasias. In this therapy, hemoglobin absorbs the laser light leading to thrombocoagulation.26 Endovenous thermal ablation can be used for larger vessels, including the great saphenous vein. Under ultrasound guidance, a laser optical fiber or radiofrequency catheter electrode is inserted into the vein in a distal to proximal direction. Heat from the laser or radio waves coagulates the blood in the vein, resulting in closure of the vein and redirection of blood flow to functional veins.26,27

Endovenous thermal ablation is performed after a local anesthetic is injected around the vein. Patients can walk after the procedure and may be discharged home the same day. Patients may return quickly to work and other activities. There is a risk (approximately 7%) of surrounding nerve damage attributed to thermal injury; however, most nerve damage is temporary.27 Endovenous thermal ablation is recommended as first-line treatment for nonpregnant patients with symptomatic varicose veins and documented valvular reflux, and need not be delayed for a trial of external compression.7,15

Endovenous Sclerotherapy. Endovenous sclerotherapy involves using ultrasound guidance to inject superficial veins with an agent that causes inflammation of the endothelium, resulting in fibrosis and occlusion in the vein.27 Sclerotherapy is typically used for small (1 to 3 mm) and medium (3 to 5 mm) veins or to treat recurrent varicose veins after surgery; however, there is not a precise diameter used to make treatment decisions.28

A needle is inserted into the vein lumen and the sclerosing agent is injected, often with air to
create a foam. The foam displaces the blood and reacts with the vascular endothelium, sealing and scarring the vein. A variety of agents may be used, including hypertonic saline, sodium tetradecyl (Sotradecol), and polidocanol (Varithena). There is no evidence that any of these agents is superior to the others in terms of effectiveness or patient satisfaction.29

Surgery. Historically, surgery with ligation and stripping of the great or small saphenous vein has been the standard of care for the treatment of varicose veins after the failure of conservative therapy. However, a growing body of literature does not consistently support surgery as the best interventional treatment option, and the 2013 National Institute for Health and Care Excellence clinical guidelines recommend surgery as third-line therapy after endovenous thermal ablation and sclerotherapy.15,30,31

Updated surgical techniques use small incisions to reduce scarring, blood loss, and complications and limit removal of the superficial axial veins from the groin to knee. Some of these procedures can be performed under regional or local anesthesia.7 Ligation and stripping of the great and small saphenous vein are probably the best-known procedures. Typically, the vein is divided proximally, a vein stripper is passed distally to an incision made near the knee to access the tip of the stripper. The proximal end of the stripper is secured to the vein and the vein is then removed as the stripper is pulled distally. Nonsaphenous and smaller veins can be removed via phlebectomy, during which a scalpel or large-gauge needle is used to create punctures every 2 to 3 cm along a varicose vein. Segments of the damaged vein are removed using forceps or small hooks.

OUTCOME DATA
A 2014 Cochrane review concluded that endovenous laser ablation, radiofrequency ablation, and foam sclerotherapy are as effective as surgery for great saphenous vein varices.30 Prior literature suggested that traditional surgical treatment of varicose veins with great saphenous vein ligation at the saphenofemoral junction and stripping has a five-year recurrence rate of 20% to 28%.30 Clinical recurrence of varicose veins at five years was measured in only one study in the Cochrane review and suggested no difference between endovenous laser ablation and surgery.30

Maintaining saphenous vein occlusion at six months is less likely with sclerotherapy than with endovenous laser ablation or surgery (43% vs. 80%).31 Endothermal ablation resulted in less recurrence of reflux at one year compared with surgery when treating varicose veins of the small saphenous vein resulting from incompetence of the saphenous-popliteal junction.27

Nonsurgical therapies may have faster return-to-work and recovery times than surgery. Endovenous laser ablation may be better tolerated than sclerotherapy and surgery, with fewer adverse effects and equal effectiveness.30,31 For all three therapies, rates of minor and major complications, including numbness, persistent bruising or tenderness, skin ulceration, skin staining, and lumpiness, are relatively low (1% to 7%).31 Hematomas occur more often with surgical treatment than with foam sclerotherapy or radiofrequency ablation. Endovenous laser ablation appears to be superior to surgery in terms of technical failure and neovascularization. Although all interventional treatment leads to symptomatic improvement, the improvement at six months may be more significant with endovenous laser ablation and surgery than with foam sclerotherapy.31

This article updates a previous article on this topic by Jones and Carek.18

Data Sources: A search was performed in Essential Evidence Plus. Additionally, PubMed and the Cochrane database were searched using the key term varicose veins. The PubMed search was limited to English language, humans, 10 years, and systematic reviews. Search dates: March 15, 2018; June 6, 2018; and February 21, 2019.

The Authors
JAQUELINE RAETZ, MD, is an associate professor in the University of Washington Family Medicine Residency program, Seattle.

MEGAN WILSON, MD, is an assistant professor in the University of Washington Family Medicine Residency program.

KIMBERLY COLLINS, MD, is an assistant professor in the University of Washington Family Medicine Residency program.

Address correspondence to Jaqueline Raetz, MD, 331 NE Thornton Place, Seattle, WA 98125 (e-mail: jraetz@uw.edu). Reprints are not available from the authors.
REFERENCES


Adolescent use of illicit substances imposes an enormous burden on individuals, families, and communities. The types of illicit substances adolescents are using have changed drastically over the past decade with decreases in alcohol use (including binge alcohol use) offset by increases in electronic cigarette, marijuana, and opioid use. Primary care physicians have the opportunity to identify adolescents who use illicit substances. The U.S. Preventive Services Task Force and the American Academy of Family Physicians found insufficient evidence to assess the balance of benefits and harms of primary care–based behavioral interventions to prevent or reduce illicit substance use or nonmedical pharmaceutical use in children or adolescents. The American Academy of Pediatrics recommends that clinicians become familiar with Screening, Brief Intervention, and Referral to Treatment initiatives. Validated screening tools that may be used in primary care include the CRAFFT, POSIT, AUDIT, and NIAAA Screening Guide. During the clinical visit, a split-visit model encourages parents to participate in the visit for a limited time but also allows adolescents to have confidential conversations with physicians. Evidence-based treatment modalities range from school- and parent-based interventions to medication-assisted treatment. Brief interventions using components of motivational interviewing may be suitable for addressing substance use, even among adolescents not seeking treatment. Prevention efforts can supplement cessation programs to maximize program effectiveness. (Am Fam Physician. 2019;99(11):689-696. Copyright © 2019 American Academy of Family Physicians.)

**WHAT IS NEW ON THIS TOPIC**

Adolescent Substance Use and Misuse
In 2017, e-cigarettes were the most commonly used nicotine-delivery product among high school students.

Approximately 27% of adolescents 13 to 18 years of age who drink alcohol mix it with energy drinks. These adolescents are at increased risk for using tobacco and marijuana and for nonmedical use of prescription stimulants.

Seventeen percent of adolescents have taken prescription drugs without a doctor’s prescription.
Aadolescent Substance Use and Misuse

Monitoring the Future surveys show decreases in 30-day, annual, and lifetime use in 2015, including significant declines in current and binge drinking. Approximately 27% of alcohol-using adolescents 13 to 18 years of age mix alcohol with energy drinks, which is a risk factor for tobacco, marijuana, and nonmedical use of prescription stimulants.

In 2015, adolescent use of illicit substances was reported to be 2.1% for heroin, 5.2% for cocaine, 6.4% for hallucinogens, and 9.2% for synthetic marijuana. National estimates indicate that approximately 5% of adolescents had used ecstasy/methylenedioxymethamphetamine (MDMA). Other research, however, indicates that the estimate could be as high as 8% because many adolescents do not realize that the substance they know as Molly is a form of ecstasy. Approximately 16.8% of adolescents have taken prescription drugs without a physician’s prescription (nonmedical use of prescription drugs).

The opioid epidemic does not spare the younger population. From 1997 to 2012, hospitalizations for prescription opioid poisoning in children and adolescents increased 165% (1.40 to 3.71 per 100,000); for adolescents older than 15 years, hospitalizations for heroin and methadone poisoning increased 161% (0.96 to 2.51 per 100,000) and 950% (0.10 to 1.05 per 100,000), respectively. Nonmedical consumption of codeine cough syrup is sometimes an introduction to opioid misuse among youth. The cough syrup is typically mixed with soda or occasionally alcohol and is colloquially known as lean, sizurp, or purple drank.

Previous research showed that misuse of codeine cough syrup was primarily by black youth. Other research, however, indicates that the use of lean is also high among Hispanic and Native American youth; males; homosexual, bisexual, and transgender individuals; and youth from urban areas.

The types of products and the ways in which they are used have changed drastically over the past decade. Traditional cigarette use is low and declining, but high school students’ use of any tobacco product within 30 days (19.6%) has not changed significantly from 2011 to 2017, primarily because of the increase in hookah and electronic cigarette (e-cigarette) use. The use of cigarillos (smaller, unfiltered cigars) is also prevalent. Cigarillo users often empty the tobacco and replace the contents with marijuana, creating a blunt.

In 2017, e-cigarettes were the most commonly used nicotine-delivering product among high school students. E-cigarette usage, or vaping, has also become a method for administering marijuana; in national and community samples of high school students, rates of vaporizing marijuana by using e-cigarettes were high (10% to 29.2%). In 2018, 21% of U.S. 12th graders reported vaping nicotine in the past 30 days.

A JUUL is a popular vaping tool that delivers high concentrations of nicotine and has a sleek appearance similar to a computer flash drive. JUUL products are promoted on social media platforms whose primary audiences are youth or young adults. JUUL Labs, Inc., and retailers selling the JUUL product have received warning letters from the U.S. Food and Drug Administration and have been subjected to fines for illegally selling these products to minors.

Physicians are valued as a trustworthy source of information, so they may be asked to provide information about vaping and e-cigarettes to patients and their families. The role of e-cigarettes as a form of nicotine delivery continues to

<table>
<thead>
<tr>
<th>Clinical recommendation</th>
<th>Evidence rating</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>The American Academy of Pediatrics recommends that physicians become knowledgeable about the Screening, Brief Intervention, and Referral to Treatment (SBIRT) guidelines.</td>
<td>C</td>
<td>35</td>
</tr>
<tr>
<td>The U.S. Preventive Services Task Force and the American Academy of Family Physicians conclude that the current evidence is insufficient to assess the balance of benefits and harms of primary care–based behavioral interventions to prevent or reduce illicit substance or nonmedical pharmaceutical use in children and adolescents.</td>
<td>C</td>
<td>48, 49</td>
</tr>
<tr>
<td>Primary care treatment for adolescent substance use should be coordinated with treatment from other mental health experts.</td>
<td>C</td>
<td>50</td>
</tr>
<tr>
<td>Brief interventions using components of motivational interviewing may reduce illicit substance use among adolescents.</td>
<td>C</td>
<td>41, 53</td>
</tr>
</tbody>
</table>

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to https://www.aafp.org/afpsort.
be debated, but physicians can provide accurate information on meaningful differences in product risks.\textsuperscript{25}

**Sociodemographic Differences**

Between 2002 and 2014, male and female adolescents 12 to 17 years of age had similar 12-month prevalence rates of SUDs and decreasing trends in use of illicit substances. Male adolescents are typically more likely to use most illicit substances; female adolescents are more likely to use nonmedical amphetamines and tranquilizers.\textsuperscript{10} Risk factors for illicit substance use include dropping out of high school and ease of access to substances.\textsuperscript{26} Rural adolescents reported easier access to tobacco products and steroids; urban adolescents reported greater access to alcohol, marijuana, cocaine, methamphetamine, inhalants, ecstasy, hallucinogens, and prescription drugs.\textsuperscript{27} Neighborhood economic disadvantage, social disorder, and high unemployment rates may play a larger role than individual-level factors in the variance of alcohol and illicit substance use among black adolescents compared with white adolescents.\textsuperscript{28}

**Screening and Diagnosis**

Mild, moderate, or severe SUD is identified in persons who meet criteria in the Diagnostic and Statistical Manual of Mental Disorders, 5th ed., indicating significant clinical and/or functional impairment (Table 1).\textsuperscript{29} Because 81\% of patients seeking SUD treatment had been seen by a primary care physician during the previous year, primary care physicians have the opportunity to identify adolescents who use substances.\textsuperscript{30} However, few primary care physicians screen adolescents according to guidelines,\textsuperscript{30} likely because of low reported levels of preparedness,\textsuperscript{34} knowledge,\textsuperscript{30} and low perceived confidence\textsuperscript{12} to identify and treat substance use.

