

Turning Data into Useful, Actionable Information:
*Integrating the Global Trigger Tool with
Reported Events and Malpractice Claims to
Develop a Strategy to Promote the Safe
Use of Opiates in the Inpatient
Environment*

Stephanie Jackson MD, FHM
System Patient Safety Officer
PeaceHealth

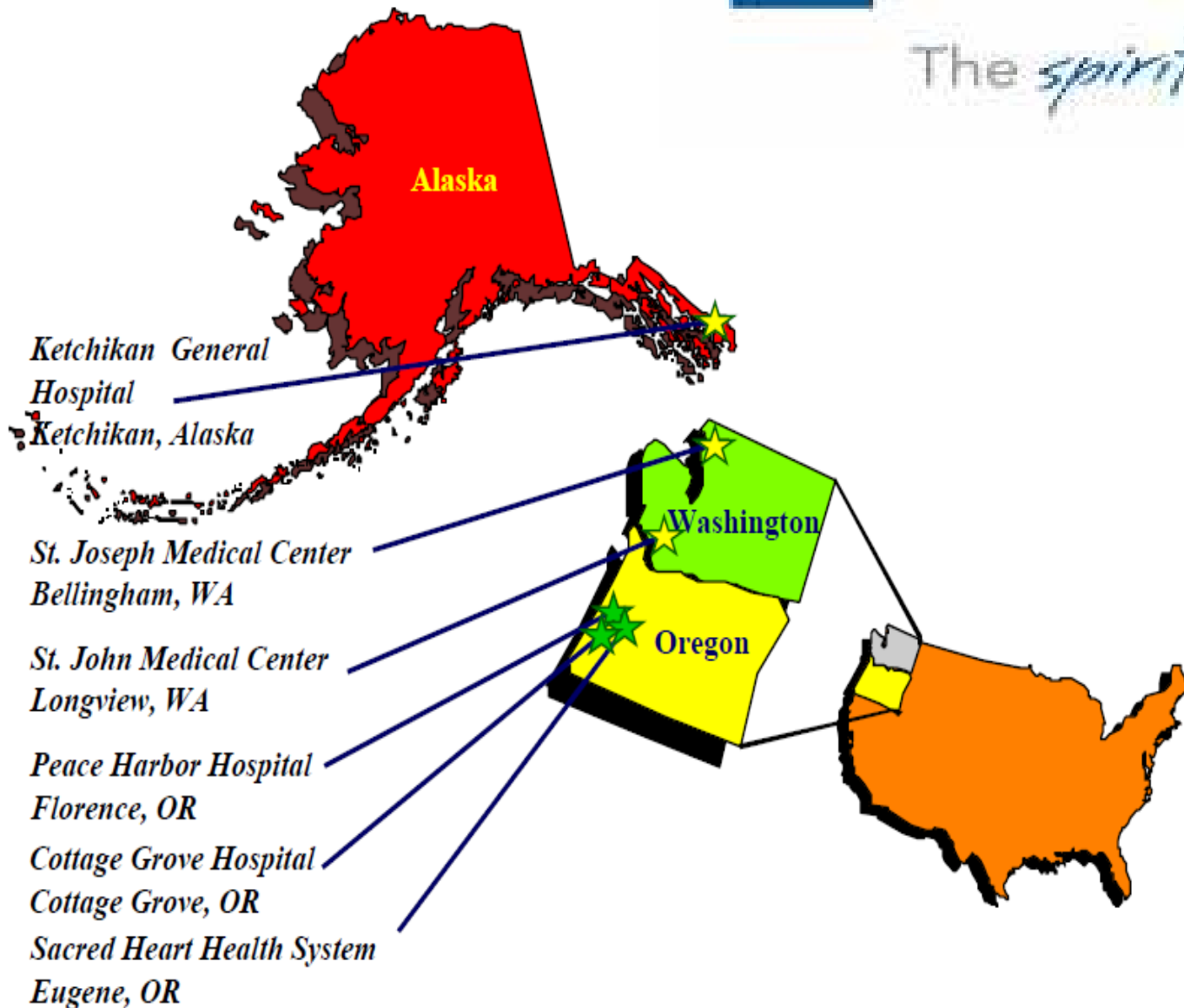
Objectives

- **Define methods to measure patient safety and their advantages and limitations**
- **Review recent national studies quantifying inpatient harm**
- **Learn how integration of multiple sources of safety information led to a focused patient safety initiative**



PeaceHealth

The spirit of healing™



Our Oath:
First Do No Harm

Our Promise:
***Every PeaceHealth patient will receive
SAFE, evidence-based, compassionate
care; every time, every touch***

- How **SAFE** are we?
- How much **HARM** do we cause?

