

NACDS

pharmacy & 2011 technology conference

August 27 - 30, 2011 ■ Boston Convention & Exhibition Center ■ Boston, MA

Date: Tuesday, August 30, 2011

Time: 11:00 a.m. – noon

Location: Boston Convention & Exhibition Center, Meeting Level 2, Room 252 AB

Title: **Analysis of Medication Errors Originating at Data Entry in Community Pharmacy**
ACPE # 0206-0000-11-521-L05-P (0.1 CEU)

Speaker: Donna M. Horn, RPh, DPh, Institute for Safe Medication Practices (ISMP)

Learning Objectives:

At the conclusion of this knowledge-based program, participants will be better able to:

- List the challenges associated with intake and data entry errors/omissions in the dispensing process
- Identify systems and workflow changes that can be implemented to address the root causes of errors associated with intake and data entry errors and omissions
- Explain new types of errors that originate from electronic prescriptions

Don't forget to obtain continuing education credit for your participation in this session. Instructions for processing your statement of credit online are included in your registration bag.

Analysis of Medication Errors Originating at Data Entry in Community Pharmacy

Donna Horn, RPh, DPh
Director, Patient Safety- Community
Pharmacy
8/30/2011

1

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Causes and Contributing Factors

College graduate and had been bar-tending for 8 years. Watching her with her speed and hand control she seemed immensely talented.

I asked her if she ever made mistakes. She said YES, about one in every 100 drinks. She said that the errors came when she or others were talking, there were unexpected interruptions, or she was fatigued.

She also said that if she only came in to work one day a week she would make more mistakes than if she came in every day. Familiarity and constant repetition she said increased her accuracy.

She also added that there were other errors when her colleagues asked for the wrong drink. This would occur about one in every 50 drinks.

- Busy
- Distractions
- Interruptions
- Short-staffed
- Inexperienced staff
- Change of shift

2

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Data Entry: Set Up to Fail

- Illegible Handwriting
 - Lack of patient information- purpose?
- Look alike name pairs
- Water marks for diversion
- Staff education- new drugs
- Direction challenges
 - Missing zeros
 - mL vs. teaspoonful
- Speed codes
- Fax machines need cleaning
- Wrong patient

3

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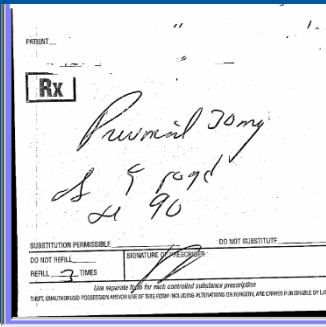
Handwriting issues

4

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Dispensed as Prinivil Written for Prevacid

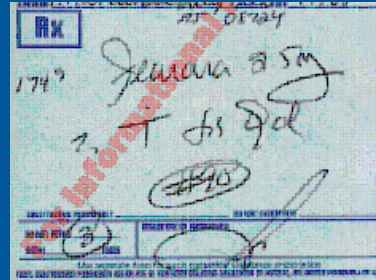


5

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Looks Like?

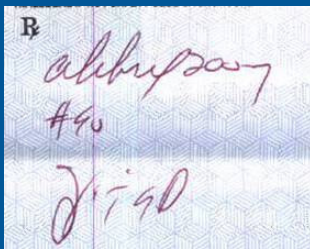


6

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Drug Selection?



Abilify 20 mg?

NO!

Celebrex 200mg

7

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Too bad we have to look for clues

ONCOLOGY
Hospital • Street
Telephone:

