



Observation Based Medication Error Detection Systems

**MedAccuracy
ADE Risk Calculator - Medication Administration Errors**

	Inaccurate Perception of Risk:	Evidence-based Assessment of Risk:		
		Hospitals without BPOC	Hospitals with BPOC	Hospitals with AU MEDS & BPOC
Number of staffed beds	300	300	300	300
Doses per patient per day	10	10	10	10
Total doses per day	3,000	3,000	3,000	3,000
Administration error rate ^{1,2,3}	0.05%	13.70%	10.00%	1.00%
Total medication errors per day	1.50	411.00	300.00	30.00
Risk of potential ADEs ⁴	7%	7%	7%	7%
Risk - Total ADEs per day	0.11	28.77	21.00	2.10
Cost per ADE per day ⁵	\$ 1,018	\$ 1,018	\$ 1,018	\$ 1,018
Risk - Cost of ADEs per day	\$ 107	\$ 29,288	\$ 21,378	\$ 2,138

¹ Administration error rates - Voluntary Reports & Hospitals without BPOC: Administration error rates are based on an observation-based study conducted at 36 hospitals and skilled-nursing facilities and published in the American Journal of Health-System Pharmacy in March 2002. The true error rate in the study, 17.9%, was adjusted to 13.7% to exclude errors detected in skilled-nursing facilities. The error rate obtained by voluntary reports in the study was .05% of hospital errors. Study: Flynn EA, Barker, KN, Pepper GA, Bates DW, Mikeal RL, Comparison of methods for detecting medication errors in 36 hospitals and skilled-nursing facilities, Am J Health-Syst Pharm. Vol. 59, Mar 1, 2002, pages 436 - 445.

² Administration error rate - Hospitals with BPOC: Administration error rate is based on an observation-based study that identified and measured medication administration errors before and after the deployment of EMAR and BCMA technologies at a 500-bed hospital. The study, published in the American Journal of Health-System Pharmacy in March 2007, found that the error rate fell from 15.6% to 10% following implementation of their new technologies. Of the errors identified, none were voluntarily reported. Study: Paoletti R, Suess T, et al., Using bar-code technology and medication observation methodology for safer medication administration, Am J Health-Syst Pharm, Vol. 64, Mar 1, 2007, pages 536 - 543.

³ Administration error rate - Hospitals with BPOC and AU MEDS: Administration error rate is based on the experience of a 500-bed hospital after the deployment of EMAR and BCMA and the implementation of AU MEDS to monitor workarounds and errors not detected by EMAR and BCMA. The hospital reported that its medication administration accuracy rate increased from 86.5% before BCMA and AU MEDS to a measurement that is now at 99% (1% error rate). Kean C, No Surprise – Nurses Often Bypass Drug Bar-coding Safety Features, Pharmacy Practice News, August 2008 Vol. 35:08.

⁴ Risk of potential ADEs is based on a study published in the Archives of Internal Medicine in September 2002 which found that 7% of medication administration errors were judged potential adverse drug events. Study: Barker KN, Flynn EA, Pepper GA, Bates DW, Mikeal RL, Medication Errors Observed in 36 Health Care Facilities. Arch Intern Med, Vol. 162, Sep 9, 2002, pages 1897-1903.

⁵ Cost per ADE per day is based on a study published in the Journal of the American Medical Association in January 1997 which found that preventable ADEs resulted in an increase of 4.6 days in length of stay and \$4,685 in increased costs (\$1,018 per day). These costs exclude costs of injuries to patients and malpractice costs, and do not reflect subsequent increases in the producer price index for general medical and surgical hospitals. Study: Bates DW, Leape LL, et al., The Costs of Adverse Drug Events in Hospitalized Patients, JAMA, Jan 22/29, 1997, Vol 277, No. 4, pages 307 - 311.