3 key methods

Reports

Audits

Surveys

Advantages

- Captures errors of commission and omission
- Captures close calls as well as harm
- Captures behavior complaints
- Detail that is unable to be obtained from chart review

Limitations

- Only 8-12% of errors reported
- Yet number of reports is overwhelming
- Confidentiality issues
- Goal is to increase the number of reports, can not provide measure over time

Pitfalls

- The act of reporting in and of itself, does nothing to improve patient safety
- Resist temptation to base decisions on numbers of reports

- **Sentinel Events – the worst reports**
 - Allows focus on the most severe, potentially preventable event reports
 - Clear definitions
 - At PH, only 1/3 of severe events found by audit were captured in the incident report database
- **Malpractice Claims : patient reporting**
 - Only 1% of negligent care results in litigation
 - Delayed
 - Relies on societies lens to determine harm

Advantages

- Correlation with outcomes, adverse events, employee satisfaction and retention
- Provides insight into key areas of communication and teamwork
- Inexpensive relative to other measures

Limitations

- Surrogate marker, depends on the day, not an outcome
- Problems identified are often the most challenging to tackle
- Usually done only once a year

Pitfalls

- The act of surveying in and of itself, does nothing to improve patient safety
- Real power is in discussing results with teams

Advantages

- Expresses harm or process failures in measurable terms – event rate can be followed over time
- Does not rely on reporting
- Most effective way of detecting harm

Limitations

- Labor intensive, often retrospective
- Preventable and non preventable adverse events
- Difficult to pick up behavior concerns
- Lack of consistent definitions of harm

Pitfalls

- Subjectivity can make clinician buy in difficult
- GTT - lack of nationally benchmarked data and standard definitions
- Just because you capture it all, doesn't mean you can improve it all

Patient Safety Indicators - Coding Abstracts

AHRQ PSI Composite Measure	
Patient Safety for Selected Indicators (PSI #90)	
PSI #03 Pressure Ulcer	PSI #11 Postop Respiratory Failure
PSI #06 Iatrogenic Pneumothorax	PSI #12 Postop PE Or DVT
PSI #07 Central Venous Catheter-related Bloodstream Infections	PSI #13 Postop Sepsis
PSI #08 Postop Hip Fracture	PSI #14 Postop Wound Dehiscence
PSI #09 Postop Hemorrhage or Hematoma	PSI #15 Accidental Puncture or Laceration
PSI #10 Postop Physiologic and Metabolic Derangments	

Advantages

- **Becoming benchmarked, reportable**
- **Most have clear definitions**
- **Hybrid of Reporting and Auditing**

Limitations

- **Low sensitivity**
- **Some with poor specificity**
- **Procedurally weighted**

