

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.

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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	diphenhydr AMINE
diphenhydr AMINE	dimenhy DRINATE
DOBU Tamine	DOP amine
DOP amine	DOBU Tamine
DOXO rubicin	DAUNO rubicin

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

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

Drug Name With Tall Man Letters	Confused With
gli PI ZIDE	gly BUR IDE
gly BUR IDE	gli PI ZIDE
hydr AL AZINE	hydr OX Yzine – HYDR omorphone
HYDR omorphone	hydr OX Yzine – hydr AL AZINE
hydr OX Yzine	hydr AL AZINE – HYDR omorphone
medroxy PROG ESTERone	methyl PREDN ISolone – methyl TEST OSTERone
methyl PREDN ISolone	medroxy PROG ESTERone – methyl TEST OSTERone
methyl TEST OSTERone	medroxy PROG ESTERone – methyl PREDN ISolone
mito XAN TRONE	Not specified
ni CAR dipine	NIF Edipine
NIF Edipine	ni CAR dipine
predni SO NE	predni SON E
predni SON E	predni SO NE
risperi DO NE	RO PI NI Role
RO PI NI Role	risperi DO NE
sulf ADIA AZINE	sulf SO XAZOLE
sulf SO XAZOLE	sulf ADIA AZINE
TOL AZamide	TOL BU T amide
TOL BU T amide	TOL AZamide
vin BLAS tine	vin CRIS tine
vin CRIS tine	vin BLAS tine

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

Drug Name With Tall Man Letters	Confused With
ALPRA Zolam	LO Razepam – clonaz PAM
a MI Loride	am LO DIPine
am LO DIPine	a MI Loride
ARIP iprazole	RAB Eprazole
AVIN za*	INV anz*
aza CITID ine	aza THIO prine
aza THIO prine	aza CITID ine
car BAM azepine	OX carbazepine
CARBO platin	CIS platin
ce FAZ olin	ce FO TEtan – ce FO Xitin – ce TAZ idime – ce TRIA Xone
ce FO TEtan	ce FAZ olin – ce FO Xitin – ce TAZ idime – ce TRIA Xone
ce FO Xitin	ce FAZ olin – ce FO TEtan – ce TAZ idime – ce TRIA Xone
ce TAZ idime	ce FAZ olin – ce FO TEtan – ce FO Xitin – ce TRIA Xone
ce TRIA Xone	ce FAZ olin – ce FO TEtan – ce FO Xitin – ce TAZ idime
Cele BREX *	Cele XA *
Cele XA *	Cele BREX *
chlordi az e PO XIDE	chl or pr o MAZINE **

* 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 TI AZem
di TI AZem	diaze PAM
DOCE taxel	PACL itaxel
DOXO rubicin**	IDA rubicin
DU Loxetine	FLU oxetine – PAR oxetine
e PHE drine	EPINEPH rine
EPINEPH rine	e PHE drine
epi RUB icin	eri BUL in
eri BUL in	epi RUB icin
fenta NVL	SUF entanil
flavo ATE	fluvoxa MINE
FLU oxetine	DUL oxetine – PAR oxetine
flu PHENAZ ine	fluvoxa MINE
fluvoxa MINE	flu PHENAZ ine – flavo ATE
guai FEN esin	guan FAC ine
guan FAC ine	guai FEN esin
Huma LOG *	Humu LIN *
Humu LIN *	Huma LOG *
hydr ALAZINE **	hydro CHLORO thiazide – hydro OXYzine **
hydro CHLORO thiazide	hydro OXYzine ** – hydr ALAZINE **
HYDRO codone	oxy CODONE
HYDRO morphine**	morphine – oxy MOR phone
HYDROXY progesterone	medroxy PROGESTERone **
hydr OXYzine **	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 SIL *
Lam SIL *	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 FEPRI Stone	mi SOPRO Stol
mi SOPRO Stol	mi FEPRI Stone
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 FEDI pine**
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	QUETI apine
OX carbapizine	car BAM azepine
oxy CODONE	HYDRO codone – Oxy CONTIN * – oxy MOR phine
Oxy CONTIN *	oxy CODONE – oxy MOR phine
oxy MOR phine	HYDRO morphine** – oxy CODONE – Oxy CONTIN *
PACL itaxel	DOCET axel
PAR oxetine	FLU oxetine – DULO xetine
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 *	PROZAC *

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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	romiPLOSstim
romiPLOSstim	romiDEPsin
rOPINIRole**	RisperDAL* – risperiDONE**
SandIMMUNE*	SandoSTATIN*
SandoSTATIN*	SandIMMUNE*
sAXagliptin	SITagliptin
SEROquel*	SINEquan*
SINEquan*	SEROquel*
SITagliptin	sAXagliptin – SUMatriptan
Solu-CORTEF*	SOLU-Medrol*
SOLU-Medrol*	Solu-CORTEF* – DEPO-Medrol*
SORafenib	SUNItinib
SUFentanil	fentaNYL
sulfaADIAZINE**	sulfaSALAzine
sulfaSALAzine	sulfaADIAZINE**
SUMatriptan	SITagliptin – 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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