

FDA and ISMP Lists of Look-Alike Drug Names with Recommended Tall Man Letters

Since 2008, ISMP has maintained a list of drug name pairs and trios with recommended, **bolded** tall man (uppercase) letters to help draw attention to the dissimilarities in look-alike drug names. The list includes mostly generic-generic drug name pairs, although a few brand-brand or brand-generic name pairs are included. The US Food and Drug Administration (FDA) list of drug names with recommended tall man letters was initiated in 2001 with the agency's Name Differentiation Project (www.ismp.org/sc?id=520).

While numerous studies between 2000 and 2016 have demonstrated the ability of tall man letters alone or in conjunction with other text enhancements to improve the accuracy of drug name perception and reduce errors due to drug name similarity,¹⁻⁹ some studies have suggested that the strategy is ineffective.¹⁰⁻¹² The evidence is mixed due in large part to methodological differences and significant study limitations. Nevertheless, while gaps still exist in our full understanding of the role of tall man lettering in the clinical setting, there is sufficient evidence to suggest that this simple and straightforward technique is worth implementing as one among numerous strategies to mitigate the risk of errors due to similar drug names. To await irrefutable, scientific proof of effectiveness minimizes and undervalues the study findings and anecdotal evidence available today¹³ that support this important risk-reduction strategy. As such, the use of tall man letters has been endorsed by ISMP, The Joint Commission (recommended but not required), the US Food and Drug Administration (as part of its Name Differentiation Project), as well as other national and international organizations, including the World Health Organization and the International Medication Safety Network (IMSN).¹⁴

Table 1 provides an alphabetized list of FDA-approved established drug names with recommended tall man letters.

Table 2 provides an alphabetized list of additional drug names with recommendations from ISMP regarding the use and placement of tall man letters. This is not an official list approved by FDA. It is intended for voluntary use by healthcare practitioners, drug information vendors, and medication technology vendors. Any product label changes by manufacturers require FDA approval.

To promote standardization regarding which letters to present in uppercase, ISMP follows a tested methodology whenever possible called the CD3 rule.¹⁵ The methodology suggests working from the left of the drug name first by capitalizing all the characters to the right once 2 or more dissimilar letters are encountered, and then, working from the right, returning 2 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 name, the methodology suggests capitalizing the central part of the word only. When application of this rule fails to lead to the best tall man lettering option (e.g., makes names appear too similar, makes names hard to read based on pronunciation), an alternative option is considered.

ISMP suggests that the **bolded**, tall man lettering scheme provided by FDA and ISMP for the drug name pairs listed in **Tables 1** and **2** be followed to promote consistency.

[continued on next page >](#)

Table 1. FDA-Approved List of Generic Drug Names with Tall Man Letters

Drug Name With Tall Man Letters	Confused With
aceta ZOLAMIDE	aceto HEXAMIDE
aceto HEXAMIDE	aceta ZOLAMIDE
bu PROPion	bus PIRone
bus PIRone	bu PROPion
chlorpro MAZINE	chlorpro PAMIDE
chlorpro PAMIDE	chlorpro MAZINE
clomi PHENE	clomi PRAMINE
clomi PRAMINE	clomi PHENE
cyclo SERINE	cyclo SPORINE
cyclo SPORINE	cyclo SERINE
DAUNO rubicin	DOXO rubicin
dimenhy DRINATE	diphenhy DRAMINE
diphenhy DRAMINE	dimenhy DRINATE
DOBU Tamine	DOP amine
DOP amine	DOBU Tamine
DOXO rubicin	DAUNO rubicin

[continued on next page >](#)

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Table 1. FDA-Approved List of Generic Drug Names with Tall Man Letters (continued)

