Pharmacists Responsibility for Patient Safety and Proper Medication Distribution.

Pharmacists Mutual Company
In a study of 500 pharmacist malpractice claims conducted by Pharmacists Mutual Insurance Company, the following types of errors were identified:
- Wrong Drug Dispensed 52%,
- Wrong Strength Dispensed 27%,
- Wrong Directions Given 7.4%,
- for a total of 86.4% of errors that could have been prevented.

Incorrect Use of Medications
- 82% of Americans take at least one medication
- 29% take at least 5 or more
  - www.cdc.gov
- 9 million hospital admissions
- 18 million emergency room visits
- $177.4 billion

Institute of Medicine
- The IOM report estimates that medical errors cost the Nation approximately $37.6 billion each year; about $17 billion of those costs are associated with preventable errors. About half of the expenditures for preventable medical errors are for direct health care costs (IOM, 1999).
- Preventable medication errors: $21 billion in wasteful health care spending (National Priorities Partnership)
  - Inpatient = $16.4 Billion
  - Outpatient = $4.2 Billion

Question?
- What are the other types of costs that you can associate with having medication errors?
- Discussion...

National Association of Boards of Pharmacy
- There are as many as 7,000 deaths annually in the United States from incorrect prescriptions, according to Carmen Catizone of the National Association of Boards of Pharmacy.
- He told The Washington Post that as many as 5 percent of the 3 billion prescriptions filled each year are incorrect.
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Problems in the dispensing process
Risk Reduction Strategies

• Distractions
  ➢ Very common in practice
  ➢ Are you a pharmacy manager vs. supervising pharmacist vs. director of pharmacy
  ➢ Other duties besides dispensing and counseling
• Many distractions are unavoidable but many have solutions
  ➢ Phone calls ...faxes, electronic Rxs
  ➢ Train personnel to answer and route calls
  ➢ Train personnel to deal with insurance companies
  ➢ Do not text or take emails at work
  ➢ Do not surf the web for personal use at work.

Distractions/Interruptions in the dispensing process

• Interruption
  ➢ The cessation of productive activity before the current prescription-filling task was completed for any externally imposed, observable or audible reason.

Distractions/Interruptions in the dispensing process

• Distraction
  ➢ A stimulus from a source external to the pharmacist that was not followed by cessation of activity but by the pharmacist continuing productive efforts while responding in a manner that was observable.

Distractions/Interruptions in the dispensing process

• 451 bed, non-government, not-for-profit hospital in 1992
• Outpatient pharmacy
• Videotaping
  ➢ 23 day study period
  ➢ 14 pharmacists
  ➢ 10 technicians
  ➢ Open 830am to 430pm M-F
• Looked for interruptions and distractions

Distractions/Interruptions in the dispensing process

• 5,072 prescriptions were analyzed
• 164 errors were detected

Distractions/Interruptions in the dispensing process

• Error rate = 3.23%
  ➢ Wrongful label = 80%
  ➢ Incorrect instructions 46%
  ➢ Incorrect physician 18%
  ➢ Wrong refills 8%
  ➢ Misc 28%
  ➢ Wrong quantity 7%
  ➢ Wrong drug 6%
  ➢ Wrong strength 6%
  ➢ Wrong Dosage form 1%

Michael R. Cohen, Medication Errors: Causes, Prevention and Risk Management ©2000 Chapter 9: Preventing Dispensing Errors
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Distractions/Interruptions in the dispensing process
- 2,022 interruptions
- 2,457 distractions
- Where there occurred > 1 interruption/30 min
  ▫ 6.54%
- Where there occurred > 1 distraction/30 min
  ▫ 6.55%

Conclusion: The more interruptions/distractions per ¼ hour the higher the error rate.

Intentional Blindness
- Process by which fail to see something that is unexpected.
  ▫ It is involuntary
  ▫ Very difficult to overcome
  ▫ “We see what we expect to see”

Vol 56 (Jul), 1999 Am J. Health-Syst Pharm

Intentional Blindness
- Visual attentiveness
  ▫ What captures our attention
  ▫ 4 factors affect this:
    ▪ 1. Conspicuity
      ▫ The degree to which an object or piece of information jumps out to capture our attention.

