January 30, 2020 ▪ Volume 25 Issue 2

Acute Care
ISMP Medication Safety Alert!®
Educating the Healthcare Community About Safe Medication Practices

Medical abbreviations that have contradictory or ambiguous meanings

ISMP would like to thank Neil M. Davis, PharmD, MS, FASHP, for authoring this article. The author can be reached at: neil@medabbrev.com for any comments or questions.

Introduction

Abbreviations are a convenience, a time saver, and a way of fitting a word or phrase into a restricted space or avoiding the possibility of misspelling words. However, a high price can be paid for their use. Abbreviations are sometimes not understood, misread, or interpreted incorrectly. Their use lengthens the time needed to train healthcare professionals; wastes time tracking down their meaning; sometimes delays the patient's care; and occasionally results in patient harm.

I published my first book of medical abbreviations, *Medical Abbreviations: 1,700 Conveniences at the Expense of Communication and Safety,* in 1983. To expand the list of abbreviations, I contacted hospitals and requested lists of abbreviations that were used at their facility, searched the literature, and solicited readers to send me abbreviations. Since then, I have published 16 editions of the book, which now contains 55,000 abbreviations.[1] A web version of the book is updated with more than 30 new entries per week.[2]

One of the problems I noticed was that one abbreviation could have two or more contradictory or ambiguous meanings, which can create dangerous communications. I collected these meanings, and a partial list of medical abbreviations with contradictory or ambiguous meanings is shown in **Table 1** (pages 3-5). It is obvious from an examination of this list that these abbreviations should not be used, as they fail to communicate with any certainty their intended meaning and present possible dangers to the health of patients.

The Joint Commission directs medical facilities to publish a Do Not Use List[3] of abbreviations that must not be used (see ISMP's list at: www.ismp.org/node/8). This list is a very important step in the right direction but does not solve the systemic problem of an abbreviation with contradictory or ambiguous meanings.[3] The Joint Commission standards also state, if multiple abbreviations exist for the same term, the organization must identify which one will be used to eliminate ambiguity.[4] This step is extremely difficult to achieve.

Two Possible Solutions That May Not Be Feasible

① **Create a national list of standard abbreviations.** A simplistic approach to this problem is to create a national list of approved abbreviations, with each abbreviation having only one meaning. The problem with this approach is that all medical specialties, allied health professionals, health-related organizations, and government agencies would have to agree on one meaning for each abbreviation.

A recognized health-related organization, such as USP, the American Medical Association, the Council of Science Editors, ISMP, or ECRI Institute, would have to be funded to take responsibility for creating and maintaining such a list. The organization would have to reach out to all the health-related organizations to suggest abbreviations that should be on this list. Then, arbitration would be required between organizations if there is conflict with a suggested abbreviation that has more than one submitted meaning, such as PT

continued on page 2 — Abbreviations >

SAFETY briefs

HIGH-ALERT **Waste and error risk tied to Stivarga packaging.** The oral kinase inhibitor **STIVARGA** (regorafenib) is approved for treatment of metastatic colorectal cancer, metastatic gastrointestinal stromal tumor, and hepatocellular carcinoma. The drug, which is available through specialty pharmacies, is formulated as 40 mg tablets and supplied in a carton containing three 28-count bottles, totaling 84 tablets (**Figure 1**). Current labeling states, "Store tablets in the original bottle," and "Discard any unused tablets 7 weeks after opening the bottle." The recommended dose is 160 mg daily (4 x 40 mg tablets) for the first 21 days of each 28-day cycle, which totals 84 tablets per cycle. Treatment is continued until disease progression or unacceptable toxicity.

Product labeling mentions various drug-related toxicities that require reduced

continued on page 2 — SAFETY briefs >

Figure 1. Stivarga carton holds three 28-tablet bottles.

Become an ISMP Fellow

ISMP fellowships can help you grow in your career and make major contributions to medication safety worldwide. ISMP is now accepting applications for three unique programs that begin this summer/fall—the **ISMP Safe Medication Management Fellowship**, the **ISMP International Medication Safety Management Fellowship**, and the **FDA** (US Food and Drug Administration)**/ISMP Safe Medication Management Fellowship**. The deadline for applications is **March 31, 2020**. For information, program descriptions, and application, visit: www.ismp.org/node/871.

Provided to members courtesy of vizient

> Abbreviations — continued from page 1

for physical therapy, prothrombin time, preterm, parathyroid, patellar tendon, patient, and others. Such an endeavor would take hundreds of thousands of hours. Furthermore, after an approved list is created, it must be maintained. Any new abbreviations would require review and approval by all interested parties. Also, there could be a troublesome lapse of time before a new proposed medical abbreviation is commonly known and used—MRI for magnetic resonance imaging is an example of such a situation.