**TABLE 1**

<table>
<thead>
<tr>
<th>Diagnostic Criteria for Substance Use Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. A problematic pattern of use of an intoxicating substance not able to be classified within the alcohol; caffeine; cannabis; hallucinogen (phencyclidine and others); inhalant; opioid; sedative, hypnotic, or anxiolytic; stimulant; or tobacco categories and leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:</td>
</tr>
<tr>
<td>1. The substance is often taken in larger amounts or over a longer period than was intended.</td>
</tr>
<tr>
<td>2. There is a persistent desire or unsuccessful efforts to cut down or control use of the substance.</td>
</tr>
<tr>
<td>3. A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.</td>
</tr>
<tr>
<td>4. Craving, or a strong desire or urge to use the substance.</td>
</tr>
<tr>
<td>5. Recurrent use of the substance resulting in a failure to fulfill major role obligations at work, school, or home.</td>
</tr>
<tr>
<td>6. Continued use of the substance despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of its use.</td>
</tr>
<tr>
<td>7. Important social, occupational, or recreational activities are given up or reduced because of use of the substance.</td>
</tr>
<tr>
<td>8. Recurrent use of the substance in situations in which it is physically hazardous.</td>
</tr>
<tr>
<td>9. Use of the substance is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.</td>
</tr>
<tr>
<td>10. Tolerance, as defined by either of the following:</td>
</tr>
<tr>
<td>a. A need for markedly increased amounts of the substance to achieve intoxication or desired effect.</td>
</tr>
<tr>
<td>b. A markedly diminished effect with continued use of same amount of the substance.</td>
</tr>
<tr>
<td>11. Withdrawal, as manifested by either of the following:</td>
</tr>
<tr>
<td>a. The characteristic withdrawal syndrome for other (or unknown) substance (refer to Criteria A and B of the criteria sets for other or unknown substance withdrawal).</td>
</tr>
<tr>
<td>b. The substance (or a closely related substance) is taken to relieve or avoid withdrawal symptoms.</td>
</tr>
</tbody>
</table>

Specify if:

In early remission: After full criteria for other (or unknown) substance use disorder were previously met, none of the criteria for other (or unknown) substance use disorder have been met for at least 3 months but for less than 12 months (with the exception that Criterion A4, “Craving, or a strong desire or urge to use the substance,” may be met). In sustained remission: After full criteria for other (or unknown) substance use disorder were previously met, none of the criteria for other (or unknown) substance use disorder have been met at any time during a period of 12 months or longer (with the exception that Criterion A4, “Craving, or a strong desire or urge to use the substance,” may be met).

Specify if:

In a controlled environment: This additional specifier is used if the individual is in an environment where access to the substance is restricted.

To assist physicians in managing substance use in adolescents, the Substance Abuse and Mental Health Services Administration (SAMHSA) launched the Screening, Brief Intervention, and Referral to Treatment (SBIRT) initiative. Screening flowcharts based on the SBIRT model are available (http://pediatrics.aappublications.org/content/128/5/e1330 and http://pediatrics.aappublications.org/content/138/1/e20161211). The American Academy of Pediatrics (AAP) recommends that physicians become familiar with adolescent SBIRT practices.

SCREENING TOOLS
Several validated screening tools that may be used in primary care, including the CRAFFT questionnaire, Problem Oriented Screening Instrument for Teenagers (POSIT), Alcohol Use Disorders Identification Test (AUDIT), and the National Institute on Alcohol Abuse and Alcoholism Screening Guide, are reviewed in Table 2. The CAGE questionnaire is not recommended for use with adolescents because of its low sensitivity. Self-administered computer screening may be a valid and time-efficient alternative to in-person screening.

CONFIDENTIALITY
Confidentiality in adolescent health care visits is a significant predictor of the number and subject matter of health

**TABLE 2**

<table>
<thead>
<tr>
<th>Screening tool</th>
<th>Patients</th>
<th>Time to administer</th>
<th>Optimal cut-point associated with problem use</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Use Disorders Identification Test (AUDIT)**</td>
<td>13 to 19 years of age; college students; emergency department patients</td>
<td>2 minutes</td>
<td>2</td>
<td>0.88 (0.83 to 0.93)</td>
<td>0.81 (0.77 to 0.85)</td>
</tr>
<tr>
<td>CAGE Questionnaire*</td>
<td>Adults (not recommended for use with adolescents)</td>
<td>Not applicable</td>
<td>1</td>
<td>0.37 (0.29 to 0.44)</td>
<td>0.96 (0.94 to 0.98)</td>
</tr>
<tr>
<td>CRAFFT Questionnaire†</td>
<td>14 to 18 years of age</td>
<td>74 seconds via paper; 49 seconds via computer</td>
<td>1</td>
<td>0.92 (0.88 to 0.96)</td>
<td>0.64 (0.59 to 0.69)</td>
</tr>
<tr>
<td>National Institute on Alcohol Abuse and Alcoholism (NIAAA) Screening Guide§</td>
<td>Offers age-specific screening questions (9 to 11, 11 to 14, and 14 to 18 years of age)</td>
<td>Not documented; only two questions in length</td>
<td>Varies by age</td>
<td>0.87 (0.76 to 0.94)</td>
<td>0.84 (0.82 to 0.86)</td>
</tr>
<tr>
<td>Problem Oriented Screening Instrument for Teenagers (POSIT)**</td>
<td>12 to 19 years of age</td>
<td>20 to 30 minutes</td>
<td>1</td>
<td>0.84 (0.79 to 0.90)</td>
<td>0.89 (0.86 to 0.92)</td>
</tr>
</tbody>
</table>

*—CAGE = Have you ever felt you should Cut down on your drinking? Have people Annoyed you by criticizing your drinking? Have you ever felt bad or Guilty about your drinking? Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (Eye opener)?†—CRAFFT = Have you ever ridden in a Car driven by someone (including yourself) who was high or had been using alcohol or drugs? Do you ever use alcohol or drugs to Relax, feel better about yourself, or fit in? Do you ever use alcohol or drugs while you are by yourself, Alone? Do you ever Forget things you did while using alcohol or drugs? Do your family or Friends ever tell you that you should cut down on your drinking or drug use? Have you ever gotten into Trouble while you were using alcohol or drugs?

Information from references 36 through 38.
ADOLESCENT SUBSTANCE USE AND MISUSE

topics discussed. Adolescents particularly fear that alcohol, tobacco, or illicit substance use may be disclosed to their parents and/or legal authorities. Physicians should be aware of federal and state laws that apply to adolescent minor confidentiality because these may differ among states. Parental support for adolescent confidentiality can be mixed, so research suggests a split-visit model. This model encourages parents to participate in the clinical visit for a limited time but then requests that parents leave the examination room to allow for an adolescent-physician confidential conversation. The American Academy of Family Physicians supports offering adolescents examinations and counseling separate from parents. It is essential for physicians and other health care professionals to explain the benefits of this model and to clarify adolescent and parent expectations and boundaries.

LABORATORY TESTING

Laboratory (urine or serum) testing has limited use for diagnostic purposes and documenting history of substance use. On the use of drug testing in children and adolescents are not clear, although the AAP supports further study of its safety and effectiveness. The AAP further recommends against implementing school- and home-based testing and supports informing concerned parents about the limitations of such testing.

Prevention and Treatment

The U.S. Preventive Services Task Force and American Academy of Family Physicians have found insufficient evidence to assess the balance of benefits and harms of primary care–based behavioral interventions to prevent or reduce illicit substance use or nonmedical pharmaceutical use in children or adolescents.

Although early identification is ideal, screening and interventions can be useful at any stage of illicit substance use. Prevention and treatment strategies often go together; prevention efforts can supplement cessation programs to maximize program effectiveness. Prevention programming aims to decrease risk and to promote protective factors while considering specific population characteristics, cultural influences, and determinants of health. Among Monitoring the Future survey participants, 40% of past year users of narcotics stated that they were originally prescribed their narcotics. To deter nonmedical use of prescription drugs by adolescent patients, prescribing physicians should consider reducing the number of prescriptions or amount in the prescription. As in treatment planning and delivery, prevention strategies focus on families, schools, and communities (Table 3). Treatment should address the needs of the whole person. Coexisting mental health problems should be identified and treated in conjunction with SUD, and primary care physicians should refer, as appropriate, to child/adolescent psychiatrists. Evidence-based treatment modalities range from school- and parent-based interventions that seek to involve the family in treatment to medication-assisted treatment (such as buprenorphine and naltrexone [Revia] in the treatment of opioid use disorder; Table 4).

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**TABLE 3**

**Adolescent Substance Use Resources**

**General information**

- The Community Guide: Adolescent Health [https://www.thecommunityguide.org/topic/adolescent-health/?field_recommendation_tid=All&items_per_page=5](https://www.thecommunityguide.org/topic/adolescent-health/?field_recommendation_tid=All&items_per_page=5)
- SAMHSA [https://www.samhsa.gov/](https://www.samhsa.gov/)

**Support and treatment**


**Cultural awareness**

- SAMHSA = Substance Abuse and Mental Health Services Administration; TIP = treatment improvement protocol.

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TABLE 4

Principles of Substance Use Disorder Treatment

Behavioral approach
Helps adolescents participate actively in recovery from illicit substance use; may include referral to community agencies that provide the following services:
- 12-step facilitation
- Adolescent community reinforcement
- Cognitive behavior therapy
- Contingency management
- Group therapy
- Motivational enhancement therapy

Family-based approach
Highlights the need to engage the adolescent’s family in treatment; may include assisting the family to access agencies that offer the following services:
- Brief strategic family therapy
- Family behavior therapy
- Functional family therapy
- Multidimensional family therapy
- Multisystemic therapy

Addiction medications
Can be effective, but none are approved by the U.S. Food and Drug Administration to specifically treat adolescents; some physicians use the following off-label for older adolescents:
- Alcohol use disorders
  - Acamprosate (Campral)
  - Disulfiram (Antabuse)
  - Naltrexone
- Nicotine use disorders
  - Bupropion (Zyban)
  - Nicotine replacement therapies
  - Varenicline (Chantix)
- Opioid use disorders
  - Buprenorphine
  - Methadone
  - Naltrexone (Revia)

Recovery support services
Used to reinforce gains made in treatment and to improve quality of life; physicians can make referrals to these services, including the following:
- Assertive continuing care
- Mutual help groups
- Peer recovery support
- Recovery high schools

Information from reference 50.

