

Medication Safety

Indiana University Health's Experience

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The speaker has no conflicts to disclose.

Objectives

- Describe medication safety initiatives at Indiana University Health.
- List external and internal resources for identifying medication safety concerns.
- Identify keys to a successful medication safety program.

Identify your practice setting

1. Hospital
2. Ambulatory/Retail
3. Industry
4. Other


Indiana University Health



- Largest health system in Indiana
- 21+ hospital academic health system
- 22,000+ employees
- Educate 13,000+ medical residents, students and other allied health professionals each year

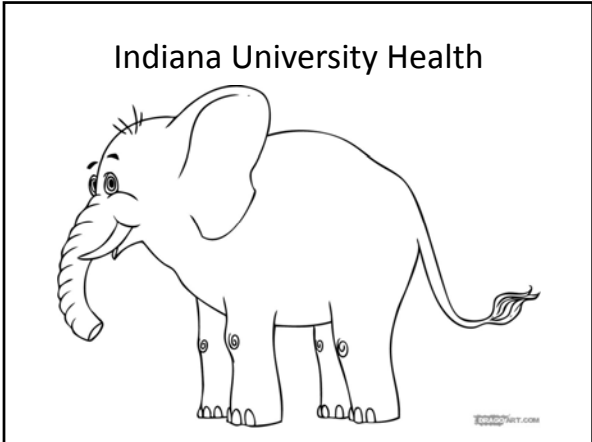
Indiana University Health

- Commitment to safety from the Board Room to the Bedside
- Focus on system-level quality and safety



Indiana University Health

- Medication Safety Project Sampling
 - FMEA: Concentrated Insulin U-500 addition to formulary
 - Pitocin standardization
 - Indianapolis Coalition for Patient Safety
 - Drug-Drug Interactions



Medication Safety – Internal Data

- Voluntary Reporting
- Medical Record Review
- Observational Methodology
- Technology Data Reports
- Interventions

Medication Safety – External Data

- FDA
- Institute for Safe Medication Practices
- The Joint Commission
- Pennsylvania Patient Safety Authority

Medication Safety – Processes

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Which is not an example of an external source of medication safety information?

1. Failure Mode Effects Analysis
2. TJC Sentinel Event Alert
3. ISMP Newsletter
4. Pennsylvania Patient Safety Advisory

Medication Safety

Smith GCS, Pell JP. Parachute use to prevent death and major trauma related to gravitational challenge: systemic review of randomised controlled trials. *BMJ* 2003;327:1459-1461.

What is already known about this topic

Parachutes are widely used to prevent death and major injury after gravitational challenge

Parachute use is associated with adverse effects due to failure of the intervention and iatrogenic injury

Statutes of force fall do not show 100% mortality

What this study adds

No randomised controlled trials of parachute use have been undertaken

The basis for parachute use is purely observational, and its apparent efficacy could potentially be explained by a 'healthy cohort' effect

Individuals who insist that all interventions need to be validated by a randomised controlled trial need to come down to earth with a bang.

Parachutes reduce the risk of injury after gravitational challenge, but their effectiveness has not been proved with randomised controlled trials

Medication Safety

Leape LL, Berwick DM, Bates DW. What practices will most improve safety? Evidenced-based medicine meets patient safety. JAMA 2002;288:501-507.

“There will never be complete evidence for everything that must be done in medicine.”

Medication Safety



**Automating Adverse Drug Event
(ADE) Trending**

Amber Meigs, PharmD, BCPS
September 17, 2011

Disclosure

Speaker has no actual or potential conflicts of interest in relation to this presentation.

Learning Objectives

- Describe various methods for identifying an adverse drug event (ADE)
- List the Institute for Healthcare Improvement (IHI) medication related triggers

NorthShore University HealthSystem

- Four acute care hospitals
 - Evanston Hospital
 - Glenbrook Hospital
 - Highland Park Hospital
 - Skokie Hospital
- NorthShore Medical Group
- NorthShore Research Institute
- NorthShore Foundation

Background

- Adverse Drug Events (ADE)
- Various methods for ADE tracking/trending
 - Manual
 - Voluntary reporting
 - Chart review
 - Patient safety indicators (AHRQ)
 - Trigger tool (IHI)

Health Affairs, 30, no.4 (2011):581-589

**Background:
Institute for Healthcare Improvement**

- Non-profit organization, founded in the late 1980s
- Need for a more effective way for hospitals to identify harm
 - Only 10-20% of errors are reported
 - Most cause no harm to patients
- Formed the Idealized Design of the Medication System (IDMS) Group
 - Developed the Trigger Tool
 - Assessed whether practice changes improved the safety of the medication system

