

Community/Ambulatory Care

ISMP Medication Safety Alert!®

Educating the Healthcare Community About Safe Medication Practices

Tall Man Letters: ISMP updates its list of drug names with tall man letters

One in every 1,000 medication orders in a hospital, and one in every 1,000 prescriptions in a pharmacy, have been associated with selecting the wrong drug while prescribing, transcribing, dispensing, or administering medications.¹⁻⁴ One of the key causes of these errors is drug name similarity.⁵ Factors that increase visual similarity among drug names include similar length of the names and the number of groups of similar characters or the same characters within the names. Other risk factors that increase the risk of confusion between similar drug names include similarities in strength, dosing, route of administration, dosage forms, indication, the environment in which the drugs are used, the frequency of use, and product labeling.⁶

In response, a number of design techniques have been explored for the purpose of differentiating look-alike drug names. Tall man lettering is one such technique. Tall man lettering, a term coined by the Institute for Safe Medication Practices (ISMP), describes a method for differentiating the unique letter characters of similar drug names known to have been confused with one another. Starting with a drug name printed in lowercase letters, tall man lettering highlights the differences between similar drug names by capitalizing dissimilar letters. Accentuating a unique portion of a drug name with uppercase letters along with other means, such as color, bolding, or contrast, can draw attention to the dissimilarities between look-alike drug names as well as alert healthcare providers that the drug name can be confused with another drug name. See **Tall Man Letters: A review of the evidence** at www.ismp.org/newsletters/ambulatory/review-of-evidence.aspx for a discussion of published studies on the effectiveness of tall man letters.

ISMP list. Since 2008, ISMP has maintained a list of drug names with recommended **bolded**, tall man letters. The list includes mostly generic-generic drug name pairs, although a few brand-brand or brand-generic name pairs are included.

Periodically, ISMP updates its list of drug name pairs with recommended bolded, tall man letters. The update includes analyses of reported incidents from our error databases, a survey of practitioners on the topic, and an internal assessment of drug name pairs that would benefit from the application of bolded, tall man lettering. The internal assessment includes an exploration of orthographic similarity; patterns of similarities in dosage, form, and use; and the potential for (or actual) patient harm if the drugs are confused.

ISMP survey. ISMP conducted a survey on drug name pairs with tall man letters between February and April 2016 and received 235 responses. The primary reason for conducting this survey was to utilize the findings to update ISMP's current list of look-alike drug name pairs with tall man letters. We believe healthcare practitioners

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SAFETY briefs



Methotrexate-metOLazone mix-ups. A

Washington Post article in April 2016 (www.ismp.org/sc?id=1727) detailed a lawsuit that resulted in a \$125,000 award (initially \$2 million before a judge lowered it) after a patient died from a methotrexate overdose. The drug was dispensed instead of metOLazone, which was the prescribed drug. The error began upon discharge when a hospital nurse called in 8 discharge medications to a pharmacy. Unfortunately, one of the oral prescriptions was transcribed incorrectly at the pharmacy as methotrexate 2.5 mg daily instead of metOLazone 2.5 mg. During the trial, there was plaintiff testimony that methotrexate is a high-alert medication for which specific precautions should be taken, including segregation of the drug away from the other stock in the pharmacy, mandatory patient counseling, and use of a hard stop in dispensing software to prevent “one tablet daily” instructions on the label.

About the same time the *Washington Post* article was published, we received a similar error involving methotrexate 2.5 mg dispensed by a pharmacist for an ambulatory care patient instead of the prescribed metOLazone 2.5 mg. The prescription was sent electronically to the pharmacy but didn't automatically transfer into the pharmacy computer, so it needed to be transcribed. At that point, methotrexate was selected incorrectly, and then later, a second pharmacist missed the error when she checked the drug by reading the pharmacy label and the product label, but not the image of the original prescription. The patient took methotrexate daily for 1 week until she

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should be involved in the process of identifying confusable drug name pairs relevant to their respective practice settings, and reviewing proposed tall man lettering for possible implementation. The capitalized letters should make the drug names distinguishable from the user’s perspective.⁶

In the survey, we listed 16 potential new drug name pairs or trios, or single drug names that may be confused with another drug name pair already on the list. Of these, at least half or more of the respondents felt that 13 of these should be added to the ISMP list of drug names with tall man letters (see **Table 1**). For these 13 name pairs or trios, we evaluated the potential for overlap among indications for use, frequency of use, form of the drug, and available strengths, along with the potential for harm if a mix-up occurred. Based on this assessment, all 13 drug name pairs or trios were added to the ISMP list. The 3 name pairs in our survey that were not added to the list include: dexame**THASONE** and dexmede**TOM**idine; zo**IPIDEM** (and **ZOLM**itriptan already on the list with **SUMA**riptan); and oxy**BUTY**nin (and oxy**CODONE** already on the list with **HYDRO**codone and Oxy**CONTIN**).

