



Nurse Advise-ERR™

Educating the healthcare community about safe medication practices

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Avoiding Double Doses

Optimal patient care requires a coordinated effort among healthcare providers. However, if more than one clinician is administering medications to a patient during the same shift, be alert to the possibility of double doses.

Double doses tend to occur more frequently with one-time, stat, and prn medications. For example, an emergency department nurse might give a stat dose of a drug to a patient in response to a verbal order; a short time later, another nurse covering the patient might see the same order, now written on the chart, and give the stat medication again. One nurse covering during lunch might not know that a prn medication had just been given to a patient, but not yet documented, and administer the same prn medication to the patient. Licensed practical nurses (LPN) often depend on a covering registered nurse (RN) to administer certain IV medications to her patients. In this case, duplicate drug therapy via different routes of administration could occur. An error was reported in which the patient had been receiving subcutaneous insulin several times daily. Early one morning, the physician discontinued the subcutaneous insulin and started the patient

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on an insulin drip. The RN noted the order and hung the insulin drip, but the LPN was unaware of the new order and gave the patient's morning dose of subcutaneous insulin.

Similar errors can happen in settings with student nurses. When a patient asked for pain medication, a student nurse removed codeine 30 mg from an automated dispensing cabinet, and stopped at the nurses station to discuss the drug's side effects with her instructor. While waiting, the patient asked his primary care nurse for pain medication, explaining that he hadn't yet received the previously requested dose. Unaware that codeine 30 mg had been removed from the automated dispensing cabinet 3 minutes before for this patient, the nurse retrieved another dose and administered it. Within minutes, the student entered the room and gave the patient a duplicate dose. The student had told the patient that the medication was codeine, but he took it anyway. At that moment, the nurse came into the room and told the student that she had just given codeine to the patient. No adverse reactions were observed.

See **Check it out!** (right column) for suggestions on how to avoid giving your patients double doses.

check it out! ✓✓✓✓

To avoid giving your patients double doses of medication:

- ✓ **Designate responsibility.** Limiting drug administration to one individual for each patient is safest, but often unrealistic. If more than one person will be administering medications to a patient during the same time period, clearly designate each person's scope of responsibility at the beginning of each shift, and confirm understanding among the various clinicians involved (including students and instructors).
- ✓ **Give/receive report.** When transferring care of the patient to another, even for short periods of time, always give and receive a verbal report that includes recent drug administration.
- ✓ **Check prior doses.** If retrieving a medication from an automated dispensing cabinet, observe when the last dose was removed for the patient. Bar coding systems and some dispensing cabinets will also provide an audible/visual alert if an attempt to remove or administer a drug occurs before the prescribed time.
- ✓ **Check the MAR.** Check the medication administration record (MAR) immediately before giving medications, to assure the timing is correct.
- ✓ **Verify doses with the patient.** Tell patients about the medications you will be administering. Since double doses are more likely with prn medications and one-time-doses, confirm with the patient the last time (if ever) they received the medication.
- ✓ **Document immediately.** Always take the MAR to the bedside and document what was given immediately after drug administration.

safetywire

⚡ This will bring tears to your eyes. A patient's wife accidentally administered **HEMOCCULT SENSA** (hydrogen peroxide, denatured ethyl alcohol) solution into the patient's eyes. A nurse had left the Hemocult bottle at the bedside, and the patient's wife thought it was her husband's artificial tears. The patient experienced pain, which resolved when his eyes were flushed. Hemocult developer and other generic developers are available in what looks like a typical ophthalmic dropper bottle. About 10 years ago, after reports of accidental ophthalmic administration, the manufacturer began packaging Hemocult with a "stove pipe" cap, and added an icon (encircled eye with red line through it) to signal that it

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All is not as it seems...

Q Based on this order, how often should Lovenox be given?

start Lovenox 40 mg SC Q8 today

A The prescriber intended the patient to receive Lovenox 40 mg daily. However, his use of the error-prone abbreviation “QD” for daily led a nurse to misinterpret this order as Lovenox 40 mg “Q8” hours, even though the medication is typically administered daily or every 12 hours. “QD” has also been misinterpreted frequently as “QID” (four times daily), as demonstrated in this order:

Hydrocortisone - 25mg (qd) + tablet

The raised tail on the q led to misreading “qd” as “qid.”