② **Not allowing abbreviations.** Not allowing the use of any abbreviations would be an exceedingly difficult edict to introduce and enforce. Practitioners have used abbreviations in their daily routine, and it would be difficult to break this habit. In fact, some abbreviations that are frequently used have become word-like, making it especially challenging to require use of the full words instead. Examples are listed in **Table 2** (page 5).

Since it is highly unlikely that abbreviations will ever be eliminated, and naïve to assume that they can be systematically approached in any realistic timeframe, the healthcare professions must work together to ensure that abbreviations are used appropriately.

What Healthcare Practitioners, Agencies, Authors, and Editors Can Do

Before practitioners, researchers, and authors introduce a new abbreviation, they must question whether it is necessary to do so. Do not create an abbreviation that is already in use for some other meaning or has a contradictory or ambiguous meaning. To accomplish this, use comprehensive and up-to-date resources such as the US National Library of Medicine's PubMed, web search engines, medical abbreviations books, and websites.

There are several character similarities and risky abbreviation construction practices that are apparent in **Table 1** (pages 3-5), which should serve as a signal that many medical abbreviations can be easily misinterpreted and may be dangerous. These characteristics should lead to the following guiding principles when it comes to medical abbreviations:

- Avoid abbreviating drug names entirely
- Employ great care when abbreviating health syndromes, diseases, and conditions
- Be particularly sensitive to the problems caused by the following abbreviations:
  - ☐ B for breast, brain, or bladder
  - ☐ C for cerebral, coronary, or carotid
  - ☐ H for hand or hip
  - ☐ I for impaired or improvement
  - ☐ L for liver or lung
  - ☐ N for no or normal
  - ☐ P for pancreas, prostate, preeclampsia, or psychosis
  - ☐ S for special or standard

Authors and medical editors must follow these principles when reviewing and editing proposed manuscripts to make sure they do not introduce contradictory, ambiguous, or dangerous abbreviations into the health-related vocabulary. No abbreviation should be used in titles and abstracts unless it is defined, as the body of the text will not appear in an abstracting service. Any abbreviations used in the body of the text must be defined.

The person who uses an abbreviation must take responsibility for making sure that it is properly interpreted. When an uncommon or ambiguous abbreviation is used and it may not be understood correctly, it should be defined by the writer/sender (even on professional discussion boards). Where uncertainty exists, clarification with the one who used the abbreviation is required. There is hope that IBM Watson-like products, artificial intelligence, and future technologies can be used to devise additional workable solutions.

References

1) Davis NM. *Medical Abbreviations: 55,000 Conveniences at the Expense of Communication and Safety.* 16th ed. Warminster, PA: Neil M. Davis Associates; 2020.
2) MedAbbrev.com. Website by Neil M. Davis; 2020. https://medabbrev.com/
3) The Joint Commission. Medication errors related to potentially dangerous abbreviations. *Sentinel Event Alert.* 2001;Sep(23):1-4.
4) The Joint Commission. Information management standard IM.02.02.01, EP 2, 3. 2020 Comprehensive Accreditation Manual for Hospitals (CAMH). Oakbrook Terrace, IL: The Joint Commission; 2019.

Tables begin on page 3 — Abbreviations >

> SAFETY briefs cont'd from page 1

dosing—either 120 mg daily (63 tablets per 28-day cycle) or 80 mg daily (42 tablets per 28-day cycle), depending on the toxicity. During clinical trials, 38-50% of patients had their dose reduced. The number of tablets needed for the lower doses are not divisible by 28 tablets—the number of tablets in each bottle. Since tablets expire 7 weeks after opening the bottle and must be stored in the original bottle, some specialty pharmacies will not open or split bottles, often dispensing the full 84 tablets, which can lead to leftover tablets, waste, and improper billing to insurance companies.

Medication errors are also possible. In one case, a patient taking a reduced dose of 120 mg daily was given a prescription for 63 tablets per month (with 2 refills), with directions to take the medication for 21 days and then to stop for 7 days. However, due to the manufacturer's recommendation to dispense the tablets in the original container, a carton of 3 bottles (28 tablets each, 84 tablets total) were dispensed. The patient was counseled to take the medication for 3 weeks, to stop for 1 week, and to save the remaining medication for the next cycle. When the patient returned for a refill, only 56 tablets (two bottles) were dispensed. The patient said this would not be enough tablets for the month. When the pharmacist asked what happened to the remaining tablets from the previous treatment cycle, he discovered that the patient took the medication for 4 weeks and finished all 84 tablets. Although extra doses might cause toxicity, none was reported.