ADOLESCENT SUBSTANCE USE AND MISUSE

MOTIVATIONAL INTERVIEWING

Motivational interviewing is a way to develop conditions for positive behavior change and is especially suitable for communication with adolescents.

It has a patient-centered focus and is designed to help individuals explore and resolve ambivalence around behavior change, including illicit substance use. Brief interventions using components of motivational interviewing may be suitable for addressing substance use, even among adolescents not seeking treatment for SUD.

A previous AFP article (https://www.aafp.org/afp/2018/1215/p719.html; Tables 5, 6, and 7) provides examples of motivational interviewing.

Current and future initiatives for further reduction of adolescent substance use include SBIRT programs, increased training of primary care physicians, and expansion of integrated primary care and behavioral health systems to overcome the fragmented nature of our current health care system and the way provision of and payment for treatment have been managed.

Public and private social welfare initiatives that work to safeguard vulnerable youth may help to mitigate or prevent health care disparities in child and adolescent populations.

This article updates a previous article by Griswold, et al.

Data Sources:
We searched Medline using the key words adolescent, youth, substance use, substance abuse, alcohol, drug(s), tobacco, prevention, screening, treatment, primary care, physician. We repeated our search using Cochrane Database of Systematic Reviews and governmental websites, including SAMHSA, NIDA, and NIIAA. Search dates: October 2017 and December 2018.

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The authors gratefully acknowledge the suggestions made by Dr. Gregory Hornish, Dr. Linda Kahn, and Joan Kernan. We thank Angela Henke for her expert assistance on this manuscript.

The Authors

JESSICA A. KULAK, PhD, MPH, is an assistant professor in the Department of Health, Nutrition, and Dietetics at Buffalo (NY) State College. At the time this article was written, she was a postdoctorate fellow at the Primary Care Research Institute in the Department of Family Medicine, State University of New York at Buffalo.

KIM S. GRISWOLD, MD, MPH, is a professor at the Primary Care Research Institute in the Department of Family Medicine, Jacobs School of Medicine and Biomedical Sciences, State University of New York at Buffalo.

Address correspondence to Jessica A. Kulak, PhD, MPH, 205 Houston Gym, 1300 Elmwood Ave., Buffalo, NY 14222 (e-mail: jakulak@buffalo.edu). Reprints are not available from the authors.
References


ADOLESCENT SUBSTANCE USE AND MISUSE


The future of health begins with you

The more researchers know about what makes each of us unique, the more tailored our health care can become.

Join a research effort with one million or more people nationwide to create a healthier future for all of us.

JoinAllofUs.org/together

Precision Medicine Initiative, PMI, All of Us, the All of Us logo, and “The Future of Health Begins with You” are service marks of the U.S. Department of Health and Human Services.
We’re calling on one million people to lead the way toward better health.

What is precision medicine?

Precision medicine is health care that is based on you as an individual. It takes into account factors like where you live, what you do, and your family health history. The goal is to be able to tell people the best ways to stay healthy. If someone does get sick, precision medicine may help health care teams find the treatment that will work best.

What is the All of Us Research Program?

The All of Us Research Program is a large research program. The goal is to help researchers understand more about why people get sick or stay healthy. People who join will give us information about their health, habits, and what it’s like where they live. By looking for patterns, researchers may learn more about what affects people’s health.

How do I join the All of Us Research Program?

There are three ways to join:

• Visit the All of Us website JoinAllofUs.org.
• Download the All of Us app.
• If you get health care at one of our affiliated health care provider organizations, you can join there.

Because the All of Us Research Program is research, you will be asked to complete an informed consent process. This process tells more about what is involved, and the risks and benefits of joining.

What will you ask me to do?

If you decide to join All of Us, we will ask you to share different kinds of information. We will ask you basic information like your name and where you live, questions about your health, family, home, and work. If you have an electronic health record, we may ask for access. We might also ask you to give samples, like blood or urine.

How long will the All of Us Research Program last?

All of Us may last for at least 10 years. We hope you will stay involved over time. If you join, you can withdraw at any time for any reason without penalty.

Why should I join the All of Us Research Program?

You will be contributing to research that may improve health for everyone. Here are some examples of what researchers might be able to discover:

• Better tests to see if people are sick or are at risk of getting sick.
• Better mobile apps to encourage healthy habits.
• Better medicine or information about how much of a medicine is right for each person.

What will you do to protect my privacy?

We will take great care to protect your information. Here are a few of the steps we will take:

• Information we have about you will be stored on protected computers. We will limit and keep track of who sees the information.
• We will remove your name and other direct identifiers (like your date of birth) from your information and replace them with a code.
• Researchers must promise not to try to find out who you are.
• We will tell you if there is a data breach.
• The All of Us Research Program has Certificates of Confidentiality from the U.S. government. This will help us fight legal demands (such as a court order) to give out information that could identify you.

(844) 842-2855  JoinAllofUs.org/together  help@joinallofus.org
A family caregiver is broadly defined as a friend or relative who provides unpaid assistance for a person with a chronic or disabling condition. Eighty percent of adults requiring long-term care currently live at home in the community, and unpaid family caregivers provide 90% of their care. These caregivers fill an important role for the family and provide a substantial cost savings of an estimated $470 billion nationwide in 2013. Family caregivers serve as a critical extension of the U.S. health care system, and the demand for family caregivers is expected to increase during the next few decades. Caring for loved ones is associated with several benefits, including personal fulfillment; however, caregiving is also associated with physical, psychological, and financial burdens. Family physicians can aid in the identification, support, and treatment of caregivers by offering caregiver assessments—interviews directed at identifying high levels of burden—as soon as caregivers are identified. Repeat assessments may be considered when there is a change in the status of the caregiver or the care recipient. Caregivers should be directed to appropriate resources for support, including national caregiving organizations, local elder care agencies, websites, and respite care. Psychoeducation, skills training, and therapeutic counseling interventions for caregivers have shown small to moderate success by decreasing caregiver burden and increasing caregiver quality of life. Additional research is needed to further identify strategies to offset caregiver stress, depression, and poor health outcomes. Support and anticipatory guidance for the caregiver is especially helpful during care transitions and at the care recipient’s end of life.

---

**TABLE 1**

<table>
<thead>
<tr>
<th>Characteristics of Care Recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age: 69 years</td>
</tr>
<tr>
<td>Behavioral problems (7%)</td>
</tr>
<tr>
<td>Female (65%)</td>
</tr>
<tr>
<td>Hospitalized in past 12 months (53%)</td>
</tr>
<tr>
<td>Memory problems (26%)</td>
</tr>
<tr>
<td>Need assistance with activities of daily living (59%)</td>
</tr>
<tr>
<td>Need assistance with instrumental activities of daily living (99%)</td>
</tr>
</tbody>
</table>

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Information from reference 6.
burden are more likely to be less educated, to live with the care recipient, to provide more than 21 hours of caregiving per week, to care for someone with cognitive impairment or difficult to manage behaviors, and to perceive they had no choice in assuming the caregiver role (Table 3). It is less common to have multigenerational family homes in the United States, which may place a more direct burden on one family member. Spousal caregivers are at high risk of caregiver burden, often providing a high number of care hours and assisting with medical tasks, and they are less likely to have additional help. Most caregivers report having less time for family and friends, having increased emotional stress, and neglecting self-care, such as healthy sleep, exercise, and dietary habits.

Caregiver Assessment

Caregiver assessment refers to a systematic, family-centered process of gathering information about a caregiver situation to identify needs and resources. Assessment can be performed by the family physician or other health care team member. Ideally, caregivers and care recipients should be interviewed together and separately to allow assessment of confidential information such as elder abuse or caregiver stress.

WHAT IS NEW ON THIS TOPIC

Caregiver Care

Online interactive programs significantly reduce patient physical symptoms and decrease caregiver burden and depressive symptoms.

In caregivers of people with dementia, a meta-analysis showed that multicomponent interventions (e.g., education, resiliency training, problem solving) can reduce depressive symptoms, improve quality of life, and reduce caregiver burden.

The National Family Caregiver Support Program is the first federally funded program to formally recognize caregivers. However, in 2016, the program received only $150 million in federal funding, approximately one-twentieth of one percent of the estimated value of caregiver contributions to the health system.

TABLE 2

Elements of Caregiver Burden

Financial effects
- Increased absenteeism or reduced work hours
- Increased self-reported financial strain
- Loss of promotional and training opportunities
- Loss of salary and benefits
- Reduction in retirement savings and Social Security benefits

Health effects
- Higher inflammatory burden and other biomarkers of poor health in caregivers for people with dementia
- Higher rates of insomnia and depression
- Increased mortality for spousal caregivers
- Less likely to engage in preventive care
- Subjective sense of worsening health

Inadequate preparation, knowledge, and skills
- Lack of information on how to care for recipient: safety, activities of daily living
- Lack of information on self-care: coping with stress, finding time for self
- Lack of information on support services

Information from 1, 3, 6 through 12.

TABLE 3

Characteristics of Caregivers

Average age: 49 years
Average hours of care provided per week: 24.4
Feel they had no choice in role (50%)
Female (60%)
Help with medical and nursing tasks (57%)
Provide care more than five years (24%)
Provide care more than 21 hours per week (26%)

Information from reference 6.
CAREGIVER CARE

Caregiver Strain Index at https://consultgeri.org/try-this/general-assessment/issue-14.pdf. The adapted Zarit Burden Interview is another validated tool that can be used to assess caregiver burden; see appendix at https://bit.ly/2Hso3qt.

Caregiver Support

Despite many published research trials showing effective interventions, such as multidimensional and psychoeducational interventions, there has been a delay in translating the research into resources that are readily accessible to caregivers. This requires development of best practices, assessment of clinical relevance, and restructuring of reimbursements to allow for sustainability. Until this happens, family physicians can focus on practical, individualized interventions aimed at assisting caregivers.

Caregivers should be encouraged to take a break, join a support group, and pursue their own interests. They should be encouraged to take care of their own health, including preventive health care, and to seek respite care when needed.

Family physicians should provide accurate, disease-specific education and resources for obtaining more information (Table 4). Online toolkits, such as the AARP’s Prepare to Care: A Planning Guide for Families, can be easily accessed and provided during an office visit. Caregivers should be offered training in medical tasks and specific care needs with the help of therapists and nurses. Referrals should be made to appropriate resources such as local elder care agencies, home health care services, adult day programs, and meal delivery services.

Family physicians should encourage caregivers to participate in the health care of the recipient. Evidence suggests that when care recipients and caregivers are treated as a dyad, outcomes for both are improved. Caregivers often know the most about the needs of the care recipient and can be vital allies in the care management plan. Evidence shows that caregiver involvement and agreement with the care plan increases adherence to recommendations.

There is strong evidence that early palliative care interventions for patients with serious illness improve quality of life and family satisfaction, and can reduce caregiver burden. Family physicians are uniquely positioned to provide primary palliative care, such as facilitating goals of care discussions and advance care planning. Addressing the care recipient’s symptoms of chronic illness can improve the caregiver’s quality of life and help relieve the caregiver’s distress over the recipient’s discomfort.

