PHARMACY LEARNING NETWORK 1-DAY REGIONAL MEETINGS

Preventing Errors:

Look- and Sound-Alike Medications

ICHP

Presented in partnership with the ICHP Annual Meeting

Faculty

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Disclosure

Matthew Grissinger, RPh, FISMP, FASCP: Spouse's Employer—Johnson and Johnson

Learning Objectives

- Identify the types of medication errors that are the result of look-alike and sound-alike names
- Describe strategies for health-system pharmacists for reducing errors due to similarity in drug names

Audience Polling Question

What is the most common pairs of medication names that are involved in wrong drug errors?

1. HydrALAZINE and hydrOXYzine
2. Tramadol and trazodone
3. Morphine and HYDROmorphone
4. GlipiZIDE and glyBURIDE

FDA Name Differentiation Project

Established Name	Recommended Name
Acetohexamide Acetazolamide	AcetoHEXAMIDE AcetaZOLAMIDE
Bupropion Buspirone	BuPROPion BusPIRone
Chlorpromazine Chlorpropamide	ChlorproMAZINE ChlorproPAMIDE
Clomiphene Clomipramine	ClomiPHENE ClomiPRAMINE
Cyclosporine Cycloserine	CycloSPORINE CycloSERINE
Daunorubicin Doxorubicin	DAUNOrubicin DOXOrubicin
Dimenhydrinate Diphenhydramine	DimenhyDRINATE DiphenhydrAMINE
Dobutamine Dopamine	DOBUTamine DOPamine
Glipizide Glyburide	GlipiZIDE GlyBURIDE

Established Name	Recommended Name
Hydralazine Hydromorphone Hydroxyzine	HydrALAZINE HYDROmorphone HydrOXYzine
Medroxyprogesterone	MedroxyPROGESTERone
Methylprednisolone Methyltestosterone	MethylPREDNISolone MethylTESTOSTERone
Mitoxantrone	MitoXANTRONE
Nicardipine Nifedipine	NICARdipine NIFEdipine
Prednisone Prednisolone	PrednISONE PrednisoLONE
Risperidone Ropinirole	risperiDONE rOPINIRole
Sulfadiazine Sulfisoxazole	SulfaDIAZINE SulfiSOXAZOLE
Tolazamide Tolbutamide	TOLAZamide TOLBUTamide

US Food and Drug Administration. www.fda.gov/Drugs/DrugSafety/MedicationErrors/ucm164587.htm. Accessed on February 16, 2016.

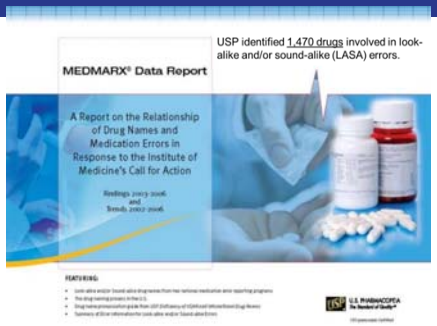
ISMP's List of Confused Drug Names

Drug Name	Confused Drug Name
Abelcet	amphotericin B
Accupril	Aciphex
acetaZOLAMIDE	acetoHEXAMIDE
acetic acid for irrigation	glacial acetic acid
acetoHEXAMIDE	acetaZOLAMIDE
Aciphex	Accupril
Aciphex	Aricept
Actimmune	Cathflo Actimmune
Actimmune	TNKase
Actamel	Actos
Actos	Actonel
Adacel (Tdap)	Daptacel (DTaP)
Adderall	Inderal
Adderall	Adderall XR
Adderall XR	Adderall
ado-trastuzumab emtansine	trastuzumab
Advair	Advicor
Advicor	Advair
Advicor	Altacor
Afrin (oxymetazoline)	Afrin (saline)
Afrin (saline)	Afrin (oxymetazoline)
Aggrastat	argatroban
Aldara	Alora
Alkeran	Leukeran
Alkeran	Myleran
Allegra (fexofenadine)	Allegra Anti-Itch Cream (diphenhydrAMINE/allantoin)
Allegra	Viagra
Allegra Anti-Itch Cream (diphenhydrAMINE/allantoin)	Allegra (fexofenadine)
Alora	Aldara

