

with the use of a correlation statistic without first considering the distribution of the data.

The authors also fail to recognize the role of process measures in improving care. We know from well-vetted, peer-reviewed research that specific processes can improve overall care. Therefore, it only makes sense that such measures should be set as a minimum standard to be expected by all patients, all the time.

The Institute of Medicine has defined *quality* using a broad, multifaceted framework, including measures of effectiveness, efficiency, patient safety, patient-centeredness, equity, and access. We must cease the practice of presenting practitioners and patients with what amounts to a false choice between measures of outcomes and measure of processes. Useful measures of quality must incorporate both.

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Report Card Measuring: The Authors Respond

We thank Richard Bankowitz for his interest in our paper (Mar/Apr 09). We support process measurement and public reporting in hip and knee arthroplasty. It is an interim step on the road to higher quality. However, a level of scientific rigor is needed as quality programs go from simple measurement and reporting to financial incentives and penalties. Our data document that current systems for measuring quality are not ready to make that leap: the variation in process measurement is too low, and the outcome measures are too crude.

Our paper indeed notes that there was some correlation between surgical volume and composite quality measures. But the system was best for discriminating low-quality/low-volume hospitals and could not truly differen-

tiate average- from high-quality hospitals. Our patients and payers are seeking the ability to accurately identify hospitals and surgeons with outstanding outcomes.

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Computerized Order Entry

The seven-country comparison of computerized prescriber-order entry (CPOE) implementation in hospitals by Jos Aarts and Ross Koppel (Mar/Apr 09) offers a platform for discussing information technology (IT) applications in hospital medication use. Data collected by the American Society of Health-System Pharmacists

further elucidate the status of CPOE in the United States.¹ In 2007, 18 percent of hospitals had implemented CPOE, and two-thirds of them had clinical decision-support systems. In 16 percent of hospitals with CPOE, medication orders still needed to be manually reentered into pharmacy computer systems (thereby diluting one benefit of CPOE). Slightly more than half of the hospitals without CPOE said that they planned to implement it within three years.

Hospital IT priorities should exploit the opportunities to improve patient safety in each step of the medication-use process. The potential for harm is nearly equal in the prescribing and drug-administration steps.² Thus, it is noteworthy that 24 percent of hospitals have invested in bar-code drug administration technology, and 56 percent of the rest plan to do so within three years.³ Computerized infusion pumps that check doses against preset limits are used by 44 percent of hospitals; 47 percent of the rest plan to acquire this technology within three years.

Hospitals are investing significant human resources in the application of IT to the medi-

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cation-use process. For example, 36 percent of hospitals employ dedicated pharmacy personnel to collaborate with physicians, nurses, and IT staff in this cause.

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NOTES

1. C.A. Pedersen and K.F. Gumpfer, "ASHP National Survey of Informatics: Assessment of the Adoption and Use of Pharmacy Informatics in U.S. Hospitals—2007," *American Journal of Health-System Pharmacy* 65, no. 23 (2008): 2244–2264.
2. L.L. Leape et al., "Systems Analysis of Adverse Drug Events," *Journal of the American Medical Association* 274, no. 1 (1995): 35–43.
3. Pedersen and Gumpfer, "ASHP National Survey."

Computerized Order Entry: The Authors Respond

We welcome the additional information on computerized prescriber order entry (CPOE) adoption in the United States, in response to our paper (Mar/Apr 09). Although Craig Pedersen and Karl Gumpfer's study (Note 1 in Gumpfer and William Zellmer's letter) was not available when we submitted our paper, the figures concur with our findings and estimates. Their work also reflects how hard it is to obtain reliable data on CPOE market penetration, which we also pointed out.

Gumpfer and Zellmer, however, also observe that about half of the hospitals currently without CPOE reported that they intend to implement it within the next three years. Here we differ with their views. We doubt the veracity of that prediction (but neither their reporting nor the honest intentions of the respondents). A dramatic shift of that scale is unlikely both because of the recent economic crisis and, more important, because of the painstaking and difficult process of implementing CPOE in reality. We agree that bar-coded medication administration systems will reduce pharmacy dispensing errors. However,

the evidence to date does not suggest that such systems are as effective in reducing administration errors because of design and implementation faults and the resulting staff workarounds that mitigate the efficacy of bar-coding.¹

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NOTE

1. R. Koppel et al., "Workarounds to Barcode Medication Administration Systems: Their Occurrences, Causes, and Threats to Patient Safety," *Journal of the American Medical Informatics Association* 15, no. 4 (2008): 408–423.

Improved Models Of Health Care Delivery

Janet Corrigan and Dwight McNeill (Mar/Apr 09) conclude that new organizational models will be needed to improve the way health care is delivered in this country. What their paper fails to point out, and what has been left out of much of the debate on health reform, is that physicians have already created a new delivery model that works well, improves the quality of care, and reduces costs for both payers and consumers.

Ambulatory surgery centers (ASCs) provide exactly the focus and care environment outlined by Corrigan and McNeill. This comes from being owned by physicians who have risked their own capital to create a model that delivers outstanding care efficiently, and that is patient-focused and cost-effective. ASCs are the "focused factory" that health care expert Regina Herzlinger says are critical to fixing our health care system.

For more than twenty years there has been a steady movement of surgical procedures from inpatient acute care hospitals to ASCs and other outpatient surgical facilities. More than 40 percent of the fifty million surgical