

POEMs (patient-oriented evidence that matters) are provided by Essential Evidence Plus, a point-of-care clinical decision support system published by Wiley-Blackwell. For more information, see <http://www.essentialevidenceplus.com>. Copyright Wiley-Blackwell. Used with permission.

For definitions of levels of evidence used in POEMs, see http://www.essentialevidenceplus.com/product/ebm_loe.cfm?show=oxford.

To subscribe to a free podcast of these and other POEMs that appear in *AFP*, search in iTunes for "POEM of the Week" or go to <http://goo.gl/3niWXb>.

This series is coordinated by Sumi Sexton, MD, Associate Deputy Editor.

A collection of POEMs published in *AFP* is available at <http://www.aafp.org/afp/poems>.

YEARS Clinical Decision Tool Decreases CTA in Patients with Suspected Pulmonary Embolism

Clinical Question

Can a simple clinical decision tool safely decrease the use of computed tomographic angiography (CTA) in patients with suspected pulmonary embolism?

Bottom Line

In this study, using a simplified algorithm in patients with suspected pulmonary embolism can safely decrease the number of CTAs. (Level of Evidence = 1b)

Synopsis

Over the past several years, the addition of D-dimers to emergency department laboratory panels and the widespread access of rapid diagnostic tools (i.e., CTA) have resulted in a decrease in the prevalence of pulmonary embolism to approximately 10%. These researchers from the Netherlands prospectively evaluated a simple algorithm prediction model and also compared it with the Wells prediction model in 3,465 consecutively recruited patients with suspected pulmonary embolism. The simple model (called YEARS) assesses three factors: clinical signs of deep venous thrombosis, hemoptysis, and whether pulmonary embolism is the most likely diagnosis.

In addition to a D-dimer test result, each patient was scored using the YEARS and

Wells models. If a patient had no YEARS items and a D-dimer result of less than 1,000 ng per mL, the authors ruled out pulmonary embolism (1,320 patients fit this category). If a patient had no YEARS items and a D-dimer result of 1,000 ng per mL or greater, the clinician ordered a CTA (423 patients). If a patient had one or more YEARS items and a D-dimer result of less than 500 ng per mL, pulmonary embolism was ruled out (331 patients), but if the D-dimer result was 500 ng per mL or greater, the clinician ordered a CTA (1,391 patients). The researchers followed patients in whom a pulmonary embolism was ruled out for three months. Approximately 13% of the patients were diagnosed with pulmonary embolism at the outset, a handful of patients were anticoagulated for reasons other than thromboembolism (e.g., atrial fibrillation), and 18 (0.6%) of the 2,946 remaining patients were subsequently diagnosed with pulmonary embolism. Six of those were fatal. Based on the YEARS algorithm, 48% of the patients did not need a CTA compared with 34% using the Wells model.

Study design: Decision rule (validation)

Funding source: Self-funded or unfunded

Setting: Uncertain

Reference: van der Hulle T, Cheung WY, Kooij S, et al.; YEARS study group. Simplified diagnostic management of suspected pulmonary embolism (the YEARS study): a prospective, multicentre, cohort study [published correction appears in *Lancet*. 2017;390(10091):230]. *Lancet*. 2017;390(10091):289-297.

HENRY C. BARRY, MD, MS
Professor
Michigan State University
East Lansing, Mich.

Mite-Impermeable Covers Decrease Hospital Visits in Kids with Asthma

Clinical Question

Can mite-impermeable bedding decrease asthma exacerbations in children with asthma who are sensitive to mites?

Bottom Line

In children with house dust mite allergies and asthma, the use of mite-impermeable bedding decreases the frequency of asthma exacerbations. (Level of Evidence = 1b-)

Synopsis

House dust mites are a common allergen associated with asthma. This U.K. study included children with physician-diagnosed asthma who visited the hospital for an exacerbation (emergency department or admission). After the exacerbation had cleared, the researchers skin tested the children for house dust mite, cat, dog, pollen, and other allergens. They randomized children who had a wheal at least 3 mm larger than the negative control to receive mite-impermeable bedding covers (n = 146) or identical but nonimpermeable bedding covers (n = 138) to use at home. The researchers gave all participants the same instructions on the care of the bedding covers, and none were given instructions on mite avoidance. In the event that a second child from the same family entered the study, the researchers assigned them to the same intervention. Interviewers unaware of group assignment interviewed the child's primary caregiver one, four, eight, and 12 months after enrollment to ascertain exacerbations, unscheduled medical care, medication use, and quality of life. Additionally, the researchers vacuumed the child's bedroom floor at baseline and at the end of the study to estimate the mite load in the room.

At the end of one year, 23 children in the mite-impermeable bedding group dropped out compared with 20 in the control group. Although this 15% dropout rate is not a major problem, it is still a bit worrisome. At the end of one year, 29% of children in the mite-impermeable bedding group had exacerbations leading to a hospital visit compared with 42% of the control group (number needed to treat = 9; 95% confidence interval, 5 to 512). However, approximately one-half of the children in each group used oral corticosteroids during the year. Approximately 25% of the children reported that the special bedding covers were uncomfortable and thought about removing them, as did less than 3% of the children with the regular covers. These mite-impermeable

bedding covers cost approximately \$200 in the United States.