NAME _____
DATE 1/16/07
Rx famotidine 20mg qd #90

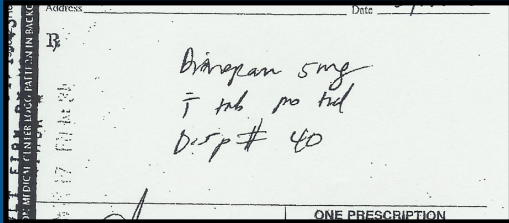
Filled as Famotidine 20 mg

8

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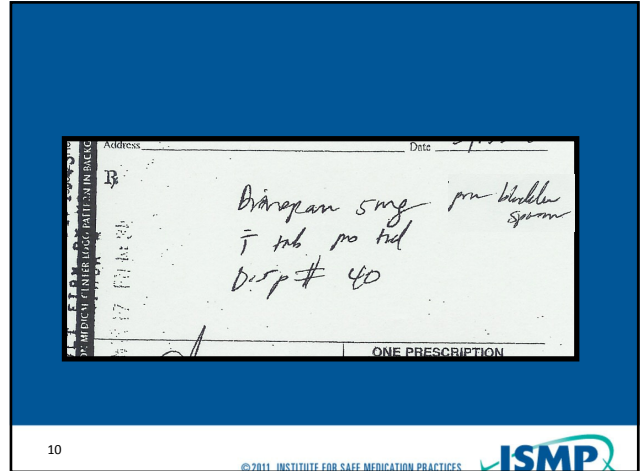


Give us a Clue



9

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10

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Caught!

Disp: hydralazine 25mg
Sig: #100 1-2 po 80 pm hch

11

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Top 10 (11) Drugs Involved Errors

- Zyrtec
- Seroquel
- Serzone
- Synthroid/Levoxyl
- Zantac
- Prozac
- Lipitor
- Methylphenidate
- Toprol XL
- Topamax
- Zyprexa

What are your top 10?

12

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Common Name Pairs in Errors

- Seroquel and Serzone
- Zantac and Zyrtec
- Zyrtec and Zyprexa
- Topamax and Toprol XL

ISMP data 587 rx June 2006 –July 2007

13

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Wrong Vaccine errors

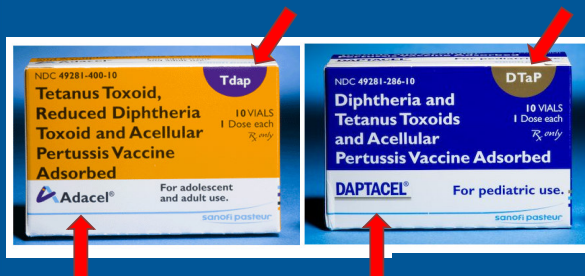
- 30 states and DC allow RPh to administer vaccines to patients under 18
- 600 *voluntary* reported errors 1999-2010
- LASA
- DTaP (diphtheria and tetanus toxoids and acellular pertussis) vs. reduced diphtheria toxoid, and acellular pertussis (Tdap)
 - DTaP: Daptacel, Infanrix, Tripedia
 - Tdap: Adacel, Boostrix
- Hep A Vaccine: Havrix, Vaqta vs . Hep B Vaccine: Engerix-B, Recombivax

14

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Look-alike Vaccines



15

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Sound-Alike Vaccines

- Vaccine manufacturers historically maintain similar naming structures across their vaccine products
 - **GlaxoSmithKline:** Infanrix, Kinrix, Pediarix, Havrix, Twinrix, Rotarix
 - **Merck:** PedvaxHIB, Comvax, Recombivax HB

16

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Sound-Like Vaccines

- DT vs Td and DTaP vs Tdap
- PPD vs DPT and PPD vs PPV
- Rabies: Imovax vs Imogam
- Adacel vs Daptacel versus Pentacel
- HIB vs Hep B
- *H. influenzae* vs influenza
- Rubella vs Rubeola

17

Eliminate handwriting- go electronic

18

Formulation

“It seem like the doctor is clicking on the first drug with a name that includes what they want”

- For example, pick the liquid formulation wanted tablets
- or the short-release when in fact they want the “XR”

19

clomiPRAMINE and clomiPHENE

- Prescription filled as
 - clomi**PRAMINE** 50 mg once daily for 5 days for a 31-year-old female patient
- Triggers
 - Length of therapy
 - medroxy**PROGESTERone** and Prenatal vitamins on the same prescription
- Verification
 - Supposed to be for clomi**PHENE**

20

Documented Incorrect Ordering

- methohexital for methotrexate
- propofol for propranolol
- procarbazine for procardia
- dilaudid for dilantin
- imuran for imdur
- **quiNIDine** for **quiNINE**
- aminophylline for amiodarone
- **hydrALAZINE** for **hydrOXYzine** (and reverse)
- oxybutinin for **oxyCODONE**
- simvastatin for simethicone