ISMP has contacted the manufacturer, Bayer, about the packaging issue and the risk for waste and errors. Suggestions for alternative packaging, such as bottles of 21 tablets, were made. This would match any dose reduction/combination that is recommended in the literature and the labeling. To prevent patients on reduced doses from taking extra tablets, pharmacists dispensing the carton of 84 tablets should tell patients they are receiving more tablets than needed per cycle. Consider providing patients with a dosing calendar for the 4-week cycle that blocks off the final 7 days. Patient education material is available from Bayer at: www.ismp.org/ext/337. Also, counsel patients on proper storage and handling of the drug.

continued on page 3 — SAFETY briefs >

> Abbreviations — continued from page 2

Table 1. Medical Abbreviations That Have Contradictory or Ambiguous Meanings[1,2]

Abbreviation	Contradictory or Ambiguous Meanings
Drug Name and Drug Regimen Abbreviations	
AMI	amifostine, amitriptyline, or acute myocardial infarction
ATR	atropine or atracurium
AZT	azidothymidine (zidovudine) or aza**THIO**prine
CPM	cyclophosphamide or chlorpheniramine maleate
CPZ	chlorpro**MAZINE** or **COMPAZINE*** (prochlorperazine)
DNR	**DAUNO**rubicin, did not respond, do not report, or do not resuscitate
DW	dextrose in water, distilled water, or deionized water
DXM	dexamethasone, dexmedetomidine, or dextromethorphan
FEC	fluorouracil, epi**RUB**icin, and cyclophosphamide; or fluorouracil, etoposide, and **CIS**platin
GEM	gemfibrozil or gemcitabine
KET	ketamine or ketoconazole
MP	melphalan and predni**SONE**; or mito**XANTRONE** and predni**SONE**
MTZ	mirtazapine, mito**XANTRONE**, or met**OL**azone
NITRO	nitroglycerin or sodium nitroprusside
PBZ	phenylbutazone, **PYRIBENZAMINE**,* or phenoxybenzamine
PIT	**PITOCIN** (oxytocin) or **PITRESSIN*** (vasopressin)
TAC	tetracaine, **ADRENALIN** (**EPINEPH**rine), and cocaine solution; or triamcinolone cream
TMZ	temazepam or temozolomide
VAC	**VEPESID***(etoposide), **ARA-C*** (cytarabine), and **CARBO**platin; vin**CRIS**tine, actinomycin D (**DACTIN**omycin), and cyclophosphamide; or vin**CRIS**tine, **ADRIAMYCIN** (**DOXO**rubicin), and cyclophosphamide
VAD	vin**CRIS**tine, Adriamycin (**DOXO**rubicin), and dexamethasone; or vin**CRIS**tine, Adriamycin (**DOXO**rubicin), and **DACTIN**omycin
VAP	vin**CRIS**tine, Adriamycin (**DOXO**rubicin), and predni**SONE**; vin**CRIS**tine, Adriamycin (**DOXO**rubicin), and procarbazine; vin**CRIS**tine, actinomycin D (**DACTIN**omycin), and **PLATINOL-AQ*** (**CIS**platin); or vin**CRIS**tine, asparaginase, and predni**SONE**
Anatomy-Related Abbreviations	
APC	advanced pancreatic cancer or advanced prostate cancer
BCa	bladder cancer or breast cancer
BO	bowel open or bowel obstruction
CAS	carotid artery stenosis, cerebral arteriosclerosis, or coronary artery stenosis
CLD	chronic liver disease or chronic lung disease
ESLD	end-stage liver disease or end-stage lung disease
HOA	hand osteoarthritis or hip osteoarthritis
HO	hand orthosis or hip orthosis
IAI	intra-abdominal infection or intra-abdominal injury
IBC	invasive bladder cancer, invasive breast cancer, or inflammatory breast cancer
ICA	internal carotid artery, intracranial abscess, or intracranial aneurysm
LAPC	locally advanced pancreatic cancer or locally advanced prostate cancer
LF	left foot, little finger, or long finger
LKT	laparoscopic kidney transplantation or liver-kidney transplantation
LL	left leg, left lung, lower lid, lower limb, lower lip

* Brand product no longer available in the US.