Table 1. Awareness of Confusion and Agreement (%) with Proposed Drug Names Added to the ISMP List

Drug Name Pair/Groups	Aware of Confusion?		Add to ISMP List?			Agree with Proposed Tall Man Letters?		
	Yes	No	Yes	No	Don't Know	Disagree	Neutral	Agree
meth IMA zole and met OL azone and methazol AMIDE	27	73	50	27	23	10	32	58
di AZE pam (now changed to diaze PAM) and diltia ZEM	46	54	55	32	13	22	24	54
rif AMP in and rif AXIM in	73	27	88	6	6	6	9	85
oxy MOR phine (HYDRO morphone, oxy CODONE , and Oxy CONTIN , already on list)	71	29	81	12	7	7	16	77
penicill AMINE and penicillin	51	49	69	15	16	8	19	73
LEVO leucovorin and leucovorin	38	62	76	13	11	5	21	74
clo BAZ am (and clonaze PAM , already on list with clo NID ine, clo ZAP ine, and LOR azepam)	28	72	52	28	20	12	32	56
levo FLOX acin (and lev ETIRA -cetam, already on the list with lev OCARN itine)	58	42	71	20	9	8	16	76
DEPO -Medrol and SOLU -Medrol*	70	30	74	15	11	8	13	79
SAX agliptin and SIT agliptin†	49	51	81	10	9	2	14	84
eri BUL in and epi RUB icin	20	80	53	21	26	8	34	58
PONAT inib and PAZOP anib	17	83	54	19	27	4	30	66
idaru CIZU mab (and IDA -rubicin, already on the list with DOXO rubicin)	24	76	55	16	29	8	30	62

*Solu-**MEDROL** is already on the list with Solu-**CORTEF**; changing to **SOLU**-Medrol

†sita**GLIP**tin is already on the list with **SUMA**riptan; changing to **SIT**agliptin

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developed mouth ulcers. She was treated by her physician and is now doing well. We also received reports of mix-ups between met**OL**azone and methadone, both of which can have overlapping tablet strengths and doses, and a report in which met**OL**azone 4 x 2.5 mg tablets to be taken weekly was dispensed instead of the prescribed 4 x 2.5 mg tablets of methotrexate.

In addition to the testimony above, ambulatory care pharmacy staff should never check medicine labels alone against the product container as a final check, without verification of the original prescription or transcription of an oral prescription. Patient counseling offers another opportunity to detect an error. A patient counseling checklist for methotrexate to aid in educating patients is available on our consumer website in English and Spanish (www.ismp.org/sc?id=1709).



Could vigabatrin be confused with dabigatran?

We haven’t received any reports of mix-ups yet, but we did receive a report expressing concern with the potential for mix-ups between the anticonvulsant drug vigabatrin (**SABRIL**) and the anticoagulant dabigatran (**PRADAXA**). It is not hard to envision someone believing they heard dabigatran when vigabatrin was mentioned, for example during a telephone order. The potential risk to patients could be significant. Fortunately, vigabatrin is available only in a 500 mg tablet and 500 mg packets of powder for oral solution. That should help in differentiating it from dabigatran, which is available in 75 mg, 110 mg, and 150 mg capsule strengths.



A liquid dose cup you can read.

Comar has begun distribution of mL-only liquid dose cups with an easy-to-read, printed scale. These are being distributed by Medi-Dose (www.ismp.org/sc?id=1749) and are available in three capacities: 20,

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Many respondents shared their thoughts regarding other drug name pairs that were not included in the survey. We reviewed each suggestion carefully while considering all risk factors and the need to keep the list short enough to avoid diluting the effectiveness of tall man letters. Overuse of tall man letters may reduce effectiveness, as names no longer appear novel.⁶ More than 60 name pairs with tall man letters were suggested (many brand names, which we hesitate to include without FDA approval). There were 5 pairs that were closely associated with high risk of harm and, thus, were added to the list:

- **HYDROXY**progesterone (and medroxy**PROGESTER**one already on the FDA list)
- mi**FEPRIS**tone and mi**SOPROS**tol
- metyro**SINE** and metyra**PONE**
- hydro**CHLORO**thiazide (and hydro**OXY**zine/hydr**ALAZINE** already on the FDA list)
- ra**NITID**ine and ri**MANTAD**ine

Table 2 provides the list of the new additions or changes in the tall man lettering scheme. The complete *FDA and ISMP Lists of Look-Alike Drug Names with Recommended Tall Man Letters* on our website (www.ismp.org/sc?id=1746) has been updated to reflect these changes.

Standardization of tall man letters. To promote standardization regarding which letters to present in uppercase, ISMP follows a tested methodology whenever possible called the CD3 rule.⁷ The rule suggests working from the left of the drug name first by capitalizing all the characters to the right once two or more dissimilar letters are encountered. Then, working from the right of the word back, returning two or more letters common to both words to lowercase letters. When the rule cannot be applied because there are no common letters on the right side of the