Conspicuity
- Sensory Conspicuity
  ▫ Physical properties of information that jumps out to catch our attention
  ▫ High degree of contrast with background
  ▫ Bright colors, contrast or movements do not guarantee conspicuity

HPSO Risk Advisor 2013

Conspicuity
- Cognitive conspicuity
  ▫ Refers to the perceived relevance of the information.
    ▪ Hearing your name spoken across the room at a cocktail party
    ▪ Seeing something that stands out in a newspaper because it draws our attention

Intentional Blindness (IB)
- 2. Mention workload and task inference
  ▫ IB more likely to occur if part of our attention is diverted to a secondary task
  ▫ Answering phones
  ▫ Entering Rxs into the computer
  ▫ Texting
  ▫ Listening to auditory sounds interferes less than visual
  ▫ (listening to a radio vs seeing a sign)
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Mention workload and task inference

- Low volume workload leads to boredom
  - Less mental concentration
- Highly practiced tasks
  - Filling Rxs
  - Filling Syringes
  - “automatic pilot” makes us more prone to IB
  - Technology worsens automatic pilot

Intentional Blindness (IB)

- 3. Expectations
  - A. Change:
    - When change occurs in working area you are more prone to make mistakes
  - B. Confirmation Bias:
    - We are drawn to evidence to support our belief and dismiss evidence to the contrary.
      - e.g., numbers on a calculator
      - e.g., checking many tech-filled Rxs in a row.
      - e.g., subconsciously learned that there was nothing important to see in these tasks

Intentional Blindness (IB)

- 4. Capacity
  - Capacity to pay attention and notice important events
  - Age, alcohol, drugs, fatigue* and stress

Errors Associated with An Outpatient Computerized Prescribing System

- Outpatient pharmacy chain
- 3 states
  - Florida
  - Arizona
  - Mass
- 3,850 computer generated Rxs
- 4 week span in 2008

Errors Associated with An Outpatient Computerized Prescribing System

- Objectives:
  - Incidence of medication errors
  - Potential of adverse drug events
  - Errors with a potential for harm
  - Rate of prescribing errors by type and prescribing system

Errors Associated with An Outpatient Computerized Prescribing System

- 3,850 prescriptions
  - 466 (11.7%) total errors
  - 163 (35%) were potential drug ADE’s
  - 303 (65%) were medication errors
  - Depending on the software used
    - Errors = 5.1 to 37.5%
    - Most common error = omitted information (60.7%).
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Errors Associated with An Outpatient Computerized Prescribing System
- 10% of the computer generated prescriptions included at least one error
  - 1/3 had the potential for harm
  - Same rate as written Rxs!
- Error rates varied among computer systems
  - Some computer software is better than others.

J Am Med Inform Assoc 2011: 18: 767-773

Errors Associated with An Outpatient Computerized Prescribing System
- Implementing a computerized prescribing system without a comprehensive functionality and processes in place to ensure meaningful system use does not decrease medication errors.

J Am Med Inform Assoc 2011: 18: 767-773

Community Chain Pharmacists Interventions on Electronic Prescriptions
- 68 pharmacies in 5 states
- 2,690 e-prescriptions
  - 83% new

JAPHA 49:1 Jan/Feb 2009

Community Chain Pharmacists Interventions on Electronic Prescriptions
- Objectives
  - Measure the incidence of problems on e-Rxs that require the pharmacist to contact the prescriber to resolve
  - Determine the types and relative frequency of e-prescription problems that require intervention by the pharmacist

JAPHA 49:1 Jan/Feb 2009

Community Chain Pharmacists Interventions on Electronic Prescriptions
- Estimate the pharmacy personnel time and related practice expense to resolve these problems

JAPHA 49:1 Jan/Feb 2009

Community Chain Pharmacists Interventions on Electronic Prescriptions
- Pharmacists intervened in 3.8% of the e-prescriptions
  - 32% due to missing information
    - 13% for missing directions
  - 18% dosing errors
  - 6.2% excessive dose
  - 6.2% excessive quantity/duration
  - 113 reasons in all
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Community Chain Pharmacists Interventions on Electronic Prescriptions

- How did the pharmacists resolve these problems?
- 64% with prescribers
- 12.8% with profiles
- 9.4% with the patient

Community Chain Pharmacists Interventions on Electronic Prescriptions

- 56% order was changed and dispensed to the patient
- 15% order was dispensed “as is” after discussion with prescriber.
- 10% not dispensed
- 12% unresolved issues at the time of the study.

