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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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## Abbreviation Use: Saving time, But at What Expense?

(This story is an adaptation of an article published in the *Joint Commission Journal on Quality and Patient Safety*, entitled “The Impact of Abbreviations on Patient Safety,” September 2007 Vol 33 No.9 pp 576-583.)

The use of abbreviations, aimed at conserving time and facilitating communication, is a common practice in today’s demanding healthcare environment. Abbreviations may conserve time; however, concern has been increasing over the miscommunications resulting from the use of inappropriate abbreviations. In response to this concern, the Joint Commission (JC) incorporated an official “Do Not Use” abbreviation list into the requirements for meeting its National Patient Safety Goal number two, which targets lapses in communication. The extent to which hospitals and health systems comply with the “Do Not Use” list continues to be problematic, despite its first appearance in 2004.<sup>1</sup>

In conducting a review of medication errors reported to the USP MEDMARX<sup>®</sup> program between 2004 and 2006, the term “Abbreviatic” 74 records reported from 682 facilities. Of these errors, 0.3% were categorized as resulting in patient harm (NCC MERP *Index* Categories E-I), with one fatality documented as having resulted from the confusion between HD (hemodialysis) and TID (three times daily). The majority of reported errors were recorded as category B (67.2%) and A (28%). Table 1 summarizes the distribution of errors in each error category.

**Table 1: Severity of Errors Involving Abbreviations**

Error Category <sup>a</sup>	n	% <sup>c</sup>
Potential error		
A	5,080	28
Intercepted error		
B	12,193	67.2
Non-harmful error		
C	694	3.8
D	132	0.7
Harmful error		
E	39	0.2

F	8	0.04
G	1	0.006
H	5	0.03
Fatal error		
I	1	0.006
Total	18,153 <sup>b</sup>	

a. For complete definitions of the Medication Error Category Index from the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) see: [www.nccmerp.org/pdf/indexcolor2001-06-12.pdf](http://www.nccmerp.org/pdf/indexcolor2001-06-12.pdf)

b. Of the 29,794 records, only 18,153 had sufficient information allowing for the identification of the abbreviation implicated. Therefore, 18,153 was the number used as the study population.

c. Percentages have been rounded and may not total 100%

Medication errors associated with abbreviations were reported to originate among all healthcare disciplines, with the majority of errors originating from the medical staff (78.5%), followed by nursing (15.1%) and pharmacy (4.1%). This correlates with the distribution of the types of error, where prescribing errors represented 67.5% of all reported selections (Table 2). Additionally, the prescribing node (phase) was the most common phase in the medication-use process for reported errors, accounting for 81.2% of all reported selections. This suggests that the prescribing phase of the medication-use process is more problematic in the initiation of abbreviation-related errors. The use of abbreviations that are known to contribute to medication errors is a significant target of opportunity for improvement medication safety.

**Table 2: Types of Medication Errors Related to Abbreviations**

Type of Error	n <sup>a</sup>	% <sup>b</sup>
Prescribing error	12,864	67.5
Improper dose/quantity	3,940	20.7
Wrong drug preparation	746	3.9
Omission	425	2.2
Unauthorized drug	304	1.6
Extra dose	258	1.4
Wrong time	212	1.1
Mislabeleding	145	0.8
Wrong dosage form	50	0.3

Wrong route	44	0.2
Wrong administration technique	25	0.1
Deteriorated product	20	0.1
Wrong patient	15	0.1
<b>Total</b>	<b>19,048</b>	

<sup>a</sup> Based on the number of reported selections, each record may have one or more selections.

<sup>b</sup> Percentages have been rounded and may not add up to 100%.

## Case Examples<sup>a</sup>

1. A 62 year-old hemodialysis patient was prescribed acyclovir oral tablets for the treatment of a viral infection. The order was written as acyclovir (exact dose unknown) with hemodialysis (HD); however, HD was misinterpreted as TID (three times a day) resulting in the dispensing and administration of an incorrect dose of the drug. The patient received acyclovir, which requires dose adjustments for renal impairment, three times daily for two days. Acyclovir toxicity ensued and the patient's mental status rapidly declined resulting in delirium, and eventually death.