Medicare Hospital Acquired Conditions

Air Embolism

Blood Incompatibility

**Catheter-Associated Urinary Tract
Infection**

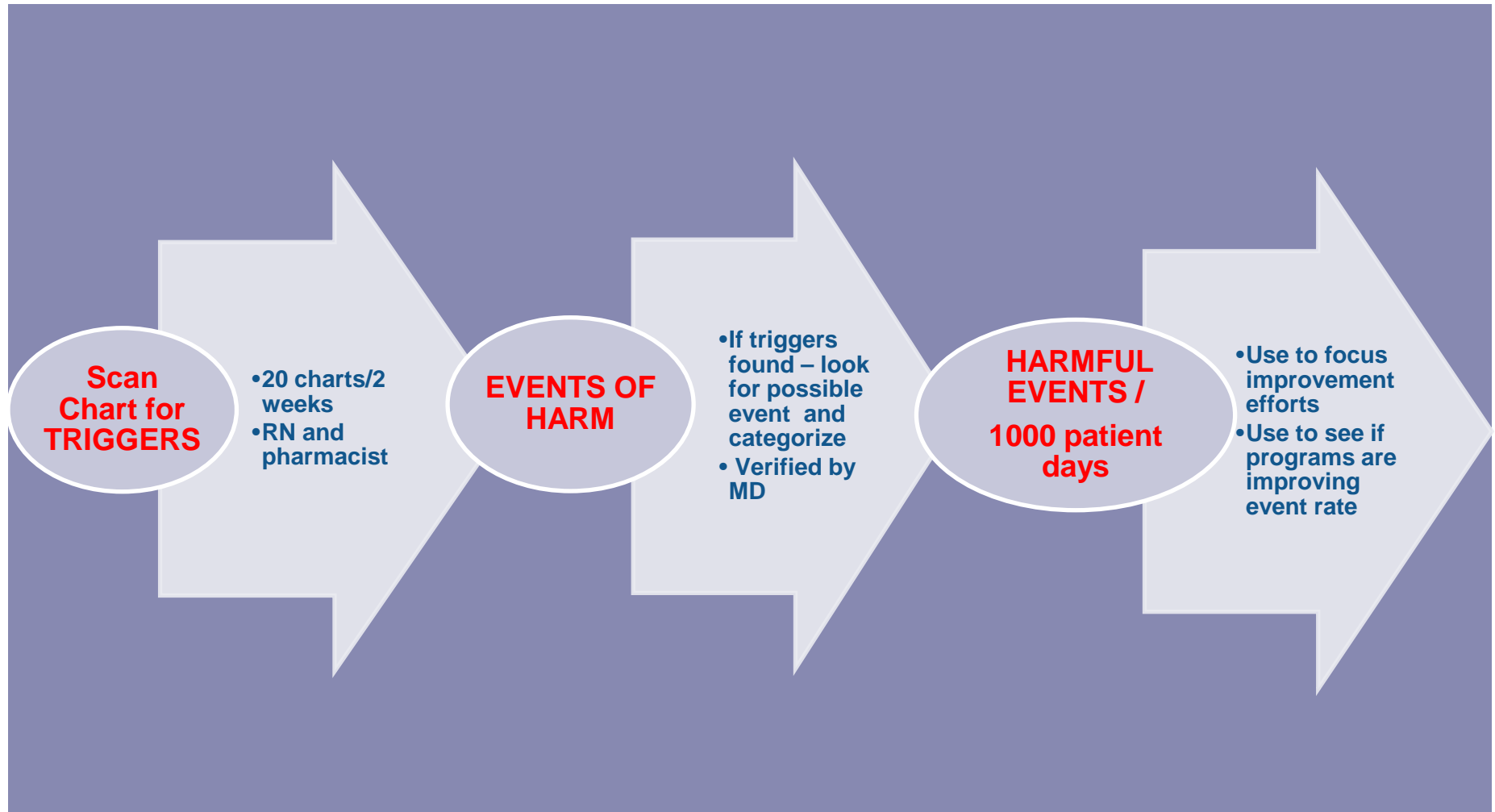
Falls and Trauma

Foreign Object Retained After Surgery

Manifestations of Poor Glycemic Control

Pressure Ulcers Stages III and IV

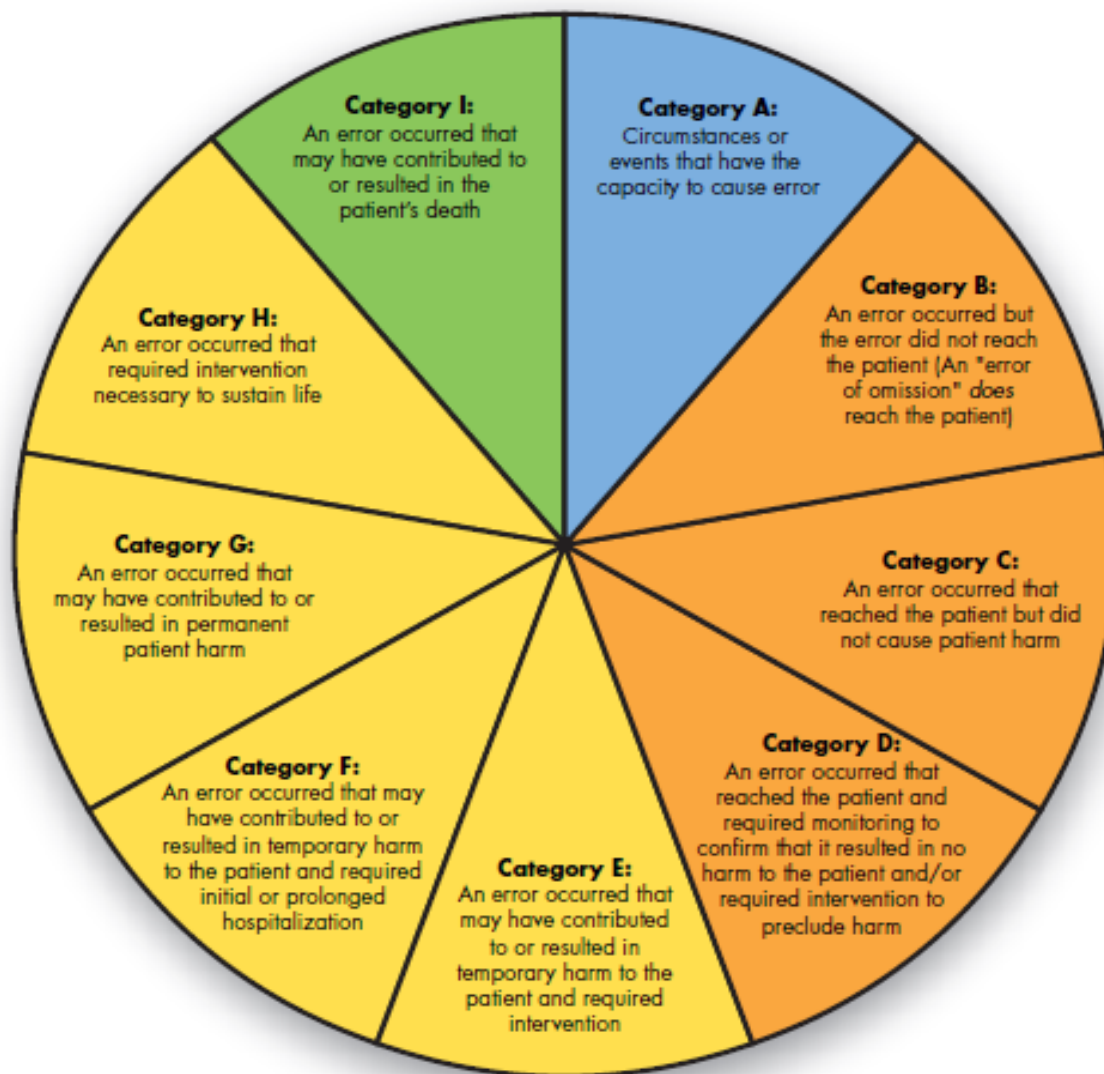
Vascular-Catheter Associated Infections



GTT Definition of Harm

**Unintended physical injury
resulting from or contributed to
by medical care that requires
additional monitoring,
treatment or hospitalization, or
that results in death.**

NCC MERP Index for Categorizing Medication Errors



- No Error
- Error, No Harm
- Error, Harm
- Error, Death

Definitions

Harm

Impairment of the physical, emotional, or psychological function or structure of the body and/or pain resulting therefrom.