Caregiver care often necessitates offering innovations in self-management through technology. Family caregivers can now access educational materials as well as connect with other caregivers online. Websites and apps are available to schedule tasks and help families coordinate caregivers, meal delivery, and appointments. Wearable technology and remote monitoring systems are expanding and hold promise for improving the lives of caregivers. Online interactive programs have shown reductions in patient physical symptoms and in caregiver burden and depressive symptoms. Advancements in smart home environments allow caregivers to monitor care recipients from remote locations, detecting changes and preventing adverse events in the care recipient. Telehealth options are expanding and offer real-time access to health care teams. Table 5 lists apps and services recommended by reputable online resources such as AARP and the National Alliance on Caregiving. Despite potential benefits of new technologies, these innovations may be limited by the ability of caregivers to access and learn how to operate new devices, overcome cost barriers, and avoid the perception of depersonalized care.

Specialized Caregiving

CANCER

Changes in health care and insurance reimbursement have led to much of cancer care being provided at home, with the family assuming more responsibilities. A 2017 meta-analysis found that psychoeducational interventions were the most common intervention researched; however, they often require significant time, making them hard to translate to clinical practice. Pain management skills and symptoms assessment are the largest caregiver needs. A 2015 study found that interdisciplinary palliative care interventions such as educational sessions and self-care plans improved caregivers’ social well-being scores, lowered psychological distress scores, and significantly reduced caregiver burden. Continued research with a focus on palliative care interventions, the effect on caregivers, and ways to increase the availability of these services is needed.

DEMENTIA

Caregiving for a person with dementia is associated with high levels of strain caused by associated behavior disturbances, intense physical tasks, and the need for constant vigilance. High caregiver strain has been identified as a predictor of long-term care placement in these patients; therefore, family physicians should identify caregivers early and provide support. Fact sheets available from Family Caregiver Alliance are free, easy to download, and provide practical guidance on topics such as understanding and managing dementia behaviors, controlling frustration, self-care, and end-of-life decision making.

Evidence to support caregiver interventions in this subgroup is fairly robust. Structured education provided in home and telephone-based sessions to improve
CAREGIVER CARE

caregiver coping skills and management of behaviors have decreased caregiver burden and improved quality of life for the caregiver and care recipient. A meta-analysis showed that multicomponent interventions (e.g., education, resiliency training, problem solving) can reduce depressive symptoms, improve quality of life, and reduce caregiver burden. Interventions are cost saving or cost neutral by helping to keep care recipients in the community longer. Additional resources are needed to translate these interventions into opportunities accessible to all caregivers.

HEART FAILURE

Caregivers of patients with heart failure report similar issues as those caring for patients with other chronic illnesses.

### TABLE 4

<table>
<thead>
<tr>
<th>Caregiver Resources</th>
<th>Organization</th>
<th>Website</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>National organizations</td>
<td>AARP</td>
<td><a href="https://www.aarp.org/caregiving/">https://www.aarp.org/caregiving/</a></td>
<td>Prepare to Care guide, legal and financial information, local resources</td>
</tr>
<tr>
<td></td>
<td>Caregiver Action Network</td>
<td><a href="https://caregiveraction.org/">https://caregiveraction.org/</a></td>
<td>Scenario-specific tips and toolbox, caregiver connections</td>
</tr>
<tr>
<td></td>
<td>Family Caregiver Alliance, National Center on Caregiving</td>
<td><a href="https://www.caregiver.org/">https://www.caregiver.org/</a></td>
<td>Disease- and issue-specific fact and tip sheets, caregiver connections, policy and advocacy information</td>
</tr>
<tr>
<td></td>
<td>Mather Lifeways Institute on Aging</td>
<td><a href="https://www.matherlifewaysinstituteonaging.org/category/caregiving/">https://www.matherlifewaysinstituteonaging.org/category/caregiving/</a></td>
<td>Caregiver-specific articles, senior housing initiatives</td>
</tr>
<tr>
<td></td>
<td>National Institute on Aging</td>
<td><a href="https://www.nia.nih.gov/health/caregiving">https://www.nia.nih.gov/health/caregiving</a></td>
<td>Caregiving tips with focus on dementia and older adults</td>
</tr>
<tr>
<td></td>
<td>Rosalynn Carter Institute for Caregiving</td>
<td><a href="http://rci.gsw.edu">http://rci.gsw.edu</a></td>
<td>Caregiver workshops and resources, research</td>
</tr>
<tr>
<td>Caregiver education and respite care</td>
<td>Alzheimer’s Association and AARP</td>
<td><a href="https://www.communityresourcefinder.org">https://www.communityresourcefinder.org</a></td>
<td>Programs, resources for housing, caregivers</td>
</tr>
<tr>
<td></td>
<td>American Elder Care Research Organization</td>
<td><a href="https://www.payingforseniorcare.com">https://www.payingforseniorcare.com</a></td>
<td>Resources for paying for care, managing insurance, reducing costs</td>
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<tr>
<td></td>
<td>ARCH National Respite Network and Resource Center</td>
<td><a href="https://archrespite.org/">https://archrespite.org/</a></td>
<td>Respite locator and funding by state</td>
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<tr>
<td></td>
<td>Caring Today</td>
<td><a href="http://caringtoday.com/blog/">http://caringtoday.com/blog/</a></td>
<td>Caregiver blog</td>
</tr>
<tr>
<td></td>
<td>Family Caregiver Alliance Camp for Caring</td>
<td><a href="https://www.caregiver.org/camp-caring">https://www.caregiver.org/camp-caring</a></td>
<td>Respite camp for caregivers and recipients</td>
</tr>
<tr>
<td></td>
<td>Hospice Foundation of America</td>
<td><a href="https://www.hospicefoundation.org">https://www.hospicefoundation.org</a></td>
<td>Information about hospice care</td>
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<tr>
<td></td>
<td>United Hospital Fund Next Step in Care</td>
<td><a href="https://www.nextstepincare.org">https://www.nextstepincare.org</a></td>
<td>Focus on helping caregivers with transitions in care, communication with health care teams</td>
</tr>
<tr>
<td></td>
<td>U.S. Administration on Aging</td>
<td><a href="https://www.eldericare.gov">https://www.eldericare.gov</a></td>
<td>Local community resources</td>
</tr>
<tr>
<td>Specific caregiving scenarios</td>
<td>Caregiving.com</td>
<td><a href="https://www.caring.com/support-groups/caring-for-a-spouse">https://www.caring.com/support-groups/caring-for-a-spouse</a></td>
<td>Caregiver blog for spouses, topics including finances, intimacy, and managing symptoms</td>
</tr>
<tr>
<td></td>
<td>Centers for Disease Control and Prevention</td>
<td><a href="https://www.cdc.gov/ncbddd/disabilityandhealth/family.html">https://www.cdc.gov/ncbddd/disabilityandhealth/family.html</a></td>
<td>Tips for caregivers of people with disabilities</td>
</tr>
<tr>
<td></td>
<td>National Organization for Rare Disorders</td>
<td><a href="https://rarediseases.org/for-patients-and-families/connect-others/find-patient-organization/">https://rarediseases.org/for-patients-and-families/connect-others/find-patient-organization/</a></td>
<td>Disease-specific resource for support groups</td>
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<td></td>
<td>Parent to Parent</td>
<td><a href="http://www.p2pusa.org/">http://www.p2pusa.org/</a></td>
<td>Resources with local options for families of children who have special needs</td>
</tr>
<tr>
<td></td>
<td>U.S. Department of Veterans Affairs</td>
<td><a href="https://www.caregiver.va.gov">https://www.caregiver.va.gov</a></td>
<td>Resource for caregivers, mentoring program, hotlines, access to support coordinator</td>
</tr>
<tr>
<td></td>
<td>Well Spouse Association</td>
<td><a href="https://wellspouse.org">https://wellspouse.org</a></td>
<td>Support group locator, national conference, social community</td>
</tr>
</tbody>
</table>
The most burdensome aspects of care are enforcing dietary restrictions and monitoring for signs and symptoms of heart failure.40,41 Care recipients with heart failure may have frequent exacerbations requiring hospitalization and a more uncertain clinical trajectory that can increase caregiver strain. During the past decade, there have been significant advances in the availability of advanced heart failure therapies (e.g., left ventricular assist devices, inotropic medications) that can lower hospitalization and mortality rates. Availability of these therapies may increase life expectancy, but often leave care recipients with a higher degree of functional disability, thereby increasing the burden of caregiving.42 Overall, few interventions have been thoroughly studied to effectively support caregivers of patients with

### TABLE 5

<table>
<thead>
<tr>
<th>Technology and Apps for Caregivers</th>
<th>Organization</th>
<th>Website</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family coordination</strong></td>
<td>AARP Caregiving App</td>
<td><a href="https://states.aarp.org/aarp-caregiving-app">https://states.aarp.org/aarp-caregiving-app</a></td>
<td>Calendar, caregiver coordination</td>
</tr>
<tr>
<td></td>
<td>CareZone</td>
<td><a href="https://carezone.com/home">https://carezone.com/home</a></td>
<td>Caregiver coordination health care record keeping, scheduling</td>
</tr>
<tr>
<td></td>
<td>Caring Bridge</td>
<td><a href="https://www.caringbridge.org">https://www.caringbridge.org</a></td>
<td>Calendar, scheduling, forum for updates, fundraising</td>
</tr>
<tr>
<td></td>
<td>Caring Village</td>
<td><a href="https://www.caringvillage.com">https://www.caringvillage.com</a></td>
<td>Calendar, communication, document storage, to-do lists</td>
</tr>
<tr>
<td></td>
<td>Evernote</td>
<td><a href="https://evernote.com">https://evernote.com</a></td>
<td>Organization, to-do lists</td>
</tr>
<tr>
<td></td>
<td>Google Calendar, Google Docs</td>
<td><a href="https://www.google.com">https://www.google.com</a></td>
<td>Calendar and shared documents</td>
</tr>
<tr>
<td></td>
<td>Lotsa Helping Hands</td>
<td><a href="https://lotsahelpinghands.com">https://lotsahelpinghands.com</a></td>
<td>Calendar, forum for updates</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>AARP Transportation Services</td>
<td><a href="https://www.aarp.org/caregiving/home-care/transportation-services/?intcmp=CAR-LRS-R3-C2">https://www.aarp.org/caregiving/home-care/transportation-services/?intcmp=CAR-LRS-R3-C2</a></td>
<td>General information</td>
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<td>Arrive</td>
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<td>Links to Uber and Lyft without need for smartphone</td>
</tr>
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<td>GoGoGrandparent</td>
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<td></td>
</tr>
<tr>
<td><strong>Remote monitoring</strong></td>
<td>Blipcare (blood pressure monitoring)</td>
<td><a href="http://www.blipcare.com">http://www.blipcare.com</a></td>
<td>Various monitoring tools using wearable devices</td>
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<td>eCare 21</td>
<td><a href="https://ecare21.com">https://ecare21.com</a></td>
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<td></td>
<td>GPS SmartSole (trackable shoes)</td>
<td><a href="http://gpssmartsole.com/gpssmartsole">http://gpssmartsole.com/gpssmartsole</a></td>
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<td>Luna Lights (automated lighting)</td>
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<td>SafeinHome (alerts)</td>
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<td><strong>Medication management</strong></td>
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<td>MyMedSchedule</td>
<td><a href="https://secure.medactionplan.com/mymedschedule">https://secure.medactionplan.com/mymedschedule</a></td>
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<td><strong>Telehealth services</strong></td>
<td>AARP Telehealth Services</td>
<td><a href="https://www.aarp.org/caregiving/health/telehealth-services/?intcmp=CAR-LRS-R3-C1">https://www.aarp.org/caregiving/health/telehealth-services/?intcmp=CAR-LRS-R3-C1</a></td>
<td>General information</td>
</tr>
</tbody>
</table>
CAREGIVER CARE

heart failure. Given the high level of symptom monitoring, caregiver burden, and uncertainty in disease trajectory, many experts are calling for earlier and concurrent involvement of palliative care with the goal of improving caregiver education and confidence, assistance with management of symptoms, and skilled advanced care planning.