All staff involved in the error were informed and educated, especially related to the importance of appropriate and ongoing therapeutic drug monitoring for a drug like acyclovir in a patient with renal impairment. The facility's computerized medical information software was modified to improve clinical alert notification for lab requirements related to high risk drugs. Additionally, policies and procedures were changed focused on the prevention of patient harm associated with the use of abbreviations.

2. A hospice nurse incorrectly transcribed a patient's medication list during a home visit. The list was posted on the patient's home refrigerator and included the unacceptable abbreviation for 'units' of insulin as 2U, 4U, 6U, 8U, etc. The nurse misinterpreted and incorrectly transcribed orders as 20U, 40U, 60U, etc., which were faxed to a pharmacy without the required verification or signature by the oncologist. The orders were subsequently entered into a computerized system by the pharmacist, who stated the intention to contact the physician, but was distracted and failed to follow-up. As a result, the patient received 20 units of regular insulin for a fasting

blood sugar of 152 mg/dL. The patient's blood glucose level bottomed out at 39 mg/dL at approximately by 9:30 p.m. The nurse then administered one ampul of Dextrose 50% (D50%), and the patient's blood sugar was closely monitored throughout the night and for approximately 48 hours. A total of three D50% ampuls were administered to the patient (as per physician orders) for each blood glucose reading in the 30 mg/dL range. The patient fully recovered.

The nurse, physician and pharmacist involved in the error were educated on the importance of verifying all transcriptions of home medication lists and the responsibility of timely follow-up for clarification with a physician anytime an order is questionable. Additional actions taken included staff education focused on the inappropriate use of the unacceptable "U" abbreviation for 'units' and in following policies that require a physician's verification and signature on all transcribed orders before forwarding to pharmacy. The patient was also educated on not using "U" for 'units' on the home (refrigerator) medication list, which was incorrectly interpreted by the nurse and led to a ten-fold insulin overdose.

3. A 53 year-old hospitalized patient complained of mid-sternal chest pain. The cardiologist, who evaluated the patient, did not think that the pain was cardiac in nature, and wrote an order for "MDX/GI" cocktail. The order was faxed to the pharmacy, where the medication was prepared and delivered to patient care unit. A nurse obtained the medication and administered a dose to the patient, who immediately experienced difficulty breathing, which rapidly evolved to acute respiratory distress. A code blue was called, and the patient responded to an emergency dose of epinephrine and his condition stabilized. As a result of this incident, the patient's hospitalization was prolonged several additional days to carefully monitor and ensure complete resolution.

Upon further review of the patient's medical record it was well documented that he had a history of allergy to lidocaine and similar anesthetic products. This drug allergy was documented in both the patient's paper and electronic medical records. The facility's gastro-intestinal cocktail "MDX" contains Mylanta<sup>®</sup>, dicyclomine and lidocaine. Upon questioning, neither the physician nor the nurse was aware that MDX contained lidocaine (Xylocaine<sup>®</sup>). Actions taken included review and enhancements to the hospital's clinical information system software, education to the physician and nurse

related to the importance of not using unacceptable abbreviations and encouraging an improved multi-disciplinary communications process.

## **Recommendations for the Appropriate Use of Abbreviations in Preventing Medication Errors**

- Identify facility specific abbreviations for inclusion on the “Do Not Use” abbreviation list in addition to those required by Joint Commission.
- Implement an interdisciplinary task force on the prohibition of abbreviation use.
- Launch a facility wide awareness campaign.
  - Post dangerous abbreviation lists in areas of high traffic or exposure:
    - Screen savers
    - ID badges
    - Patient charts
    - Intranet site
    - Hospital/departmental newsletters
- Educate staff that the use of abbreviations increases the risk of patient harm.
- Hold staff accountable for non-compliance to the prohibited abbreviation list:<sup>2</sup>
  - “Dear Doctor/ Dear Provider” letters
  - Consider additional actions for continued inappropriate use (e.g. orders with prohibited abbreviations will not be accepted)
  - Rewards for compliance with prohibited list
- Clarify the intent of the abbreviation if one is used
- Examine computer software throughout the facility for dangerous use of abbreviations, quick keys, and/or autofill features which introduce error potential

<sup>a</sup>Case reports reflect actual error descriptions but may have been modified for clarity.

