

Brigham and Women's Hospital

Organization Name:

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Organization Address:

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<http://www.brighamandwomens.org/>

Organization Contact(s):

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Schema Archetype

Inpatient, Academic Medical Centers

Schema Factors

Inpatient, >200 Beds, Urban, Academic, Hospital Setting

Organization Summary

Brigham and Women's Hospital (BWH) is a 720-bed tertiary-care hospital and a teaching affiliate of Harvard Medical School. Annual inpatient admissions total approximately 44,000 and the Emergency Department treats about 54,000 patients annually. BWH employs about 3,000 physicians, fellows and residents, more than 1,000 researchers, and 2,800 nurses. The hospital has an integrated hospital information system, accessed via networked desktop personal computers, that provides clinical, administrative, and financial functions.

IT Environment

In 1989, BWH built the Brigham Integrated Computing System (BICS), a clinical information system running on a network of over 6,000 computers. Physicians, nurses, and administrators use the system to access lab results, discharge summaries, and other clinical data. BWH built a physician order entry system in 1991. Rollout began in May 1993 and continued for 18 months. Physicians enter all patient orders into this application, with the majority being entered in coded form. The information system in general, and the physician order entry system in particular, deliver patient-specific decision support to clinicians in real time. The

most active decision support to date has focused on drugs, laboratory testing, and radiology procedures. In addition, a wide array of information is available online for physicians to consult, including literature searching, Scientific American Medicine, and the Physician's Desk Reference.

CDS Achievement

Drug-drug interaction alerts and drug-allergy alerts are initiated as soon as the physician completes an order. Physician override of the system requires a rationale to be entered. A second round of CDS checks occur at the pharmacy.

CDS identifies and pages the physician at any time of day with an alert describing a potentially dangerous situation involving a patient and asking for action. For example, if a lab test indicates a low potassium level and the patient was also taking digoxin the physician will be alerted.

CDS also alerts physicians and staff if medication doses exceed recommended levels. As a result, the percentage of patients with appropriate dosing increased from 30 percent to 70 percent.

CDS allows "group orders" which significantly reduces time for order entry and greatly improves physician satisfaction with the system.

Lessons Learned

- Speed is everything; CDS needs to be easy to use and not time consuming.
- Anticipate needs and delivery in real time.
- CDS needs to fit into the user's workflow.
- Offer alternatives rather than insist on stopping an action.
- Simple interventions work best (single screen of info).
- The more data elements requested, the less likely the guideline will be implemented.

Awards, Recognitions, and Citations

Bates DW, Kuperman GJ, Wang S, Gandhi T, Kittler A, Volk L, Spurr C, Khorasani R, Tanasijevic M, Middleton B. Ten commandments for effective clinical decision support: making the practice of evidence-based medicine a reality. *J Am Med Inform Assoc.* 2003 Nov-Dec;10(6):523-30. Epub 2003 Aug 4.

Doolan DF, Bates DW, James BC. The use of computers for clinical care: a case series of advanced U.S. sites. *J Am Med Inform Assoc.* 2003 Jan-Feb;10(1):94-107. PubMed PMID: 12509360; PubMed Central PMCID: PMC150362.