STROKE
Stroke is the leading cause of serious long-term disability, and most stroke survivors return home. These care recipients often require significant assistance with activities of daily living and instrumental activities of daily living. A review of caregiver interventions shows that those with a focus on dyad interventions may help survivor outcomes; however, interventions targeted specifically toward caregivers are needed to improve caregiver outcomes. Skill-building interventions (e.g., problem solving, tips for communicating with health care professionals, strategies for lifting) were more effective at improving caregiver outcomes than providing information about the diagnosis alone. Appropriate referrals to home health care, skilled therapy, and respite care should be offered by the family physician in addition to options for home modifications.

TRANSITIONS IN CARE
Many caregivers experience a decrease in depressive symptoms after the death of a care recipient, which may mark the end of the care recipient’s discomfort. The placement of a care recipient into a long-term care facility is not associated with positive effects on the caregiver and may be accompanied by an increase in caregiver anxiety. This implies that the relief of the daily caregiving burden does not account for the reduction in depressive symptoms in bereaved caregivers. To ease these care transitions, family physicians should provide anticipatory guidance, assistance with advance care planning, and appropriate resources for respite, long-term, and end-of-life care.

Public Policy
Providing optimal care for the patient and caregiver mandates an understanding of financial reimbursement strategies. The Family and Medical Leave Act allows qualified employees to take up to 12 weeks of continuous or intermittent unpaid leave to provide care. The United States is one of the few developed economies that does not offer mandatory paid leave, a topic that has emerged as a new public policy interest. The National Family Caregiver Support Program was the first federally funded program to formally recognize caregivers. However, in 2016, the program received only $150 million in federal funding, approximately one-twentieth of one percent of the value of caregiver contributions. Consumer-, participant-, and self-directed care programs are now available in nearly every state, allowing informal caregivers, such as a spouse or other family member, to be paid for the services they provide. Most programs are based on Medicaid home- and community-based service waiver programs that provide in-home assistance for

CAREGIVER CARE

SORT: KEY RECOMMENDATIONS FOR PRACTICE

<table>
<thead>
<tr>
<th>Clinical recommendation</th>
<th>Evidence rating</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>All caregivers should be offered assessment to identify high levels of caregiver burden.</td>
<td>C</td>
<td>1, 12, 16</td>
</tr>
<tr>
<td>Encouraging caregivers to take a break, take care of their own health, seek preventive health care, join a support group, and seek respite care when needed are key ways that a family physician can provide direct caregiver support.</td>
<td>C</td>
<td>5</td>
</tr>
<tr>
<td>Caregivers identified as having unmet educational or informational needs should be directed to appropriate resources for support.</td>
<td>C</td>
<td>1, 6, 13, 16</td>
</tr>
<tr>
<td>Psychoeducational, skills training, and therapeutic counseling interventions for caregivers of patients with chronic conditions (e.g., dementia, cancer, stroke, heart failure) have small to moderate success in decreasing caregiver burden and increasing caregiver quality of life.</td>
<td>B</td>
<td>34, 35, 37-39</td>
</tr>
<tr>
<td>Anticipatory guidance, assistance with advance care planning, and information about appropriate resources should be provided to the care recipient and caregiver during care transitions and at the end of life.</td>
<td>C</td>
<td>36, 37, 43</td>
</tr>
</tbody>
</table>

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to https://www.aafp.org/afpsort.

704 American Family Physician www.aafp.org/afp Volume 99, Number 11 • June 1, 2019
nursing home–eligible care recipients who qualify for Medicaid services. However, options have expanded to include non-Medicaid programs, veterans’ programs, life insurance, and long-term care insurance to allow family members to be paid caregivers.44

This article updates previous articles on this topic by Parks and Novielli,45 and by the authors.50

Data Sources: A PubMed search was completed using Clinical Queries and the key terms caregiver, burden, and stress. The search included meta-analyses, randomized controlled trials, clinical trials, and reviews. Also searched were the Agency for Healthcare Research and Quality evidence reports, Clinical Evidence, the Cochrane database, and the Institute for Clinical Systems Improvement. Search dates: February 15, 2018, and January 2, 2019.

The Authors

KRISTINE SWARTZ, MD, is an assistant professor in the Department of Family and Community Medicine at Thomas Jefferson University, Philadelphia, Pa.

LAUREN G. COLLINS, MD, is a Josiah Macy Jr. Foundation Faculty Scholar and an associate professor in the Department of Family and Community Medicine at Thomas Jefferson University.

Address correspondence to Kristine Swartz, MD, Thomas Jefferson University, 1015 Walnut St., Ste. 401, Philadelphia, PA 19107 (e-mail: kristine.swartz@jefferson.edu). Reprints are not available from the authors.

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INFORMATION from Your Family Doctor

Caregiver Care

Who is a caregiver?
A caregiver is a friend or relative who provides unpaid care for someone with a chronic or disabling condition.

What are the benefits and challenges of caregiving?
Caregiving is associated with personal satisfaction in helping a loved one. However, most caregivers feel unprepared to provide care. Caregivers report having less time to spend with other family members and friends. They may have trouble with money because of their caregiving expenses. They also are less likely to make time for regular health care for themselves. Caregivers with high stress levels are at risk of serious medical problems.

What can my doctor do to help?
When taking the person you are caring for to the doctor, it is important to tell the doctor that you are the caregiver. The doctor may ask how you feel about caregiving, how much help your loved one needs, and how you provide this care. The doctor may refer you to other resources for help.

What can I do to help myself?
Make sure to take time for yourself. Find ways to help relieve your stress, such as talking to friends or family, exercising, meditating, or praying. It may help to find other support services in your area. Make sure to visit your doctor on a regular basis to help protect your own health.

Where can I find more information?
Your doctor
AAFP’s Patient Information Resource
AARP
https://www.aarp.org/families/caregiving
Family Caregiver Alliance
https://www.caregiver.org
Caregiver Action Network
https://caregiveraction.org/
U.S. Administration on Aging Eldercare Locator
https://www.elderhelp.gov

June 2019

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Curbside Consultation

An Unhappily Married Patient

Commentary by Matthew Alexander, PhD, and Shaista Qureshi, MD

Department of Family Medicine, The University of North Carolina, Atrium Health, Charlotte, North Carolina

Case Scenario

A 45-year-old woman presented to my office with initial symptoms of headaches and insomnia. My initial screening showed mild depression; her physical examination was normal. I asked her how things were at home, and she told me that she and her husband fight all the time. She added that her husband complains that they never have sex and that she is afraid he may be interested in a coworker. She stated that her attempts to talk with her husband about their situation have been met with anger and defensiveness. She is beginning to shut down her feelings in the relationship.

During my training, I was encouraged to explore relationship issues between committed partners; however, doing this in a busy office setting is challenging. What practical recommendations can be offered? What indicators should prompt a more thorough evaluation and/or referral for additional care?

Commentary

Overall, marriage enhances health.1 Men gain greater health benefits from marriage than their wives. Conversely, wives are more negatively affected by a bad marriage than their husbands.2,3 In general, the health benefit of marriage is maximized in a good marriage but negated in a bad marriage.4,5

Physicians receive little training in couple dynamics, however. Only a few articles in the medical literature address the treatment of interpersonal stress in committed couples. This is particularly alarming because family physicians have traditionally been trusted to address family issues, and patients want family physicians to be knowledgeable about and helpful with these issues.6

Management

Women are more likely to share concerns in the physician’s office; however, men may be willing to share if properly encouraged with open-ended questions. Relationship issues present in same-sex marriages are similar to those in heterosexual marriages. The goal is to address the patient’s concerns with appropriate sensitivity while remaining on schedule during a busy clinical day.

INTERVIEWING

First, gather information about the marital situation in a timely manner. Be aware of the risk of triangulation; physicians should remember that they are hearing only one side of the story and should be careful before recommending specific actions without obtaining a complete picture. Physicians should also make every effort to be sensitive to cultural differences about marriage and to be self-aware of unconscious bias.

Physicians can achieve a relatively complete picture in a short amount of time by asking these questions:

• How did you and your spouse meet?
• How long have you been in your partnership?
• Is this your first marriage?
• Do you have any children or grandchildren?
• What types of external stressors (e.g., money, career, in-laws, medical issues) currently affect your relationship?
• Have you tried anything to fix this problem?
• What would your spouse say about this situation if your spouse were in the office now?
• What bothers you the most about this situation?
• What are you willing to do to help this situation?
• Would it be okay if I offer some suggestions?

Case scenarios are written to express typical situations that family physicians may encounter; authors remain anonymous. Send scenarios to afpjournal@aafp.org. Materials are edited to retain confidentiality.

This series is coordinated by Caroline Wellbery, MD, Associate Deputy Editor.

A collection of Curbside Consultation published in AFP is available at https://www.aafp.org/afp/curbside.

Author disclosure: No relevant financial affiliations.
CURBSIDE CONSULTATION

• Would you be willing to attend couple therapy with your spouse? (It is helpful if you ask patients whether they have past experience seeing therapists or whether any barriers to seeing a therapist [e.g., cost, pride, fear] would keep them from following through.)

RECOMMENDATIONS FOR SOLUTIONS

Several real-world recommendations are effective for unhappily married patients when addressing typical problems, including fighting, sexual libido incongruities, and trust and communication issues. *Table 1* lists examples of simple suggestions to help spouses connect.8

**Constant Fighting**

• Take a 10-minute break if fighting gets intense; discuss again only after both parties have calmed down.

• Express more appreciation to your spouse; a five-to-one ratio of positive to negative interactions is associated with marital satisfaction.9

• Try to empathize and understand what might be bothering your spouse.

• Practice emotional regulation techniques such as diaphragmatic breathing and time-out to prevent fights from escalating; meditation has also been found to improve emotional regulation.10,11

• Ask your spouse to come to the office to discuss relationship issues. A possible script: “I saw our doctor today and was asked about relationship problems. Based on what I shared, our doctor recommended that you come in with me next time so that both sides of the story can be heard and recommendations could be made to help us. Would you consider going with me?” Alternatively, ask your spouse to consider couple therapy.

**Sexual Libido Incongruities**

• Accept that differences in libido exist, including that a man’s libido is sometimes less than a woman’s libido.

• Schedule sex on the same night every week.

**Lack of Trust and Communication**

• Set aside time to talk without distractions (e.g., talking while walking, putting cell phones away during dinner).

