Editorial

Pneumonia Management Guidelines—Why, How, and Where to Start

Clinical practice guidelines (CPGs) are proliferating. Their ultimate purpose is to improve quality of medical care while reducing costs and utilization of resources. Increasingly, they are being used to assess and compare provision of health-care services across different settings.

In an article in this issue of the *Mayo Clinic Proceedings* (pages 5 to 9), Josephson and colleagues compare management of bacteremic pneumococcal pneumonia in two different care settings in an attempt to evaluate strategies for measurement of performance and to guide future continuous quality improvement efforts. They found that outcomes (defined as “in-hospital mortality”) were not significantly different between university and community hospitals studied but that use of resources was significantly greater at the university hospital. They concluded that examining interhospital variations in resource utilization detected important differences in physician practice, even among a small number of patients, and could be used to guide continuous quality improvement efforts and possible policy decisions.

The report by Josephson and associates raises several important questions related to development of guidelines and analysis of inpatient pneumonia care. Is in-hospital mortality an adequate measure of outcomes? What differences in experience and training regarding process improvement and implementation of guidelines generally exist between academic and community hospitals? Do some comorbidities more substantially influence practice variation than can be assessed by batched severity-adjusted comparisons? What is the effect of previous pneumococcal immunization on mortality in patients who have pneumococcal pneumonia?

**Differences in Medical Practice.**—Variation in practice may be necessary or unnecessary. Differences in ordering of tests and resource utilization between academic teaching center hospitals and private community hospitals are detectable whenever sought. Some valid reasons exist for these differences (for example, the more frequent procurement of sputum specimens at teaching hospitals to monitor patterns of antimicrobial susceptibility and to guide more specific antimicrobial treatment options for individual patients). Moreover, factors related to specific comorbidities (such as alcohol abuse and chronic liver disease, which are known indicators of poor prognosis for patients with pneumonia) may warrant increased testing and intensity of services but may not be reflected in overall severity-adjusted comparisons. Unnecessary variations—those differences in practices that do not lead to improved outcomes or reduced resource utilization—are those that might be disclosed by profiles of resource utilization and then merit further study.

**Outcome-Based Recommendations.**—High-quality CPGs originate with a relevant clinical question, synthesize sound evidence, assign value to outcomes, generate practical and unambiguous recommendations, and ultimately reduce unnecessary practice variation while improving outcomes.

A crucial requirement of successful guidelines is that they be based on outcomes. In their best form, CPGs enhance health care by providing physicians with scientific, evidence-based knowledge in a usable format, applicable to daily decision-making processes in patient care and leading to high-quality, cost-effective care. In their worst form, they are conglomerates of rigid criteria, used for cost-control programs and limiting physicians’ decision-making power.

Outcome-based CPGs differ from previous methods for development of guidelines (such as the consensus conference) in that quantitative estimates of the effect of interventions on health outcomes are sought. Specific decision nodes are linked together to form clinical pathways. Scientific evidence linking an intervention to a health outcome is crucial. Although direct evidence (such as that provided by randomized controlled trials) is preferred over indirect evidence (such as retrospective cohort studies), relatively few medical treatments and interventions have been studied in adequate detail to provide strong direct evidence to answer many of the important clinical questions posed to physicians daily. Fortunately, improved decision models have been developed to link intervention quantitatively to outcomes when direct evidence is lacking. Multidisciplinary teams may generate and use systematic reviews as an important step in the process of developing CPGs.

Optimal management of pneumonia in hospitalized patients is an example of an important clinical question that is begging for continuous improvement and CPG efforts. Pneumonia is a common and serious problem. It is the sixth leading cause of death and the most common cause of death due to infection in the United States. As for many of the other common medical problems encountered daily, inadequate direct evidence is available to support a specific

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Address reprint requests to Dr. J. C. McDougall, Division of Pulmonary and Critical Care Medicine, Mayo Clinic Rochester, 200 First Street SW, Rochester, MN 55905.


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management plan to achieve the best outcome at the lowest cost. Two main academic groups have published their guidelines of recommendations for initial management of community-acquired pneumonia. These guidelines are based on a consensus panel model. Despite the publication of these guidelines, practice patterns vary considerably. The individual physician is still left to decide, for patients with different manifestations, types, and severity of pneumonia, what tests should be ordered, what drugs should be given, and what duration of treatment should be recommended.

Change is difficult. If guidelines are to be used as a tool to convince physicians to change clinical practice and to accomplish improved patient care, while using the same or fewer resources, the data used to develop these guidelines must be compelling. The use of “best practice” guidelines developed by an expert panel clearly does not reach the sophistication or scientific validity of those guidelines that are developed by critical evaluation of outcome data. The current best examples of outcome-based CPGs primarily address ambulatory conditions, such as hypertension and diabetes mellitus. Inpatient guidelines have been most successfully applied to surgical or procedural admissions. An important need exists for development of guidelines for initial management of some of the common medical conditions that necessitate hospitalization, such as pneumonia. Outcomes that should be evaluated in developing high-quality CPGs for pneumonia include not only the type of pneumonia, in-hospital mortality, and resource utilization, as noted in the article by Josephson and colleagues, but also other important outcomes such as delayed morbidity and mortality, causes of death, complications of treatment as well as diagnostic or therapeutic procedures, time to alleviation of symptoms, and return to normal function. No such CPGs currently exist.

Successful Implementation.—The challenges in moving to more evidence-based care of common medical and surgical conditions are many: development of excellent outcome-based CPGs, effective communication of the CPGs, achievement of compliance with the CPGs by physicians and other health-care providers, and updating of CPGs as new evidence is developed by clinical researchers. Where do we start? As Maria sings in The Sound of Music, “Let’s start at the very beginning.” The importance of reducing unnecessary variation in provision of care and the principles of guideline development and implementation should be taught in medical school and throughout residency training. Medical students and residents should be included on teams that are developing and implementing guidelines. All physicians must continue to examine critically the systems of provision of medical care and their outcomes in an effort to reduce variation and to maintain excellent care in an atmosphere of reduced resources. Of utmost importance, implementation of guidelines must never result in a deterioration of quality of patient care in the pursuit of cost reduction.

Lynne T. Shuster, M.D.
Division of Area General Internal Medicine
John C. McDougall, M.D.
Division of Pulmonary and Critical Care Medicine and Internal Medicine
Mayo Clinic Rochester
Rochester, Minnesota

REFERENCES