Monitoring

To observe or record relevant physiological or psychological signs.

Intervention

May include change in therapy or active medical/surgical treatment.

Intervention Necessary to Sustain Life

Includes cardiovascular and respiratory support (e.g., CPR, defibrillation, intubation, etc.)

APPENDIX 1 TRIGGERS FOR IHI GLOBAL TRIGGER TOOL

Cares Module		Medication Module		Surgical Module	
C1	Transfusion or use of blood products	M1	<i>Clostridium difficile</i> -positive culture	S1	Return to surgery
C2	Any code or arrest	M2	Partial thromboplastin time greater than 100 seconds	S2	Change in procedure
C3	Dialysis	M3	International normalized ratio greater than 6	S3	Admission to intensive care postoperative
C4	Positive blood culture	M4	Glucose less than 50 mg/dl	S4	Intubation/reintubation/BiPap in post anesthesia care unit (PACU)
C5	Radiograph or Doppler studies for emboli	M5	Rising BUN or serum creatinine greater than 2 times baseline	S5	Radiograph intraoperative or in PACU
C6	Abrupt drop of greater than 25% in hemoglobin or hematocrit	M6	Vitamin K administration	S6	Intraoperative or postoperative death
C7	Patient fall	M7	Benadryl (diphenhydramine) use	S7	Mechanical ventilation greater than 24 hours postoperative
C8	Decubiti	M8	Romazicon (Flumazenil) use	S8	Intraoperative epinephrine or norepinephrine
C9	Readmission within 30 days	M9	Narcan (naloxone) use	S9	Postoperative troponin level greater than 1.5 ng/ml
C10	Restraint use	M10	Antiemetic use	S10	Change anesthetic during surgery
C11	Infection of any kind	M11	Oversedation/hypotension	S11	Consult requested in PACU
C12	In-hospital stroke	M12	Abrupt medication stop	S12	Pathology report normal or unrelated to diagnosis
C13	Transfer to higher level of care	M13	Other	S13	Insertion of arterial or central venous line during surgery
C14	Any procedure complication			S14	Operative time greater than 6 hours
C15	Other			S15	Removal/injury or repair of organ
Emergency Department Module		Intensive Care Module		Perinatal Module	
E1	Readmission to ED within 48 hours	I1	Pneumonia onset	P1	Apgar less than 7 at 5 minutes
E2	Time in ED greater than 6 hours	I2	Readmission to intensive care	P2	Maternal/neonatal transport/transfer
		I3	In unit procedure	P3	Magnesium sulfate or terbutaline use
		I4	Intubation/reintubation	P4	Infant serum glucose less than 50 mg/dl
				P5	Third- or fourth-degree lacerations
				P6	Induction of delivery

Table 1: Number and Percentage of Events Identified Through Each Screening Method

Method	Number of Events*	Percentage of 120 Events
Nurse Reviews	93	78%
POA Analysis	61	51%
Beneficiary Interviews	22	18%
Hospital Incident Reports	8	7%
PSI Analysis	8	7%

Source: OIG analysis of 278 Medicare beneficiary hospitalizations in 2 selected counties, 2008.

*Column does not sum to 120 because many events were identified through more than 1 method.

The Forum

Medical mistakes plague Medicare patients

Today's inspector general's report: About 1 in 7 patients experienced serious harm during hospital stay

By Daniel R. Levinson

Today's hospitals are modern-day marvels of healing, and we expect them to be models of patient safety as well. But a just-released report from my office shows that medical care is falling short for too many hospitalized Medicare patients. A decade after an Institute of Medicine study placed preventable medical errors among the leading causes of death in the United States, our latest study found that a disturbing number of hospitalized patients still endure harmful consequences from medical care, 44% of them preventable. These instances, which the report calls "adverse events," include infections, surgical complications and medication errors.

Such occurrences are not always preventable, particularly since many Medicare patients are elderly and have complicated health problems. But enough patient harm is avoidable to make a strong case for action. Hospitals must improve, but they need the help of lawmakers, medical professionals and patients to do so.

Errors prolonged hospital stays

This study began in response to a congressional mandate to determine the number of harmful medical events Medicare patients experienced, and the cost to taxpayers. My office arranged for physician reviewers to examine a ran-



2008 USA TODAY photo

Hefty price: Additional care caused by errors costs more than \$4 billion each year.

dom sample of 780 Medicare patients discharged from hospitals around the country during the month of October 2008.

Physicians determined that about one in seven patients (13.5%) experienced at least one serious instance of harm from medical care that prolonged their hospital stay, caused permanent harm, required life-sustaining intervention, or contributed to their deaths. Projected to the entire Medicare population, this rate means an estimated 134,000 hospitalized Medicare beneficiaries experienced harm from medical care in one month, with the event contributing to death for 1.5%, or approximately 15,000 patients.

Strikingly, medication errors factored

in more than half the patient fatalities in our sample, including use of the wrong drug, giving the wrong dosage, or inadequately treating known side effects. Such events were commonly caused by hospital staff diagnosing patients incorrectly or failing to closely monitor their conditions.

