



Getting Started Kit: Prevent Adverse Drug Events (Medication Reconciliation)

Bibliography

100,000 Lives Campaign

We invite you to join a Campaign to make health care safer and more effective — to ensure that hospitals achieve the best possible outcomes for all patients. IHI and other organizations that share our mission are convinced that a remarkably few proven interventions, implemented on a wide enough scale, can avoid 100,000 deaths between January 2005 and July 2006, and every year thereafter. Complete details including materials, contact information for experts, and web discussions available on the web at <http://www.ihl.org/IHI/Programs/Campaign/>.

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Reconciling Medications Reference Articles

Classen DC, Pestotnik SL, Evans RS, Lloyd JF, Burke JP. Adverse drug events in hospitalized patients. Excess length of stay, extra costs, and attributable mortality. *JAMA*. 1997;277:301-306.

This paper reports the findings of a matched case-control study conducted at LDS Hospital in Salt Lake City, Utah, to identify mortality, length of stay (LOS), and costs associated with ADEs. During the four-year study period, the investigators identified 1,580 patients with an ADE. They compared these patients to 20,197 matched controls. The crude mortality rate for the cases was 3.5%, whereas the mortality rate for controls was 1.05%. In a logistic regression analysis, the odds ratio for death among cases compared to controls was 1.88. This analysis also showed that cases experienced an increased LOS of 1.91 days and incurred \$2,262 in additional costs compared to controls.

Institute for Safe Medication Practices. Use your pre-admission process to enhance safety. *ISMP Medication Safety Alert!* October 30, 2002:2.

Describes reviewing a patient's medication during the pre-admission process for elective admissions as a way to decrease medication errors.

Kohn LT, Corrigan JM, Donaldson MS, eds. *To err is human: building a safer health system*. Washington, DC: National Academy Press, 1999.

This landmark report from the Institute of Medicine's Committee on Quality of Health Care in America called attention to the problem of patient safety, especially in hospitals. In this report the IOM Committee estimates that there are 44,000 to 98,000 deaths in U.S. hospitals each year due to medical errors. They also estimate that medication errors alone, occurring either in or out of the hospital, account for over 7,000 deaths annually.

Leape LL, Kabacoff A, Berwick DM, Roessner J. *Reducing adverse drug events*. Boston: Institute for Healthcare Improvement, 1998.

This Breakthrough Series Guide summarizes the work of a Collaborative initiated by the Institute for Healthcare Improvement in March 1996. Forty-three health care organizations participated in this Collaborative, of which one third met or exceeded their goal of a 30% reduction in ADEs within 12 months. The guide describes both process design and organizational change concepts. It also includes a list of key contacts and an annotated bibliography.

Michels RD, Meisel S. Program using pharmacy technicians to obtain medication histories. *Am J Health-Sys Pharm*. 2003;60:1982-1986.

Authors describe a pilot program utilizing pharmacy technicians for transitioning outpatient medications to active inpatient orders. This model

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resulted in a decrease of potential adverse drug events by 80% and increase in staff satisfaction.

Nester TM, Hale LS. Effectiveness of a pharmacist-acquired medication history in promoting patient safety. *Am J Health-Sys Pharm.* 2002;59(22):2221-2225.

This study compared the effectiveness of pharmacist-obtained medication histories with nurse-obtained medication histories. Patients were assigned to either the study or the control group. Pharmacists identified more discrepancies between the patient's reported home medications and the initial hospital medication orders. Authors conclude that pharmacists are especially suited to conducting medication histories.

Phillips DP, Christenfeld N, Glynn LM. Increase in U.S. medication-error deaths between 1983 and 1993. *Lancet.* 1998;351:643-644.

The authors examined all U.S. death certificates between 1983 and 1993 to identify deaths due to medication errors, defined as "accidental poisoning by drugs, medicaments, and biologicals." They found that the number of deaths due to medication errors increased from 2,867 in 1983 to 7,391 in 1993.

Pronovost P, et. al. Medication reconciliation: a practical tool to reduce the risk of medication errors. *Journal of Critical Care.* 2003;18(4):201-205.

In an adult surgical intensive care unit, reconciliation of medication was focused on patient discharge orders. The medical reconciliation was incorporated into a discharge survey, assessing the drug changes between admission and discharge. Almost all medication errors were eliminated by week 24.

Rothschild JM, Federico FA, Gandhi TK, Kaushal R, Williams DH, Bates DW. Analysis of medication-related malpractice claims. Causes, preventability, and costs. *Arch Intern Med.* 2002;162:2414-2420.

The authors conducted a retrospective analysis of claims data for the Controlled Risk Insurance Company (CRICO), which provides malpractice insurance for physicians employed by the Harvard Medical Institutions. They examined claims for a ten-year period (January 1, 1990, through December 31, 1999). They found that ADEs were responsible for 6.3% of claims. They judged 73% of these ADEs to have been preventable.

Rozich JD, Haraden CR, Resar RK. Adverse Drug Event Trigger Tool: a practical methodology for measuring medication-related harm. *Qual Saf Health Care.* 2003;12:194-200.

This paper describes the use of the ADE "Trigger Tool," a relatively low-cost and "low-tech" approach to the identification of ADEs. The authors report that use of the Trigger Tool increases ADE detection rates approximately 50-fold over traditional reporting methodologies.

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Rozich JD, Resar RK. Medication Safety: One Organization's Approach to the Challenge. *JCOM*. 2001;8(10):27-34.

The authors describe reconciliation as a powerful strategy, along with broad cultural changes and other interventions, to reduce adverse drug events. Results reported include a 70% reduction in medication errors and a 15% reduction in adverse drug events.

Rozich JD, Resar RK, et. al. Standardization as a Mechanism to Improve Safety in Health Care: Impact of Sliding Scale Insulin Protocol and Reconciliation of Medications Initiatives. *Joint Commission Journal on Quality and Safety*. 2004;30(1):5-14.

This paper describes two interventions: first, standardization of insulin administration, with the outcome of significantly reducing hypoglycemic events; second, the introduction of medicine reconciliation ("clarifying, correcting and specifying medications") with a subsequent 7-month chart audit, showing errors falling from 213 per 100 admissions to less than 50.

Whittington J, Cohen H. OSF Healthcare's journey in patient safety. *Quality Management in Health Care*. 2004;13(1):53-59.

Modified version available online as: Haig K. One hospital's journey toward patient safety – a cultural evolution. *Medscape Money & Medicine*. 2003;4(2). www.medscape.com/viewarticle/460721.

The authors describe the organization's work as part of an IHI Collaborative to reduce adverse drug events. Reconciliation is identified as a key tool and linked to a reduction in adverse drug events. Other tools are also described.

Web-based Resources

American Society of Health-System Pharmacists www.ashp.org

Institute for Healthcare Improvement (IHI) www.ihl.org

Institute for Safe Medication Practices www.ismp.org

Massachusetts Coalition for the Prevention of Medical Errors www.macoalition.org/