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# USP Patient Safety CAPSLink™

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### USP Patient Safety CAPSLink™

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 Requires Special Vigilance To Ensure Safety**

During 2003, an analysis of data from USP's MEDMARX<sup>SM</sup> reporting program revealed that nearly 3.6% (291 / 8,193) of medication errors in the pediatric population (i.e., patients less than 17 years old) led to some level of patient harm. Treating pediatric patients requires specialized knowledge and skill and must take into account the unique physiological, emotional, and social characteristics of this population subset. Healthcare practitioners must pay close attention to a child's age, weight, medication dosing frequencies, allergies, and other factors to ensure the safety of medication therapy.

A review of the Error Category Index<sup>a</sup> for errors that reached the patient but were not harmful (categories C and D) and harmful errors (categories E-I) cross-

tabulated with **Types of Error** reveals that seven types of error exceeded the 3.6% threshold of harm. (Table 1)

Table 1

Type of Error <sup>1</sup>	Non-harmful Errors	Percent	Harmful Errors	Percent	Total
Wrong administration technique	147	88.0	20	12.0	167
Wrong route	71	88.8	9	11.3	80
A type not determined	175	88.8	22	11.2	197
Deteriorated product	16	88.9	2	11.1	18
Prescribing error	295	91.6	27	8.4	322
Improper dose/quantity	1,793	94.1	113	5.9	1,906
Wrong drug preparation	447	94.1	28	5.9	475
Unauthorized drug	667	97.8	15	2.2	682
Extra dose	462	97.9	10	2.1	472
Wrong time	975	98.3	17	1.7	992
Omission error	2,584	98.3	45	1.7	2,629
Wrong dosage form	202	99.0	2	1.0	204
Wrong patient	318	99.4	2	0.6	320
Expired product	56	100.0	0	0.0	56
<b>Total</b>	<b>8,208</b>		<b>312</b>		<b>8,520</b>

a. See [www.nccmerp.org](http://www.nccmerp.org) for complete A-I Category definitions.

1. Type of Error is a multi-select field. Data is based on 8,193 records representing a total of 8,520 Type of Error selections.

The top **Causes of error** reported to the MEDMARX database are listed in Table 2.

Table 2. Top Causes of Error

Error Cause	Count	Percent
Performance deficit	3,283	40.1
Procedure/protocol not followed	1,455	17.8
A cause not determined	1,363	16.6
Communication	974	11.9
Transcription inaccurate/omitted	611	7.5
Knowledge deficit	574	7.0
Computer entry	503	6.1
Documentation	499	6.1
Calculation error	483	5.9

Table 3 is a partial representation of the products involved with the 291 errors that resulted in some level of harm to a pediatric patient.

Table 3. Products Associated with Harmful Errors<sup>1</sup>

GENERIC NAME      Count    Percent

Insulin*	21	6.5
Morphine*	21	6.5
Fentanyl*	10	3.1
Dopamine*	9	2.8
Albuterol	8	2.5
Ceftriaxone	8	2.5
Gentamicin	8	2.5
Potassium Chloride*	8	2.5
Vancomycin	8	2.5
Acetaminophen	6	1.9
Epinephrine*	6	1.9
Sodium Chloride 0.225%	6	1.9
Baclofen	5	1.5
Dextrose 10% in Water	5	1.5
Fat Emulsions	5	1.5
Heparin*	5	1.5

1. This table is a partial representation of the 323 product selections that were reported in 291 records.  
\*Denotes all dosage forms and formulations

Ninety-seven errors involving pediatric patients were reported to USP's Medication Errors Reporting (MER) program in 2003 - 30% (29/97) were categorized as harmful (categories E-I). (Table 4)

Table 4. Error Category Index

Category Index	# of Records	Percent
A	5	5.2
B	8	8.2
C	44	45.4
D	11	11.3
E	17	17.5
F	2	2.1
G	1	1.0
H	6	6.2
I	3	3.1
Total Records	97	

The top three most frequently reported **Types of Error** collected by the MER were *unauthorized* or "wrong drug" errors, *improper dose/quantity* errors, and *prescribing* errors. (Table 5).

Table 5. Types of Error

Type of Error	Count	Percent* (%)

Unauthorized drug	41	42.7
Improper dose/quantity	38	39.6
Prescribing error	10	10.4
Wrong route	3	3.1
Wrong patient	3	3.1
Wrong drug preparation	2	2.1
Wrong dosage form	2	2.1
Extra dose	2	2.1
Wrong administration technique	1	1
Omission	1	1
Total selections	103	

\* There were 96 records associated with 103 types of error selections.