IHI Global Trigger Tool, 2009

Background: IHI Trigger Tool

- Trigger or “clue”
 - Developed to detect and alert health care professionals of a **possible ADE**
 - Focused on identifying harm related to the acute delivery of care

Modules	# of Triggers
Cares	14
Medication	13
Surgical	11
Perinatal	8
Intensive Care	4
Emergency Department	2

IHI Global Trigger Tool, 2009

Background: IHI Medication Related Triggers

- | | |
|--|----------------------------------|
| M1 - <i>Clostridium difficile</i> positive stool | M8 - Flumazenil administration |
| M2 - PTT > 100 seconds | M9 - Naloxone administration |
| M3 - INR > 6 | M10 - Anti-emetic administration |
| M4 - Glucose < 50 mg/dl | M11 - Over-sedation/hypotension |
| M5 - Rising BUN or SCr 2x over baseline | M12 - Abrupt medication stop |
| M6 - Vitamin K administration | M13 - Other |
| M7 - Diphenhydramine administration | |

IHI Global Trigger Tool, 2009

Background: IHI Trigger Tool Recommended Process

- Review Team
- Retrospective chart review
 - 10 discharged charts every 2 weeks
 - 20 minute rule (no more than 20 min/chart)
 - Identify triggers
 - Identify whether an adverse event occurred
 - Categorize harm
- Track measures over time

IHI Global Trigger Tool, 2009

Objective

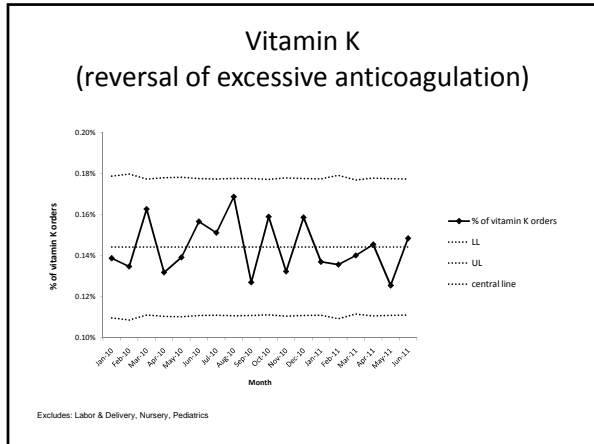
Utilize the electronic health record to generate an automatic report of select triggers to identify and track potential adverse drug events (ADEs).

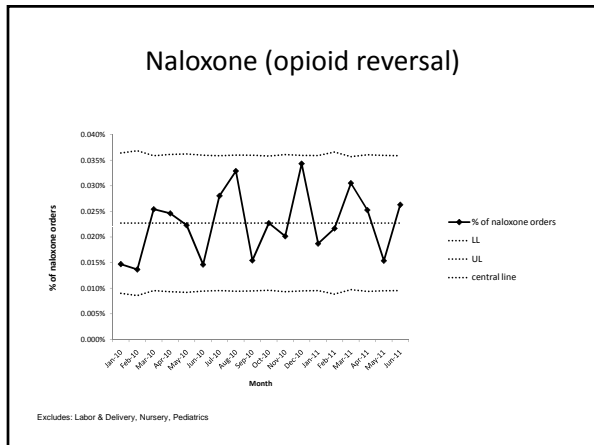
Methods

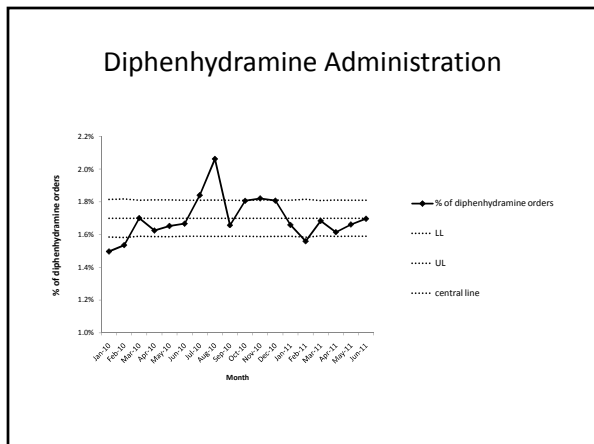
- Multidisciplinary team
 - Pharmacy
 - Quality
 - Medical Informatics
- Determine indicators for each trigger
- Monthly, automated reports
- Developed control charts
- Monitoring
 - Team to monitor and track trends
 - Review for special cause variations as needed

