



# USP Patient Safety CAPSLink™

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### USP Patient Safety CAPSLink™

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This message has been sent to you as a service of the U.S. Pharmacopeia, Center for the Advancement of Patient Safety (CAPS). USP is a not-for-profit, non-governmental organization that promotes the public health by establishing state-of-the-art standards to ensure the quality of medicines and other health care technologies. CAPS is a component of USP's Patient Safety public health program. The USP Center for the Advancement of Patient Safety was created to encourage medication error reporting, conduct data analysis and research, develop educational programs, and propose standards, recommendations, and guidelines that ultimately improve the safety and quality of patient care.

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### Medication Errors in the Perioperative Environment

USP’s Center for the Advancement of Patient Safety (CAPS) recently collaborated with the Association of periOperative Registered Nurses (AORN) to investigate the scope of medication errors occurring in the perioperative environment. The perioperative environment consists of same day surgery settings, operating rooms, and post anesthesia care units. Studies were done in each of these areas using data sets from USP’s MEDMARX reporting program<sup>(1)</sup>. Within MEDMARX, errors are recorded in one of nine categories (A-I) based on whether the event was a potential error (Category A), an error with no harm (B-D), or an error that caused harm (E-I). MEDMARX also allows reporters to document locations within facilities where errors occur including the above perioperative areas.

One common research finding among each of these perioperative locations was that more events led to patient harm (Categories E-I) in these areas when compared to the overall rate of harmful events for all locations (7% versus 2.4%). Health care practitioners working in these particular areas encounter complex patients, a wide range of technology, and various organizational issues that may contribute to medication errors.

<sup>1</sup> MEDMARX is an Internet-accessible, anonymous medication error database using standardized definitions and data collection fields. Nearly 600 hospitals currently subscribe to the MEDMARX program.

### **Errors in Day Surgery Settings**

Day surgery patients undergo a diverse range of surgical and invasive procedures and practitioners working in this setting face high patient acuity levels, provide care to post-procedural care, and prepare patients for either discharge or admission. In day-surgery settings, many patients can receive medication from floor stock or without direct pharmacy oversight. The majority of errors were reported to have occurred in the administering stage of the medication use process.

Node (i.e., phase) of the Medication Use Process	Number of Reported Errors	Percentage
Prescribing phase	83	13.6%
Documenting (Transcribing)	66	10.8%
Dispensing	37	6.1%
Administering	417	68.4%
Monitoring	7	1.1%

(Data reported to the MEDMARX database from 8/98-3/02)

In day surgery, approximately 4.2% of the medication errors resulted in patient harm. Examples of errors in the day-surgery setting were omissions of pre-procedural antibiotics. In some cases, patients received antibiotics for which they had previously reported an allergy. Several reports

indicated that the administration of ophthalmic preparations were administered incorrectly (e.g., given in the wrong eye, given to the wrong patient).

### **Operating Room (OR)**

Few researchers or other experts have focused on the specific problems associated with medication errors in the OR. Experts agree that errors in the OR can result in serious outcomes, including death or serious injury. In operating rooms, medication orders are often given verbally through a mask that may distort the name or dose of the product. Another pre-disposing risk for error involves the methods, policies, and procedures used by health care practitioners when transferring drugs from their original packaging on to the sterile field. Many newer technologies, such as computerized prescriber order entry (CPOE), have limited applicability to the operating room.

Omissions, giving unauthorized (i.e., wrong) drugs, and prescribing errors were the most common types of error revealed in this study. Causes that were reported to be associated with these errors included performance deficit, procedure/protocol not followed, and communication.

Cause of Error	Number of Reported Errors	% (Based on 668 records)
Performance (human) deficit	284	42.5
Procedure/protocol not followed	158	23.7
Communication	144	21.6
Documentation	66	9.9
Contraindicated, drug allergy	61	9.1
Knowledge deficit	60	9.0

(Data reported to the MEDMARX database from 8/98-3/02)

Approximately 10% of the errors reported to have originated in the operating room resulted in patient harm, including one fatality. High alert medications, such as paralytic agents, anesthesia agents, and opioids were among the drugs identified in the study of operating room errors.