### **References:**

1. Joint Commission on Accreditation of Healthcare Organizations. Facts about the official “Do Not Use” list. Available at: [click here](#). (accessed 3/27/07, 8/09/07).
2. Traynor K. Enforcement outdoes education at eliminating unsafe abbreviations. Am J Health-Syst Pharm 2004; 61:1314-15.

## 1. USP-ISMP Workshop: Using Data to Manage Safety Risks

This one-day interactive program is designed for pharmacy directors, risk managers, patient safety officers, medication safety officers, and other healthcare professionals seeking to enhance their ability to collect, analyze, and prioritize medication error and other adverse drug event data. Participants will learn how to select effective risk reduction strategies based on proven medication safety principles, instead of relying on human vigilance alone. They also will learn the best way to report findings in an actionable format that will help drive medication safety efforts and show results from system improvements. The workshops include home study materials and will include breakout sessions with an opportunity to gain hands-on practice working with data. Pharmacy and Nursing CE credit will be available.

### **AGENDA TOPICS that will be covered during the program include:**

- Risk identification: Data collection methods
- Risk analysis: Analysis of aggregate data for trending
- Risk control: Choosing effective error reduction strategies
- Case studies: Examining data, priority setting, and interventions

### **FEES AND REGISTRATION**

Early registration: \$350.00 (up to 21 days before program date)

Regular registration: \$395.00

Group discounts: For more information and a group code number for online registration, call 301-816-8136

Visit <http://www.intellor.com/usp/ismp>

### **WORKSHOP DATES**

- September 25, 2007 - Hyatt Regency Tampa  
Tampa, FL
- October 9 - *Before the ASHRM Annual Conference*; Hyatt  
Regency Chicago, IL
- November 5 - USP Headquarters

Rockville, MD

- December 1 - *Before the ASHP Midyear*, Imperial Palace Hotel, Las Vegas, NV

## 2. Roche Revises Ceftriaxone Warnings

In response to a July 5, 2007 FDA MedWatch alert describing cases of deadly calcium-ceftriaxone precipitates in patients' lungs and kidneys, Roche revised its product labeling for ceftriaxone (Rocephin®), to state that ceftriaxone and calcium-containing solutions or products should not be concurrently administered to newborns. The FDA alert stated that Roche has received reports of neonatal deaths associated with calcium-ceftriaxone precipitate in the lungs and kidneys. The revised product labeling also emphasizes that ceftriaxone is contraindicated in hyperbilirubinemic newborns—and premature infants, in particular—because the drug can displace albumin-bound bilirubin and increase the risk of bilirubin encephalopathy. Of concern to pharmacists is a new warning in the labeling that at least 48 hours must lapse between the last administration of a dose of ceftriaxone and the use of any calcium-containing product. For additional information, [click here](#).

## 3. USP 2007 Annual Scientific Meeting

The 2007 USP Annual Scientific Meeting will be held on September 25-27, 2007 in Tampa, Florida at the Hyatt Regency Hotel. The theme of this year's meeting is *Quality of Manufactured Medicines and Quality of Care*. This three-day meeting is designed for scientists and practitioners and will include sessions on labeling issues for small and large volume parenterals that were recently addressed during the FDA/Institute for Safe Medication Practices (ISMP)/USP *conference on Improving Patient Safety by Enhancing the Container Labeling for Parenteral Infusion Drug Products; issues related to the naming of medications, providing the practitioner's view of nomenclature and methods for reducing medication errors; recent development of initiatives to procure medications for use in international health programs and the issue of counterfeit drugs and current anti-counterfeiting efforts by the World Health Organization (WHO) and other organizations. CE credit for practitioners will be available.*

**AGENDA TOPICS that will be covered during the meeting include:**

### **Wednesday, September 26, 2007:**

- Quality of Care: Medication Safety Topics
- Quality of Care: Good Naming Practices that Prevent Medication Errors

### **Thursday, September 27, 2007:**

- International Health: Global Procurement of Medicines, Quality Considerations
- International Health: Counterfeits- International Perspective

## **FEES AND REGISTRATION**

Registration fees begin at \$400.00.

