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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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USP Medication Error Analysis

Distractions Contribute to Medication Errors

Medication errors seldom occur because of one person, but rather are a result of a series of system failures. System failures include design failures (e.g., problems with a process, task, or piece of equipment) environmental factors (e.g., physical work space), and situational factors (e.g., distractions, spontaneous emergency situations, workload, and staffing levels). Findings from USP’s MEDMARXSM program indicate “distractions” are a significant and frequent contributing factor in medication error events.

From 1998 - 2002 nearly 35,000 records were submitted to the MEDMARX database that listed *Distractions* as a contributing factor. *Distractions* were most often reported for errors that occur during the drug administering and drug dispensing phases of the medication use process (MUP). Table 1.

Table 1^a

MUP Phase	N	Percent
Prescribing	3,067	8.8%
Documenting	7,930	22.8%
Dispensing	9,687	27.8%
Administering	13,830	39.7%
Monitoring	316	0.9%
Data not provided	18	0.1%

a. Data from USP’s MEDMARXSM program for years 1998-2002.

The most frequently reported **Types of Error** for records listing *Distractions* as a contributing factor include *Omission*, *Improper dose/quantity*, and *Unauthorized/wrong drug errors*. (Table 2) Further analysis of the database uncovered two interesting findings: When *Distractions* were listed as a contributing factor in the error event, *Wrong patient* errors were reported twice as often (10.5% versus 5.2% overall). In contrast, *Prescribing errors* were reported less frequently (7% versus 12% overall).

Table 2. Error Type with Distractions as a Contributing Factor

Error Type	Count¹	Percent²
Omission error	8,949	26.9%
Improper dose/quantity	7,864	23.6%
Unauthorized/wrong drug	4,852	14.6%
Wrong patient	3,489	10.5%
Prescribing error	2,376	7.1%
Extra dose	2,227	6.7%
Wrong drug preparation	2,207	6.6%
Wrong time	2,094	6.3%
Wrong dosage form	1,099	3.3%
Wrong route	519	1.6%

Wrong administration technique	490	1.5%
A type not determined	5	0.01%
Deteriorated product	3	0.01%
Expired product	1	0.00%

1. There were 33,327 unique records associated with at least one Type of Error selection from the Type of Error pick list. The total number of selections represented by these records is 36,175.
2. Based on unique records making a selection from the pick list.

The types of health care workers most often involved with errors associated with *distractions* were nursing personnel (55%), pharmacy personnel (32%), and physicians (7.3%). These findings, when combined with those from Tables 1 and 2, seem to indicate that *distractions* are a greater problem for nurses who typically administer medications and for pharmacists and pharmacy technicians who are typically involved with drug preparation and dispensing.

Selected Case Reports Involving Distractions*:

Case #1: A patient care unit was experiencing a particularly busy day and the medication administration record (MAR) for patient □A□ was accidentally placed in the slot for patient “B”. The medication nurse was informed during morning report that the family for patient “B” was coming soon to pick up the patient but the patient needed his medications and breakfast before discharge. The nurse ran to the kitchen to retrieve an early breakfast tray, returned to the unit, became distracted by multiple call lights, and failed to notice the misplaced MAR. Consequently, all of the morning medications (i.e., sertraline, lisinopril, azmismamide, aspirin, and phenytoin) that were supposed to be given to patient “A” were given to patient “B”. Patient “B” required additional monitoring to ensure no adverse effects had occurred. The patient’s discharge from the hospital also had to be delayed.

Case #2: A loading dose of 500 mcg/kg of esmolol followed by a titrated IV infusion of 5,000 mg/500mL was ordered for a surgical intensive care patient experiencing acute arrhythmias. Based on the patient’s weight of 264 pounds (120 kg), the nurse correctly calculated the loading dose to be 60mg. However, the noise and activity of the surgical intensive care unit distracted the nurse and he inadvertently retrieved a concentrated ampule of esmolol (250mg/mL) instead of the ready-to-use vial (10mg/mL). The nurse drew up 3mL (750mg), mixed this amount with a small volume of normal saline, and administered the dose to the patient. The patient's condition soon deteriorated and he went into cardiac arrest resulting in brain hypoxia and then death.

