# Challenges Implementing
# Barcoded Medication Administration in the Emergency Room

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## Introduction and Background

Barcoded medication administration (BCMA) has been successfully implemented at a number of hospitals in recent years and been shown to decrease medication errors (Poon et al, 2010). BCMA was implemented in 2010 at a 637 bed tertiary-care hospital with medical/surgical, oncology, cardiac, maternal/child, pediatric, psychiatric and special care inpatient units, and a 64 bed emergency department (ED). The technology had consistently higher utilization on some floors than on others, suggesting that it was easier to use in some environments. In particular, the ED had lower utilization than the med/surg floors. A search of the literature revealed little mention of BCMA use in the ED except to note that BCMA was not used in the ED (Fitzhenry et al., 2011; Early et al, 2011). The purpose of this study was to explore contributing factors.

## Methods

A 29-bed geriatric unit and a 38-bed general medical/surgical unit and its 6-bed step-down unit were chosen for comparison with the ED. Structured Query Language (SQL) queries used in BCMA utilization reports were extended to include medication frequencies, administration routes and the number of medications in each pass. Audits of the data, observations of medication administrations and interviews with nurses were used to validate the data and to organize the results describing the barriers to BCMA use.

## Results

BCMA was used to chart medications 95.6% of the time on the medical/surgical units during the six month period from January 1 through June 30, 2011. The ED was more than 20 percent lower (74.7%). BCMA could not be used to chart medication administration for two common ED occurrences: 1) verbal or protocol orders and 2) medications dispensed to patients by prescribing providers.

SQL queries revealed that the ED nurses gave more stat and now medications, fewer oral medications and fewer medications per pass than their med/surg counterparts. Audits of the data revealed that invalid wrong medication alerts were more likely to occur when stat or now medications were given, creating additional alert fatigue for the ED nurses. There were more steps when administering non-oral medications, increasing the workload for ED nurses. Med/surg nurses enjoyed an economy of scale when administering more medications a given pass since each pass involved overhead such as system logon and review of patient data.

Barriers such as the chaotic nature of the ED environment could not be quantified. Some issues, such as hardware problems, impacted all users.

## Discussion

New solutions should be developed for BCMA in the ED keeping in mind the requirement to chart medications when there is no order in the system, the need to document medications distributed by prescribing providers, the unpredictable nature of nursing workflow, the increased workload imposed by BCMA, the effect of alert fatigue on users and the choice of scanning hardware.

## *References*

1. Glover N. Challenges Implementing Bar-Coded Medication Administration in the Emergency Room in Comparison to Medical Surgical Units. *CIN: Computers, Informatics, Nursing*. 2013;31(3): 133–141. doi: 10.1097/NXN.0b013e318280ef5e