More detailed information on the meeting and registration is available from:

- [www.usp.org/goto/asm](http://www.usp.org/goto/asm)  
301-816-8134
- Email information request to [conferences@usp.org](mailto:conferences@usp.org)

### **4. Baxter Pump Recall Problems Continue**

The FDA recently announced a new class 1 (life and death) recall of six models of the Baxter Colleague and Flo-Gard volumetric infusion pumps. The class 1 recall was initiated by the FDA after verification that Baxter falsified repair and service records for the infusion devices. For additional information see:

<http://www.fda.gov/cdrh/recalls/recall-062107.html>

### **5. News from the FDA**

#### **- FDA Provides Consumer Tips to Avoid Medication Mistakes**

The FDA has recently published consumer tips with the primary goal of better educating patients about important facts they need to know related to medication safety and the prevention of errors / mistakes. The six tips to consumers include: Finding out the name of all prescribed medications, encouraging patients to ask questions about how to use their medications, knowing what their medication

is for, reading all medicine labels and following directions, keeping all health care providers informed about their medications (to include over-the counter and dietary supplements), and keeping a list of all medications. For additional information, go to <http://www.fda.gov/consumer/updates/medtips062107.html>

### **- FDA Analyzing Potential Heart Risks Related to Omeprazole and Esomeprazole**

On August 9, 2007, the FDA announced that it is reviewing all available safety data on omeprazole and esomeprazole after recent information from clinical trials of the drugs hinted that they might put patients at risk for cardiovascular events. The results from an AstraZeneca the study of Prilosec<sup>®</sup> and analyses from an ongoing study of Nexium<sup>®</sup> raised concerns that long-term use of Prilosec or Nexium may have increased the risk of heart attacks, heart failure, and heart-related sudden death in those patients taking either one of the drugs compared to patients who received surgery. The FDA's preliminary conclusion is that collectively, these data do not suggest an increased risk of heart problems for patients treated with omeprazole or esomeprazole. Therefore, FDA does not believe that healthcare providers or patients should change either their prescribing practices or their use of these products at this time. The FDA plans to complete its review within three months, and will communicate its conclusions and any resulting recommendations to the public at that time. For additional information, [click here](#).

### **6. Medical Illiteracy Can be Deadly for Older Patients**

A new study of patients, who were age 65 and older, indicated that patients in this age group were more likely to die within six years of receiving written medical instructions than those who easily understood their caregivers, despite the health conditions at the outset. The study was done by a team at Northwestern University's Feinberg School of Medicine, and showed that of the quarter of the 3,260 patient participants who were medically illiterate, more than 40% died during the study, compared to the 19% who were medically literate. The results of the study were published in the July 23 issue of the *Archives of Internal Medicine*. The study concluded that inadequate health literacy, as measured by reading fluency, independently predicts all-cause mortality and cardiovascular death among community-dwelling elderly persons. For additional

information, [click here](#).

### **7. Doctors Encouraged to Decrease Reliance on Beta-Blockers**

An article published in the June 2007 issue of the Journal of the American College of Cardiology provided a review by researchers of numerous previously published studies and found that medications for treating hypertension other than beta blockers work better and cause fewer side effects. A growing body of medical evidence now shows that diuretics and newer blood-pressure medications are superior to beta-blockers at reducing high blood pressure. Although beta-blockers reduce blood pressure, diuretics, calcium channel blockers and ACE inhibitors do so more effectively and with fewer complications. It has been reported that European medical societies have already begun urging physicians to abandon beta-blockers as a high blood-pressure medication; however, until further data is available, researchers involved in the review recommend that it is probably best not to use beta-blockers as a first-line treatment of high blood pressure. Patients should not stop taking blood pressure medications without first talking to their physician. For full text article, [click here](#).