Drug Name With Tall Man Letters	Confused With
gliPiZIDE	glyBURIDE
glyBURIDE	gliPiZIDE
hydrALAZINE	hydrOXYzine – HYDRomorphone
HYDRomorphone	hydrOXYzine – hydrALAZINE
hydrOXYzine	hydrALAZINE – HYDRomorphone
medroxyPROGESTERone	methylPREDNISolone – methylTESTOSTERone
methylPREDNISolone	medroxyPROGESTERone – methylTESTOSTERone
methylTESTOSTERone	medroxyPROGESTERone – methylPREDNISolone
mitoXANTRONE	Not specified
niCARDipine	NIFEdipine
NIFEdipine	niCARDipine
predniSOONE	predniSONE
predniSONE	predniSOONE
risperiDONE	rOPINIRole
rOPINIRole	risperiDONE
sulfADIAZINE	sulfISOXAZOLE
sulfISOXAZOLE	sulfADIAZINE
TOLAZamide	TOLBUTamide
TOLBUTamide	TOLAZamide
vinBLASline	vinCRISline
vinCRISline	vinBLASline

Table 2. ISMP List of Additional Drug Names with Tall Man Letters***

Drug Name With Tall Man Letters	Confused With
ALPRAZolam	LORazepam – clonazePAM
aMILoride	amLODIPine
amLODIPine	aMILoride
ARIPiprazole	RABEprazole
AVINza*	INVanz*
azaCITIDine	azaTHIOprine
azaTHIOprine	azaCITIDine
carBAMazepine	OXcarbazepine
CARBOplatin	CISplatin
ceFAZolin	cefoTEtan – cefOXitin – cefTAZidime – cefTRIAXone
cefoTEtan	ceFAZolin – cefOXitin – cefTAZidime – cefTRIAXone
cefOXitin	ceFAZolin – cefoTEtan – cefTAZidime – cefTRIAXone
cefTAZidime	ceFAZolin – cefoTEtan – cefOXitin – cefTRIAXone
cefTRIAXone	ceFAZolin – cefoTEtan – cefOXitin – cefTAZidime
CeleBREX*	CeleXA*
CeleXA*	CeleBREX*
chlordiazePOXIDE	chlproMAZINE**

* Brand names always start with an uppercase letter. Some brand names incorporate tall man letters in initial characters and may not be readily recognized as brand names. An asterisk follows all brand names on the ISMP list.

** These drug names are also on the FDA list.

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Table 2. ISMP List of Additional Drug Names with Tall Man Letters*** (continued)

Drug Name With Tall Man Letters	Confused With
chlorpro MAZINE **	chlordiaze POXIDE
CIS platin	CARBO platin
clo BAZ am	clonaze PAM
clonaze PAM	clo NID ine – clo ZAP ine – clo BAZ am – LOR azepam
clo NID ine	clonaze PAM – clo ZAP ine – Klon oPIN *
clo ZAP ine	clonaze PAM – clo NID ine
DACTIN omycin	DAPTO mycin
DAPTO mycin	DACTIN omycin
DEPO -Medrol*	SOLU -Medrol*
diaze PAM	di iTIAZ em
di iTIAZ em	diaze PAM
DOCE taxel	PACL itaxel
DOXO rubicin**	IDA rubicin
DUL oxetine	FLU oxetine – PAR oxetine
e PHED rine	EPINEPH rine
EPINEPH rine	e PHED rine
epi RUB icin	eri BUL in
eri BUL in	epi RUB icin
fenta NYL	SUF entanil
flavo xATE	fluvo xAMINE
FLU oxetine	DUL oxetine – PAR oxetine
flu PHENAZ ine	fluvo xAMINE
fluvo xAMINE	flu PHENAZ ine – fluvo xATE
gua iFEN esin	guan FACINE
guan FACINE	gua iFEN esin
Huma LOG *	Humu LIN *
Humu LIN *	Huma LOG *
hydr ALAZINE **	hydro CHLORO thiazide – hydro OXY zine**
hydro CHLORO thiazide	hydro OXY zine** – hydr ALAZINE **
HYDRO codone	oxy CODONE
HYDRO morphine**	morphine – oxy MOR phone
HYDROXY progesterone	medroxy PROGESTER one**
hydr OXY zine**	hydr ALAZINE ** – hydro CHLORO thiazide
IDA rubicin	DOXO rubicin** – idaru CIZU mab
idaru CIZU mab	IDA rubicin
in FLIX imab	ri TUX imab
INV anz*	AVIN za*
ISO tretinoin	tretinoin
Klon oPIN *	clo NID ine
La MIC tal*	Lam ISIL *
Lam ISIL *	La MIC tal*