Less serious harm also occurred. An additional one in seven hospitalized Medicare patients experienced temporary problems, such as allergic reactions or injuries from falls. And many experienced multiple events, including an elderly heart patient who had six separate events during a single hospital stay. Obviously, this situation is unacceptable — and expensive, costing taxpayers more than \$4 billion a year due to the need for

additional treatment or longer hospitalizations (and even more if you add costs for follow-up care).

Hospitals clearly want to excel in patient care — and often do. Still, improvements can and must take place. Fully addressing the far-reaching implications of our study requires both an official response and a personal one.

The report made recommendations for improvement to agencies within the Department of Health and Human Services that monitor medical care. Those agencies are committed to increasing medical effectiveness and have embraced the recommendations. Among them are the following:

- Too many patient safety efforts concentrate on a narrow list of egregious medical problems that thankfully occur rarely, such as surgery performed on the wrong body part. This focus overlooks the need to also concentrate on far more common harmful incidents, such as blood clots and poor diabetes control.

- Government, which pays for a large portion of the nation's medical care, must hold hospitals accountable for better care. New authorities granted by Congress further enable the Medicare program to use hospital performance as a basis for payment. Private insurers can join Medicare in finding effective ways to tie payment to quality.

Government commitment is important, yet hospitals bear much of the responsibility. Although hospitals have broadly embraced safety initiatives, the

still-high rate of adverse events indicates that far more needs to be done. Hospitals must work faster to adopt evidence-based practices that reduce medical errors. Hospitals can also learn together by volunteering to join patient safety organizations, which collect confidential information about instances of harm that occur from medical care to assess what went wrong and improve patient safety. Further, hospitals can continue to improve patient care systems, including effective use of electronic health records, to help staff avoid mistakes and to alert them to problems.

What you can do

Vigilance saves lives. Family members with hospitalized loved ones should educate themselves regarding medical treatment and expected outcomes and speak up when things go awry. Hospital staff should treat patients and their families as partners, welcoming family monitoring of patients as an additional safeguard against poor medical outcomes.

Sooner or later, most of us will need the help of hospitals. They have earned their current, central place in saving lives and curing disease. We owe it to these critical institutions to help them increase quality of care for the continued health of us all.

Daniel R. Levinson is the inspector general of the Department of Health and Human Services.

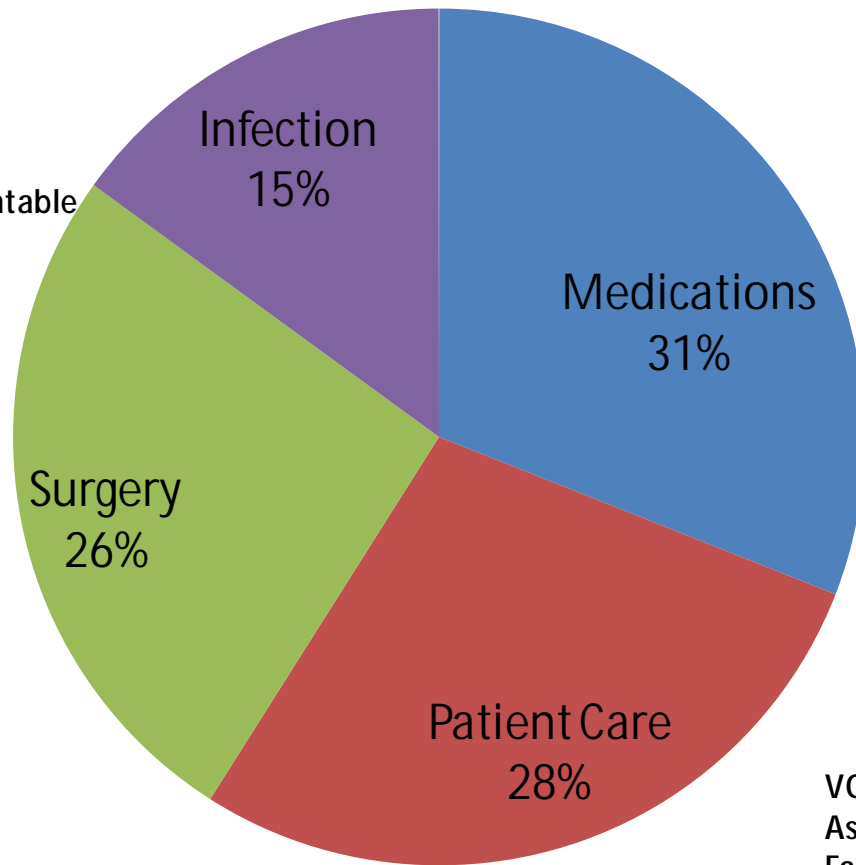
Office of Inspector General:
NATIONAL INCIDENTS AMONG MEDICARE
BENEFICIARIES
Published 11/16/2010

- **1 in 7 patients (13.5%) experienced at least one serious instance of harm (F,G,H, I)from medical care**
- **44% of events deemed preventable**
- **134,000 hospitalized Medicare beneficiaries experienced harm from medical care/month,**
- **Event contributing to death for 1.5%, or approximately 15,000 patients/month**
- **Medicare harm is costing taxpayers more than \$4 billion a year**