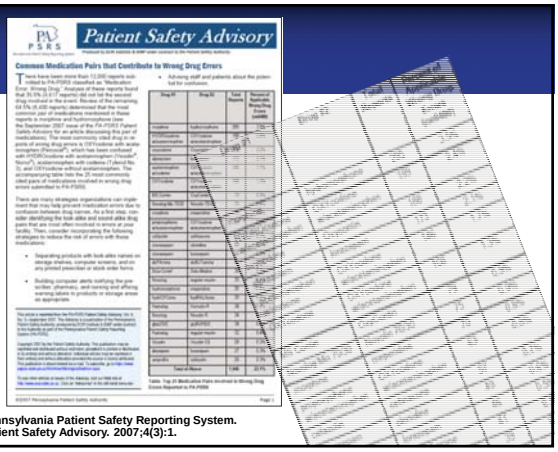
Drug Name	Confused Drug Name
Amikin	Kineret
amiLORIde	amLODIPine
amiodarone	amantadine
amLODIPine	amiLORIde
amphotericin B	Abelcet
amphotericin B	Ambisome
Anacin	Anacin-3
Anacin-3	Anacin
antacid	Atacand
Anticoagulant Citrate Dextrose Solution Formula A	Anticoagulant Sodium Citrate Solution
Anticoagulant Sodium Citrate Solution	Anticoagulant Citrate Dextrose Solution Formula A
Antivert	Avert
Anzemet	Aversdemet
Apidra	Spiriva
Apresoline	Procaline
argatroban	Aggrastat
argatroban	Organan
Aricept	Aciphex
Aricept	Aclect
ARIPiprazole	proton pump inhibitors
ARIPiprazole	RABEprazole
Arista AH (absorbable hemostatic agent)	Arixtra
Arixtra	Arista AH (absorbable hemostatic agent)
Asacol	Ox-Cal
Atacand	antacid
atomoxetine	atorvastatin
atorvastatin	atomoxetine
Atravent	Natru-Vent
Avandamet	Anzemet

Institute of Safe Medication Practices. www.ismp.org/Tools/confuseddrugnames.pdf. Accessed on February 16, 2016.

USP MedMarx Data Report



US Pharmacopeia. www.labatecpharma.com/wp-content/uploads/2012/02/2008MEDMARX-Data Report.pdf. Accessed on February 16, 2016.



Pennsylvania Patient Safety Reporting System. Patient Safety Advisory. 2007;4(3):1.

Wrong Drug Errors Involving Morphine or HYDROmorphone

- Of all wrong drug error reports that include morphine and/or HYDROmorphone, 36% involve a mix-up between those 2 drugs
- Of wrong drug reports that involve these 2 drugs
  - 62% show morphine as the prescribed medication and HYDROmorphone given in error
  - 71% of reports indicate that the errors occurred when these medications were obtained from unit stock

Pennsylvania Patient Safety Reporting System. *Patient Safety Advisory*. 2007;4(3):69-108.

Types of "Look-Alike" Names

1. Handwritten orders
   - Some pairs are only confused when handwritten
2. Beginning of drug name is same
   - metFORMIN – metroNIDAZOLE
   - traMADol – traZODone
3. Look-alike drug names
   - hydRALAZINE & hydrOXYzine
   - DOPamine & DOBUTamine
   - morphine & HYDROmorphone
   - Drug names with and without suffixes
     - Immediate-release and extended-release products

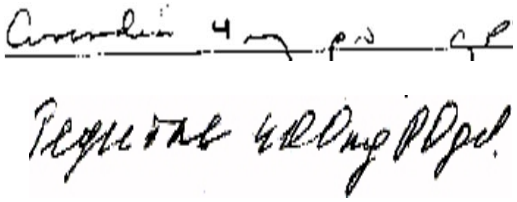
Additional Factors

- What factors contribute to names that "look-alike"?
  - Strengths/concentrations
  - Frequency
  - Usage in organization (may affect how often it happens)
  - Indication
  - Serzone & Seroquel

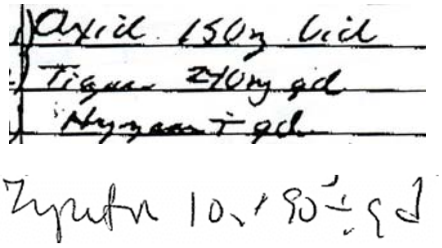
Where Are Names Confused?

