



Meaningful Use Case Study

Eastern Maine Medical Center—[2008 Davies Organizational Award Winner](#) [2010 Stories of Success case study selection](#)

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Stage One Meaningful Use Goal

To roll out computerized provider order entry (CPOE) and achieve mandated CPOE competency for all providers.

CPOE Definition

A computer application that enables clinicians to order and process medications, lab tests, clinical procedures and other services electronically.

Meaningful Use Core Objective and Measure: CPOE

Objective: Use CPOE for medication orders directly entered by any licensed healthcare professional who can enter orders into the medical record per state, local and professional guidelines. Measure: More than 30 percent of unique patients with at least one medication in their medication list, seen by the eligible provider or admitted to the eligible hospital's or critical access hospital's inpatient or emergency department, have at least one medication order entered through CPOE.

Organizational Snapshot

Eastern Maine Medical Center (EMMC) is a 411-bed medical center located in Bangor, with nearly 300 medical staff and more than 3,000 clinical and support staff. Over the past few years, EMMC has been steadily achieving various stages of electronic health record (EHR) implementation.

Lessons Learned—Successful Strategies

Achieved multi-disciplinary stakeholder involvement and consensus

The involvement of stakeholders throughout EMMC ensured the smooth and timely planning, testing and implementation of CPOE. This extensive and inclusive process ensured that the technology design fully supported clinical objectives.

CPOE use and competency mandated

The EHR project team engaged the medical staff in the CPOE planning process at section and service meetings, leading to the physicians voting mandatory CPOE use into the medical bylaws. EMMC also mandated CPOE competency for all non-physician clinicians. The use of paper order sets eased the transition to CPOE. Creating clinical decision support at the point of care added value to the CPOE functionality.

Extensive training prepared clinicians thoroughly and efficiently

The use of workflow processes and teaching by concept minimized training time for clinicians. In addition to classroom training, the CPOE education team put together Web-based tutorials

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on essential topics and published flyers and posters to reinforce educational topics.

Some clinicians received additional training to serve as “subject matter experts” and then actively provided “super-user” support to other clinicians. The super-users answered questions on process flows during end-user training classes and provided at-the-elbow support during go-live and post-implementation periods. Information Services (IS) education staff also were available onsite during implementation to provide second-level triage support. However, the super-users were so effective in their role that only limited face-to-face support was required from the IS education staff. Post-implementation, provider training continues to be offered via classroom and Web-based tutorials, flyers, tip sheets and manuals.

During CPOE implementation, the message had to be absolutely clear that CPOE implementation was going to happen; any perception that CPOE implementation was tentative or provisional was addressed quickly. The project team used both internal and general communication methods, including a CPOE Web site. Staff also could provide feedback and check on the status of reported issues via the Web site.

Support structure resolved issues quickly

A Command Center structure was put in place to provide on-the-floor, 24/7 support during the first two weeks of go-live. A 19-week CPOE Transition Support period followed after the Command Center closed. This 24/7 support structure provided dedicated on-site support by CPOE team members during business hours, as well as on call (off-site) support between 11 p.m. and 7 a.m. This transition period ended when CPOE was fully operational; support was handed over to the IS Help Desk. All phases of support emphasized quick issues resolution.

Minimized risk of alert override

Overriding alerts without reading them due to alert fatigue is a documented, unintended consequence of CPOE. To minimize this risk, EMMC fired the minimum number of alerts to providers but fired all to the pharmacists. This reduction in drug-drug alert firing to providers significantly decreased the “noise” and negative impact on provider ordering while maintaining patient safety.

Additional Lessons Learned

The code level used for implementation, although functionally strong, required some workarounds to achieve needed features. There were two different generation tools (PowerPlans vs. Caresets) for ordering. Also, EMMC did not anticipate issues with providers selecting the correct patient encounter, the registration process delaying the initiation of orders and the lack of participation by certain services in the CPOE design and implementation processes.

Results

CPOE is now implemented in all inpatient areas and for all inpatients in the inpatient and outpatient care settings, improving patient safety and quality of care.

- By week four of full launch, about 90 percent of all providers were entering orders and about 91 percent of all orders placed by providers were electronic.
- By week eight, about 96 percent of providers were entering orders.
- EMMC has continued to keep the CPOE usage rate at about 91 percent electronic.

Less than 5 percent of provider orders remain on paper order sets, including chemotherapy

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orders, intra-procedural orders and all outpatient orders.

- Due to strict policies put in place regarding verbal orders, these orders declined from about 93 percent pre-CPOE to only about 2.5 percent.

CPOE implementation occurred on schedule, due to careful monitoring of project scope creep and implementation of a change control process. Still, about 100 functionalities were created to meet the ordering needs of providers.

Implementing CPOE with decision support helped to prevent medical errors and reduced the number of reduced duplicate lab tests. CPOE also improved pharmacist medication verification turnaround time (TAT) of non-stat med orders, eliminating about 160 minutes from the time of order writing to pharmacy order receipt and decreasing by 52 percent (50.8 to 24.3 minutes) the average time for pharmacist review.

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