Case 3#: The pharmacy received an order to prepare a Total Parenteral Solution (TPN) that was to contain Sodium Chloride 4mEq/mL. The pharmacy often used multi-dose electrolyte vials when compounding IV admixtures. The pharmacy

technician preparing the TPN was called away to assist another technician and, consequently, was interrupted at the point when the sodium was to be added to the solution. Upon her return to the laminar flow hood, she saw the partially used, multi-dose sodium chloride vial next to the IV bag and assumed she had already added this to the solution.

The technician placed all the drug vials used to prepare the TPN next to the IV bag for the pharmacist to check against the IV label. The TPN was sent to the patient care area and administered. After 5 hours of infusion, the patient's serum sodium value was only 107 indicating severe hyponatremia. An assay was taken by the lab to check the solution's ingredients. The lab results indicated an extremely low level of sodium chloride. The IV was stopped and sodium replacement started. The patient's hospitalization was prolonged because of this event.

*Based on reports to USP's MEDMARXSM and Medication Errors Reporting (MER) Programs.

Suggestions for Minimizing Distractions*

1. Consider creating specific policies outlining when and where distractions and interruptions are unacceptable. Use visible "do not disturb" signs in selected areas or for selected job tasks (e.g., IV compounding, cart-fill, medication-administration) and establish consequences for violations to both the policies and/or signs.
2. Place phones away from those selected health care workers who are actively preparing, dispensing, or administering medications. Provide phone support especially at medication administration times.
3. Develop a pocket "checklist" for selected, critical tasks (e.g., medication administration) that outline the steps that should be followed in that task. This will serve as a useful reminder when interruptions and distractions occur.
4. Conduct departmental and multi-disciplinary educational sessions on the importance of teamwork and maintaining focus during critical tasks (e.g., avoid unnecessary conversation while compounding or administering medications)

*Points 1,3, and 4 were based on the following: Pape, T.M. (2002) "The Effect of Nurses' Use of A Focused Protocol To Decrease Distractions During Medication Administration" (Doctoral Dissertation, Texas Woman's University, College of Nursing; Denton, TX)



1. JCAHO Updates

Back By Popular Demand - Joint Commission Resources and USP Offer Workshop on Medication Errors: USP's Center for the Advancement of Patient Safety (CAPS) in conjunction with Joint Commission Resources (JCR) will conduct two, one-day workshops titled - "Transforming Data Collection and Analysis into

Meaningful Information". This interactive program will be offered on the following dates:

- November 11 (Oakbrook Terrace, IL)
- November 20 (New Orleans, LA)

The program will teach participants methods to categorize error events by severity, determine thresholds to signal performance problems, and evaluate the impact of actions taken. This workshop is offered in conjunction with JCR's - *Executive Briefings on JCAHO's New Medication Management Standards* to be conducted on November 10, and November 21. Significant savings in registration is offered when signing up for both programs. For more information and to register call JCR Customer Service Center toll free at 877-223-6866 or go on-line [Click here](#)

Additional Performance Data Required in 2004: Hospitals will be expected to collect data on an additional set of core performance measures beginning in January 2004. The new requirement will increase the scope of hospital collection and reporting of performance measure data from two to three sets of core measures. [Click here](#)

Hospital measure selection forms are due October 15,2003: [Click here](#)

PHRP Accreditation Program Launches Web-based Survey Tool: The Partnership for Human Research Protection, Inc. (PHRP) recently announced the launch of its new on-line accreditation survey tool. PHRP, [a collaboration between JCAHO and the National Committee for Quality Assurance \(NCQA\)](#), seeks to protect the safety and rights of participants in human research studies in the United States and abroad. The survey process begins when the organization submits its survey tool over the Web. [Click here](#)

Roundtable on Trustee Involvement in Patient Safety: A select group of trustees, CEOs, and medical staff leaders were invited this month by JCAHO to discuss patient safety issues. Proceedings from the meeting and recommendations will be summarized in a white paper and will provide the framework for a national conference on trustee engagement in patient safety that is scheduled for this October in Boston. [Click here](#)

Options to the Periodic Performance Review: Two options have been designed to address legal disclosure concerns related to the Periodic Performance Review (PPR). The standard PPR process requires each accredited organization to conduct a mid-cycle self-assessment against applicable JCAHO standards and share the findings of this self-assessment at the mid-cycle point. [Click here](#)