### Selected Pediatric Case Reports

Case #1: A three-year old girl diagnosed with seizures was brought to an emergency room (ER) while seizing. A physician gave a verbal order for Diazepam 2mg injection but lorazepam 2mg was given instead. Both products were available as floor stock items in the ER. However, diazepam was stored in a locked narcotic cabinet and lorazepam was stored in a locked compartment within the ER medication refrigerator. The nurse who took the verbal order confused the similar -sounding drug names and when she approached the charge nurse to verify that the correct product was retrieved from floor stock, the charge nurse (who did not hear the verbal order), merely verified that the drug retrieved was indeed lorazepam. The child experienced a cardiac arrest but was resuscitated and recovered.

Case #2: A patient who had been receiving total parenteral nutrition (TPN) therapy at home was admitted to the hospital. Admission orders were written to continue the patient on TPN, however, the amount of calcium to be added to the admixture was written illegibly. A pharmacist accurately interpreted the order and the correct TPN was prepared and administered. The next day the physician resident copied the original poorly-written order and, unfortunately, incorrectly misinterpreted the amount of calcium that was to be included in the TPN. Consequently, the wrong amount of calcium was added to the solution and the patient required ventilation, cardiopulmonary resuscitation, oxygen and was transferred to a higher level of care. The patient subsequently died. A root cause analysis summary revealed the following safety-net failures: (1) An illegible order was copied from the previous day's order sheet; (2) An alert from the pharmacy computer system was overridden because the pharmacist checked the 2nd order against the previous day's illegible order; and (3) the nurse administered the medication because it was checked against the previous day's illegible order.

Case #3: A two-year old boy who was scheduled for a minor surgical procedure was given morphine 2mg injection along with several other pre-operative medications. After the procedure, the patient was transferred to the recovery room. The nurse receiving the patient did not review the OR report to see what medications had already been given and proceeded to give the 27 pound boy an additional 2mg of morphine over a 5 minute period. The patient received a total

of 4mg of morphine in less than one hour which was twice the recommended amount for his weight. The patient stopped breathing shortly afterwards and required resuscitation and a narcotic antagonist to reverse the respiratory depression caused by the morphine. The patient made a full recovery.

Medication errors in the pediatric population result from multiple failures including:

- Miscalculations and misinterpretation of drug dosages
- Inappropriate measuring devices for pediatric patients
- Nonadherence to procedures and protocols
- Nonadherence to double-checking
- Inexperienced and/or insufficient hospital staff
- Inadequate counseling of the patient's caregiver

The vulnerability of the pediatric patient should instill extra care during the prescribing, dispensing, transcribing, administering, and monitoring of drug products. In an effort to assist healthcare professionals, consumers, and manufacturers, USP has developed recommendations to avoid errors for medications in the pediatric population.

<http://www.usp.org/patientSafety/tools/pedRecommnds2003-01-22.html>



## 1. USP's *Practitioners' Reporting News*

**And The Similarity Goes On:** Cases submitted to USP's Medication Errors Reporting (MER) Program illustrate the confusion that may result from the similar labeling/packaging of products and the similarity of the drug products themselves. USP's Center for the Advancement of Patient Safety hopes that practitioners will become more and more aware of the safety issues surrounding product similarity—the informed practitioner is an empowered practitioner. [Click here to read more.](#)

**Is That Letter a "C" or An "E"?:** USP's MER Program received a report from a pharmacist regarding the imprint code on Ranbaxy's buspirone being confused with Eon's lisinopril/hydrochlorothiazide. This example illustrates the confusion that can result when trying to identify or confirm products. [Click here to read more.](#)

Share your experiences with the MER Program. Other practitioners will benefit from your experiences and valuable insight. Actual and potential medication errors can be submitted online at [www.usp.org/patientSafety/reporting/mer.html](http://www.usp.org/patientSafety/reporting/mer.html) or by requesting a reporting form at 1-800-23-ERROR (1-800-233-7767)

## 2. Leapfrog Recognizes Pharmacists' Contribution to Medication Safety

The Leapfrog Group recently adopted an item from the National Quality Forum's "Safe Practices for Better Healthcare: A Consensus Report" that recognizes the importance and value of hospital pharmacists who are actively involved in evaluating medication use within their facility. <https://leapfrog.medstat.com/pdf/Final.pdf>

### 3. Updates from AHRQ

Patient Safety Research Coordinating Center RFP: The Agency for Healthcare Research and Quality (AHRQ) is seeking applicants to serve as AHRQ's patient safety research coordinating center. The new center will support the needs of the Agency's patient safety initiative and serve as the resource and support center that links all the components of the Agency's patient safety research portfolio and connects with other Federal and non-Federal patient safety stakeholders. The contract will be awarded for 3 years with two 1-year renewal options. Deadline for proposals is 12Noon EDT July 13.