Q How would you interpret this order?

Tramadolone 400 mg AD TID

A The prescriber wanted to increase the patient’s amiodarone dose, but a nurse misread the order as trazodone. The physician had used an up arrow to signify the word “increase,” but it looked just like the letter “T.” The error was recognized when the nurse called the pharmacy looking for the “missing” trazodone. The pharmacist could not find the order, so he asked the nurse to resend it. Upon receipt, he quickly recognized the order from earlier in the day, and told the nurse that he had interpreted it as “increase” amiodarone, since trazodone would not be dosed above 600 mg a day.

“QD” and an up arrow are just two of many error-prone abbreviations, symbols, and dose expressions that have led to errors, some fatal. As a result, the Joint Commission requires hospitals to prohibit the use of the following abbreviations in all medication orders and other medication-related documentation:

- QD/QOD for daily/every other day
- U for unit
- IU for international unit
- MS/MSO4/MgSO4 for morphine sulfate/magnesium sulfate
- Trailing zeros (e.g., 2.0 mg) following whole numbers
- Naked decimal points (e.g., .5 mg) preceding doses less than zero
- Three additional error-prone abbreviations/symbols selected by the facility.

To assist with this effort, please see pages 3 and 4 for a complete list of error-prone abbreviations, symbols, and dose designations.

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Report medication errors to ISMP at 1-800-FAIL-SAF(E).

safetywire continued

should not be used in the eye (see photo). It seems neither change has been fully effective in preventing errors. A similar product, **SERACULT** (hydrogen peroxide, ethanol), is packaged with a cardboard ring around the bottle’s neck stating, “Do not use in



Hemocult and Seracult solutions. Notice their similarity to eye drops.

the eyes.” But the ring is easily torn off, and a small warning to avoid contact with eyes and skin is poorly visible. These solutions should never be left in areas where they could be confused with eye drops (e.g., bedside tables, medicine carts, patient bathrooms). To ensure safe storage, you may want to secure the bottles (using string around the neck) to a fixed object where stool specimens are tested.

⚡ Send the order to pharmacy.

A physician wrote an order for a stable diabetic patient stating: “if no insulin required x 48h, d/c SSRI” (meaning sliding scale regular insulin). The patient did not require insulin coverage for 2 days, so a nurse wrote “SSRI to be discontinued (per previous MD order)” on the patient’s chart and sent a communication form to the pharmacy stating “d/c SSRI” instead of the order copy. Without the order, which better illustrated the meaning of “SSRI” (paired with insulin), the pharmacist discontinued the patient’s selective-serotonin reuptake inhibitor (SSRI), **ZOLOFT** (sertraline). The patient missed several doses of Zoloft before the error was noticed.

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www.ismp.org/nursingce

ISMP List of Error-Prone Abbreviations, Symbols, and Dose Designations

The 2004 Joint Commission National Patient Safety Goals call for organizational compliance with a list of prohibited “dangerous” abbreviations, acronyms and symbols. To assist with this effort, we have updated our list of error-prone abbreviations, symbols, and dose designations, many of which have resulted in patient harm after being misinterpreted. As such, these items should be avoided with handwritten, preprinted, and

electronic forms of communication. Since the Joint Commission has specified that certain abbreviations must appear on the organization’s list, we’ve highlighted these items with a double asterisk (**). As of April 1, 2004, each organization must also include at least three additional items on their list. Selections can be made from below, however, we hope you will consider others beyond this minimum requirement.