Study design: Randomized controlled trial (double-blinded)

Funding source: Foundation

Allocation: Concealed

Setting: Inpatient (any location) with outpatient follow-up

Reference: Murray CS, Foden P, Sumner H, Shepley E, Custovic A, Simpson A. Preventing severe asthma exacerbations in children. A randomized trial of mite-impermeable bedcovers. *Am J Respir Crit Care Med.* 2017;196(2):150-158.

HENRY C. BARRY, MD, MS

Professor
Michigan State University
East Lansing, Mich.

Treating Sleep Apnea with Positive Airway Pressure Does Not Reduce Adverse CV Outcomes or Mortality

Clinical Question

Does positive airway pressure (PAP) for adults with sleep apnea reduce cardiovascular (CV) disease morbidity and mortality?

Bottom Line

The use of PAP for adults with sleep apnea does not reduce adverse CV events or mortality. Patients who experience daytime fatigue at baseline benefit from reduced sleepiness and improved physical and mental well-being. Order sleep testing only in patients with signs or symptoms of sleep apnea who also experience clinically significant symptoms of daytime fatigue. No one else will benefit. (Level of Evidence = 1a)

Synopsis

These investigators thoroughly searched multiple databases including Medline, Embase, and the Cochrane Library, as well as reference lists from clinical trials, review articles, conference abstracts, and the clinicaltrials.gov website. Eligible studies included randomized clinical trials that assessed the use of PAP compared with standard care or sham PAP among adults, 18 years or older, with obstructive sleep apnea (OSA) or central sleep apnea (CSA). No language restrictions were applied. Two individuals independently assessed studies

for inclusion criteria and for methodologic quality using a standard risk of bias assessment tool. Disagreements were resolved by consensus.

A total of 10 studies that assessed the use of PAP in adults (N = 7,266) with OSA and CSA met the inclusion criteria—nine evaluated continuous PAP and one evaluated adaptive servo-ventilation. The overall risk of bias was low to medium; all studies concealed allocation assignment and masked outcomes assessment. No significant associations occurred between the use of PAP and major adverse CV events, CV mortality, or all-cause mortality in patients with OSA or CSA. In addition, there was no significant association with length of follow-up, adherence with using PAP, and baseline apnea-hypopnea index. The use of PAP was significantly associated with improvements in sleepiness and quality of life. A formal analysis found no evidence of publication bias and minimal heterogeneity of assessed outcomes.

Study design: Meta-analysis (randomized controlled trials)

Funding source: Government

Setting: Various (meta-analysis)

Reference: Yu J, Zhou Z, McEvoy RD, et al. Association of positive airway pressure with cardiovascular events and death in adults with sleep apnea: a systematic review and meta-analysis. *JAMA*. 2017;318(2):156-166.

DAVID SLAWSON, MD
Director of Information Sciences
University of Virginia Health System
Charlottesville, Va.

Use of Mindfulness or Self-Hypnosis Provides Immediate Pain Relief to Hospitalized Patients

Clinical Question

Can mind-body training, including mindfulness or self-hypnosis, decrease acute pain in hospitalized patients?

Bottom Line

Compared with psychoeducation, a single 15-minute session of training in mindfulness or self-hypnosis leads to greater immediate pain relief for hospitalized patients with at least moderate pain at baseline. (Level of Evidence = 1b)

Synopsis

For this single-site trial at a Utah hospital, these investigators randomized 244 hospitalized patients who reported intolerable pain or inadequate pain control to receive a single 15-minute session by a trained social worker using one of three interventions: (1) mindfulness training, focusing on breathing and acceptance of pain; (2) self-hypnosis, focusing on pleasing imagery and altering pain sensations; or (3) psychoeducation with delivery of empathic responses and pain-coping strategies. Baseline characteristics of the three groups were similar, with the exception that the hypnosis group had fewer women in it than the other two groups. In the overall sample, 94% were white, 57% were female, the mean age was 51 years, and all had moderate or greater pain at baseline.

The primary outcomes were self-reported pain intensity and unpleasantness scores before and after the intervention. Although patients in all three groups had reduced scores postintervention, patients in the mindfulness and hypnosis groups had significantly lower baseline-adjusted pain intensity and pain unpleasantness compared with the psychoeducation group. More patients achieved a clinically significant reduction in pain intensity of at least 30% in the mindfulness and hypnosis groups compared with the psychoeducation group (27%, 39%, and 15%, respectively). Pain relief was noted immediately following the intervention; the duration of this relief was not evaluated. Additionally, the power of suggestion and potential bias introduced by self-selection into the study may have played a role in the observed therapeutic effects.

Study design: Randomized controlled trial (nonblinded)

Funding source: Government

Allocation: Concealed

Setting: Inpatient (ward only)

Reference: Garland EL, Baker AK, Larsen P, et al. Randomized controlled trial of brief mindfulness training and hypnotic suggestion for acute pain relief in the hospital setting. *J Gen Intern Med*. 2017;32(10):1106-1113.

NITA SHRIKANT KULKARNI, MD
Assistant Professor in Hospital Medicine
Northwestern University
Chicago, Ill. ■