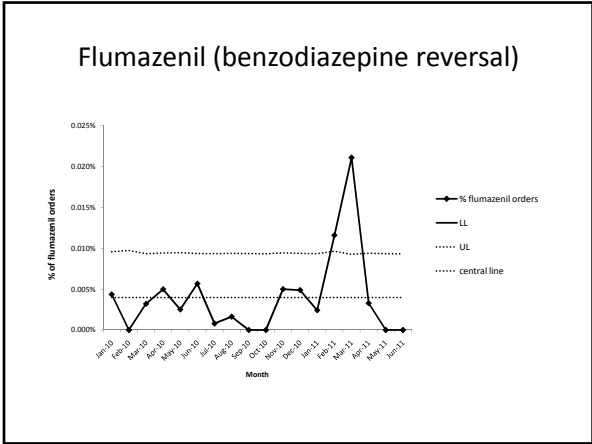
Selected Triggers

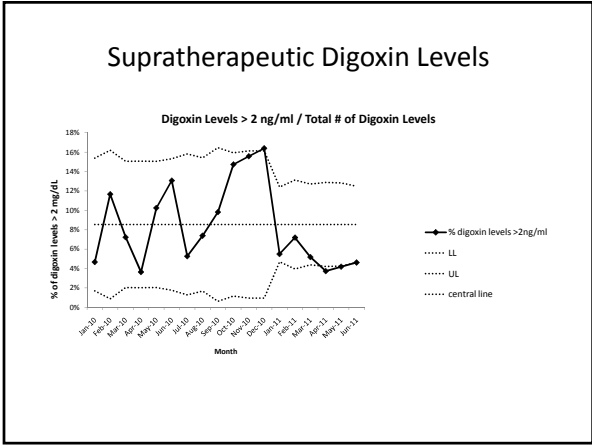
- Vitamin K for reversal of excessive anticoagulation
- Naloxone for opioid reversal
- Diphenhydramine administration
- Flumazenil for benzodiazepine reversal
- Digoxin levels > 2 ng/mL
- Glucose < 70 mg/dl while receiving insulin or oral hypoglycemic agents

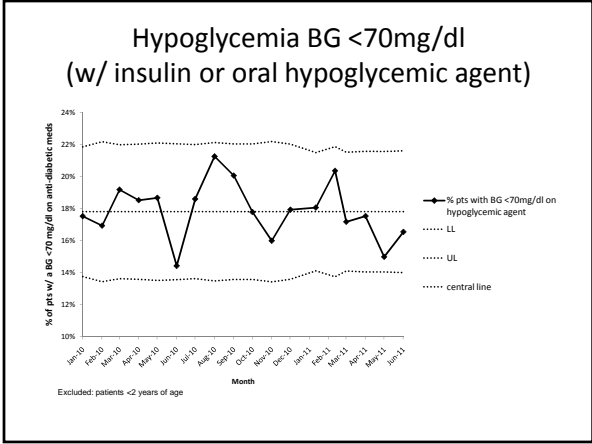












Discussion

- All trigger points exhibit common cause variation
- Individual points outside of the control limits
- Short runs of data, but no concern for special cause variation

Limitations

- Low volume of use
- Lack of sensitivity and specificity
- Unable to capture non-discrete data
- Administrations not documented on the MAR

Future Steps

- Review remaining triggers
 - PTT >100 and bleeding
 - received protamine or blood transfusion
 - INR >6 in patients who received warfarin in past 5 days
 - Over-sedation related to sedatives or analgesics
 - *C.difficile* positive and recent antibiotic use
- Review for special cause variation as needed
- Consider requiring indication for use on every order

Self Assessment Question

Which of the following statement(s) are correct?

- A. Voluntary reporting of ADEs is known to have a high ADE detection rate.
- B. Patient Safety Indicators use automated review of discharge and diagnosis codes to identify ADEs.
- C. The Institute for Healthcare Improvement's (IHI) Global Trigger Tool relies on manual chart review to detect ADEs.
- D. All of the above

Self Assessment Question

Which of the following is an example of an IHI medication related trigger?

- A. Insulin administration for glucose > 180mg/dl
- B. Glucose <50mg/dl
- C. N-acetylcysteine administration for acetaminophen overdose
- D. Flumazenil for benzodiazepine reversal
- E. Both B and D

Questions?

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