• Ask your spouse to express what is really bothersome by using I statements (e.g., I feel angry when you…).

• Watch a relationship-oriented movie together; research shows that couples who watch and discuss relationship movies on a regular basis are less likely to divorce12 (e.g., *The Story of Us* [1999], *Hope Springs* [2012]).

• Increase your involvement in activities that promote connection, including novel activities that have benefit in facilitating connection (e.g., riding motorized scooters to have dinner in a previously unvisited restaurant).13

• Read books about marriage; bibliotherapy is an effective intervention for a variety of psychological problems14,15 (e.g., *Hold Me Tight* by Susan Johnson, *The Seven Principles for Making Marriage Work* by John Gottman and Nan Silver, *The Sex-Starved Marriage* by Michele Weiner Davis).

• See a licensed marriage therapist; therapists who practice Emotionally Focused Couple Therapy typically provide the best outcome.16,17

**RED FLAG REFERRALS**

Substance abuse, infidelity, high levels of contempt, or intimate partner violence indicate the need for specific referrals (i.e., addiction treatment center, couple therapy, anger management therapy, women’s shelter, respectively). Physicians should follow safety protocols if exposure to volatile patients is an issue.

**Case Resolution**

The physician in the case scenario should recommend that the patient have a conversation with her husband and suggest to him that they have a scheduled date night once a week. The patient could be encouraged to read a book on marital health or sexuality and to engage in more fun activities with her husband on a regular basis. She should be encouraged to come back in a month.

---

**Table 1**

<table>
<thead>
<tr>
<th>Cultivating Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be nice and appreciative</td>
</tr>
<tr>
<td>Engage in fun and novel activities</td>
</tr>
<tr>
<td>Have one date night per week</td>
</tr>
<tr>
<td>Meet emotional as well as sexual needs</td>
</tr>
<tr>
<td>Say I love you</td>
</tr>
<tr>
<td>Share housework</td>
</tr>
<tr>
<td>Talk for 10 minutes a day</td>
</tr>
</tbody>
</table>

Information from reference 8.
to report whether the situation has improved. If it has not improved, the physician should offer a referral to a qualified couple therapist.

The authors thank Dave Slawson, MD, for his expert assistance in developing this article.

Address correspondence to Matthew Alexander, PhD, at Matthew.Alexander@atriumhealth.org. Reprints are not available from the authors.

References

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Clinical Question
What are the best screening tools for the evaluation and diagnosis of attention-deficit/hyperactivity disorder (ADHD)?

Evidence-Based Answer
The Conners Abbreviated Symptom Questionnaire has the best combination of positive and negative likelihood ratios (eTable A). (Strength of Recommendation [SOR]: B, based on a meta-analysis of observational studies.) The Vanderbilt ADHD Diagnostic Teacher and Parent Rating Scales also have moderate sensitivity and specificity in elementary school-aged children. (SOR: B, based on a single cohort study.)

Evidence Summary
A 2016 meta-analysis of 25 cross-sectional, cohort, and case-control studies evaluated the accuracy of the Child Behavior Checklist–Attention Problem Scale (CBCL-AP) and three versions of the Conners Rating Scales–Revised (CRS-R) for diagnosing ADHD in children and adolescents three to 18 years of age.1 Patients had all three types of ADHD: predominantly hyperactive/impulsive, predominantly inattentive, and combined. In addition to the CBCL-AP (14 studies) and the three versions of the CRS-R, the Conners Parent Rating Scale–Revised short form (four studies), the Conners Teacher Rating Scale–Revised short form (five studies), and the Conners Abbreviated Symptom Questionnaire (five studies) were evaluated. The reference standard was a clinical examination performed by a qualified professional using diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM), 3rd or 4th ed., and corresponding diagnosis codes from the International Classification of Diseases, 9th or 10th revision. All scales had moderate sensitivity, specificity, and positive and negative likelihood ratios for diagnosing ADHD. The Conners Abbreviated Symptom Questionnaire may be the most effective diagnostic tool for ADHD because of its brevity and high diagnostic accuracy, and the CBCL-AP could be used for more comprehensive assessments.

A 2013 cohort study compared the Vanderbilt ADHD Diagnostic Parent/Teacher Rating Scales with a structured diagnostic psychiatric interview using DSM-IV criteria.2,3 Participants were selected from a random sample of elementary school students in urban, suburban, and rural school districts in Oklahoma. The Vanderbilt parent and teacher scales were moderately sensitive and specific for diagnosing ADHD.

References


Help Desk Answers provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (http://www.cebm.net).

The complete database of evidence-based questions and answers is copyrighted by FPIN. If interested in submitting questions or writing answers for this series, go to http://www.fpin.org or e-mail: questions@fpin.org.

This series is coordinated by John E. Delzell Jr., MD, MSPH, Associate Medical Editor.

A collection of FPIN’s Help Desk Answers published in AFP is available at https://www.aafp.org/afp/hda.

Author disclosure: No relevant financial affiliations.
## eTABLE A

### Diagnostic Accuracy of Tests for Attention-Deficit/Hyperactivity Disorder

<table>
<thead>
<tr>
<th>Test</th>
<th>Studies</th>
<th>Participants</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
<th>Positive LR</th>
<th>Negative LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Behavior Checklist–Attention Problems Scale</td>
<td>14</td>
<td>3,296</td>
<td>77% (69% to 84%)</td>
<td>73% (64% to 81%)</td>
<td>2.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Conners Parent Rating Scale–Revised short form</td>
<td>4</td>
<td>596</td>
<td>75% (64% to 84%)</td>
<td>75% (64% to 84%)</td>
<td>3.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Conners Teacher Rating Scale–Revised short form</td>
<td>5</td>
<td>733</td>
<td>72% (63% to 79%)</td>
<td>84% (69% to 93%)</td>
<td>4.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Conners Abbreviated Symptom Questionnaire</td>
<td>5</td>
<td>972</td>
<td>83% (59% to 95%)</td>
<td>84% (68% to 93%)</td>
<td>5.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Vanderbilt ADHD Diagnostic Parent Rating Scale</td>
<td>1</td>
<td>560</td>
<td>80% (71% to 87%)</td>
<td>75% (66% to 83%)</td>
<td>3.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Vanderbilt ADHD Diagnostic Teacher Rating Scale</td>
<td>1</td>
<td>370</td>
<td>69% (43% to 87%)</td>
<td>84% (78% to 89%)</td>
<td>4.3</td>
<td>0.4</td>
</tr>
</tbody>
</table>

ADHD = attention-deficit/hyperactivity disorder; LR = likelihood ratio.

Information from:


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AMERICAN ACADEMY OF FAMILY PHYSICIANS
A 10-year-old girl was brought to the family medicine clinic by her mother with a painful lesion on the left upper gum. The lesion was first noted about two months before the visit, when it was approximately 3 mm in diameter. The lesion had gradually increased in size. There was no discharge, but the patient had noticed a change in sensation in her gum. She had no constitutional symptoms or history of injury to the permanent tooth. However, the mother recalled that one of her baby teeth was pulled in preparation for braces two years earlier.

Physical examination revealed a lesion on the left upper anterior gingiva above the canine tooth (Figure 1). The round, erythematous lesion measured 8 mm in diameter. It was firm, non-pulsatile, and tender to palpation, and it did not bleed.

**Question**

Based on the patient’s history and physical examination findings, which one of the following is the most likely diagnosis?

- A. Dental abscess.
- B. Langerhans cell histiocytosis.
- C. Mucocele.
- D. Pyogenic granuloma.

See the following page for discussion.
Discussion

The answer is A: dental abscess. Dental abscess is a subtype of odontogenic infection, which is one of the most common diseases of the oral and maxillofacial region. Classifications of dental abscess include periapical, periodontal, gingival, pericoronial, and combined periodontal-endodontic. Pain is one of the most common symptoms of dental abscess for which patients seek medical attention. The pain is usually moderate to severe and can be intermittent or persistent and sharp, throbbing, or shooting. Pain is absent in some acute cases. Swelling is almost always present, whether it is the acute or subacute phase. Patients sometimes describe a toothache with sensitivity to hot and cold and may have a history of a recent dental procedure.

Odontogenic infection is diagnosed with physical examination and imaging findings. The choice of imaging study varies with clinical setting. Computed tomography is particularly sensitive for osseous structures and is the modality of choice for most odontogenic infections. Fluid collection and tissue biopsies should be examined for evidence of acute or chronic inflammation and infection.

A spreading infection is more serious than localized swelling of gingival tissue, because the infection could spread outward from the root of the tooth throughout the bone and periosteum. Failure to recognize a systemic infection can lead to chronic infections or life-threatening complications, such as airway obstruction, mediastinitis, necrotizing fasciitis, cavernous sinus thrombosis, cerebral abscess, orbital abscess, and sepsis. Severe complications require intravenous antibiotics, incision and drainage, and probable removal of the source of infection. A localized infection is usually not urgent and can be managed in the outpatient setting.

Langerhans cell histiocytosis is a rare histiocytic disorder that most commonly affects children one to three years of age, although it can occur at any age. In young children, it is an acute disseminated multisystem disease. Bone and skin are most commonly affected. There is oral involvement in about 13% of cases, usually manifesting as an intraoral mass, gingivitis, mucosal ulcers, and loose teeth. Lesions of the bones or soft tissue are painful.

Mucocele is an area of mucin drainage in soft tissue resulting from rupture of a salivary duct. Mucocele is most common in children and young adults who usually have multiple episodes of swelling lesions with periodic rupture. Long-standing lesions may develop fibrosis, which is nontender on palpation. Mucocele is most commonly located on the inside of the lower lip.

Pyogenic granuloma is a rapidly growing lesion that develops in response to local irritations, such as poor hygiene, overhanging dental fillings, and trauma. The lesion can be from millimeters to centimeters in diameter. Pyogenic granulomas are erythematous, nonpainful, and smooth, and bleed easily when touched.

Address correspondence to Nguyet-Cam Lam, MD, FAAFP, at Nguyet-Cam.Lam@sluhn.org. Reprints are not available from the authors.

References
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Patient-Oriented Evidence That Matters

Overview of New ACC/AHA Lipid Guidelines

Clinical Question
What do cardiologists recommend for the management of hyperlipidemia?

Bottom Line
These updated guidelines, made without any input from primary care physicians who manage most patients with hyperlipidemia, are more complex than the 2013 guidelines and will likely lead to even more recommendations for statins, ezetimibe (Zetia), and PSK9 inhibitors. Rather than a “fire and forget” strategy involving a risk-based prescription of a moderate- or high-intensity statin, we are supposed to go back to monitoring low-density lipoprotein (LDL) levels and targeting a percentage reduction in LDL cholesterol—and in very high-risk patients targeting an LDL level of less than 70 mg per dL (1.81 mmol per L). (Level of Evidence = 1a–)

Synopsis
This is an update to the 2013 American College of Cardiology/American Heart Association (ACC/AHA) guidelines, which were the first to base treatment decisions primarily on the 10-year risk of an atherosclerotic cardiovascular disease (ASCVD) event rather than on specific LDL targets. This guideline reemphasizes regularly measuring lipids and a return to an LDL target for assessing effectiveness and deciding when to prescribe one of the new and pricey PSK9 inhibitors ($14,000 to $15,000 per year at http://www.goodrx.com, December 1, 2018). Statins are divided into high intensity (atorvastatin [Lipitor], 40 to 80 mg; rosuvastatin [Crestor], 20 to 40 mg), moderate-intensity (atorvastatin, 10 to 20 mg; simvastatin [Zocor], 20 to 40 mg; rosuvastatin, 5 to 10 mg), and low-intensity (simvastatin, 10 mg groups).