Abbreviations	Intended Meaning	Misinterpretation	Correction
µg	Microgram	Mistaken as “mg”	Use “mcg”
AD, AS, AU	Right ear, left ear, each ear	Mistaken as OD, OS, OU (right eye, left eye, each eye)	Use “right ear,” “left ear,” or “each ear”
OD, OS, OU	Right eye, left eye, each eye	Mistaken as AD, AS, AU (right ear, left ear, each ear)	Use “right eye,” “left eye,” or “each eye”
BT	Bedtime	Mistaken as “BID” (twice daily)	Use “bedtime”
cc	Cubic centimeters	Mistaken as “u” (units)	Use “ml”
D/C	Discharge or discontinue	Premature discontinuation of medications if D/C (intended to mean “discharge”) has been misinterpreted as “discontinued” when followed by a list of discharge medications	Use “discharge” and “discontinue”
IJ	Injection	Mistaken as “IV” or “intrajugular”	Use “injection”
IN	Intranasal	Mistaken as “IM” or “IV”	Use “intranasal” or “NAS”
HS	Half-strength	Mistaken as bedtime	Use “half-strength” or “bedtime”
hs	At bedtime, hours of sleep	Mistaken as half-strength	
IU**	International unit	Mistaken as IV (intravenous) or 10 (ten)	Use “units”
o.d. or OD	Once daily	Mistaken as “right eye” (OD-oculus dexter), leading to oral liquid medications administered in the eye	Use “daily”
OJ	Orange juice	Mistaken as OD or OS (right or left eye); drugs meant to be diluted in orange juice may be given in the eye	Use “orange juice”
Per os	By mouth, orally	The “os” can be mistaken as “left eye” (OS-oculus sinister)	Use “PO,” “by mouth,” or “orally”
q.d. or QD**	Every day	Mistaken as q.i.d., especially if the period after the “q” or the tail of the “q” is misunderstood as an “i”	Use “daily”
qhs	Nightly at bedtime	Mistaken as “qhr” or every hour	Use “nightly”
qn	Nightly or at bedtime	Mistaken as “qh” (every hour)	Use “nightly” or “at bedtime”
q.o.d. or QOD**	Every other day	Mistaken as “q.d.” (daily) or “q.i.d.” (four times daily) if the “o” is poorly written	Use “every other day”
q1d	Daily	Mistaken as q.i.d. (four times daily)	Use “daily”
q6PM, etc.	Every evening at 6 PM	Mistaken as every 6 hours	Use “6 PM nightly” or “6 PM daily”
SC, SQ, sub q	Subcutaneous	SC mistaken as SL (sublingual); SQ mistaken as “5 every;” the “q” in “sub q” has been mistaken as “every” (e.g., a heparin dose ordered “sub q 2 hours before surgery” misunderstood as every 2 hours before surgery)	Use “subcut” or “subcutaneously”
ss	Sliding scale (insulin) or ½ (apothecary)	Mistaken as “55”	Spell out “sliding scale;” use “one-half” or “½”
SSRI	Sliding scale regular insulin	Mistaken as selective-serotonin reuptake inhibitor	Spell out “sliding scale (insulin)”
SSI	Sliding scale insulin	Mistaken as Strong Solution of Iodine (Lugol's)	
1/d	One daily	Mistaken as “tid”	Use “1 daily”
TIW or tiw	3 times a week	Mistaken as “3 times a day” or “twice in a week”	Use “3 times weekly”
U or u**	Unit	Mistaken as the number 0 or 4, causing a 10-fold overdose or greater (e.g., 4U seen as “40” or 4u seen as “44”); mistaken as “cc” so dose given in volume instead of units (e.g., 4u seen as 4cc)	Use “unit”
Dose Designations and Other Information	Intended Meaning	Misinterpretation	Correction
Trailing zero after decimal point (e.g., 1.0 mg)**	1 mg	Mistaken as 10 mg if the decimal point is not seen	Do not use trailing zeros for doses expressed in whole numbers
No leading zero before a decimal dose (e.g., .5 mg)**	0.5 mg	Mistaken as 5 mg if the decimal point is not seen	Use zero before a decimal point when the dose is less than a whole unit

** Identified abbreviations above are also included on the JCAHO's "minimum list" of dangerous abbreviations, acronyms and symbols that must be included on an organization's "Do Not Use" list, effective January 1, 2004. An updated list of frequently asked questions about this JCAHO requirement can be found on their website at www.jcaho.org.