Table continued on page 4 — Abbreviations >

> SAFETY briefs cont'd from page 2

Caution: Look-alike, sound-alike drug name pairs. We recently received reports of mix-ups between two different look-alike, sound-alike drug name pairs. In the first case, a physician prescribed **REMERON** (mirtazapine) instead of the intended **ROZEREM** (ramelteon) due to the look- and sound-alike names. Fortunately, the error was caught before dispensing the wrong drug. Rozerem, which is indicated for the treatment of insomnia characterized by difficulty with sleep onset, looks and sounds like Remeron, which is indicated for the treatment of major depressive disorder. Both are available as tablets in different strengths (Rozerem as 8 mg tablets and Remeron as 15 mg, 30 mg, and 45 mg tablets) and are orally administered. Despite the difference in indications, there is a risk of confusing these medications due to name, dosage form, and route of administration similarities.

Sound-alike confusion was also reported when a pharmacist received an orally transmitted order for **STEGLATRO** (ertugliflozin) but heard it as **SPRAVATO** (esketamine). Spravato has received a great deal of attention in recent months because of its employment in treating refractory depression. The error was quickly recognized because the administration instructions for Spravato do not match the instructions given with Steglatro. These medications have similar-sounding brand names, but the similarity stops there. Steglatro is a sodium glucose co-transporter 2 (SGLT2) inhibitor indicated as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus. As noted above, Spravato is used for treatment-resistant depression (TRD) in adults. Additionally, Spravato is only available through a Risk Evaluation and Mitigation Strategy (REMS) program and is supplied as a nasal spray device that is administered under the direct supervision of a healthcare provider. Steglatro is supplied in a tablet dosage form for oral administration daily. While it is unlikely that confusion as described above would lead to an actual error, it is not inconceivable the other way around (i.e., Spravato heard as Steglatro).

If these drugs are available at your location, be aware of these sound-alike name pairs and make note of them in electronic systems.

© 2020 ISMP. Reproduction of the newsletter or its content for use **outside** your facility, including republication of articles/excerpts or posting on a public-access website, is prohibited without written permission from ISMP.

> **Abbreviations** — continued from page 3

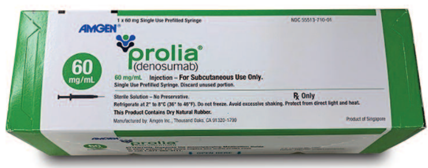
Table 1. Medical Abbreviations That Have Contradictory or Ambiguous Meanings[1,2] (continued)

Abbreviation	Contradictory or Ambiguous Meanings
LNE	lymph node enlargement or lymph node excision
LT	liver transplant or lung transplant
Ltx	liver transplant or lung transplant
LVO	left ventricular opacification, left ventricular output, or left ventricular overactivity
MBC	male breast cancer or metastatic breast cancer
MPM	malignant peritoneal mesothelioma or malignant pleural mesothelioma
NBM	no bowel movement, normal bowel movement, or nothing by mouth
OLB	open-liver biopsy or open-lung biopsy
OPC	operable pancreatic carcinoma, oropharyngeal cancer, or oropharyngeal candidiasis
PAA	popliteal artery aneurysm or pulmonary artery aneurysm
PBL	primary breast lymphoma or primary brain lymphoma
SCCP	squamous cell carcinoma of the penis or small cell carcinoma of the prostate
TSCC	thymic squamous cell carcinoma, tongue squamous cell carcinoma, or tonsillar squamous cell carcinoma
WBRT	whole-brain radiotherapy or whole-breast radiotherapy
Abbreviations for Syndromes	
RS	Raynaud's syndrome, Reiter's syndrome, Rett syndrome, Reye's syndrome, or Richter's syndrome
SJS	Schwartz-Jampel syndrome, Stevens-Johnson syndrome, or Swyer-James syndrome
TS	Tay-Sachs (disease), Tourette syndrome, or Turner syndrome
WS	Waardenburg syndrome, Werner syndrome, West syndrome, or Williams syndrome
Abbreviations for Patient Care Units	
ACU	ambulatory care unit or acute receiving unit
IPCU	inpatient palliative care unit, intensive pediatric care unit, or intensive psychiatric care unit
PCU	palliative care unit, primary care unit, progressive care unit, or protective care unit
TICU	thoracic intensive care unit, transplant intensive care unit, or trauma intensive care unit
Abbreviations for Diseases, Symptoms, and Conditions	
ADVT	acute deep venous thrombosis or asymptomatic deep venous thrombosis
ED	eating disorder, elbow disarticulation, emotional disorder, or erectile dysfunction
EIH	environmentally induced hyperthermia, exercise-induced hypertension, exercise-induced hyperthermia, or exercise-induced hypoxemia
EOP	early-onset Parkinsonism, early-onset pneumonia, early-onset preeclampsia, or early-onset psychosis
GD	Graves' disease or Gaucher disease
HCC	hepatocellular carcinoma or Hürthle cell carcinoma
HD	Hansen's disease, Hodgkin's disease, or Huntington's disease
IAD	incontinence-associated dermatitis or intractable atopic dermatitis
IRDM	insulin-requiring diabetes mellitus or insulin resistant diabetes mellitus
IRF	impaired renal function or improvement in renal function
MS	mitral stenosis or multiple sclerosis
PD	Paget's disease, panic disorder, Parkinson's disease, personality disorder, or Peyronie's disease
PHTN	portal hypertension, prehypertension, or pulmonary hypertension