### **8. Collaboration Among Indiana Hospitals Improves Safety**

The Indianapolis Coalition for Patient Safety, a consortium of six hospital systems that began collaborating four years ago to cut down on medical errors recently reported on a pilot initiative involving Eli Lilly and Co. and Wishard Health Services. Specifically, coalition members that are participating in the pilot program are trying to reduce the potential for errors when a hospitalized patient requires insulin. The project included the implementation of a "be the vial" exercise that followed insulin from the pharmacy to the patient and identified 23 process steps that added potential for error without any value. The project is analyzing the best ways to administer insulin and upon completion, the findings will be shared with all the hospitals in the coalition. For full text of article, [click here](#).

### **9. ISMP Updates High-Alert Medication List**

The Institute of Safe Medication Practices (ISMP) has recently updated its High-Alert Medication list. Additions to the list include i.v. formulations of epoprostenol, oxytocin, and promethazine and 100-mL or larger containers of sterile water for injection, inhalation,

or irrigation. Nesiritide is no longer on the list due to a large decline in the drug's use. Two new categories were added: antithrombotic agents and i.v. antiarrhythmics. For complete information on the updated list, [click here](#).

## 10. Anonymous Reporting of Errors Urged by New Hampshire Board of Pharmacy

The New Hampshire Board of Pharmacy recently implemented a patient safety initiative that includes a nonpunitive approach to the voluntary and anonymous reporting of medication errors. The anonymous reports will provide the Board with additional information and data for review, analysis and further sharing with New Hampshire pharmacies and pharmacists. The goal of this initiative is strictly educational and the primary goal is to reduce medication errors. An insert in the “Notices” section of the *New Hampshire Pharmacy Law Book* was distributed to all pharmacies *that* includes a “Quality Check Event Report.” These reports are strictly voluntary and totally anonymous as to the identity of the individual and the pharmacy and will not be considered as a basis for disciplinary action. Information gained through this initiative will be posted on the Board’s Web site. For additional information, see: <http://www.nabp.net/ftpfiles/newsletters/NH/NH012007.pdf>

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### USP Medication Error Reporting Programs:



**MEDMARX**<sup>®</sup>—USP's comprehensive, Internet-accessible, anonymous medication errors reporting program, and quality improvement tool. The program facilitates productive and efficient documentation, tracking, trending, and prevention of medication errors.



**Medication Errors Reporting (MER) Program**—presented in cooperation with the Institute for Safe Medication Practices, this nationwide program makes it possible for health professionals to report medication errors confidentially and anonymously to USP.

### Other USP patient safety resources:

- [MEDMARX Annual Data Summary reports](#)—provides readers with a wealth of information on reported error events including patterns in the types, causes, and level of harm associated with medication errors.
- [Understanding and Preventing Medication Errors: A Resource for Healthcare Practitioners](#)—a

CD toolkit with practical guidelines, forms, and templates to help healthcare facilities improve error-reduction initiatives.

- [Advancing Patient Safety in U.S. Hospitals: Basic Strategies for Success](#)—a book in which hospitals share stories about how they reduced medication errors and promoted safer patient care.
- Medication Safety Pocket Reference—a pocket-sized reference booklet containing listings of similar drug names and dangerous abbreviations that could cause medication errors. Contact [custsvc@usp.org](mailto:custsvc@usp.org) and ask for item #3227702.
- Similar Drug Names Poster—a wall poster for easy reference listing look-alike and sound-alike drug names known to cause confusion and potential medication errors when handwritten or communicated verbally. Posters are packaged in quantities of 1 (item # 3728251) 10 (item # 3728252) and 50 (item # 3728253). Contact [custsvc@usp.org](mailto:custsvc@usp.org) and ask for the appropriate item number.

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