Community Chain Pharmacists Interventions on Electronic Prescriptions

- Average of 6.07 minutes/intervention
- $46.64 / hour = wage of pharmacist
- $4.74 per e-Rx intervention
- OVERALL = $0.18 per Rx dispensed.

Community Chain Pharmacists Interventions on Electronic Prescriptions

- Study:
  - Prescribers should perform their own e-Rx data entry
  - Carefully review before sending
  - Software by physician enabled to check problems
    - Special emphasis on problems
    - Special emphasis on dosing errors

Pharmacists Dispensing Discontinued Medications*

- The study was conducted at Harvard Vanguard Medical Associates
- Researchers used electronic medical records to analyze 1,218 medications that were discontinued
  - November 2008 – October 2009
- Studied the pharmacies who were affiliated with the clinics
- Looked at 83,902 medications that were discontinued
  - 1,218 were subsequently dispensed

Pharmacists Dispensing Discontinued Medications*

- 1.5% were dispensed at least once in a 12 month period
  - Potential harm in at 12% of these cases
- Medications were electronically transmitted to the pharmacy but no transmissions of discontinuations.
- Conclusion: need to improve communication between providers and pharmacists.

Allen, Andrienne, Annals of Internal Medicine November 2012

Allen, Andrienne, Annals of Internal Medicine November 2012
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Understanding and Preventing Wrong-Patient Electronic orders: A Randomized Controlled Trial

- Objective:
- To develop a reliable method to measure the frequency of wrong-patient electronic orders, study their underlying root causes, and test electronic interventions designed to avert them in a randomized controlled trial.


Understanding and Preventing Wrong-Patient Electronic orders: A Randomized Controlled Trial

- In phase 1, from May to August 2010, the effectiveness of a ‘retract-and-reorder’ measurement tool was assessed that identified orders placed on a patient, promptly retracted, and then reordered by the same provider on a different patient as a marker for wrong-patient electronic orders.
  - Found 173 of 223 as wrong-patient electronic orders.


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Understanding and Preventing Wrong-Patient Electronic orders: A Randomized Controlled Trial

- ID-Verify Alert
  - Single-click confirmation of patient identity
  - Reduced wrong-patient electronic orders by 16%
  - Took 0.5 seconds per alert

- ID-Reentry Function
  - Required active reentry of identifiers
  - Reduced wrong-patient electronic orders by 41%
  - Took 6.6 seconds per alert


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Understanding and Preventing Wrong-Patient Electronic orders: A Randomized Controlled Trial

- Given that these additional checks take extra time and effort, will this cause other errors to occur?


Overrides of Medication Alerts in Ambulatory Care

- Examined electronic prescriptions from a specific vendor software
  - Massachusetts
  - New Jersey
  - Pennsylvania
  - Jan 1, 2006-Sept 30, 2006

Arch Intern Med/Vol 169 (No. 3) Feb 9, 2009
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Overrides of Medication Alerts in Ambulatory Care

• 2,872 Clinicians
• 862 Practices
  - 69% Mass
  - 20% NJ
  - 11% Penn

Overrides of Medication Alerts in Ambulatory Care

• 3 million prescriptions
• 233,537 Safety Alerts
  - Drug-drug alerts (98.3%)
  - Allergy alerts (1.7%)

Overrides of Medication Alerts in Ambulatory Care

• Conclusions:
  - Electronic prescribing may NOT be as safe as everyone believes
    - Most alerts were overridden
  - Pharmacists are even more important now to check and catch potentially dangerous alerts.
  - Just because it is an electronic Rx does not mean it has been thoroughly checked by the prescriber!

