

Executive Summary

Clinical Baseline and Financial Impact Study

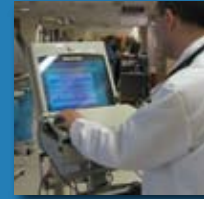
Medical innovations often bear the burden of a mixed reputation: on the one hand, they can be costly to acquire and implement; on the other hand they may save lives and save money over the long run. Assessing this double-edged duality—cost versus effectiveness—is critical to determining a medical technology’s value and ultimately its adoption by the health care system.

That is exactly what the **Massachusetts Hospital CPOE Initiative** set out to do with the technology known as Computerized Physician Order Entry (CPOE), a computer application used by physicians to enter diagnostic and therapeutic orders for hospitalized patients. Coordinated by the Massachusetts Technology Collaborative (MTC) and the New England Healthcare Institute (NEHI), and in partnership with the Massachusetts Hospital Association, the Massachusetts Council of Community Hospitals and a broad spectrum of key stakeholders in the health care system, the Massachusetts Hospital CPOE Initiative was organized to speed the adoption of CPOE systems, which have been shown to improve the quality of care and to reduce costs.

Adverse drug events, or ADEs, have long been a significant cause of injury and death among hospital patients. Conservative estimates show that nationwide, adverse drug events result in more than 770,000 hospital injuries and deaths each year and cost up to \$5.6 million per hospital, according to a report published in 2001 by the Agency for Healthcare Research and Quality (AHRQ)¹. Just as distressing: many of those injuries and costs are *preventable*—yet they still occur at alarming rates. “Anywhere from 28 percent to 95 percent of ADEs can be prevented by reducing medication errors through

Saving Lives, Saving Money:

The Imperative for
Computerized Physician Order Entry
in Massachusetts Hospitals



computerized monitoring systems,” the AHRQ report said.

Implementing CPOE is a daunting task because there are significant barriers impeding adoption, in particular the high capital costs involved and the fact that adoption requires major, disruptive changes in the workflow of a hospital. While there have been studies in academic medical centers showing that CPOE can reduce costs and improve quality, there are no studies that indicate where and to what extent the quality improvements and savings would occur in the community hospital setting. For this reason, any Massachusetts hospital contemplating the considerable effort necessary to implement CPOE would face a high degree of uncertainty in terms of the quality and cost benefits it could reasonably expect, especially in regard to the financial impact of this substantial investment.

The Clinical Baseline and Financial Impact Study was conducted to address these uncertainties. MTC and NEHI were joined by a team headed by Dr. David Bates, Chief of the Division of General Medicine at the Brigham and Women’s Hospital, PricewaterhouseCoopers, and other experts in the field in conducting an in depth analysis of six Massachusetts community hospitals. The study

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teams reviewed 4,200 charts to determine the baseline level of preventable adverse drug events, and the unnecessary use of expensive drug and laboratory tests, that could be improved by implementing CPOE.

The results are stunning.

The average baseline rate of preventable adverse drug events was 10.4 percent. This means that one in every ten patients admitted to these community hospitals suffered a preventable adverse drug event. If CPOE with robust clinical decision support were implemented, these levels could be substantially reduced. Adding in the cost reductions from unnecessary drug and laboratory test use, the annual savings to each hospital could be \$2.7 million. The onetime average total cost of a CPOE system is \$2.1 million with an annual increment in operating costs of \$435,000. The savings from a CPOE system could provide full payback to the average hospital in about 26 months.

In addition to the financial impact on the hospitals, the annual benefit to payers, on average, could amount to \$900,000 for each of the hospitals.

Based on the findings in these six representative hospitals, it is estimated that if all Massachusetts hospitals that don't have CPOE adopt it, the annual savings for the hospitals and payers could be approximately \$170 million and 55,000 adverse drug events could be prevented every year.

The study recommends that all Massachusetts hospitals complete implementation of CPOE systems with clinical decision support by 2011; that the Hospital CPOE Initiative, working in collaboration with all stakeholders, develop performance metrics to assure that CPOE systems are being operated effectively, and that payers adopt robust incentives to facilitate attainment of this goal. In addition, the state should continue to support the search for and evaluation of valuable new technologies that both save lives and save money.

Taken together, the clinical and financial benefits of a fully implemented CPOE system offer a win-win opportunity for patients, hospitals, and payers across the Commonwealth of Massachusetts. Eliminating preventable adverse drug events, improving patient care and reducing medical costs are fundamental tenets of sound health care policy. CPOE now has a strong reputation based on evidence, and the Commonwealth must seize this chance to save lives and save money and to become a national leader in patient safety along the way.



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