Table continued on page 5 — **Abbreviations** >

Your ***Reports*** at ***Work***

Thanks to your reporting, Coherus BioSciences submitted a revised carton label to the US Food and Drug Administration (FDA) for its product, **UDENYCA** (pegfilgrastim-cbqv), a biosimilar leukocyte growth factor associated with the reference pegfilgrastim product, **NEULASTA**. The revision was recently approved. ISMP had received several reports last year about the potential for confusion with **PROLIA** (denosumab; Amgen), an osteoporosis drug. Two actual errors were reported in which patients received the wrong drug. **Figure 1** shows the carton label similarities between Udenyca and Prolia while **Figure 2** shows the revised carton label. While the company works to implement the new packaging, cartons of Udenyca will be shipped with a bright orange-red warning sticker affixed to the carton (**Figure 3**).



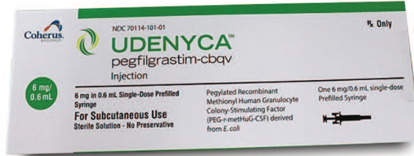


Figure 1. Former green carton label for Udenyca (bottom) led to confusion with Prolia cartons (top).

Figure 2. Recently approved color change for Udenyca contrasts with Prolia carton label above.

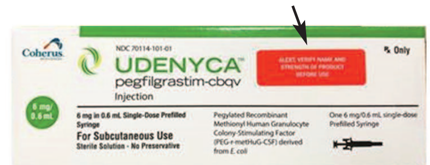


Figure 3. An orange-red sticker will be affixed to the original Udenyca carton until the new packaging is available. The sticker reminds practitioners to verify the product name and strength before use.

> Abbreviations — continued from page 4

Table 1. Medical Abbreviations That Have Contradictory or Ambiguous Meanings[1,2] (continued)

Abbreviation	Contradictory or Ambiguous Meanings
PVO	peripheral vascular occlusion, portal vein occlusion, or pulmonary venous occlusion
RM	radical mastectomy or reduction mammoplasty
RTI	reproductive tract infection or respiratory tract infection
SAD	social anxiety disorder or seasonal affective disorder
Miscellaneous Abbreviations	
ABP	ambulatory blood pressure or arterial blood pressure
AQoL	acne quality of life, assessment of quality of life, or asthma-related quality of life
BR	bright red or brown
ERT	enzyme replacement therapy or estrogen replacement therapy
I & D	incision and drainage or irrigation and debridement
IT	intrathecal, intratracheal, intratumoral, or intratympanic
LAM	laminectomy, laparoscopic-assisted myomectomy, or laser-assisted myringotomy
LFD	lactose-free diet, low-fat diet, or low-fiber diet
Mon	Monday or month
MV	mechanical ventilation, manual ventilation, or mitral valve
NABS	no active bowel sounds or normoactive bowel sounds
NAF	Native-American female or normal adult female
NE	no effect, no enlargement, or not evaluated
PORT	postoperative radiotherapy, postoperative respiratory therapy, perioperative respiratory therapy, or prostate-only radiotherapy
S & S	swish and spit or swish and swallow
SA	suicide alert or suicide attempt
SDBP	seated diastolic blood pressure, standing diastolic blood pressure, or supine diastolic blood pressure
SGAs	second-generation antihistamines or second-generation antipsychotics
SSE	saline solution enema or soapsuds enema
STF	special tube feeding or standard tube feeding
TBA	to be absorbed, to be added, to be administered, to be admitted, to be announced, to be arranged, or to be assessed
T/E	testosterone to epitestosterone (ratio), testosterone to estrogen (ratio), or trunk-to-extremity skinfold thickness (index)
Tx	therapist, therapy, traction, transcription, transfer, transfuse, transplant, transplantation, or treatment

©MedAbbrev.com.[2] Table may be reproduced/republished with permission only.

