

## READY OR NOT: DEVELOPMENT OF A VALIDATED REPACKAGING ASSESSMENT TOOL FOR BEDSIDE BAR CODING IMPLEMENTATION

### 1. ABSTRACT

While bar-code-enabled medication administration (BCMA) offers a multitude of potential benefits to healthcare provider organizations and patients, implementation of BCMA may prove challenging and resource intensive. The benefits of BCMA, ranging from improved accuracy of medication administration and decreased medication errors to connection of nursing and pharmacy workflows, are appealing to provider organizations, healthcare industry, and patients. However, barriers to BCMA implementation, ranging from expense to operational challenges to training needs, as well as the struggle with specific medications and unreadable barcodes, may pose sufficient challenges to cause health systems to pause in their implementation efforts.

In this response to the 2009 ASHP Medication Safety Team Grant: Optimizing Bedside Technology Solutions call for applications, we offer a proposal to assist in jumping one of the hurdles faced in BCMA implementation, namely the magnitude of medication repackaging required. Our primary objective is to develop a validated repackaging assessment instrument that can be used to: predict the percentage of medications a hospital would have to repackage as they engage in a BCMA transition (i.e., based upon assessing scannability of barcodes); and determine the likelihood that a specific medication will require repackaging (e.g., when added to the formulary, when changed during contracting). Subsequently, we will examine how the tool could aid hospitals in identifying: appropriate feedback loops to address immediate medication failures; staffing needs related to repackaging; pharmacy and nursing workflow impacts related to repackaging; and optimal equipment to manage the repackaging process.

We propose a six-step study design allowing for our work to evolve in an iterative fashion:

- Step 1: We will utilize both peer-review literature, practical experience data, as well as a collaborative study team, involving pharmacists, pharmacy technicians, University of MN Pharmacy Practice Faculty, nursing, IS and operational representatives, to develop a pilot assessment tool. Important considerations in this phase will be determination of the types of medications to be included in the assessment (i.e., top 100 medications at a site, top 100 medications from the common formulary, high volume drugs across various dosage forms).
- Step 2: We will test the assessment tool at one larger metropolitan hospital, performing both a test of the instrument with medications scanned by pharmacy and bedside nursing staff, for the purposes of understanding how well the tool predicts unreadable bar codes and thereby extrapolated repackaging needs, as well as a test of specific medications, to understand how well the tool performs in predicting specific repackaging.
- Step 3: We will analyze the results of the testing and revise the tool.
- Step 4: We will retest the tool, using the same approach as in Step 2 at the same hospital and at a smaller regional hospital.
- Step 5: We will finalize the tool based upon data obtained during the retesting process.
- Step 6: We will implement the repackaging assessment tool at our remaining hospitals.

Notable is the necessity to design this tool for one manufacturer's bar code scanner. The construct of the tool is generalizable to other scanners however the tests of significance will be unique to the chosen scanner.

Allina Hospitals & Clinics is a not-for-profit network of hospitals, clinics and other health care services, providing care throughout Minnesota and serving approximately 1.5 million Minnesotans. Allina has 11 hospitals, 4 of which are larger metropolitan facilities (including a large tertiary acute care facility), as well as 6 smaller regional facilities and a small specialty hospital. Beginning in 2005, Allina Hospitals & Clinics began the transition to Excellian<sup>®</sup>, its landmark electronic health record (EHR) system (an Epic product). Allina's EHR has allowed the organization to realize its vision of "one patient, one record."