### **Post Anesthesia Care Unit (PACU)**

Clinicians working in PACU find few published references that guide safe medication use in this unique setting. The complexity of care and the fast-paced nature of the PACU environment create significant risks for safe medication use. In the PACU, approximately 7% of the medication errors resulted in harm. The most frequently reported types of errors were administering the wrong dose, omissions of ordered medications, and giving medications to patients with pre-existing allergies to those same drugs.

ERROR_TYPE	N	Percent
Improper dose/quantity	151	24.1%
Omission error	129	20.6%
Prescribing error	97	15.5%
Unauthorized drug	92	14.7%

Extra dose	39	6.2%
Wrong drug preparation	33	5.3%
Wrong administration technique	32	5.1%
Wrong time	20	3.2%
Wrong patient	15	2.4%
Wrong route	11	1.8%
Wrong dosage form	7	1.1%

(Data reported to the MEDMARX database from 8/98-3/02)

High-alert medications, including epinephrine, heparin, and opioids as well as issues surrounding epidural analgesia were among the drugs identified in this study. Distractions were the most frequently reported contributing factor in these events. Compounding these problems is the fact that patients are not generally fully awake or alert in PACU's and, therefore, unable to participate fully in their care and act as an additional safety net.

Results of the analysis on the perioperative settings of day surgery, operating room, and post anesthesia care unit were presented as posters at the 50<sup>th</sup> AORN Congress in Chicago. To view the three posters see: <http://www.usp.org/daysurgery> <http://www.usp.org/operatingroom> <http://www.usp.org/postanesthesia>

### **Selected, Systems-based Recommendations to Reduce Problem-Prone Errors in Perioperative Settings**

Errors related to drug allergy verification: Review policies and practices related to the collection, documentation, and verification of the patient's drug allergies. Conduct a failure mode and effects analysis (FMEA) on this aspect of your facilities medication use process (particularly within the perioperative areas) to determine how, where, and why incomplete or inaccurate information exists. Examine how thorough allergy information is collected at the patient's point of entry into the facility (i.e., admission process) through the point of the perioperative area.

Errors involving high-alert medications: Construct a list of medications considered to be "high-risk" based on both internal and external/published data. Review your facility's policies and practices related to the use of these items and conduct a FMEA to determine points where safety nets are weak or non-existent. Are all solutions that are transferred to the sterile field within OR labeled? How are medication and solution labels verified? Are doses and strengths of high-risk drugs standardized to the extent possible? Revise procedures surrounding the use of these products, take a proactive, concerted educational initiative in implementing the new procedures, and continue to monitor errors of this nature to see if the new procedures are making a difference. Monitoring can be accomplished through multiple mechanisms including soliciting feedback from appropriate staff working in those areas and through ongoing error tracking.

Errors related to omission or wrong time: Correct timing and proper administration of preoperative IV antibiotics plays a significant role in reducing surgical site infection risks.

Perioperative team members must monitor their processes and evaluate their compliance with published therapeutic guidelines (e.g., ASHP Therapeutic Guidelines on Antimicrobial Prophylaxis in Surgery; [www.ashp.org](http://www.ashp.org))



### 1. JAMA Study Examines Preventable Drug Errors In Elderly

Among elderly outpatients, more than 25% of adverse side effects related to prescription drugs and more than 40% of life-threatening adverse drug events are preventable, according to a recent article in the *Journal of the American Medical Association* .

<http://jama.ama-assn.org/issues/v289n9/ffull/jed30009.html>

### 2. New AHRQ Web-Based Tool Offers Hospitals Help on Patient Safety

The Patient Safety Indicators are a free, Web-based tool developed by AHRQ to help hospitals enhance their patient safety performance by quickly detecting potential medical errors in patients who have undergone medical or surgical care. The tool contains a set of measures that use secondary diagnosis codes to detect 26 types of adverse events. To download the tool see:

<http://www.qualityindicators.ahrq.gov>

In related news, four AHRQ-funded articles about different aspects of health care quality are featured in the March/April issue of *Health Affairs*.