21

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Wrong Formulation

- Regular immediate release (IR)
- Extended release (XR, ER)
- Sustained release (SR)
- Controlled release (CD)
- Extended length (XL)
- Long acting (LA)
- Sustained action (SA)
- XT

22

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Example Case – Wrong Formulation

- Prescriber sent E-Rx for Depakote ; actually wanted Depakote ER
- The medication was labeled and dispensed as Depakote despite patient history of Depakote ER
- Drug selection is a big problem
 - “We had a doctor recently select Indocin 50mg suppositories instead of 25 mg capsules”
 - “Dr’s often select the wrong potassium products such as liquid or packets, when they really just want the capsules”

23

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Tamper resistant ↓ Readability

24

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Diversion Solutions can Precipitate Errors



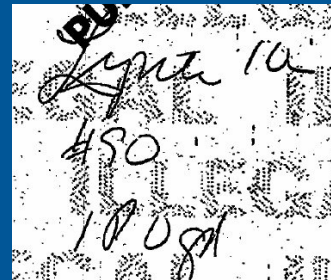
Filled as Crestor, written for Proscar

25

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Lipitor or Zyrtec

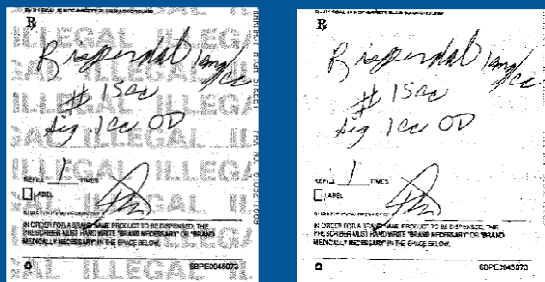


26

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Alter Brightness and Contrast



27

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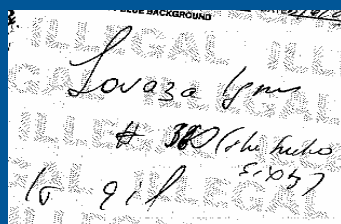
Continuous Education: medication and processes

28

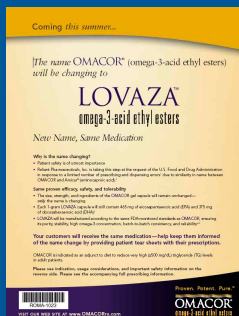
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Filled as?



Lovaza 1gm
300 (the initials)
10-9-11 5:057



Coming this summer...

If the name OMACOR® (omega-3-acid ethyl esters) will be changing to

LOVAZA™
omega-3-acid ethyl esters

New Name, Same Medication

Why is the name changing?

- To better identify the product
- To better protect the investment in the name of the product
- To better protect the investment in the name of the product

Some possible effects, with and without:

- The new strength and number of the OMACOR gel capsules will remain unchanged.
- The new strength and number of the OMACOR gel capsules will remain unchanged.
- The new strength and number of the OMACOR gel capsules will remain unchanged.

Your customers will receive the same medication - help keep them informed of the name change by providing patient tear sheets with their prescriptions.

OMACOR is considered an off-injector drug to reduce any high-dose injection risk back in the patient.

Please see the accompanying full prescribing information for the new name. Please see the accompanying full prescribing information for the new name.

Product Name: OMACOR®
Strength: 1000 mg/1000 mg

29

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Case Study: Facts

- A prescription for Lanoxin 0.125 mg was filled with Lorazepam 1 mg. The incident occurred on a Saturday morning around 11:00
- Typically fills 30-40 Rxs/hr that time of the day. Staffed with one pharmacist and two technicians
- The second technician started her shift at 10:00; pharmacy opens at 8:00
- RPh enters, scans, files, and pulls the medication
- After the medication is counted, the pharmacist verifies the prescription in the computer

30

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Case Study, cont.