List of Abbreviations, Acronyms or Symbols in Development: JCAHO is currently developing a list of commonly misunderstood abbreviations, acronyms and symbols and a corresponding list of preferred terms in order to provide additional guidance

for organizational compliance with National Patient Safety Goal 2b [Improve communication among caregivers by standardizing the abbreviations, acronyms, and symbols used throughout the organization, including a list of abbreviations, acronyms, and symbols not to use]. Based on surveys conducted so far this year, this goal has the highest level of non-compliance among all of the NPSG requirements. The list will go to JCAHO's Executive Committee for approval on October 23 with publication on the JCAHO website later this year. For more information, contact Rick Croteau, rcroteau@jcaho.org.

2. ACHE Reports on Bar Code Systems

The current issue of *Healthcare Executive* (a subscription magazine of the American College of Healthcare Executives) examines the advantages of bar coding technology and reports that it requires less time and money to implement than other types of technology such as computerized prescriber order entry. According to [Bridge Medical](#), a bar code system can be installed in about six months, and for a 300-bed hospital with 15,000 annual admissions, the up-front cost runs between \$700,000 and \$1.5 million, with annual costs of about \$150,000. Besides the “notable” improvements in patient safety, hospitals can use the technology to lower labor costs, redundancies, mistakes and administrative delays, and link financial and outcomes information with patient data for better clinical and financial analysis.

According to *Healthcare Executive*, the final FDA bar coding rule should pass by mid-2004. As of early June, the FDA had received more than 70 comments on its proposed bar coding rule, according to Christine Parker, an agency spokeswoman. The comment period on FDA's proposed rule closed in June. [Click here to read more.](#)

3. HIMSS Survey: Bar Coding and CPOE Best Safety technologies

According to a survey by the Health Information and Management Systems Society (HIMSS), 80% of respondents cited bar coding and 76% named CPOE as important technologies to improve patient safety. Ironically, only 19% have used bar codes and 21% have implemented CPOE systems. The survey included responses from 247 senior executives and managers from health care facilities. Top obstacles to implementing patient safety technology were reported as follows: 79% budget issues, 45% physician resistance, and 43% stated the technology was not mature enough to implement. Although 89% said that their organization has a formal patient safety committee, only 41% of respondents said that an IT department representative participates on their organization's patient safety committee. [Click here to read more.](#)

4. Communication Failures Lead to Boy's Death

A report released this month by the Massachusetts Department of Public Health uncovered serious problems with communication and accountability that led to the death of a 5-year-old boy at one of Boston's flagship hospitals triggering a review of all hospital operations by state and federal officials. The investigation illustrates a situation where lines of authority were blurred, and where no one person had accountability for the patient. State health officials and hospital executives stated that similar problems probably exist at other academic medical centers. In response to the report, Children's Hospital in Boston has instituted new policies that aim to cut through traditional layers of deference and seniority and clearly delineate responsibility. [Click here to read more.](#)

5. Oregon Bill Creates Voluntary Error Reporting

Oregon's new Patient Safety Bill establishes a highly confidential, voluntary way for medical personnel to report patient-care errors. A seventeen-member appointed Patient Safety Commission (comprised mostly of health care professionals) will study the data and make recommendations on ways to improve safety and improve patient outcomes. The move differs from error laws being passed in other states (e.g., most recently Georgia and Minnesota) where reporting is mandatory. The Patient Safety Commission will report to the Oregon Legislature in 2007 about whether voluntary reporting is effective, or whether reporting should be mandatory. Data on patient care errors can be reported by hospitals, long-term care facilities, pharmacies, dialysis facilities and independent health care associations among other groups. Any party involved with the adverse medical event can file the error, but it will be routed through the facility where he or she works. [Click here to read more.](#)

6. Sixth Issue of AHRQ WebM&M

The most recent issue of the AHRQ WebM&M patient safety journal includes two medication error cases: a carbamazepine overdose due to failure to shake the bottle and a patient given intravenous diltiazem rather than saline, requiring temporary pacemaker placement. This month's commentators also features more nurses and pharmacists. Previous issues' cases and CME are all still available, under "Archives" and "Past Issues." Select to access the <http://webmm.ahrq.gov/>

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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 **MEDMARXSM**. 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

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