OIG: ADVERSE EVENTS IN HOSPITALS: NATIONAL INCIDENCE AMONG MEDICARE BENEFICIARIES

UTI
CLABSI
Sepsis
Pneumonia
SSI

60% deemed preventable



EXCESSIVE BLEEDING
Delirium Confusion
Hypotension
Hypoglycemia
ARF
Respiratory Failure
50% deemed preventable

EXCESSIVE BLEEDING
Hypotension
Respiratory Failure
Pneumothorax
Ileus

17% deemed preventable

VOLUME OVERLOAD
Aspiration
Falls, PU, DVT PE
50% deemed preventable

OIG Recommendations

- **Broaden/ refocus patient safety efforts to include lower level harm (ie hypoglycemia, volume overload) not just “never” events**
- **Expand list of Medicare Hospital Acquired Conditions (HAC)**
- **Improve ability to detect HAC – 0/9 HAC events detected by OIG reviewer audits were picked up by Medicare claims**

SPECIAL ARTICLE

Temporal Trends in Rates of Patient Harm Resulting from Medical Care

Christopher P. Landrigan, M.D., M.P.H., Gareth J. Parry, Ph.D.,
Catherine B. Bones, M.S.W., Andrew D. Hackbarth, M.Phil.,
Donald A. Goldmann, M.D., and Paul J. Sharek, M.D., M.P.H.

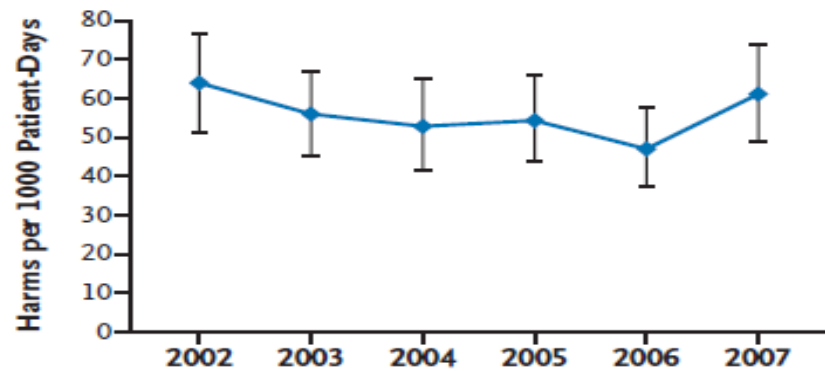
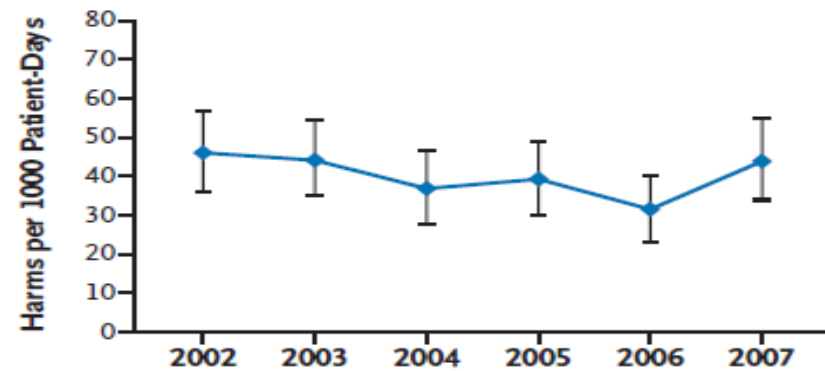
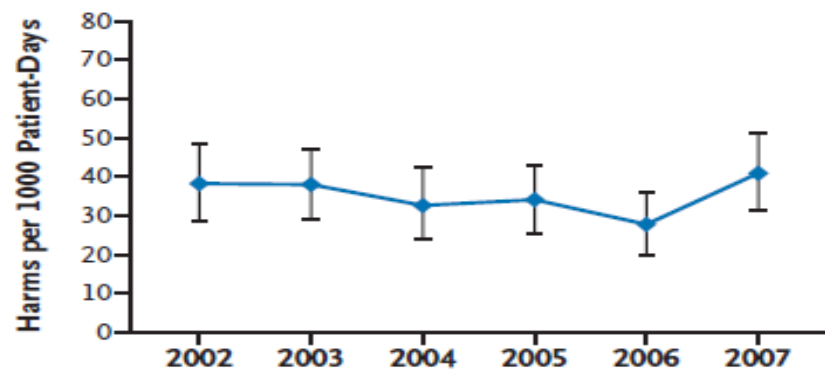
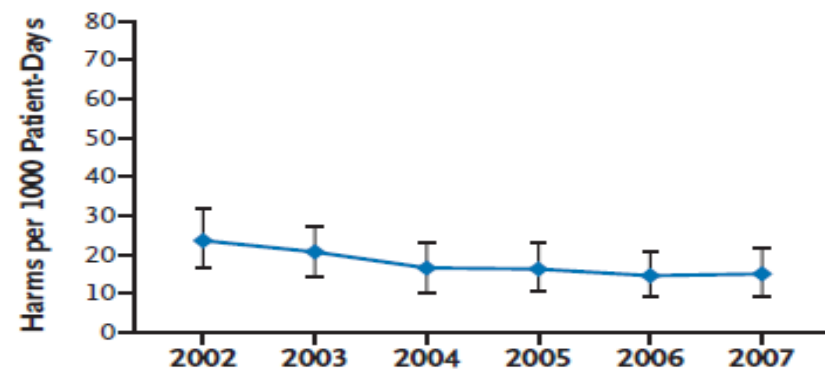
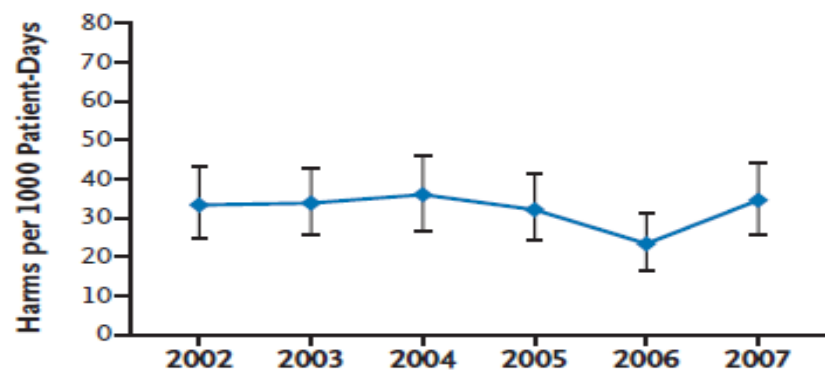
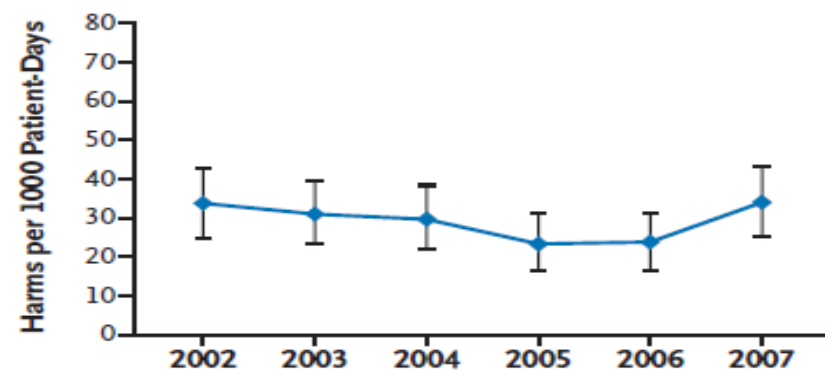
ABSTRACT