Dose Designations and Other Information	Intended Meaning	Misinterpretation	Correction
Drug name and dose run together (especially problematic for drug names that end in "L" such as Inderal40 mg; Tegretol300 mg)	Inderal 40 mg Tegretol 300 mg	Mistaken as Inderal 140 mg Mistaken as Tegretol 1300 mg	Place adequate space between the drug name, dose, and unit of measure
Numerical dose and unit of measure run together (e.g., 10mg, 100mL)	10 mg 100 mL	The "m" is sometimes mistaken as a zero or two zeros, risking a 10- to 100-fold overdose	Place adequate space between the dose and unit of measure
Abbreviations such as mg. or mL. with a period following the abbreviation	mg mL	The period is unnecessary and could be mistaken as the number 1 if written poorly	Use mg, mL, etc. without a terminal period
Large doses without properly placed commas (e.g., 100000 units; 1000000 units)	100,000 units 1,000,000 units	100000 has been mistaken as 10,000 or 1,000,000; 1000000 has been mistaken as 100,000	Use commas for dosing units at or above 1,000, or use words such as 100 "thousand" or 1 "million" to improve readability
Drug Name Abbreviations	Intended Meaning	Misinterpretation	Correction
ARA A	vidarabine	Mistaken as cytarabine (ARA C)	Use complete drug name
AZT	zidovudine (Retrovir)	Mistaken as azathioprine or aztreonam	Use complete drug name
CPZ	Compazine (prochlorperazine)	Mistaken as chlorpromazine	Use complete drug name
DPT	Demerol-Phenergan-Thorazine	Mistaken as diphtheria-pertussis-tetanus (vaccine)	Use complete drug name
DTO	Diluted tincture of opium, or deodorized tincture of opium (Paregoric)	Mistaken as tincture of opium	Use complete drug name
HCl	hydrochloric acid or hydrochloride	Mistaken as potassium chloride (The "H" is misinterpreted as "K")	Use complete drug name unless expressed as a salt of a drug
HCT	hydrocortisone	Mistaken as hydrochlorothiazide	Use complete drug name
HCTZ	hydrochlorothiazide	Mistaken as hydrocortisone (seen as HCT250 mg)	Use complete drug name
MgSO4**	magnesium sulfate	Mistaken as morphine sulfate	Use complete drug name
MS, MSO4**	morphine sulfate	Mistaken as magnesium sulfate	Use complete drug name
MTX	methotrexate	Mistaken as mitoxantrone	Use complete drug name
PCA	procaainamide	Mistaken as Patient Controlled Analgesia	Use complete drug name
PTU	propylthiouracil	Mistaken as mercaptopurine	Use complete drug name
T3	Tylenol with codeine No. 3	Mistaken as liothyronine	Use complete drug name
TAC	triamcinolone	Mistaken as tetracaine, Adrenalin, cocaine	Use complete drug name
TNK	TNKase	Mistaken as "TPA"	Use complete drug name
ZnSO4	zinc sulfate	Mistaken as morphine sulfate	Use complete drug name
Stemmed Drug Names	Intended Meaning	Misinterpretation	Correction
"Nitro" drip	nitroglycerin infusion	Mistaken as sodium nitroprusside infusion	Use complete drug name
"Norflex"	norfloxacin	Mistaken as Norflex	Use complete drug name
"IV Vanc"	intravenous vancomycin	Mistaken as Invanz	Use complete drug name
Symbols	Intended Meaning	Misinterpretation	Correction
℥	Dram	Symbol for dram mistaken as "3"	Use the metric system
℥	Minim	Symbol for minim mistaken as "mL"	
x3d	For three days	Mistaken as "3 doses"	Use "for three days"
> and <	Greater than and less than	Mistaken as opposite of intended; mistakenly use incorrect symbol; "< 10" mistaken as "40"	Use "greater than" or "less than"
/ (slash mark)	Separates two doses or indicates "per"	Mistaken as the number 1 (e.g., "25 units/10 units" misread as "25 units and 10" units)	Use "per" rather than a slash mark to separate doses
@	At	Mistaken as "2"	Use "at"
&	And	Mistaken as "2"	Use "and"
+	Plus or and	Mistaken as "4"	Use "and"
o	Hour	Mistaken as a zero (e.g., q2° seen as q 20)	Use "hr," "h," or "hour"

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