Table 2. Examples of Common Abbreviations That Have Become Word-Like

Word-Like Abbreviations					
lab	rehab	exam	info	demo	pro
auto	plane	email	JAMA	NEJM	DNA
AIDS	HIV	MRI	CT	DNR	ASAP
MD	RN	ICU	WBC	RBC	H2O
mg	mL	kg	lb	NSAIDs	911
Na	K	°C	°F	AM	PM
days of the week		months of the year		USA	UK

©MedAbbrev.com.[2] Table may be reproduced/republished with permission only.

Special Announcements

Get intensive about medication safety

The **Medication Safety Intensive (MSI)** Workshops sold out quickly last year! Act now to avoid being placed on the waiting list in 2020. You won't want to miss this unique opportunity to maximize your error prevention efforts and learn to look at your organization through the eyes of leading safety experts and regulatory/accrediting agencies. For information and to register, visit: www.ismp.org/node/127.

2020 MSI Dates

- **March 5-6**—Tampa, FL
- **April 30-May 1**—Scottsdale, AZ
- **December 4-5**—New Orleans, LA

Don't miss the next Practitioner in Residence (PIR) mentorship session

Spend a week, **March 30** to **April 3**, being mentored by national medication safety experts as a **Practitioner in Residence** at ISMP's office in suburban Philadelphia, PA. Participants will learn to use ISMP's unique model for identifying and controlling areas of risk exposure, which can also help meet regulatory and accreditation requirements. Participants will also leave with comprehensive resources to support ongoing safety efforts at their organization. Spaces for the next session are going fast, so sign up soon. To learn more or to enroll, please call ISMP at 215-947-7797 or visit: www.ismp.org/node/13263.

To subscribe: www.ismp.org/node/10

ISMP Medication *Safety Alert!* Acute Care (ISSN 1550-6312) © 2020 Institute for Safe Medication Practices (ISMP). Subscribers are granted permission to redistribute the newsletter or reproduce its contents within their practice site or facility only. Other reproduction, including posting on a public-access website, is prohibited without written permission from ISMP. This is a peer reviewed publication.

Report medication and vaccine errors to ISMP: Please call 1-800-FAIL-SAF(E), or visit our website at: www.ismp.org/MERP or www.ismp.org/VERP. ISMP guarantees the confidentiality of information received and respects the reporters' wishes regarding the level of detail included in publications.

Editors: Judy Smetzer, BSN, RN, FISMP; Michael Cohen, RPh, MS, ScD (hon), DPS (hon), FASHP; Ann Shastay, MSN, RN, AOCN; Russell Jenkins, MD; Ronald S. Litman, DO, ML. ISMP, 200 Lakeside Drive, Suite 200, Horsham, PA 19044. Email: ismpinfo@ismp.org; Tel: 215-947-7797; Fax: 215-914-1492.

ISMP Medication Safety Alert!® ActionAgenda

One of the most important ways to prevent medication errors is to learn about problems that have occurred in other organizations and to use that information to prevent similar problems at your practice site. To promote such a process, the following selected items from the **October – December 2019** issues of the *ISMP Medication Safety Alert!* have been prepared for leadership to use with an interdisciplinary committee or with frontline staff to stimulate discussion and action to reduce the risk of medication errors. Each item includes a brief description of the medication safety problem, a few recommendations to reduce the risk of errors, and the issue number to locate additional information. Look for our high-alert medication icon under the issue number if the agenda item involves one or more medications on the *ISMP List of High-Alert Medications* (www.ismp.org/node/103). The Action Agenda is also available for download in a Microsoft Word and Excel format (www.ismp.org/node/14087) that allows expansion of the columns in the table designated for organizational documentation of an assessment, actions required, and assignments for each agenda item. Continuing education credit is available for nurses at: www.ismp.org/nursing-ce.