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Table 2. ISMP List of Additional Drug Names with Tall Man Letters*** (continued)

Drug Name With Tall Man Letters	Confused With
lami VU Dine	lamo TRI gine
lamo TRI gine	lami VU Dine
lev ETI RAcetam	lev OCAR Nitine – levo FLOX acin
lev OCAR Nitine	lev ETI RAcetam
levo FLOX acin	lev ETI RAcetam
LEVO leucovorin	leucovorin
LOR azepam	ALPRAZ olam – clonaze PAM
medroxy PROGESTER one**	HYDROXY progesterone
met FORMIN	metro NIDAZOLE
methazo AMIDE	meth IMA zole – met OL azone
meth IMA zole	met OL azone – methazo AMIDE
met OL azone	meth IMA zole – methazo AMIDE
metro NIDAZOLE	met FORMIN
metyra PONE	metyro SINE
metyro SINE	metyra PONE
mi FEPRIS tone	mi SOPRO Stol
mi SOPRO Stol	mi FEPRIS tone
mito MY cin	mito XANTRONE **
mito XANTRONE **	mito MY cin
Nex AVAR *	Nex IUM *
Nex IUM *	Nex AVAR *
ni CARD ipine**	ni MOD ipine – ni FE dipine**
NIFE dipine**	ni MOD ipine – ni CARD ipine**
ni MOD ipine	NIFE dipine** – ni CARD ipine**
Novo LIN *	Novo LOG *
Novo LOG *	Novo LIN *
OLANZ apine	QUE tiapine
OX carbazepine	car BAM azepine
oxy CODONE	HYDRO codone – Oxy CONTIN * – oxy MOR phone
Oxy CONTIN *	oxy CODONE – oxy MOR phone
oxy MOR phone	HYDRO morphine** – oxy CODONE – Oxy CONTIN *
PACL itaxel	DOC etaxel
PAR oxetine	FLU oxetine – DUL oxetine
PAZO Panib	PONAT inib
PEME trexed	PRALA trexate
penicill AMINE	penicillin
PENT obarbital	PHEN obarbital
PHEN obarbital	PENT obarbital
PONAT inib	PAZO Panib
PRALA trexate	PEME trexed
Pri LOSEC *	PRO zac*

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Table 2. ISMP List of Additional Drug Names with Tall Man Letters*** (continued)	
Drug Name With Tall Man Letters	Confused With
PROzac*	PriLOSEC*
QUetiapine	OLANzapine
quiNIDine	quiNINE
quiNINE	quiNIDine
RABEprazole	ARIPiprazole
raNITidine	riMANTAdine
rifAMPin	rifAXIMin
rifAXIMin	rifAMPin
riMANTAdine	raNITidine
RisperDAL*	rOPINIRole**
risperiDONE**	rOPINIRole**
riTUXimab	inFLIXimab
romiDEPsin	romiPLOstim
romiPLOstim	romiDEPsin
rOPINIRole**	RisperDAL* – risperiDONE**
SandIMMUNE*	SandoSTATIN*
SandoSTATIN*	SandIMMUNE*
sAXaglipatin	SITaglipatin
SEROquel*	SINEquan*
SINEquan*	SEROquel*
SITaglipatin	sAXaglipatin – SUMAtriptan
Solu-CORTEF*	SOLU-Medrol*
SOLU-Medrol*	Solu-CORTEF* – DEPO-Medrol*
SORafenib	SUNItinib
SUFentanil	fentaNYL
sulfADIAZINE**	sulfaSALazine
sulfaSALazine	sulfADIAZINE**
SUMAtriptan	SITaglipatin – ZOLMitriptan
SUNItinib	SORafenib
TEGretol*	TREntal*
tiaGABine	tiZANidine
tiZANidine	tiaGABine
traMADol	traZODone
traZODone	traMADol
TREntal*	TEGretol*
valACYclovir	valGANciclovir
valGANciclovir	valACYclovir
ZOLMitriptan	SUMAtriptan
ZyPREXA*	ZyrTEC*
ZyrTEC*	ZyPREXA*

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References

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