An Analysis of Medication Errors: Look Alike and Sound Alike Names

Nancy B. Carothers, RN, BA

The United States Pharmacopeia (USP) works to establish high quality standards for medicines used in the United States. In an effort to make medications safer, the USP encourages health care practitioners to report problems—or potential problems related to medication errors—such as unclear labeling, packaging, or administration information. To encourage communication, reports can be submitted anonymously. Once collected, the reports are shared with the Food and Drug Administration (FDA), regulators, product manufacturers, and health care providers. As a result of this shared information, changes have been made to improve the safety of drug products and the accuracy of the prescribing, dispensing, and administration procedures.

It must be understood that once a patient is hospitalized, the potential for multiple errors is always present.

The purpose of the USP Medication Errors Reporting Program (MERS) is to identify, document, and analyze any aspect of medication errors. Through this process, a number of common factors have been identified that contribute to a medication error. Medication errors occur at any time during the process of providing patients with medicines (eg, prescribing, documenting, dispensing, administering). Errors can also be caused by a variety of factors (Table 1). Therefore, practitioners must question the appropriateness and accuracy during every step of the medicating process to ensure that the patient is receiving the intended treatments.

Table 1. Reasons that contribute to medication errors

Poor handwriting
Similar sounding/looking drug product names
Drug product abbreviations
Misinterpretations of labeling/packaging
Miscalculations
Knowledge/skills deficits
Improper administration

From the American Society of Health-System Pharmacists, Inc. Bethesda (MD): American Society of Health-System Pharmacists; 1995.

Products with easily confused names pose a significant problem. With more than 10000 brand names and 7700 generic or nonproprietary names, mix-ups are inevitable, but they can be reduced. In 22% of the reports submitted to MERS, similarity in appearance or sound of drug names played a key role in the commission of the error.[1] Incomplete and unclear oral and written communications, or a staff's lack of familiarity with drug names, have all contributed to errors.

Nurses and other professional staff that handle medications must begin to develop safeguards (a "safety net"[1]) that can be used to protect patients from the morbidity and death that can result from errors. It must be understood that once a patient is hospitalized, the potential for multiple errors is always present. For outpatients, the staff needs to offer instruction on the safe use of medicines, including the use of over-the-counter preparations.

Table 2 lists examples of reports received by the USP that involve the confusion of products. By developing an awareness of the factors that contribute to errors, health care practitioners can watch for similar situations in an effort to *prevent* the rep-

From the US Pharmacopeia.

For reprints, or more information concerning the USP, contact Nancy B. Carothers, RN, BA, Health Communications Specialist, Office of External Affairs, The United States Pharmacopeia, 12601 Twinbrook Parkway, Rockville, MD 20852.

Int J Trauma Nurs 1999;5:22-4.

65/1/95044

Table 2. Examples of similar product names or appearances that have caused medication errors

Problem	Action	Special note
(1) Look-alike names (easily confused when handwritten)		
Cardene SR-60 (nicardipine hydrochloride)	Calcium channel blocker	Identical suffixes are confusing
Cardizem SR-60 (diltiazem hydrochloride)	Calcium channel blocker	
Eldepryl (selegiline hydrochloride)	Anti-Parkinson	
enalapril	Antihypertensive	
Lodine 300 mg (etodolac)	Non-steroidal anti-inflammatory	
codeine 30 mg	Analgesic	
Lodine (etodolac)	Non-steroidal anti-inflammatory	
iodine	Topical tincture	
Norvasc (amlodipine)	Calcium channel blocker	
Navane (thiothixene)	Antipsychotic	
Precare	Prenatal vitamin	
Precose (acarbose)	Antidiabetic agent	
Vexol (rimexolone)	Ophthalmic anti-inflammatory solution	The crossed "x" resembles an "s"
VōSol HC (hydrocortisone, acetic acid)	Otic anti-inflammatory medication	
(2) Sound-alike names		
Ambien (zolpidem tartrate)	Sedative/hypnotic	
Amen (medroxyprogesterone acetate)	Progesterone derivative	
amiodarone hydrochloride (Cordarone)	Anti-dysrhythmic	
amrinone lactate (Inocor)	Cardiac glycoside	
Chlor-Trimeton Non-Drowsy Decongestant 4 Hour (pseudoephedrine)	Decongestant	Hypertensive patient mistook the pseudoephedrine formula, which exacerbated patient's hypertension
Chlor-Trimeton (chlorpheniramine)	Antihistamine	
(3) Similar generic names		
acetazolamide	Treats glaucoma (carbonic anhydrase inhibitor)	
acetohexamide	Anti-hyperglycemic (releases insulin)	Sudden release of insulin can cause coma and death
(4) Similar generic names in which significant difference in dosage can cause toxic response if confused		
cisplatin (Platinol)	Antineoplastic	
carboplatin (Paraplatin)	Antineoplastic	
vincristine sulfate	Antineoplastic	
vinblastine sulfate	Antineoplastic	
(5) International drugs		
Apronal		
acetaminophen (antipyretic, analgesic) in United States; aprolidine in other countries		
Inhibace		
captopril (antihypertensive) in Israel		
cilazapril (antihypertensive) in Japan and Switzerland		
Mepron		
atovaquone (antiprotozoal) in United States		
meprobamate (sedative) in Australia		

From Aschenbrenner D, Boesen M, Cohen MR, Davis NM, Esser L, Felver L, et al. Rockville (MD): US Pharmacopeia; 1996.

etition of mistakes. Such actions are necessary if patient outcomes are to improve.

Author's Note: A free 10 × 12-inch (25 × 40-cm) laminated poster that lists hundreds of look-alike and sound-alike drug names can be obtained by writing to USP, Office of External Affairs, 12601 Twinbrook Parkway, Rockville, MD 20852 USA. This poster is available to health care providers in the United States and worldwide.

REFERENCES

1. Aschenbrenner D, Boesen M, Cohen MR, Davis NM, Esser L, Felver L, et al. Understanding and preventing medication errors: an education resource. Rockville (MD): United States Pharmacopeia; 1996.

2. American Society of Health-System Pharmacists, Inc. AHFS Drug Information. Bethesda (MD): American Society of Health-System Pharmacists; 1995.

3. United States Pharmacopeial Convention. Stop, Look & Listen! USP Quality Review, No 49. USP, Inc. Rockville (MD) USP; 1995.

4. United States Pharmacopeia. Advice for the patient. Drug information in lay language, vol II (index). Rockville (MD):USP; 1998.p. 1-70.