- Medication Orders
  - Handwritten Orders
  - Order forms, preprinted orders
    - CISplatin/CARBOplatin
    - vinCRIStine/vinBLAStine
    - DOPamine/DOBUTamine
- Order Entry Screens

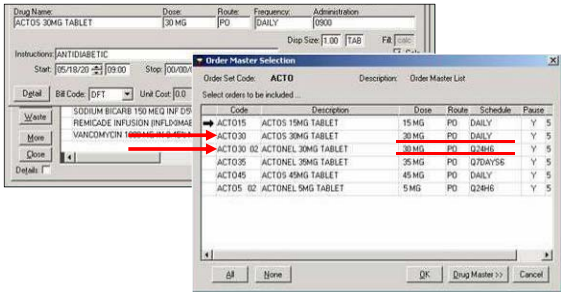
Handwritten Look-Alike Names



Handwritten Look-Alike Names (continued)

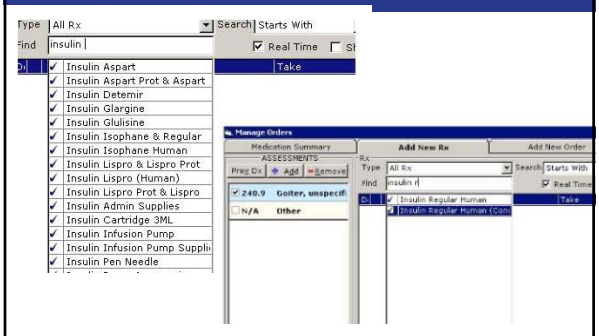


Electronic Order Entry



Used with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

Electronic Order Entry (continued)



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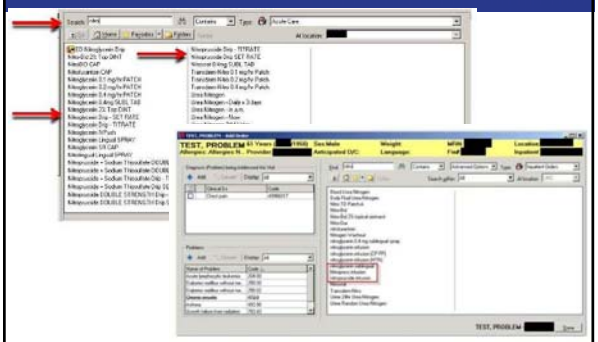
Electronic Order Entry (continued)



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Which Regular Insulin?

Enter Line # ------ ...

Ln	Drug#	Drug Name	Strength/Volume	DSFM	Pack Sz
1	13928	INSULIN-HUMULIN L	100U=1ML	INJ	10.000
2	46002	INSULIN-NOVOLIN N	100=1ML	INJ	10.000
3	61501	INSULIN-HUMULIN U	100U=1ML	INJ	10.000
4	64042	PINK-INSULIN	0.05U=1ML	SYRG	25.000
5	64043	BLUE-INSULIN	0.5U=1ML	SYRG	50.000
6	64044	YELLOW-INSULIN	1U=1ML	SYRG	50.000
7	64098	INSULIN-R DILUTED	0.1U=1ML	VIAL	10.000
8	97012	INSULIN-REG HUMAN	1U=25ML	SYRG	25.000
9	98191	INSULIN-NOVOLIN N	100U=1ML	INJ	10.000
10	98192	INSULIN-REG HUMAN	100U	INJ	100.000
11	98664	INSULIN-REG HUMAN	100U	INJ	1000.000
12	99669	INSULIN-HUMULIN R (FS)	100U	INJ	100.000
13	99818	INSULIN-HUMAN REG	100U	INJ	100.000
14	31421	INSULIN NPH INNOLET	1U	INJ	300.000
15	31321	INSULIN REG INNOLET	1U	INJ	300.000
16	31721	INSULIN 70/30 INNOLET	1U	INJ	300.000
17	22203	INSULIN,LANTUS	100U	INJ	10.000
18	30631	INSULIN,NOVOLIN 70/30	100U	INJ	10.000

Enter Line# at top of screen, press ENTER.

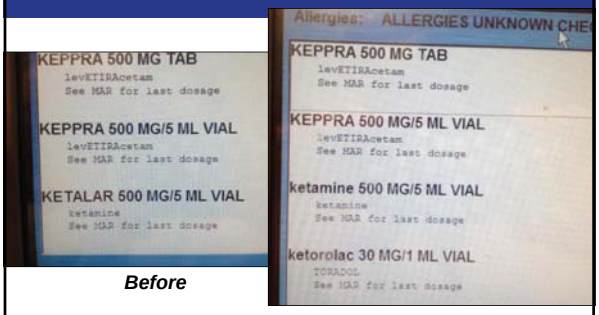
F1=Help F2=ReStart F3=Exit F4=Prompt
F7=Bkwd F8=Fwd F12=Previous F13=Disp Msg F14=Send Msg

Drug Errors Involving Immediate- and Extended-Release Products

"OxyCONTIN" from CPOE system listed as……

Medication: OXYCODONE HCL TBCR 10 MG OR
Qty: 60 Ref: 0 Start: 3/12/
Route: DAW:
Sig: 1 TABLET TWICE DAILY

Medication Devices



Before

After

Medication Devices (continued)

Test Patient View of MAR

Where Are Names Confused?