Key: ⚠ — ISMP high-alert medication

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Baxter's intravenous (IV) MYXREDLIN (insulin, human) minibags look like other minibags, leading to a mix-up with an antibiotic					
(20, 22) ⚠	Myxredlin is a new premixed insulin infusion (100 units/100 mL) that can help prevent compounding errors. However, the bag size and the black and white label are similar to other Baxter minibags, and the generic name, "insulin human," is not highly visible on the label. A patient received Myxredlin during surgery instead of a minibag of ceFAZolin.	Employ barcode scanning to prevent mix-ups. When possible, look-alike products should be kept separate in storage areas. Add a warning to the front and back of the Myxredlin container noting it "contains insulin," store the bag in its carton (which is easier to read), and inform staff about the new product and its potential for confusion with other minibags.			
Overuse of ADC overrides, removal of drugs without an order, and use of non-profiled cabinets					
(21)	Automated dispensing cabinets (ADCs) have the potential to support medication safety; however, some unsafe practices persist: 1) Overuse of overrides, often with a lack of perceived risk; 2) removal of a drug from an ADC without an order, not in an emergency but for *anticipated* medication orders; and 3) removal of an ordered drug from a non-profiled ADC. Each unsafe practice involves the removal of a medication from an ADC before a pharmacist's review of the order.	Optimize the use of ADCs in a profiled mode, and always require an order *before* removing a medication. Establish a policy to limit ADC overrides (e.g., emergent conditions AND when waiting for a pharmacist's review could lead to patient harm). Limiting drug quantities stored in ADCs will reduce the risk of errors when an override is used. Require documentation of override rationale, and routinely analyze override reports. See ISMP's updated ADC guidelines at: www.ismp.org/ext/328.			
Error associated with intravenous (IV) administration of sterile water					
(21) ⚠	IV sterile water was administered to a woman undergoing a procedure. Look-alike bags of sterile water (used during cystoscopies) and common IV fluids were stored on the same shelf. The patient now requires hemodialysis.	Do not store 1,000 mL bags of sterile water for injection, irrigation, or inhalation outside the pharmacy (see best practice #10 at: www.ismp.org/node/160). If sterile water must be in a clinical location, purchase pour bottles or other distinct containers.			

©2020 ISMP

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Oral liquid medication administered intravenously (IV) because oral/ENFit syringes were unavailable					
(20) ⚠	A woman prescribed oral oxyCODONE liquid 2.5 mg received a dose IV. Because no oral or ENFit syringes were available, a nurse withdrew the dose into a parenteral syringe from a 5 mg per 5 mL unit dose cup. The distracted nurse attached the syringe to an IV port and injected it. No harm was reported, but similar errors have resulted in harm or death.	Provide medications to patient care units in the most ready-to-use form to minimize the need for nurses to prepare patient-specific doses. Ensure that oral syringes or ENFit devices exist wherever oral liquids might be prepared and administered in clinical areas.			
Parenteral nutrition (PN) products with amino acids and/or lipids for children need light protection					
(23) ⚠	Exposing pediatric PN containing amino acids and/or lipids (especially with vitamins or trace elements) to light causes formation of peroxides and other degradation products. Children less than 2 years are susceptible to adverse effects, especially premature neonates because they are at high risk of oxidative stress.	Containers and administration sets of PN products containing amino acids and/or lipids for neonates/children less than 2 years must be protected from light (see www.ismp.org/ext/323 and www.ismp.org/ext/324). The American Society for Parenteral and Enteral Nutrition also plans to post a position paper on this topic.			
Danger of confusing thrombin (RECOTHROM) with antithrombin III (THROMBATE III)					
(23) ⚠	A verbal order for a neonate for Thrombate III was misheard as thrombin. Topical thrombin (Recothrom) was dispensed, reconstituted in a Luer syringe provided with the kit, and administered via an extracorporeal membrane oxygenation (ECMO) circuit, which caused the circuit to clot. The neonate developed clots in her heart.	Verbal orders should be limited to emergencies or under sterile conditions. When they are needed, readback (or repeat back under sterile conditions) is a must. Standard order sets should be used when ordering antithrombin III with ECMO. Pharmacy should dispense reconstituted thrombin in a topical syringe and affix a warning label to give it topically (exception: injection for pseudoaneurysms).			
Confusion between fentaNYL nasal spray (INSTANYL in Europe, LAZANDA in US) and nasal sprays used for a cold					
(24) ⚠	In Europe, a man accidentally used his partner's Instanyl nasal spray, as it looked like his sinus nasal spray. He developed respiratory depression and died. Similar errors could happen here with Lazanda, which is ordered through a Risk Evaluation and Mitigation Strategy program.	Warn patients about the risk of mix-ups with other nasal sprays, and the dangerous effects of Lazanda if used by others for whom it has not been prescribed. Also, prescribing and/or dispensing naloxone for patients taking opioids at home is highly recommended.			

