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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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Pediatric Population Prone to Harmful Errors

Data from the 2001 MEDMARX summary report showed that nearly 6% of medication errors in the pediatric population caused patient harm versus an overall harm rate of 2.4% for all patients. Pediatric healthcare is especially challenging because healthcare practitioners must consider a child's age, weight, medication dosing frequencies, and numerous other factors to ensure the safety of the pediatric patient. The MEDMARX report findings also included:

- Almost 52% of pediatric medication errors occurred during the administration of the medication
- Not following the procedure or protocol resulted in 26% of pediatric medication errors

The top three types of medication errors and the medications associated with those errors identified in pediatric patients were "Improper dose/ quantity" (Fat Emulsion, Potassium Chloride, and Morphine), "Omission" (Albuterol, Gentamicin, and Cefazolin), and "Wrong time" (Gentamicin, Ampicillin, and Vancomycin)

Type of Error n=3,295	Products* by Generic Name	Number of Times Reported
Improper dose/quantity n=936 Products, n=215	Fat Emulsion Potassium Chloride Morphine	41 36 30
Omission n=768 Products, n=209	Albuterol Gentamicin Cefazolin	47 34 21
Wrong time n=473 Products, n=142	Gentamicin Ampicillin Vancomycin	58 38 19

* Includes all formulations and dosage forms

Selected Pediatric Case Reports :

CASE #1: A physician using a preprinted form wrote an order for famotidine 40 mg to be added to a Total Parenteral Nutrition (TPN) solution. The order was mistakenly written on the insulin line of the preprinted form and 40 units of insulin were added to the solution. The technician and pharmacist, who prepared the

solution, did not realize the error. The TPN ran for six hours before the infant was discovered unresponsive. The infant's blood sugar was 26.

CASE #2: A physician wrote an order for pain control for an eight-year-old male with a fractured femur. The order read "Morphine 2-3 mg IV every 2-3 hours as needed for pain." The order was transcribed by hand to the Medication Administration Record as "Morphine 2 3 mg..." A nurse on the late shift drew up a dose of 23 mg of morphine, had the medication checked by another nurse on the shift (2.3 mL of a 10-mg/mL vial of morphine), and administered the dose intravenously. The patient fully recovered following resuscitation and Narcan administration and was discharged three days postincident. The root cause analysis found, first, that the physician should not write for doses in ranges. Second, the nurse should have been alert to the fact that she was withdrawing from multiple vials for a pediatric dose. Third, the nurse checking the dose verified only that the syringe contained 23 mg of morphine and did not check the dose against the ordered dose. Fourth, the nurse that transcribed the order left out the hyphen or dash separating the doses in the range, which lead to the misinterpretation. Fifth, the nurse had little experience and was not familiar with morphine dosing in pediatric patients.

CASE #3: A premature 1.4-kg infant was being treated with aminophylline for episodes of apnea. A loading dose of 7.4 **mg** was ordered. A nurse drew up 7.4 **mL** (185 mg) instead of 0.3 mL (7.4 mg) and administered the dose to the infant. The infant's condition deteriorated, requiring intubation and ventilator support. The infant expired within 36 hours of the incident. Aminophylline 250 mg/10 mL is a floor stock item and the nursing staff routinely prepares their own doses for administration. The pharmacy prepares some, but not all, of the parenteral doses in prefilled syringes. As a result of this medication error, numerous policies and procedures were revised, including:

- Requiring a second nurse to double check calculations and syringe volume drawn in the Neonatal Intensive Care Unit (NICU)
- Requiring a double check of a dose to be administered
- Requesting additional pharmacy assistance for preparation of prefilled syringes
- Developing calculation worksheets
- Reevaluating the list of floor stock medications stored in NICU

Medication errors in the pediatric population affect patients, parents, and practitioners. They result from:

- Miscalculations and misinterpretation of drug dosages
- Inappropriate measuring devices for pediatric products
- Nonadherence to procedures and protocols
- Nonadherence to double checking
- Inexperienced and insufficient hospital staff
- Inappropriate counseling

The vulnerability of the pediatric patient makes the prescribing, dispensing, transcribing, administering, and monitoring of drug products extremely sensitive. In an effort to assist healthcare professionals, consumers, and manufacturers, USP has developed recommendations to avoid errors for medications in the pediatric population. [Click here for recommendations](#).

In addition to the efforts of the USP Safe Medication Use and Pediatric Expert Committees and USP CAPS, the Agency for Healthcare Research and Quality (AHRQ) recently issued a fact sheet listing 20 tips intended to help parents help their children avoid medical errors. Visit www.ahrq.gov/consumer/20tipkid.htm.



1. JCAHO Updates

Pre-publication of 2004 standards: The JCAHO recently posted the pre-publication of its newly revised 2004 standards. A crosswalk is also available to help users navigate between current and new requirements. Organizations can now view the new standards prior to the official accreditation manuals that will be published in the fall. [Click here for standards](#).

Joint Commission Resources and USP to Conduct Seminar on Reducing Medication Errors: USP's Center for the Advancement of Patient Safety (CAPS) in conjunction with Joint Commission Resources will conduct a one-day seminar titled - "*Transforming Data Collection and Analysis into Meaningful Information*". This interactive program will be offered on August 7 in Philadelphia and will teach participants methods to categorize error events by severity, determining thresholds to signal performance problems, and evaluate the impact of actions taken. This seminar is offered in conjunction with the program - *Executive Briefings on JCAHO's New Medication Management Standards* to be conducted on August 8. 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 at [Click here for registration information](#).