- **Drug Labeling and Packaging**
  - Pharmacy
  - Manufacturer
- **Drug Storage**
  - Pharmacy
  - Care Areas
    - ADCs
    - Floor Stock

Pharmacy IV Labels

Manufacturer Bulk Packaging

Used with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

Wellbutrin, Zyban, Buproprion……SR, XL…..

Used with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

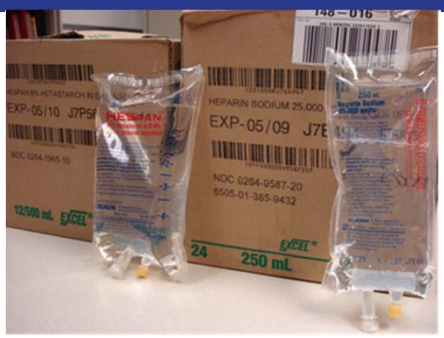
Manufacturer Unit-Dose Packaging

Used with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

Manufacturer Unit-Dose Packaging

Used with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

Manufacturer Cartons



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Manufacturer IV Solutions

Used with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

Manufacturer Vials

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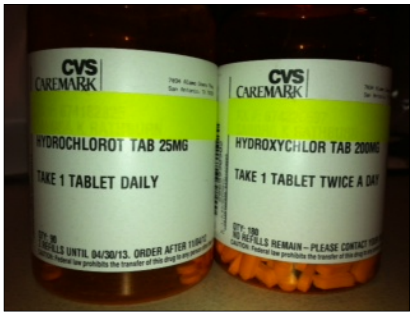
Pharmacy Labeling



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Look-alike names, Packaging & Storage

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Identifying the Problem

- **Need to know**
  - Where in the medication use process the pairs of drugs are being confused before you implement risk reduction strategies

Identifying the Problem (continued)

- Identify problematic name pairs in your organization
  - Need to know what drug name pairs are being confused before you take action
  - **Proactive**
    - Observation
  - **Concurrent**
    - Pharmacy checks
    - Cart fills
    - New orders
    - Orders vs label
    - Labels vs drug

Identifying the Problem (continued)

- **Retrospective**
  - Error reports
    - Limited – who does the reporting?
      - Usually wrong meds given to patient or pharmacy dispensing errors caught by nursing
    - Other care areas – OR, ED, radiology
    - Doesn't usually include those that are caught in pharmacy
  - Triggers
    - Opiates – morphine & HYDROmorphone
    - Insulin products

Error Reduction Strategies

- **Failure Mode and Effects Analysis (FMEA)**
  - Med-ERRS (www.med-errs.com)
- **Constraints**
  - Do you really need it on formulary?
  - Limit concentrations/strengths
    - Morphine 2 mg/mL vs HYDROmorphone 1 mg/mL
- **Separation/segregation**

FMEA = Failure Mode and Effects Analysis.

Error Reduction Strategies

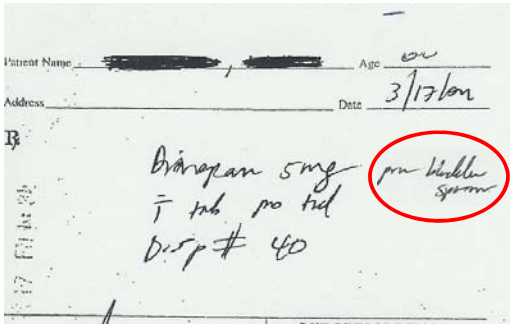
- **Redundancies**
  - Independent double checks
- **Differentiation**
  - Tallman lettering
    - Studies with TML
    - www.ismp.org/tools/
  - Include indication for use with orders
  - Highlighting, color (red)
  - Stickers (LAN)

FDA and ISMP Lists of

Look-Alike Drug Names with Recommended Tall Man Letters

Institute of Safe Medication Practices. www.ismp.org/Tools/tallmanletters.pdf. Accessed on February 16, 2016.

Look-Alike Name Error Due to Lack of Patient Information



Error Reduction Strategies

- **Education**
  - Staff need to know
    - What is being confused?
    - What are you doing about it?
    - What do those stickers mean?
- **Report errors and near-misses**
  - Internally
  - Externally
    - **ISMP**