- Two factors led to this error
 - RPh was working with a new system; had not developed his own method of checking the final product
 - The code used to identify Lanoxin 0.125 mg pulled up two medications on the computer screen
 - Lanoxin 0.125 mg
 - Lorazepam 1 mg
 - The pharmacist selected the wrong medication on the computer screen

31

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Sig Code: Saves Time, Not Money

- Incorrect on label:
 - take 1/2 tablet by mouth in the morning and 1 tablet at night
- Should have been:
 - Take 1/2 tablet by mouth at bedtime
- THHS
 - code originally for correct directions but printed the incorrect information
- Someone created a "bad" code (one which does not utilize the standard format for sig codes); or edited a correct code
- Capability to edit sig codes has been restricted to pharmacists and tech supervisor

32

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Problem:

- Diclofenac 75 mg written instructions
"Take 1 tablet twice daily with food for shoulder and elbow pain"
- Actually labeled
"Take 1 tablet daily with food for shoulder and elbow pain"
- Discovered that when the *sig* code had been originally programmed into the pharmacy computer system, the wrong directions were associated with it

33

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Recommendation:

- *Sig* codes and mnemonics only be added by administrative personnel using a standardized process; **not** be allowed at store level
- Test the *sig* codes and mnemonics to verify they function correctly
- Prohibit staff from coining abbreviations for drug names
- Run reports of system *sig* codes and mnemonics in use
 - review for dangerous, error-prone and outdated mnemonics and remove from the computer system
 - avoid using dangerous mnemonics such as "novo7030" (NovoLIN 70/30 or NovoLOG Mix 70/30)

34

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Direction (sig) issues

35

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Case Study – Missing Leading Zeros

- Zantac:
 - The intended dose was 0.6 mL
 - Label was printed to give the patient 6 mL; decimal point missed- no leading zero
- The patient's mother discontinued administering the medication after two doses (patient refused medication)
- Possible error cause(s) and contributing factor(s): Interpretation of 0.6 mL versus 6 mL

36

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Rewrite Function Leads to Errors

- Pepcid 20mg prescription
- Labeled:
 - Take 1 table by mouth twice daily
- Should have been:
 - Take 2 tablets by mouth twice daily
- The error occurred as a result of copying and old prescription and not entering the changes ordered by the provider
- Don't lose efficiency function, but make it safer

37

Sample Case – Go Metric

- Physician phoned Rx for Diflucan suspension 25 mg per day for a 3-month-old female with thrush
- Rx partially filled ; told patient to return for the remaining medication
- Three days later returned for the remainder
- RPh on duty realized the instructions on the prescription were incorrect
- Remember: dose was to have been 25 mg per day
- Dispensed Diflucan 10 mg/mL
- The directions read, "Give 2.5 teaspoons daily."
- The directions should have read, "Give 2.5 mL daily"
- Child required IV fluids for dehydration

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50 overdose mix-ups reported to ISMP

- Confusion between
 - teaspoons and tablespoons
 - milliliters (mL) and teaspoons
 - drops and mL
- Prescriber accidentally writes teaspoonfuls when mL intended
- RPh or tech accidentally types teaspoonfuls when the dose was prescribed in mL
- 'Dose check' does not catch it

39

Computer Systems Contribute to Errors

- Pharmacy systems default to express dose in teaspoonful in the directions when oral liquids are ordered
- Remember to change the instructions back to mL when teaspoons automatically appear
- Confirmation bias
- ISMP call for the elimination of teaspoonful and other non-metric measurements to prevent errors

40

E-prescribing issues

- Duplicate , triplicate copies of e-Rx transmissions to pharmacy
- Ex: 3 copies of refill requests of chronic medications transmitted with new Rx for antibiotic
- RPh deleted duplicate copies of chronic meds and 'found' Rx for new antibiotic
- Actually duplicates or updated Rx indicating a change in directions? Physician systems can't recall transmissions

41

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Direction Discrepancies

- The "sig" is pre-populated but the doctor writes the actual directions in the comments section
- In order to view the comments, have to scroll down one or two screens
- 'Prescription for Torsemide 100mg
 - Sig code reads "1 bid"
 - In the instruction field reads "100mg in the am and 50mg in the pm"
 - Quantity written is #90
 - Phone clarification: ignore the sig code, use the instruction field, change quantity to #135 because what they wanted was a 90 day supply, not a quantity of #90 as indicated

