

BCMA Evaluation: Finding Significance in "Near Misses"

Fern FitzHenry, RN, PhD
 Johniene B. Doran, BS
 Michael E. Matheny, MPH, MD
 Nancy K. Rudge, RN
 Lemuel R. Waitman, PhD
 Mark Sullivan, PharmD,
 Josh F. Peterson, MD, MPH

Department of Biomedical Informatics
 Department of Pharmacy Informatics Center
 Vanderbilt University Medical Center

OBJECTIVE:
 To develop methods for quantifying and evaluating the value of BCMA .

INTRODUCTION

Organizations employ Bar Code Medication Administration (BCMA) primarily to improve patient safety and reduce adverse drug events (ADEs). Although several studies have demonstrated quality improvements and projected overall cost savings, estimating the degree of harm averted by BCMA is challenging.

We are also developing criteria for judging the capacity of our BCMA system to prevent the error. We started by examining averted errors in a drug class with a high probability of harm.

METHODS

For the BCMA evaluation, we selected administered warfarin doses from one month in 2008. Since warfarin is routinely given orally in packaging that allows our BCMA system to validate not only the correct drug but also the correct amount of the drug.

Medication Label

TRAZODONE TAB 50MG
 MFG BARR LABS 00555-0489-04
 LOT 9872 EXP 01/31/07
 CTRL:TRAZ50MG EXP 07/01/06



Scanning Process



RESULTS

Preliminary data for February 2008 indicated that of 1081 warfarin dose opportunities (excluding omissions), there were six attempted administrations without an order: three cancelled the administration and three gave the dose with an override. We judged the errors as serious potential ADEs following the model of Poon et al. This initial audit surfaced multiple cases with closely spaced orders worthy of further examination.

Results--Error Prevalence

Description	Rate
Given With No Messages	67.6%
Admin Too Late	3.7%
Recently Given	3.6%
Admin Too Early	1.1%
Incorrect Amount	22.2%
No Schedules Found	0.6%
Admin Too Late	0.1%
Recently Given	0.1%
Incorrect Amount	0.2%
Admin Too Late	0.3%
No Med Order Found	0.3%
Med Order Discontinued	0.3%
Total	100%

Results--Warfarin Doses Feb 2008

Description	Number	Percent
Potential averted errors (no order or cancelled order)	6	0.51%
Wrong dose	6	0.51%
Omissions - unexplained	45	3.83%
Omissions – probably explained	23	1.96%
Doses given in ED (not implemented)	20	1.70%
Dose opportunities	1175	

Also found were omissions associated with cases transferred between implemented and non-implemented units and expired one time orders. Pharmacy and BCMA system interactions may play a role at VUMC, but BCMA does not prevent omissions.

CONCLUSION

Pioneers in BCMA have yet to define standards for administration errors likely to cause harm. Evaluation requires such standards for a quantitative analysis of value of BCMA in preventing errors. We plan to develop standards in our BCMA evaluation and measure averted errors with a high probability of harm as an ongoing measure of the value received from the implementation of BCMA.

Poon EG, Cina JL, Churchill W, Patel N, Featherstone E, Rothschild JM, et al. Medication dispensing errors and potential adverse drug events before and after implementing bar code technology in the pharmacy. Ann Intern Med. 2006 Sep 19;145(6):426-34.