Acceptable Approaches to National Patient Safety Goals: JCAHO has posted examples of alternative approaches that organizations can use in meeting the intent of the 2003 National Patient Safety Goals. This website document includes the results of Joint Commission's reviews (i.e., Acceptable, Acceptable with Modification, and Not Acceptable) on each of the listed alternatives. As more "Requests for Review of Alternatives" are completed, more examples will be added to this list. [Click here to read more](#).

New and updated FAQs on Goals #5 and #6: Revisions as well as new information

pertaining to the National Patient Safety Goals have been posted on the JCAHO website under a special frequently asked questions (FAQ) section. [Click here to read more](#) .

2. AHRQ WebM&M

The fourth issue of AHRQ WebM&M was recently posted and features a case of antibiotic overuse, a woman who was mistakenly told she had miscarried when she was still pregnant, a child receiving an overdose of nifedipine, and a suicide attempt by an unsupervised hospitalized patient. Cases from previous issues are available under "Archives." <http://webmm.ahrq.gov>

3. USP Practitioners' Reporting News

Ophthalmic Labeling Change

Bausch & Lomb's Neomycin/Polymyxin B Sulfates/Dexamethasone ophthalmic ointment was changed to reflect the American Academy of Ophthalmology's recommendation. Proposed labeling change was prompted by a report submitted to the USP Medication Errors Reporting Program.

http://www.usp.org/reporting/prnews/dsw_102.htm

Kaopectate Reformulated

New formulation contains bismuth subsalicylate. Reporters express concern of salicylate overdose and risk for development of Reye's Syndrome in children. Three recent reports submitted to the USP Medication Errors Reporting Program.

http://www.usp.org/reporting/prnews/dsw_103.htm

4. AHA Seeking Applicants for Quality Award

The American Hospital Association is seeking applicants for its "American Hospital Quest for Quality Prize" award. The award honors leadership and innovation in patient care quality, safety, and commitment. It is supported by grants from McKesson Corporation and the McKesson Foundation. For 2004, all U.S. hospitals and multihospital systems are invited to apply for the prize, showing they:

- Have implemented and are sustaining a culture of safety
- Are able to demonstrate significant improvements and results in patient safety through systematic use of information and data to improve care processes and overall patient care

The recipient will receive \$75,000 and a symbol of the award at the American

Hospital Association Health Forum Summit, July 2004, in San Diego. Two finalists will receive \$12,500 each. Applications are due October 18, 2003.

For more information or an application, see www.aha.org/questforquality, contact questforquality@aha.org, or call 312.422.2700

5. Participation in The Quality Initiative Approaches 1,000

Nearly 1,000 hospitals have joined in the voluntary national initiative to share performance information with the public launched by the American Hospital Association, the Federation of American Hospitals, and the Association of American Medical Colleges. Though the deadline has passed for hospitals to report their performance data for display on the Centers for Medicare & Medicaid Web site this July, hospitals still have time to volunteer their participation.

<http://www.cms.hhs.gov/quality/hospital/hqiqi.asp>

Future priorities and measures for this initiative will take into consideration a report from the Institute of Medicine (IOM) that identifies 20 priority areas for quality improvement, those that respond to the 6 aims set forth in IOM's Crossing the Quality Chasm, measures endorsed by NQF and, where possible, will include cross-cutting measures. The entire spectrum of stakeholders will be engaged to work toward focusing national public reporting of hospital performance on agreed-upon priorities.

<http://www.nap.edu/books/0309085438/html/>

6. CDC Releases Environmental Infection Control Guidelines

The Centers for Disease Control and Prevention (CDC) [*Guidelines on Environmental Infection Control in Health Care*](#) were released on June 6, 2003, in the Morbidity and Mortality Weekly Report. The 50-page guideline includes recommendations for reducing infection risk related to air and water environmental concerns, cleaning and disinfecting environmental surfaces, environmental culturing, laundry and bedding, managing regulated medical waste, construction and renovation, use of carpeting, pest control, animals in healthcare facilities and water quality in hemodialysis. [Download the CDC Guidelines](#) (1.04 MB) [Click here to read more.](#)

7. Report Reviews Community Hospitals' Approach to CPOE

A new report by the California HealthCare Foundation and First Consulting Group states that community hospitals are succeeding with computerized physician order entry, both in gaining physician participation and in addressing the gaps in safety and quality. The study is based on interviews with key staff at 10 community hospitals that have made significant progress in implementing CPOE, and with CPOE

software vendors. The report can be found at <http://www.chcf.org/>.

8. Minnesota Creates Medical Error Database

Minnesota has enacted legislation authorizing the state health department to create a database to track 27 types of medical errors in hospitals. The law will go into effect by fall, 2003. There will be a two-year transition period whereby the Minnesota Hospital Association (MHA) will be the repository for hospital medical error reports.

The MHA will give the data to the health department, which will share the information with the public and the Legislature. Once the law is fully enacted, the health commissioner will publish annual reports for the public on medical errors in each hospital. [Click here to read more.](#)

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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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