Overrides of Medication Alerts in Ambulatory Care

• Clinicians overrode
  - 90.8% of the drug-drug alerts
  - 77% of the allergy alerts

Prescriber common errors

• Choosing the wrong patient
• Forgetting to shut down one patient’s profile before prescribing for another
• Using the wrong ‘shortcuts’
  - Misspelled
  - Created incorrect shortcut
• Letting office personnel use the electronic prescribing software

Prescriber common errors

• Turning off safety features of the system
  - “alerts”
• Look alikes
  - Drug names
  - Lab names similar to drug names
• Not keeping data systems up-to-date
• Prescriber fatigue
  - With the system
• Being interrupted while e-prescribing
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**Impact of a Pharmacist-Facilitated Hospital Discharge Program**

- Compare the outcomes patients receiving the intervention (n=358) with the control group (n=366)
- High risk patients
  - Multiple medications/disease states
- Intervention consisted of
  - Medication therapy assessment
  - Medication reconciliation
  - Screening for adherence issues
  - Patient counseling and education
  - Post-discharge telephone follow up.

**Impact of a Pharmacist-Facilitated Hospital Discharge Program**

- Study outcomes
  - 14-day readmission rates
  - 30-day readmission rates
  - Emergency department visits within 72 hours of discharge.
- Results
  - Patients in the intervention group were less likely than those in the control group to have 1 or more medication discrepancies noted prior to discharge (33.5% vs 59.6%)

**Pharmacist Follow-Up:**

- Patients who received pharmacist follow-up calls were 88 percent less likely to have a preventable medication error resulting in an ED visit or hospitalization.

**Catholic Health Systems: April 1, 2014**

- Discharged patients will be receiving a printed discharge summary that will list the patients med list and instructions along with the last set of important labs and MDs dictated discharge summary.
  - Patients are instructed to present this to the community pharmacy
- If patients do not present this the information is available on HealthNetLink for patients enrolled in this.
  - Approx 60% of our patients are enrolled
- Each patient coming thru the ER gets asked if they want to enroll.
- Community pharmacies may want to remind patients to bring this with them each and every time they are discharged from the ER or a CH facility.

**Collaborative Medication Reconciliation Significantly Reduces Errors and Readmissions in Patients Discharged to Nursing Homes**

- Hennepin County Medical Center
  - Minneapolis, MN
  - 92% of patients upon discharge had at least one medication error in 2008
- Implemented a multi-disciplinary team for medication reconciliation for patients discharged to skilled nursing facilities
  - Physician must write orders within 4 hours
  - Clinical coordinator checks all non-medication orders
  - Pharmacist must review and sign-off all discharge orders
  - Problem? Contact the prescriber

http://www.innovations.ahrq.gov/content.aspx?id=3111
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**Collaborative Medication Reconciliation Significantly Reduces Errors and Readmissions in Patients Discharged to Nursing Homes: Results 2009**

- Patients with new medication reconciliation process prior to discharge:
  - No medication errors in any patient
- Patients with traditional discharge:
  - 70% had at least one medication error
- Emergency department visits and readmissions were reduced > 30% over the previous year.
- Estimated savings for the hospital
  - $587,000


**Conclusions**

- **Workload**
  - How many hours are you working?
  - Long days
  - Cluttered counter
- Be vigilant of other professionals’ workloads

**Conclusions**

- Increase computerization to eliminate communication problems in written and verbal prescriptions
  - Faxing
  - E-Prescribing
  - Security
- Encourage CPOE
  - Get involved at the prescriber side to help rectify any problems or issues.

**Conclusions**

- Become more involved with prescribers
  - MTM
  - UB and other Schools of Pharmacy Students
  - Help you to integrate with prescribers
  - Don’t just be a voice on the phone
- Coordinate efforts between discharge pharmacists in hospitals and community pharmacists for follow up of patients and medication reconciliation.

**Websites**

- [www.jcaho.org](http://www.jcaho.org)
- [www.ismp.org](http://www.ismp.org)
- [www.nccmerp.org](http://www.nccmerp.org)
- [www.usp.org](http://www.usp.org)
- [www.fda.gov](http://www.fda.gov)