For primary prevention in people 20 to 39 years of age, the guidelines recommend an assessment of the lifetime risk of ASCVD as a way to frighten patients into compliance with lifestyle changes. For people 20 to 39 years of age with LDL levels greater than 160 mg per dL (4.14 mmol per L) or a family history of premature ASCVD, a statin is recommended. For patients 40 years and older, a high-intensity statin is recommended for an LDL level greater than 190 mg per dL (4.92 mmol per L) and a moderate- or high-intensity statin (depending on other risk factors) for those with diabetes mellitus.

For all other patients, the Pooled Cohort Equations are used to place patients into one of four risk groups; the old guideline had only three. If the 10-year risk of an ASCVD event is less than 5%, no statin is recommended. If the 10-year risk is 5% to 7.5%, consider a moderate-intensity statin if there is also a “risk enhancer,” such as LDL level greater than 160 mg per dL, family history of premature ASCVD, chronic kidney disease, metabolic syndrome, South Asian ancestry, preeclampsia, HIV, rheumatoid arthritis, or psoriasis. For persons with a 7.5% to 20% risk, they recommend a moderate-intensity statin for most patients to target a 30% to 49% reduction in LDL cholesterol. Finally, if the risk is greater than 20%, a statin to target a 50% or more reduction in LDL cholesterol is recommended. For prevention in persons with known vascular disease, a new category of very high risk is described. It is defined as two or more of the following major events: acute coronary syndrome in the past 12 months, previous myocardial infarction, previous ischemic stroke, or symptomatic peripheral artery disease. A patient is also very high risk if he or she has one of those major ASCVD events and multiple high-risk conditions, such as familial hypercholesterolemia, age of at least 65 years, hypertension, diabetes, chronic kidney disease, tobacco use, heart failure, or LDL level greater than 100 mg per dL (2.59 mmol per L) despite maximal statin plus ezetimibe therapy. Patients in this category should be taking a high-intensity statin, adding ezetimibe if necessary, to target an LDL level of 70 mg per dL. If that is not achieved, a PSK9 inhibitor should be considered.

Regarding PSK9 inhibitors, it is notable that the guideline cautions that “the long-term safety (more than 3 years) is uncertain and cost effectiveness is low at mid-2018 list prices.” Although the previous guideline was silent on the question of monitoring lipid levels, this one recommends regular monitoring (at least once per year) to verify...
adherence to the medication and to estimate the percentage reduction in LDL level. It is also worth noting which organizations were not among the 12 that endorsed this guideline: the American Academy of Family Physicians (AAFP) and the American College of Physicians (ACP). This is reminiscent of the recent, aggressive hypertension guidelines from the ACC/AHA that the AAFP and ACP also did not participate in or endorse.

**Study design:** Practice guideline  
**Funding source:** Government  
**Setting:** Various (guideline)  

Mark H. Ebell, MD, MS  
Professor  
University of Georgia, Athens, Ga.

**Aspirin, Eicosapentaenoic Acid, and Placebo Equally Effective in Preventing Colorectal Adenomas in High-Risk Patients**

**Clinical Question**  
Is aspirin or eicosapentaenoic acid (EPA) effective in preventing colorectal adenomas in patients with previous high-risk colorectal neoplasia?

**Bottom Line**  
After 12 months, neither aspirin nor EPA, alone or in combination, are any better than placebo at preventing colorectal adenomas in patients with high-risk neoplasia. (Level of Evidence = 1b)

**Synopsis**  
The Systematic Evaluation of Aspirin and Fish Oil (seAFoOd) Polyp Prevention Trial was a factorial trial that randomized patients with high-risk colorectal neoplasms detected on screening colonoscopy. The included patients had three or more adenomas, one of which had to be 1 cm in diameter, or they had five or more smaller adenomas. The researchers randomized patients to receive EPA (1,000 mg twice daily; n = 179) plus placebo, aspirin (300 mg daily; n = 177) plus placebo, EPA plus aspirin (n = 177); or placebo plus placebo (n = 176). The researchers performed a follow-up colonoscopy 12 months after enrollment. Sixty-six patients (9%) did not have a follow-up colonoscopy and were excluded from the analysis. The rate of subsequent adenomas at follow-up was high (61% to 63%) and not statistically significantly different for each group. The rate of adverse events was low in all groups.

**Study design:** Randomized controlled trial (double-blinded)  
**Funding source:** Government  
**Allocation:** Concealed  
**Setting:** Outpatient (any)  

Henry C. Barry, MD, MS  
Professor  
Michigan State University, East Lansing, Mich.

**Probiotic Ineffective for Treatment of Acute Gastroenteritis in Young Children**

**Clinical Question**  
Is the probiotic *Lactobacillus rhamnosus* GG safe and effective for the treatment of acute gastroenteritis in young children?

**Bottom Line**  
Treatment with the probiotic *L. rhamnosus* GG does not result in faster symptomatic improvement or less moderate or severe diarrhea in young children with acute gastroenteritis. (Level of Evidence = 1b)

**Synopsis**  
Although some studies have shown a benefit to probiotics for the treatment of acute gastroenteritis in children, they have generally been small, funded by industry, or had methodologic flaws. This study was a large, well-designed randomized trial that attempted to more definitively answer this question. Children three months to four years of age with at least three watery stools per day for less than seven days were identified in 10 university pediatric emergency departments. Children were excluded if they or their caregivers were potentially immunocompromised, or if the children were taking long-term corticosteroids, had been premature, or had chronic gastrointestinal disease. Children were also excluded if they had any biliary tract disease, hematochezia, or allergies to the study medication or to any antibiotics used to treat invasive *L. rhamnosus* infection. They were then randomized to receive the probiotic or placebo once daily for five days, stratified by presentation within or later than 48 hours of the onset of illness, and with the first dose given in the emergency department. Of the 971 patients randomized, 943 completed the study, with a similar rate of loss to follow-up in both groups. The median age of participants was 1.4 years, 53% were male, and the median duration of diarrhea was 53 hours; groups were balanced at the start of the study. After 14 days, the...
POEMS

likelihood of moderate to severe symptoms based on the modified Vesikari scale score was similar between groups (11.8% in the probiotic group and 12.6% in the placebo group). There were also no differences between groups regarding secondary symptom outcomes such as the duration or frequency of diarrhea. There was more wheezing in the probiotic group (5 vs. 0; \( P = .03 \)).

**Study design:** Randomized controlled trial (double-blinded)

**Funding source:** Government

**Allocation:** Concealed

**Setting:** Emergency department


Mark H. Ebell, MD, MS
Professor
University of Georgia, Athens, Ga.

**Benefits and Harms for Low-Dose Aspirin in Patients with Diabetes Mellitus**

**Clinical Question**

What are the benefits and harms of low-dose aspirin in adults with diabetes mellitus?

**Bottom Line**

The 7,740 patients who took low-dose aspirin experienced 51 fewer vascular deaths, nonfatal myocardial infarctions (MIs), or nonfatal ischemic strokes; 29 fewer transient ischemic attacks (TIAs); and 44 fewer revascularizations than patients who took placebo over a mean of 7.4 years. This is balanced by an additional 69 major bleeding episodes during that period, with no effect on vascular or all-cause deaths, and no difference in the incidence of cancer. (Level of Evidence = 1b)

**Synopsis**

This British study recruited adults 40 years and older with diabetes, no known cardiovascular disease, no contraindications to aspirin, and no major comorbidity that would keep them from participating in the study for at least five years. After a placebo run-in period to assure adherence, 15,480 participants were randomized to receive aspirin 100 mg once daily or matching placebo. They were also randomized to receive an omega-3 fatty acid capsule or placebo; those results are reported separately. The groups were balanced at the start of the study: the patients had a mean age of 63 years, 63% were men, and 96% were white. Almost all (94%) had type 2 diabetes. A validated risk score determined that approximately 40% of participants were at low risk of vascular events (less than 5% at five years), 40% had a five-year risk of 5% to 10%, and the remainder were at high risk. Because the trial was ongoing, the authors added TIA to the original primary composite efficacy outcome of vascular death, nonfatal MI, or nonfatal stroke (excluding intracranial hemorrhage). The primary safety outcome was a composite of intracranial hemorrhage, intracranial hemorrhage that threatens sight, gastrointestinal bleeding, or any other serious bleeding event. After a mean follow-up of 7.4 years, 99% of patients had complete follow-up data, with outcomes adjudicated for more than 90% by a committee masked to treatment assignment. The authors also looked at the effect of adding revascularization to the composite efficacy outcome. There was no difference between groups in the original efficacy outcome of vascular death, nonfatal MI, and nonfatal ischemic stroke (7.0% with aspirin vs. 7.6% with placebo; hazard ratio [HR] = 0.92; 95% CI, 0.82 to 1.03). When you add TIA to the composite outcome, the difference between groups is statistically significant (8.5% vs. 9.6%; HR = 0.88; CI, 0.79 to 0.97; NNT = 77 for 7 years). When examining results stratified by vascular risk, those at moderate and higher vascular risk also experienced more major bleeding events (8.9 to 9.6 vs. 2.8 per 5,000 person-years in the low-risk group). The number of serious vascular events avoided per 5,000 person years was 5.7 in the low-risk group, 11.2 in the moderate-risk group, and only 4.9 in the high-risk group. For the composite harm outcome, there was a significantly increased risk of major bleeding, primarily due to more serious gastrointestinal and other bleeds (4.1% vs. 3.2%; HR = 1.29; CI, 1.09 to 1.52; number needed to treat [NNT] = 90 for 7.4 years). Adding revascularization to the original efficacy outcome had a similar result (10.8% vs. 12.1%; HR = 0.88; CI, 0.80 to 0.97; NNT = 77 for 7 years). When examining results stratified by vascular risk, those at moderate and higher vascular risk also experienced more major bleeding events (8.9 to 9.6 vs. 2.8 per 5,000 person-years in the low-risk group). The number of serious vascular events avoided per 5,000 person years was 5.7 in the low-risk group, 11.2 in the moderate-risk group, and only 4.9 in the high-risk group. For the composite harm outcome, there was a significantly increased risk of major bleeding, primarily due to more serious gastrointestinal and other bleeds (4.1% vs. 3.2%; HR = 1.29; CI, 1.09 to 1.52; number needed to treat [NNT] = 90 for 7.4 years). There was no difference in fatal bleeding events or hemorrhagic strokes. There was no difference in the incidence of cancer (11.6% for aspirin vs. 11.5% for placebo), including for gastrointestinal cancers (2.0% vs. 2.0%). There were no significant differences between groups in all-cause mortality or in vascular deaths.

**Study design:** Randomized controlled trial (double-blinded)

**Funding source:** Industry and foundation

**Allocation:** Concealed

**Setting:** Outpatient (any)


Mark H. Ebell, MD, MS
Professor
University of Georgia, Athens, Ga.

