Putting a Critical Pathway Into Practice

The Devil Is in the Implementation Details

Imagine if, for the cost of a single sheet of paper and the effort required to place it in the patient’s medical chart, you could reduce length of stay by 2 days and save up to $4600 per patient yet have no impact on readmission rate, 30-day mortality, or patient satisfaction. One might think a deal with the devil had been struck, as public and private insurers, health care systems, hospitals, and individual health care providers would likely pay a fair amount for such an intervention.

**IMPLEMENTATION OF A 3-STEP CRITICAL PATHWAY**

Amazingly, in this issue of the *Archives*, Carratalà et al. describe such a high-yield, low-risk, low-cost intervention. The authors report the impact of a simple, evidence-based, 3-step critical pathway for patients hospitalized with community-acquired pneumonia (CAP). They enrolled 401 immunocompetent patients at 2 Spanish hospitals (1 public and 1 private) who were admitted with CAP and randomized them to the critical pathway or usual care. The critical pathway included 3 components: (1) early mobilization, (2) use of objective criteria for switching to oral antibiotics, and (3) use of evidence-based criteria for appropriate hospital discharge.

The results are impressive. The authors report a reduction in the median length of stay (−2.1 days) and median duration of intravenous antibiotics (−2.0 days) and fewer adverse events (−11.4%) in the pathway group. There were no differences in 30-day readmission or 30-day mortality, and patients were equally satisfied with the critical pathway and usual care.

The patients were randomized, the sample size was large, and the results seem valid. Are these results generalizable? Should health care systems and providers implement this care pathway tomorrow? The answer is yes, but as with most interventions that require changing physician behavior, the devil is in the implementation details.

The authors report that patients were randomized “to follow a 3-step critical pathway” and were by protocol mobilized early, switched to oral antibiotic therapy, and discharged according to the specified criteria. The reported strategy involved selecting a limited number of physicians for the intervention arm (who remained “unblinded”) and placing a “printed checklist detailing the 3-step pathway” in the medical chart reminding the physicians of the intervention. Unfortunately, only failure to perform early mobilization was reported by the authors (in 8 of the 200 patients). Therefore, we must assume that all of the patients in the intervention group were switched to oral therapy and discharged according to the 3-step pathway. Was physician awareness of the intervention and placement of a single piece of paper in the medical record enough to achieve 100% adherence to the pathway?

The research exploring optimal means of introducing evidence-based medicine and guidelines into daily practice (including implementation of care pathways or protocols) would suggest this is highly unlikely; changing physician behavior is challenging. In a systematic review that evaluated the impact of printed educational materials alone (eg, a form placed in the medical chart) on health care providers’ practices, the benefits were modest compared with no intervention, only increasing adherence to recommended practices by 4.3% to 13.6%. Even when harnessing the power of electronic health records and active decision support, the impact on physician behavior remains small. A systematic review of on-screen point-of-care computer reminders revealed a median improvement in process adherence of only 4.2%. Even when physicians are aware they are being audited and receive feedback, as they likely were in this trial, the impact is only small to moderate.

**ACHIEVING ADHERENCE**

If there was 100% adherence to this critical pathway, how was this achieved? How might other institutions achieve these outstanding results? It may have been a consequence of intensive investigator involvement as part of the randomized trial. According to the protocol, patients were seen daily by at least one of the investigators to assess and record outcomes; presumably they could ensure adherence and compliance with the checklist. Whether this could easily be replicated in other hospitals and the cost of this intervention are not clear. Given the established barriers to changing physician practice, without knowledge of the necessary steps in implementation, the generalizability of the findings are limited.

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We can learn from this well-done randomized trial despite this limitation. Taken independently, each of the 3 evidence-based steps has the potential to enhance the efficiency and quality of care. In medical-surgical inpatients (including CAP), early mobilization may improve patient outcomes including length of stay and functional status. Randomized trials support the use of objective simple bedside criteria to determine appropriate timing of the switch to oral antibiotics and subsequent discharge, and other evidence reveals that these criteria are often not followed. Taken as a bundle with high adherence rates, the impressive reduction in length of stay and cost savings are easy to understand.

Individual clinicians who care for patients hospitalized with CAP should use the article by Carratalà et al to reflect on their practice. Do you follow these simple evidence-based measures? Are your patients mobilized early? Do you review vital signs and consider a switch to oral antibiotics each day? Do you monitor mental status and oxygenation each day to evaluate for possible discharge?

Health care institutions and hospitals should explore how to effectively implement this 3-step pathway (or the individual steps) within their health care environment. One can imagine a number of different practical approaches: standardized order sets, checklists with nursing oversight to ensure compliance, audit and feedback of individual health care providers, or use of complex decision support as part of an electronic health record, to name a few. In any case, the implementation should be tailored to the local culture and environment and fit within the budget and broader strategic priorities. Any successful implementation must engage the relevant health care providers, identify champions, design solutions that are creative and feasible, define measures of success, and provide feedback at regular intervals. While achieving 100% adherence, as was done by Carratalà et al, may be difficult, given the high-yield, low-risk nature of the intervention, even small changes in physician behavior could have a substantial impact on the care of patients with CAP. Institutions and hospitals should try to make this happen.

It appears no deal with the devil was made here, but the devil is in the implementation details. And if the devil himself came down with pneumonia, I am sure he would want to follow this 3-step critical pathway.

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Published Online: May 21, 2012. doi:10.1001/archinternmed.2012.2129

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Financial Disclosure: None reported.