

# Computer order entry systems reduce preventable adverse drug events

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Despite a national mandate to implement electronic health records and computer order entry systems (CPOE) by 2014, only approximately 30 percent of hospitals nationwide have done so and around 40 percent of hospitals in the state of Massachusetts have made this transition. New research from Brigham and Women's Hospital examined the impact of a vendor-developed CPOE in five community hospitals in Massachusetts and found that these CPOE systems are effective at reducing drug-related injury and harm. This research is published online in the *Journal of General Internal Medicine*.

The majority of studies that evaluate CPOE systems have been performed in academic settings with systems that have been developed internally. While these studies have demonstrated significant reductions in the rates of preventable adverse drug events (ADE), there has been no research into the effectiveness of vendor CPOE systems in a community hospital setting.

"We knew from prior research that there was potential to significantly reduce preventable ADEs at community hospitals through CPOE," said Dr. David Bates, [Senior Vice President](#) for Quality and Safety at Brigham and Women's Hospital and senior author on the study. "Our research demonstrates that this is true. We observed a 34 percent reduction in preventable ADEs overall in the community hospital setting following the implementation of a vendor CPOE system."

Researchers evaluated the impact of CPOE systems on the frequency of

adverse drug events (ADE) in five [community hospitals](#) in Massachusetts between January 2005 and September 2011. Each hospital independently selected and implemented a vendor CPOE system with decision support capabilities. They looked at the incidence of preventable ADEs and the rate of potential ADEs and ADEs overall.

An ADE was defined as any drug-related injury. They were considered preventable if they were due to an error or were preventable by any means available. A non-preventable ADE was defined as any drug-related injury in which there was no error in the medication process. A potential ADE, or near miss, was defined as a medication error with the potential to cause harm to the patient, but did not actually cause injury.

Researchers observed a 34 percent reduction for preventable ADEs, but an increase of 29.5 percent in potential ADEs or near-misses following implementation of a CPOE system.

"Our study shows that while rates of preventable ADEs may fall after CPOE implementation, all sites can benefit from tracking issues found post-implementation and making changes accordingly," Bates said. "The expertise and experience of others that have previously implemented CPOE can help guide the process."

Bates and colleagues note that further research needs to be conducted to explore the safest and most effective way to implement vendor CPOE and other technology. Bates and colleagues are currently investigating the impact of clinical decision support systems on ADE rates and identifying barriers to implementation.

Provided by Brigham and Women's Hospital

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