Letters to the Editor

Evidence Poses a Challenge to Imaging Standards in the Diagnosis of Pneumonia

Original Article: Community-Acquired Pneumonia in Adults: Diagnosis and Management

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See additional reader comments at: http://www.aafp.org/afp/2016/1101/p698.html

To the Editor: The statement by Drs. Kaysin and Viera that "chest radiography has been the standard method of diagnosing pneumonia" is consistent with recommendations from the Infectious Diseases Society of America (IDSA) that "a demonstrable infiltrate by chest radiograph or other imaging technique…is required for the diagnosis of pneumonia." However, the IDSA rates this recommendation as level III (evidence from case studies and expert opinion).[1] A Cochrane review identified two older trials suggesting that "routine chest radiography does not affect the clinical outcomes in adults and children presenting to a hospital with signs and symptoms suggestive of a LRTI [lower respiratory tract infection]."[2] Limitations in applying the Cochrane review to practice include the small number of included studies and the age of the data. Nevertheless, the fact that two different clinical trials demonstrated that the decision to obtain a chest radiograph had no bearing on eventual clinical outcomes challenges the consensus that chest radiography is *always* necessary in the management of community-acquired pneumonia, especially for patients well enough to be treated on an outpatient basis. When chest imaging is not readily available (the nearest radiograph machine to my clinic is 10 miles away), it is useful to know that a patient with history and examination findings suggesting community-acquired pneumonia who is stable enough to consider treating as an outpatient may, at least initially, be managed without imaging. Clearly, if complications develop or there is not appropriate clinical response, further investigation and imaging would be warranted.

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In Reply: We would like to thank Dr. Cayley for commenting on the IDSA recommendation regarding the use of chest radiography in the diagnosis of pneumonia. As primary care clinicians practice in diverse environments with variable access to diagnostic equipment, we agree that a chest radiograph may not be required in every case of suspected pneumonia. This decision should be based on individual patient risk factors, population prevalence of pneumonia, pretest probability, and an estimate of the potential harms and benefits of antibiotic treatment, including risk of overtreatment and the harms of a missed or delayed diagnosis.

As noted in the 2013 Cochrane review, similar outcomes have been observed with empiric diagnosis of community-acquired pneumonia compared with the IDSA-recommended approach of confirming the diagnosis with chest radiography. Such outcome studies are few, with significant limitations and based on limited and lower-quality data, including studies conducted outside the United States. There is a lack of good-quality evidence to assist clinicians in determining when to obtain a chest radiograph.[1] Clinician judgment has been shown to be better for excluding pneumonia (negative likelihood ratio = 0.25) than diagnosing pneumonia (positive likelihood ratio = 2.0).[2] Our article does present a prediction tool using a constellation of symptoms and examination findings to produce likelihood ratios that can then be used to guide management decisions.[3] However, no single clinical finding is accurate enough to exclude or diagnose pneumonia without a radiograph, and the use of clinical prediction models has not been adequately compared with a gold standard for patient-oriented outcomes.

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The use of chest radiography may additionally assist clinicians to reduce diagnostic errors in patients with respiratory symptoms secondary to malignancy, pulmonary tuberculosis, *Pneumocystis jiroveci*, pleural effusion, pulmonary edema, inflammation from non-infectious etiologies such as interstitial lung disease, and pulmonary embolism. The use of chest imaging in patients with risk factors for these conditions and those at risk of severe pneumonia may be particularly valuable.

For these reasons, we agree with the 2007 IDSA guidelines, which call for the use of chest radiography in the diagnosis of pneumonia in adult patients, with the caveat that a clinical diagnosis may be sufficient in lower-risk patients who present with characteristic symptoms and findings, as well as in the pediatric population in which radiography is not routinely recommended.[4,5]

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Correction

Incorrect Age. The Point-of-Care Guides, "Young Febrile Infants: Step-by-Step Evaluation," (January 1, 2018, p. 45) contained an error in the second paragraph of the Evidence Summary section (p. 45) regarding the age of infants on which to use clinical decision rules for distinguishing low-risk infants from higher-risk infants. The age should have been infants 90 days or younger, not older. The sentence should have read: "The study included previously healthy infants 90 days or younger presenting to 11 European pediatric emergency departments between 2012 and 2014 with a fever (body temperature of 100.4°F [38.0°C] or higher documented at home or in the emergency department) of unknown etiology." The online version of the article has been corrected. ■