Table 2. New or Changed Drug Names with Tall Man Letters

clo BAZ am (to differentiate from clo NAZ epam, clo NID ine, clo ZAP ine)
diaze PAM - diltia ZEM
eri BUL in - epi RUB icin
hydro CHLORO thiazide (to differentiate from hydroxyzine, hydr ALAZINE)
HYDROXY progesterone (to differentiate from medroxy PROGESTER one)
idaru CIZU mab (to differentiate from IDA rubicin, DOXO rubicin)
LEVO leucovorin - leucovorin
levo FLOX acin (to differentiate from lev OCARN itine, lev ETIRA cetam)
meth IMA zole - met OL azone - methazo AMIDE
metyro SINE - metyra PONE
mi FEPRIS tone - mi SOPROS tol
oxy MOR phone (to differentiate from oxy CODONE , Oxy CONTIN , HYDRO morphone)
penicill AMINE (to differentiate from penicillin)
PONAT inib - PAZOP anib
ra NITID ine - ri MANTAD ine
rif AMP in - rif AXIM in
SOLU -Medrol - DEPO -Medrol (to differentiate from Solu- CORTEF)
SAX agliptin - SIT agliptin (to differentiate from SUMA triptan)

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30, and 60 mL. Previous dosage cups we have seen have had embossed scales that were difficult to read or displayed

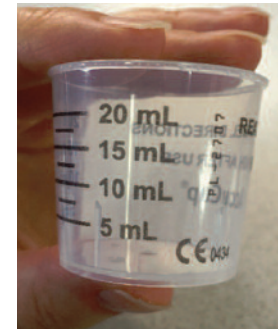


Figure 1. A mL-only dosage cup with printed scale.

both mL and tea-spoonful amounts. We have a l w a y s called for the elimination of tea-spoons, ta-blespoons, and drams

on devices used for measuring liquid doses of medication. We are glad to see manufacturers are finally providing mL-only devices.



Health Alert! Loperamide and serious cardiac problems.

Earlier this month the US Food and Drug Administration (FDA) issued a warning that taking higher than recommended doses of the common over-the-counter (OTC) and prescription diarrhea medicine loperamide (**IMODIUM**) can cause serious cardiac problems, including QT interval prolongation, torsades de pointes or other ventricular arrhythmias, syncope, and cardiac arrest. FDA found that the risk of these serious cardiac problems may be increased when high doses of loperamide are taken with several other medications (e.g., ra**NITID**ine, clarithromycin, ketoconazole, ritonavir).

The majority of reported serious events occurred in individuals who were intentionally misusing and abusing high doses of loperamide in attempts to self-treat opioid withdrawal symptoms or to achieve a feeling of euphoria. In cases of abuse, individuals often use other drugs together with loperamide in attempts to increase its absorption and penetration across the blood-brain barrier, inhibit loperamide metabolism, and enhance its euphoric effects. If lop-

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name, the methodology suggests capitalizing the central part of the name only. When this rule fails to lead to the best tall man lettering option (e.g., makes names appear too similar or hard to read based on pronunciation), an alternative option is considered. ISMP suggests that the tall man lettering scheme provided by FDA and ISMP be followed to promote consistency.

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in the NEWS



Opioid sharing, storage, and disposal. Results of a national survey among adults to examine practices surrounding the sharing of opioid medications, medication storage and disposal practices, and the sources of information received were published earlier this month in *JAMA Internal Medicine* (Kennedy-Hendricks A, Gielen A, McDonald E, et al. Medication sharing, storage, and disposal practices for opioid medications among US adults. *JAMA Intern Med.* 2016. doi:10.1001/jamainternmed.2016.2543.). The study found that a total of 20.7% (a weighted percentage) of all respondents (N = 1,032) reported having shared opioid medications with another person, primarily to help the other person manage pain. Among those respondents who currently had leftover opioids, 61.3% reported keeping them for future use. Of particular concern was the fact that nearly half of the adults with recent opioid medication use did not recall receiving information on safe storage (48.7%) or proper disposal (45.3%).

To lower the risk of misuse, the authors suggest reducing the prescribing of large quantities of opioids. The results of the study also clearly signal that prescribers and pharmacists must do a better job of communicating the risks involved with opioid therapy as well as ways to safeguard use, storage, and disposal of opioids. Patient education for opioids should be mandatory and scripted to promote consistent discussions. ISMP has FREE high-alert medication consumer leaflets, in both English and Spanish, for selected opioids (www.ismp.org/sc?id=1709) that can be provided during patient education sessions.

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eramide toxicity is suspected, promptly discontinue the drug and start necessary therapy. For more information, see the full FDA Drug Safety Communication at: www.fda.gov/Drugs/DrugSafety/ucm504617.htm.



Misread handwritten order. We recently received a report from a long-term care (LTC) facility about an order for clonazepam 1 mg PO TID that was misinterpreted as LORazepam 1 mg PO TID (Figure 1) by the pharmacy. Fortunately, a nurse caught the error before the resident received the wrong drug. While nurses may be familiar with residents and know which benzodiazepine the physician has prescribed, the pharmacist filling the prescription may not. Transitioning to a fully utilized electronic health record (EHR) with electronic prescribing can help eliminate the risk of misinterpreting handwritten orders.

Figure 1. Handwritten order for clonazepam misread as LORazepam.

Special Announcement

ISMP Medication Safety INTENSIVE

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If you would like to subscribe to this newsletter, visit: www.ismp.org/sc?id=386



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