42

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Conflicting information

- Prescription for Lactulose
 - Sig : "take 15 mL by mouth 3 times daily, max of 4 x's per day"
 - Called the doctor, they said to cross out the "max of 4 x's per day"
- Prescriber software is confusing and hard to work
 - Default directions often come up that the doctor doesn't know how to clear

43

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Misinterpreted Directions- Bad Handwriting

- Pharmacy dispensed Prednisolone Sodium Phosphate 1% ophthalmic solution
- Labeled, "one drop into left eye every ten hours"
- Prescribed as, "one drop into left eye every one hour"
- Possible error cause(s) and contributing factor(s): Misinterpretation due to doctor's handwriting

44

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Direction Discrepancies

Rx	HYTRIN
Sig:	6 MG PO HS
Dispense:	180 Tablets
Directions:	2 HS

Should have to pick drug along with strength
Limit use of free text writing

45

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Direction Discrepancies

Rx	Clonazepam
Sig:	1 (1.0MG) PO qHS x 30 days
Special Instructions:	take 0.5mg q am and 1.0mg po qhs
Dispense:	60

Dose of drug should be next to the name.
Do not allow trailing zeros
There should be a space between number and unit of measure
Eliminate use of all abbreviations

46

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What would you fill?

Istalol 0.5% 2.5mL 5mL
(ophthalmic solution)

Note to Pharmacist: istalol is "BT" rated in the FDA Orange Book which means there is no therapeutic equivalent to Istalol.

Xibrom™ 0.09% 2.5mL
(bromfenac ophthalmic solution)

Sig: 1 gtt OD OS OUD 1 times daily

Label Refill 3 times

90 day supply

Keep it clean!

48

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What Do You Think This Prescription Is For?

Patient Name
 Address
 Date

Emergan-Pem 0.5
 Sj: + Rite

INITIAL QUANTITY
 1-24
 25-49
 50-74
 75-100
 101-150
 151 & over

REFILL: NR 1 5
 LABEL IN SPINACH
 DO NOT SUBSTITUTE

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There was a blank spot on the prescription next to the "L"

Patient Name
 Address
 Date

Emergan-Pem 0.5
 Sj: + Rite

INITIAL QUANTITY
 1-24
 25-49
 50-74
 75-100
 101-150
 151 & over

REFILL: NR 1 5
 LABEL IN SPINACH
 DO NOT SUBSTITUTE

There was a fax problem from doctor's office when they faxed the prescription in

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Wrong patient

- Spouse
- Child
- Parent
- Similar last name
- Common last name
- Similar full name
- Bagging errors

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Moving on to prevention strategies....




52


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Rank Order of Error Reduction Strategies	
Fail-safes and constraints	High Leverage  Low Leverage
Forcing functions	
Automation and computerization	
Standardization	
Redundancies	
Reminders and checklists	
Rules and policies	
Education and information	
<p>Items at the top of the list, such as fail-safes, forcing functions, and automation, are more powerful strategies because they focus on systems. The tools in the middle attempt to fix the system yet rely in some part on human vigilance and memory. Items at the bottom, such as education, are old, familiar tools that focus on individual performance and therefore are weak and ineffective when used alone.</p>	

Use Variety of Strategies

- **Fail-safes and constraints** true system changes
- **Forcing functions** are procedures that create a "hard stop" 
- **Automation and computerization** reduce reliance on memory 
- **Standardization** creates a uniform model to reduce the complexity and variation of a specific process 

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Use Variety of Strategies

- **Redundancies** incorporate duplicate steps to force additional checks 
- **Reminders and checklists** make important information readily available 
- **Rules and policies** guide staff toward an intended positive outcome 
- **Education and information** effectiveness relies on an individual's ability to remember what has been presented 

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Next Step

- Think about the current process
- Think about the type of information you see (*look at your files*)
 - Is there a repeating subject matter?
 - Do you have items identified by a specific category?

Thanks!

56

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