©2020 ISMP

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Taking CRYSVITA (burosumab-twza) with active vitamin D analogs is contraindicated					
(25)	Crysvita is contraindicated with oral phosphates and/or active vitamin D analogs (i.e., calcitriol, paricalcitol, doxercalciferol, calcifediol), as it increases phosphate concentrations. An analysis of 70 reports about Crysvita taken with a vitamin D product showed that many identified cholecalciferol or ergocalciferol (neither contraindicated), noting poor understanding of contraindicated vitamin D analogs.	Educate practitioners about active vitamin D analogs and their contraindication with Crysvita, and build alerts in order entry systems. Prior to prescribing Crysvita, be sure patients who have been taking oral phosphates and/or active vitamin D analogs have discontinued their use for 1 week before starting Crysvita. Also teach patients to not take phosphates or active vitamin D analogs while taking Crysvita.			
Look-alike packaging with Baxter's intravenous (IV) premixed bags of CARDENE I.V. (niCARdipine) and NEXTERONE (amiodarone)					
(21) ⚠	Three errors involving premixed bags of Cardene I.V. (40 mg/200 mL) and Nexterone (360 mg/200 mL) were reported. Similar carton coloring, bag sizes, and bag appearance, as well as close storage in an automated dispensing cabinet (ADC) open matrix configuration, were contributing factors. One of the mix-ups resulted in patient harm.	Avoid open matrix ADC configurations and segregate the storage of these products when possible. Alert staff to the risk of mix-ups and place warning labels where products are stored. Use barcode scanning when selecting, restocking, and administering these drugs. Smart infusion pump and electronic health record integration can also avoid errors.			
Confusing labeling on blister packs of VENCLEXTA (venetoclax) containing multiple tablets					
(22) ⚠	Venclexta comes in a blister pack containing 2 tablets labeled as 10 mg. It is unclear whether each tablet, or each 2-tablet pack, contains 10 mg. A nurse administering a 20 mg dose scanned the 2-tablet pack and was prompted to scan a second pack. The patient was given 4 tablets, but each tablet contained 10 mg.	Staff should test how the barcode on Venclexta blister packs scan, especially if the 2-tablet presentation (2 x 10 mg tablets) is purchased. Affix auxiliary labels so staff recognize that each 2-tablet blister pack contains a total of 20 mg, even though it is unclearly labeled by the manufacturer as 10 mg.			
Legacy feeding tubes, administration sets, and transition adapters going away					
(25)	Manufacturers will begin phasing out legacy feeding tubes starting July 1, 2020, and discontinue transition adapters (singly or attached to feeding sets) on January 1, 2021. These moves will force the adoption of ENFit in order to reduce the risk of misconnections.	If you have not yet converted to ENFit, develop plans to do so as soon as possible. Communicate the information about the discontinued products to your purchasers and clinical staff. For additional information, visit the *Stay Connected* website: http://gedsa.org/.			

©2020 ISMP

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Confusion between the abbreviations for angiotensin II (AT II) (GIAPREZA) and antithrombin III (AT III) (THROMBATE III)					
(23) ⚠	A surgical nurse received an urgent verbal order for antithrombin III but miscommunicated the order as "AT two" (angiotensin II) when calling the pharmacy. Angiotensin II required approval from the medical director for use outside of septic shock in the critical care unit, raising a red flag. The error was recognized, and the correct medication, antithrombin III, was dispensed.	Avoid the use of drug name abbreviations, including in verbal orders, information technology databases, order sets, and protocols. Refer to all medications using only the full brand and/or generic names. Prescribers should ideally communicate orders electronically (not as a verbal order, if possible) and include the drug's indication with orders to further avoid confusion.			
Label describes sodium phosphate enema as a "saline enema"					
(23)	Several errors were reported in which sodium phosphate enema products (e.g., Fleet Saline Enema, Pure & Gentle Saline Enema, Pedia-Lax Enema, generic sodium phosphate enemas) were selected when saline enemas were intended. Labels refer to them as a "saline enema," which fails to convey the phosphate content in the products. An inadvertent phosphate enema can be harmful to elderly and pediatric patients.	Alert staff to the potential for confusion and place prominent warning labels where enema products are stored. Remind staff to read the full label of the enema product and to follow the label directions. Barcode scanning can also help detect selection errors. Manufacturers should include the actual active ingredient on the principal display panel and not refer to these products as a "saline enema."			
Confusion between doravirine (PIFELTRO) and DOVATO (dolutegravir and lamiVUDine)					
(23)	Like vaccines, antiretroviral drugs have been assigned abbreviations that can increase the risk of confusion (www.ismp.org/ext/306). A physician who intended to prescribe doravirine was thinking DOR, a commonly used abbreviation for this drug, but accidentally selected another antiviral medication, Dovato, which begins with the letters DOV. Mix-ups are also possible between other antiretrovirals commonly abbreviated (e.g., TAF [tenofovir alafenamide] and TDF [tenofovir disoproxil fumarate]).	Avoid all drug name abbreviations. Check your order entry system to ensure that the given abbreviations for antiretroviral medications are not automatically populated or included in the drug name fields. Also, it is safest if drug name searches require entry of at least the first 5 letters of the actual drug name.			

©2020 ISMP