Lower respiratory tract infections: Treating patients or diagnoses?

To the editor:

Pisarik et al give suggestions for ordering chest x-rays in patients with acute onset productive cough, mainly based on the clinical prediction rule of Diehr et al ("When should a chest x-ray be used to evaluate acute-onset productive cough for adults?" *J Fam Pract* 2005; 54(12): 1081–1083). Contrary to the authors' opinion, important outpatient studies in lower respiratory tract infection (LRTI) have taken place since then.

In 2 European studies, the accuracy of diagnosing pneumonia by general practitioners was assessed.[1,2] Melbye et al[1] found that out of 20 radiologically confirmed cases of pneumonia in a LRTI population of 153 patients, only 7 were also clinically assessed as such by the clinician. In a study in 247 patients with LRTI in the Netherlands,[2] only 4 out of 32 radiologically proven cases of pneumonia were diagnosed by clinicians based on medical history and physical examination. As in these studies, the vast majority of patients with LRTI suffer from acute bronchitis, in which the advantages of antibiotic treatment do not outweigh the side effects.[3]

We acknowledge the fact that clinicians' judgment in differentiating acute bronchitis and pneumonia in the outpatient population remains very poor. Realizing that diagnostic uncertainty is a major factor in LRTI consultations, and that clinicians will be inclined to prescribe antibiotics when uncertain, rapid diagnostic tools to distinguish which patients can do without treatment can be of great additional value. Three diagnostic studies in Norway, the Netherlands, and the US have indicated that C-reactive protein (CRP) point of care testing is helpful in LRTI, since a low test result helps to exclude pneumonia.[2,4,5] Chest x-rays and antibiotic prescriptions can therefore be safely withheld in a large group of patients with low CRP test results.

We agree with the commentary of Dr. Malloy that prediction rules are not perfect but at least better than clinicians' judgment. Excluding potential harmful conditions is one of the cornerstones of family practice. With the growing evidence of the additional value of CRP in excluding pneumonia, one may actually wonder in which LRTI patients ordering chest x-rays would be recommendable at all. Although chest x-rays are considered the gold standard, interobserver agreement of chest x-rays with a possible infiltrate from the out-patient population by experienced radiologists has proven to be moderate, thereby also limiting the applicability of their results.[6] In the Dutch LRTI study[7] mentioned above, results of chest x-rays were not revealed to clinicians during the study period, which gave the investigators the opportunity to study the course of 5 patients with an infiltrate on x-ray but without antibiotic treatment. All 5 untreated patients recovered without any problems. This challenges the commonly held assumption that all patients with pneumonia need antibiotic treatment in order to recover and can thus reduce anxiety in clinicians about failing to prescribe antibiotics to patients with possible pneumonia.

In the outpatient LRTI population, the most important question is which patients need an antibiotic and which do not. Adding a CRP test to the clinician's

findings can identify patients with no need of an antibiotic. Managing LRTI patients in primary care rather than treating diagnoses can therefor be safe and effective without using routine chest x-rays.

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The author responds:

I welcome the opportunity to respond to Cals and Hopstaken's letter concerning the Clinical Inquiry on when to order a chest x-ray in an acute-onset cough. This will give me an opportunity to discuss some important issues that we did not have space to address in the original paper.

The Clinical Inquiry was not discussing whether pneumonias need to be treated or not, just how to go about diagnosing them. We did mention the fact that many people with "missed pneumonias" do quite well without antibiotics, so some of the studies mentioned by Cals and Hopstaken will shed further light on this and hopefully get clinicians away from prescribing antibiotics for an acute cough illness "just in case" they may have pneumonia.

Two of the 3 CRP studies were not included because the results of the studies could not be generalized to acute coughing patients. The study by Melbye et al[4] studied 71 patients who were referred to the study with suspected pneumonia. These were not simply acute coughing patients—they were already at high risk of having pneumonia. The study by Hopstaken et al[2] had as part of its definition of a LRTI not only a new cough (less than 29 days), but also an acute exacerbation of a chronic cough (increasing cough). The last CRP study—the study by Flanders et al[5]—had a methodological weakness. Of the 168 patients with acute cough that had CRPs done, only 40 had chest x-rays done. With the poor ability of clinicians to diagnose pneumonia, as mentioned by Cals and Hopstaken (and also mentioned by us), all these patients would have needed to have chest x-rays to be done in order to make sure that no pneumonias were being missed.

Finally, to paraphrase what Cals and Hopstaken state, we should treat patients, not misdiagnoses. The Clinical Inquiry was addressed to those adult patients who presented with an acute cough, not necessarily only to patients with a LRTI since there is no standard definition for a LRTI or acute bronchitis for the practicing clinician.[8,9] Many patients diagnosed with "acute bronchitis" just have an upper respiratory tract infection (URTI)—the common cold.[10] Conversely, 18% of patients diagnosed with a URTI with no history of asthma or chronic obstructive pulmonary disease in one study had a greater than 15% increase in forced expiratory volume in 1 second (FEV_1) over several weeks, implying that they also had a lower respiratory tract component.[11] Even in the cited study by Melbye et al,[1] only 14 (70%) of the radiographic pneumonias found were in the patients diagnosed initially with a LRTI. The other 7 (30%) were somehow diagnosed in those presumably with an URTI. In addition, even in this study not all LRTI patients had chest x-rays done.

In studying acute cough illnesses, until we get a better way of diagnosing those respiratory tract infections that also involve the lower respiratory tract other than possibly pulmonary function testing, sticking to a readily identifiable presenting symptom will prevent misdiagnoses and misclassification. Additionally, if we want to see how an acute cough illness relates to pneumonia, then all patients would need to have a chest x-ray.

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FAST TRACK

In studying acute cough, sticking to an identifiable presenting symptom will prevent misdiagnoses and misclassification

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