<http://www.ahrq.gov/fund/rfp040012.htm>

Outpatient Assessment Tool: A tool is being created to measure a patient's perception of the quality of care they receive in the ambulatory setting. AHRQ plans to review existing tools and redesign its Consumer Assessment of Health Plans (CAHPS) tool to capture patients' ambulatory care experiences and perceptions at the various levels of ambulatory health care delivery.

[http://www.access.gpo.gov/su\\_docs/fedreg/a040610c.html](http://www.access.gpo.gov/su_docs/fedreg/a040610c.html)

### 4. JCAHO Updates

Web Site to List New Hospital-Specific Quality Reports: The Joint Commission on Accreditation of Healthcare Organizations plans to publish on its Web site a new report highlighting accredited hospitals' quality information beginning July 15. The reports will feature information on hospitals' accreditation, disease-specific care certification, and quality awards, including the AHA's Quest for Quality Prize, and compare their performance on JCAHO's National Patient Safety Goals and National Quality Improvement Goals with that of other hospitals, both nationally and statewide. Hospitals will have an opportunity to review their data and notify JCAHO of any inaccurate information and can submit commentary to be included in the report. Questions or comments on the report can be directed to JCAHO account representatives or e-mailed to [qualityreport@jcaho.org](mailto:qualityreport@jcaho.org)

Joint Commission Resources and USP Offer Workshops on Medication Errors:

Back by Popular Demand - USP's Center for the Advancement of Patient Safety (CAPS) in conjunction with Joint Commission Resources (JCR) will conduct four, one-day workshops titled - "Transforming Medication Error Data into Meaningful Information". This interactive program will be offered on the following dates in **2004**:

- [September 22 in Rockville, MD \(at USP Headquarters\)](#)
- [November 1 in Oakbrook Terrace, IL \(at JCAHO Headquarters\)](#)
- [December 4 in Orlando, FL\(Preceding the ASHP meeting\)](#)

The program is designed for nurses, pharmacists, risk managers, medication/patient safety officers, physicians, and quality improvement staff and will teach participants methods to categorize error events by severity, determine

thresholds to signal performance problems, and evaluate the impact of actions taken. For more information and to register call- JCR Customer Service toll free at 877-223-6866 or go on-line at <http://www.jcrinc.com/education.asp?durki=7032&site=5&return=5933>

## 5. Gap Revealed in Perceptions Regarding Nursing Role in Patient Safety

A recent study in the *American Journal of Nursing* found that the vast majority of clinicians believe nurses are primarily responsible for patient safety but very few physicians consider nurses to be part of the “decision-making team.” While 90% of physicians and 96% of nurses assign “primary responsibility” for patient safety to nurses, only 8% of physicians say that nurses are “part of the decision-making team.” The researchers note that clinicians and hospital officials are more likely to classify overmedication and other mistakes related to nursing care as “errors” than mistakes made by physicians, such as misdiagnoses, which often are categorized as differences in “clinical judgment.”

[http://www.nursingcenter.com/library/journalarticleprint.asp?Article\\_ID=507733](http://www.nursingcenter.com/library/journalarticleprint.asp?Article_ID=507733)

## 6. National Report Card on Quality of Health Care in the U.S.

To assess the status of the quality of health care provided in the United States, a team of experts conducted one of the most comprehensive examinations called the Community Quality Index Study. This research assessed the extent to which recommended care was provided to a representative sample of the U.S. population for a broad range of conditions in 12 metropolitan areas. Some of the key findings include:

- Overall, adults received about half of recommended care
- The level of performance was similar for chronic, acute, and preventive care
- Quality of care varied substantially by condition
- Performance was similar in each of the metropolitan areas studied
- No community had consistently the best or worst quality

<http://www.rand.org/publications/RB/RB9053/>

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USP operates two complementary error reporting programs; the Medication Errors Reporting Program presented in cooperation with the Institute for Safe Medication Practices and MEDMARX. MEDMARX<sup>SM</sup> 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)

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