<http://www.ahrq.gov/news/press/pr2003/ha4artpr.htm>

### 3. Consumer Guide Helps Manage the Benefits and Risks of Medicines

U.S. Pharmacopeia's (USP) Center for the Advancement of Patient Safety (CAPS) recently announced the availability of *Think It Through: A Guide to Managing the Benefits and Risks of Medicines*, a free consumer brochure on how to safely use prescription and over-the-counter medications. No medicine is entirely risk-free, and the eight-page brochure educates consumers about the five critical steps in making informed decisions and safely using medications: **Talk, Know, Read, Avoid, Monitor**. These critical steps allow consumers to lower the risks and obtain the full benefit from prescription and over-the-counter medications.

A member of the Partnership for Safe Medication Use, USP is making this brochure available in collaboration with the Department of Health and Human Services, Food and Drug Administration, the National Patient Safety Foundation, and a number of other national organizations.

The *Think It Through* brochure is available on the Internet at: [www.usp.org/thinkitthrough](http://www.usp.org/thinkitthrough). For a

free copy of the brochure by mail, consumers can contact the Federal Citizen Information Center (FCIC) by writing to: FCIC, Department 73, Pueblo, CO 81009; by calling (888) 878-3256 and asking for Department 73; or visiting online: [www.pueblo.gsa.gov/rc/usp.htm](http://www.pueblo.gsa.gov/rc/usp.htm).

#### 4. FDA Proposes Improved Safety Reporting and Bar Codes

The Food and Drug Administration has proposed changing its regulations on adverse-event reporting by pharmaceutical firms that would require timelier reporting of some events and the inclusion of medication errors. Comments on the proposal are due to the agency by July 14. Also, FDA announced this month the release of a proposed rule that would require machine-readable codes on drug and biological product packaging. In its proposed rule, FDA is requiring makers of drug and biological products to include the National Drug Code number in a linear bar code on product labels.

<http://www.fda.gov/oc/initiatives/barcode-sadr/default.htm>

#### 5. House Passes Voluntary Medical Error Reporting Bill

Earlier this month, the U.S. House of Representatives passed the Patient Safety and Quality Improvement Act (H.R. 663) that creates a system for voluntary reporting of medical errors or near misses and establishes a national patient safety database to analyze error reports and recommend best practices.

<http://www.healthleaders.com/news/newspage1.php?contentid=43355>

#### 6. JCAHO's Hospital Survey Teams Could Include Pharmacists

The Joint Commission on Accreditation of Healthcare Organizations is reconfiguring its hospital survey teams in 2004 to broaden the types of clinicians involved beyond the traditional nurse executives. This move could provide pharmacists the opportunity to be surveyors for the hospital accreditation program. Pharmacists have been used in the Joint Commission's Home Care accreditation program for years.

<http://www.ashp.org/news/ShowArticle.cfm?id=3293>

#### 7. Glitch in Kaiser's Computer System Leads to Mislabeled Drugs

As many as 4,700 Kaiser patients received prescriptions that were possibly mislabeled after the HMO's Northern California pharmacy computer system suffered a power outage on March 13. No adverse reactions from patients have been reported. The problem appears to have stemmed from a power outage that caused labeling problems for as many as 13,700 prescriptions issued during that period. Kaiser caught about 9,000 of those prescriptions before they left the pharmacies.

<http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2003/03/18/BU256322.DTL>

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USP operates two complementary error reporting programs; the ***Medication Errors Reporting Program*** which operates in cooperation with the Institute for Safe Medication Practices and ***MEDMARX<sup>SM</sup>***. MEDMARX is an Internet-accessible, anonymous medication error reporting program and quality improvement tool used to track and trend medication errors. For more information, visit [www.usp.org](http://www.usp.org)

USP does not sell or distribute e-mail addresses. Questions about USP Patient Safety CAPSLink should be sent to (CAPS@USP.ORG)

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