Managing Community-acquired Pneumonia

Pneumonia accounts for only about 1% of hospitalizations, but it is clearly a favorite for controversies in management. Within the past two years, clinical guidelines for managing community-acquired pneumonia have been published by the Infectious Diseases Society of America and the American Thoracic Society.[1–3] These guidelines address similar issues with recommendations that are somewhat different in some parts and very different in others.

This issue of *JGIM* includes two articles relevant to the management of community-acquired pneumonia that are not clearly addressed in the guidelines, one dealing with blood gas measurements and management of hypoxemia,[4] and a second that deals with "switch therapy," i.e., the clinical criteria to change intravenous antibiotics to oral agents.[4]

The paper by Levin et al.[5] represents another in the long series of reports from the Pneumonia Patient Outcomes Research Team (PORT), which is a 5-hospital consortium that has been analyzing community-acquired pneumonia and establishing standards for 10 years. The study showed that arterial blood gases or pulse oximetry was obtained in 21% of outpatients and 90% of hospitalized patients. Most dramatic were the institutional differences, which ranged from 9% to 58% for outpatients and 36% to 65% for hospitalized patients. The yield for detecting hypoxemia, defined as an arterial oxygen pressure less than 60 mm Hg or oxygen saturation less than 90%, was 4.6% for outpatients. For hospitalized patients, the yield was much higher at 41%; 46% had hypoxemia with blood gas analysis and 32% had hypoxemia by pulse oximetry. As expected, those with hypoxemia had higher rates of intensive care unit admissions, higher mortality, and longer length of stay. In contrast to outpatients, 90% of hospitalized patients had oxygen therapy and there was little variation between institutions. The authors conclude that more measurements of blood gases should be done in outpatients because of the high rates of hypoxemia even in the absence of identified risk factors. They specifically advocate routine screening with pulse oximetry, which is readily available and inexpensive, in order to define patients who require oxygen therapy. Nevertheless, there was no demonstrated deleterious outcome as a result of the failure to detect hypoxemia in outpatients. This means that routine use of pulse oximetry in outpatients with community-acquired pneumonia makes sense, but is not "evidence based" or proven to be "cost effective."

The second article relevant to community-acquired pneumonia was by Halm et al.[5] and concerned physicians' attitudes about the decision to switch antibiotic therapy from intravenous to the oral route of administration. Diverse opinions were expressed regarding factors that should constitute the basis for this decision including the nature of the infection (suppurative vs nonsuppurative), severity of illness (bacteremia, respiratory rate, mental status, oxygenation), and responses to therapy (normal or near-normal vital signs). The conclusion is that the divergence of opinion indicates a need for guidelines and pathways that include educational strategies to address these differences.

A critical component of the switch decision concerns the drug and the pathogen, two variables that were not mentioned. The pharmacology profile of gatifloxacin, levofloxacin, moxifloxacin, clarithromycin, and azithromycin shows good oral bioavailability so that oral therapy with these drugs might be feasible from the outset. The concern with beta lactams and erythromycin is the levels achieved with oral agents when minimal inhibitory concentrations are marginal and the variations in bioavailability. With levofloxacin, for example, oral bioavailability is 99% so the only major difference between oral and intravenous treatment in a patient with a functioning gastrointestinal tract is the speed of delivery to the infected site with the first dose.

When I raise this issue with practicing physicians, another common concern not mentioned in the analysis is that intravenous formulations are often given so that utilization personnel do not question the need for hospitalization.

Despite these concerns, the survey by Halm et al. is important in raising the issue. Oral antibiotic treatment is usually favored by the patients as less painful, by utilization reviewers to get earlier discharges, and by the Centers for Disease Control and Prevention to eliminate intravenous lines, which are a major source of nosocomial infection. It's win, win, win, with the proviso that it is safe. There are many studies that provide good testimony to the safety of oral agents in pneumonia including a report from Robert Austrian et al. on the favorable results of treating bacteremic pneumococcal pneumonia with oral penicillin.[6] The two possible exceptions are the patient with a nonfunctioning gastrointestinal tract and patients with hypotension.

The two papers in this edition of *JGIM* address practical issues about the management of pneumonia. However, neither report provides evidence of improved outcome. This means there is no support that is evidence based, the charmed concept that is the basis for performance standards. Thus, both studies get credit for raising important issues, and neither is likely to alter existing guidelines in a fashion that is likely to impact management until additional support is generated. —

JOHN G. BARTLETT, MD, *Professor of Medicine and Chief, Johns Hopkins University School of Medicine, Division of Infectious Diseases, Department of Medicine, Baltimore, Md.*

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