**Editor’s Note:** Dr. Ebell is Deputy Editor for Evidence-Based Medicine for AFP and cofounder and Editor-in-Chief of Essential Evidence Plus. ■
Cancer Screening: ACS Releases Annual Summary of Recommendations

The American Cancer Society (ACS) provides a summary of recommendations for cancer screening (Table 1) each year, including any updates and recent data, and advice for when recommendations cannot be made. In addition to this summary, the 2018 report outlines issues that affect screening for breast, cervical, colorectal, and prostate cancer; further explains the 2013 recommendations for lung cancer screening via low-dose computed tomography; compares the ACS recommendations with those of other professional health care organizations; and provides information from the National Health Interview Survey.

Breast Cancer
Breast cancer is the most common cancer in women living in the United States, with an estimated 266,120 patients diagnosed with invasive breast cancer in 2018 and an associated 40,920 deaths. The ACS screening recommendations in women at average risk were updated in 2015 and have not changed. This guideline underscores the importance of yearly screening in women 45 to 54 years of age and those 40 to 44 years who choose earlier screening, because evidence has shown that such screening in premenopausal women is associated with a significantly decreased risk of identifying advanced breast cancer compared with screening performed every other year. Postmenopausal women do not have similar benefits associated with yearly screening, unless they are currently receiving hormone treatment for menopause; therefore, women 55 years or older can receive screening every other year or yearly, depending on patient preference. An age to stop screening is not identified, but continued screening may be beneficial in certain women 75 years or older, taking into account mortality, age, comorbidities, and function. These recommendations were made after a review of the burden of disease and of the benefits and harms of screening. An update to the 2007 screening recommendations in women at greater than average risk is currently being completed.

Cervical Cancer
An estimated 13,240 persons will be diagnosed with invasive cervical cancer in 2018, with an associated 4,170 deaths. The ACS, American

Key Points for Practice

• The ACS recommends yearly screening for breast cancer in women 45 to 54 years of age and those 40 to 44 years of age who choose earlier screening.
• Women with atypical squamous cells of undetermined significance on cervical cancer screening that were found to be negative for HPV should have repeat screening in three years.
• Physicians should initiate discussions on prostate cancer with those at average risk starting at 50 years of age, at 45 years with higher risk, and at 40 years in those at even higher risk.

From the AFP Editors

Coverage of guidelines from other organizations does not imply endorsement by AFP or the AAFP.
This series is coordinated by Sumi Sexton, MD, Editor-in-Chief.
A collection of Practice Guidelines published in AFP is available at https://www.aafp.org/afp/practguide.
CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 673.
Author disclosure: No relevant financial affiliations.
Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology recommendations for screening are based on age, history of screening, and available screening options. Currently, the guidelines address screening women 21 to 65 years of age and 65 years or older who are at average risk of cervical cancer, recommending that women younger than 21 years not be screened regardless of any risk factors or sexual history. They also address

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Population</th>
<th>Test or procedure</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>Women 21 to 29 years of age</td>
<td>Pap smear</td>
<td>Should be performed starting at 21 years of age and should be performed annually using conventional or liquid-based options every three years</td>
</tr>
<tr>
<td>Breast</td>
<td>Women 30 to 65 years of age</td>
<td>Pap smear and HPV DNA test</td>
<td>Combined testing (preferred) should be performed every five years, or a Pap smear alone (acceptable) should be performed every three years (acceptable)</td>
</tr>
<tr>
<td>Breast</td>
<td>Women older than 65 years</td>
<td>Pap smear and HPV DNA test</td>
<td>Screening should no longer be performed in women older than 65 years who have had at least three consecutive Pap smears with negative results or at least two consecutive HPV tests with negative results and Pap smears within the past 10 years, with the most recent test being performed in the past five years</td>
</tr>
<tr>
<td>Breast</td>
<td>Women who have had a total hysterectomy</td>
<td>—</td>
<td>Screening should no longer be performed</td>
</tr>
<tr>
<td>Cervix</td>
<td>Women 40 to 54 years of age</td>
<td>Mammography</td>
<td>Should be routinely performed starting at 45 years of age and should be performed annually in women 45 to 54 years of age</td>
</tr>
<tr>
<td>Cervix</td>
<td>Women 55 years or older</td>
<td>Mammography</td>
<td>Should have the opportunity to begin annual screening between 40 and 44 years of age</td>
</tr>
<tr>
<td>Cervix</td>
<td>Women 65 years or older</td>
<td>—</td>
<td>Should transition to biennial screening or have the opportunity to continue screening annually</td>
</tr>
<tr>
<td>Cervix</td>
<td>Men and women 45 to 75 years of age, for all tests listed</td>
<td>Fecal immunochemical test (annual), high-sensitivity guaiac-based fecal occult blood test (annual), multtarget stool DNA test (every three years per manufacturer’s recommendation), colonoscopy (every 10 years), CT colonography (every five years), or flexible sigmoidoscopy (every five years)</td>
<td>Regular screening should be performed with either a high-sensitivity stool-based test or a structural (visual) examination, depending on patient preference and test availability; as part of the screening process, all positive results on non-colonoscopy screening tests should be followed up with timely colonoscopy</td>
</tr>
<tr>
<td>Cervix</td>
<td>Men and women 76 to 85 years of age</td>
<td>—</td>
<td>Screening decisions should be individualized, based on patient preference, life expectancy, health status, and screening history; if a decision is made to continue screening, the patient should be offered options as listed above</td>
</tr>
<tr>
<td>Cervix</td>
<td>Men and women older than 85 years</td>
<td>—</td>
<td>Should be discouraged from continuing screening</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Men and women 45 to 75 years of age, for all tests listed</td>
<td>—</td>
<td>Screening should be continued until 75 years of age in patients in good health with a life expectancy of more than 10 years</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Men and women 76 to 85 years of age</td>
<td>—</td>
<td>Screening decisions should be individualized, based on patient preference, life expectancy, health status, and screening history; if a decision is made to continue screening, the patient should be offered options as listed above</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Men and women older than 85 years</td>
<td>—</td>
<td>Should be discouraged from continuing screening</td>
</tr>
</tbody>
</table>
the human papillomavirus (HPV) vaccine and other special considerations. The current guidelines recommend that women with atypical squamous cells of undetermined significance that were found to be negative for HPV should have repeat screening in three years. The recommendations on atypical squamous cells of undetermined significance and HPV vaccines have been added since the 2012 guideline, and a full update of the cervical cancer screening guidelines is currently being completed.

Colorectal Cancer
An estimated 140,250 persons will be diagnosed with colorectal cancer in 2018, with an associated 50,630 deaths. Despite this, the incidence and mortality rates have been decreasing in persons 50 years or older, based mainly on the use of screening for prevention and early identification. In 2018, the ACS updated its recommendations for screening in persons at average risk, with the most notable change being to start screening at 45 years of age; emphasizing screening in general via a variety of options, with appropriate guidance about their benefits and harms, rather than a preference for certain screening options; and describing follow-up protocols in patients with concerning results on stool testing. The guidance specific to persons at increased and high risk was last updated in 2001.

Prostate Cancer
Prostate cancer is the second most common cancer in U.S. men, with an estimated 164,690 diagnoses in 2018 and an associated 29,430 deaths. Recommendations for early identification of prostate cancer were last published in 2010, with a full update anticipated for 2019. Decisions about screening should be made using an informed decision-making process, with physicians initiating discussions with those at average risk starting at 50 years of age, with those at high risk (e.g., black, family history of a diagnosis at younger than 65 years) at age 45, and those at even higher risk (e.g., family history of multiple diagnoses at younger than 65 years) at age 40.

Lung Cancer
In its 2013 guidance, the ACS recommended that physicians discuss current smoking, as well as smoking history, with persons 55 to 74 years of age. Subsequently, physicians who have contacts with high-quality treatment facilities also should discuss screening methods and their associated benefits and harms with persons who have a history of smoking.

### TABLE 1 (continued)

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Population</th>
<th>Test or procedure</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endometrial</td>
<td>Women, at menopause</td>
<td>—</td>
<td>Should be informed about risks and symptoms of endometrial cancer and strongly encouraged to report any unexpected bleeding or spotting to their physicians</td>
</tr>
<tr>
<td>Lung</td>
<td>Current or former smokers 55 to 74 years of age in good health with at least a 30-pack-year history of smoking</td>
<td>Low-dose helical CT</td>
<td>Should be performed annually in adults who currently smoke or have quit within the past 15 years, and who have at least a 30-pack-year smoking history; receive evidence-based smoking cessation counseling (if they are current smokers); have undergone a process of informed or shared decision-making that included information about the potential benefits, limitations, and harms of screening with low-dose CT; and have access to a high-volume, high-quality lung cancer screening and treatment center</td>
</tr>
<tr>
<td>Prostate</td>
<td>Men 50 years or older</td>
<td>Prostate-specific antigen test with or without digital rectal examination</td>
<td>Men who have a life expectancy of at least 10 years should have an opportunity to make an informed decision with their health care professional about whether to be screened after receiving information about the potential benefits, risks, and uncertainties associated with screening; should not occur without an informed decision-making process</td>
</tr>
</tbody>
</table>

CT = computed tomography; HPV = human papillomavirus; Pap = Papanicolaou.

*—All persons should become familiar with the potential benefits, limitations, and harms associated with cancer screening.

benefits and harms with those patients in good health who have at least a 30-pack-year history of smoking, who smoke currently, or who only quit smoking in the past 15 years. This recommendation, however, has been misconstrued by some physicians to mean that decisions to screen should involve shared decision-making, instead of a firm recommendation to screen combined with appropriate discussions with the patient.

To clarify this recommendation and appropriately place the emphasis, as ACS intended, on a firm recommendation for screening, in 2017, the ACS modified the wording to say that yearly screening should be performed with low-dose computed tomography in this patient population, combined with counseling on smoking cessation in current smokers and provision of information about benefits and harms of such screening. In addition, smoking cessation counseling was emphasized as an important component of identifying adults who should receive screening, which is not a replacement for smoking cessation.

**Editor’s Note:** The AAFP’s screening recommendations differ in some important respects from those of the ACS. The AAFP recommends starting routine mammography and colorectal cancer screening at age 50 in average-risk adults, and supports providing prostate specific antigen–based screening only to men 55 to 69 years of age who express a clear preference for the test after shared decision-making. In contrast to the ACS’s “firm recommendation to screen” for lung cancer in persons 55 to 74 years of age with at least a 30-pack-year history of smoking, the AAFP concluded that the evidence was insufficient to recommend for or against annual low-dose computed tomography in this population. In its recommendation, the AAFP cited concerns about high false-positive rates, unknown long-term harms of radiation exposure from follow-up full-dose computed tomography, and the lack of replication of the National Lung Screening Trial results in community settings ([https://www.aafp.org/patient-care/clinical-recommendations/all/lung-cancer.html](https://www.aafp.org/patient-care/clinical-recommendations/all/lung-cancer.html)).—Kenny Lin, MD, MPH, Deputy Editor

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**Guideline source:** American Cancer Society

**Evidence rating system used?** Yes

**Systematic literature search described?** No

**Guideline developed by participants without relevant financial ties to industry?** No

**Recommendations based on patient-oriented outcomes?** Yes

**Published source:** CA Cancer J Clin. July/August, 2018;68(4): 297-316


Lisa Croke

**AFP Senior Associate Editor**
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