BACKGROUND

In the 10 years since publication of the Institute of Medicine's report *To Err Is Human*, extensive efforts have been undertaken to improve patient safety. The success of these efforts remains unclear.

METHODS

We conducted a retrospective study of a stratified random sample of 10 hospitals in North Carolina. A total of 100 admissions per quarter from January 2002 through December 2007 were reviewed in random order by teams of nurse reviewers both within the hospitals (internal reviewers) and outside the hospitals (external reviewers) with the use of the Institute for Healthcare Improvement's Global Trigger Tool for Measuring Adverse Events. Suspected harms that were identified on initial re-

A Internal Reviewers, All Harms**B External Reviewers, All Harms****C Internal Reviewers, Preventable Harms****D External Reviewers, Preventable Harms****E Internal Reviewers, High-Severity Harms (NCC MERP categories F to I)****F External Reviewers, High-Severity Harms (NCC MERP categories F to I)**

Most harm is lurking below the surface

Sentinel- Reportable
Events
Claims

CLABSIs, SSIs

PSI/HAC

Cdiff, MRSA

Narcotics

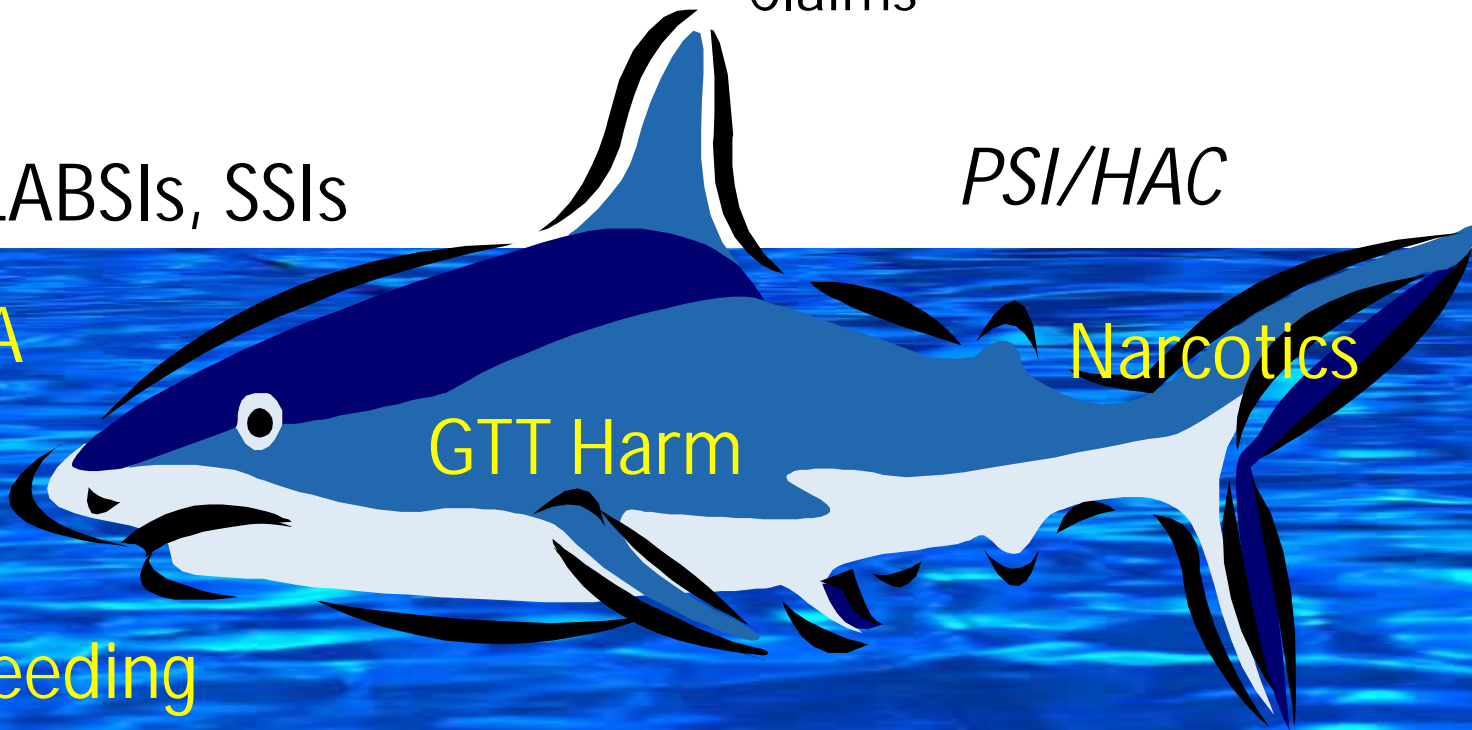
GTT Harm

Excess Bleeding

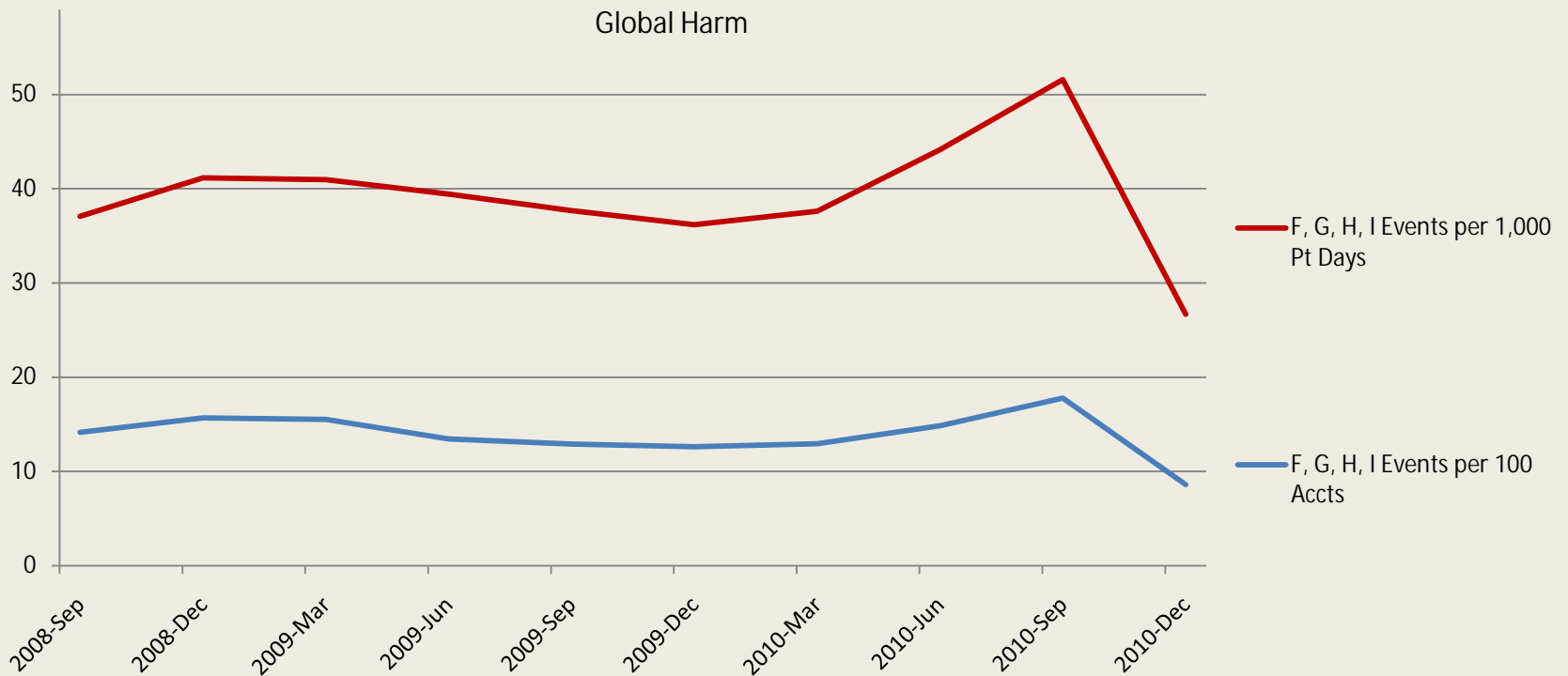
Poor Glucose Control

Volume Overload

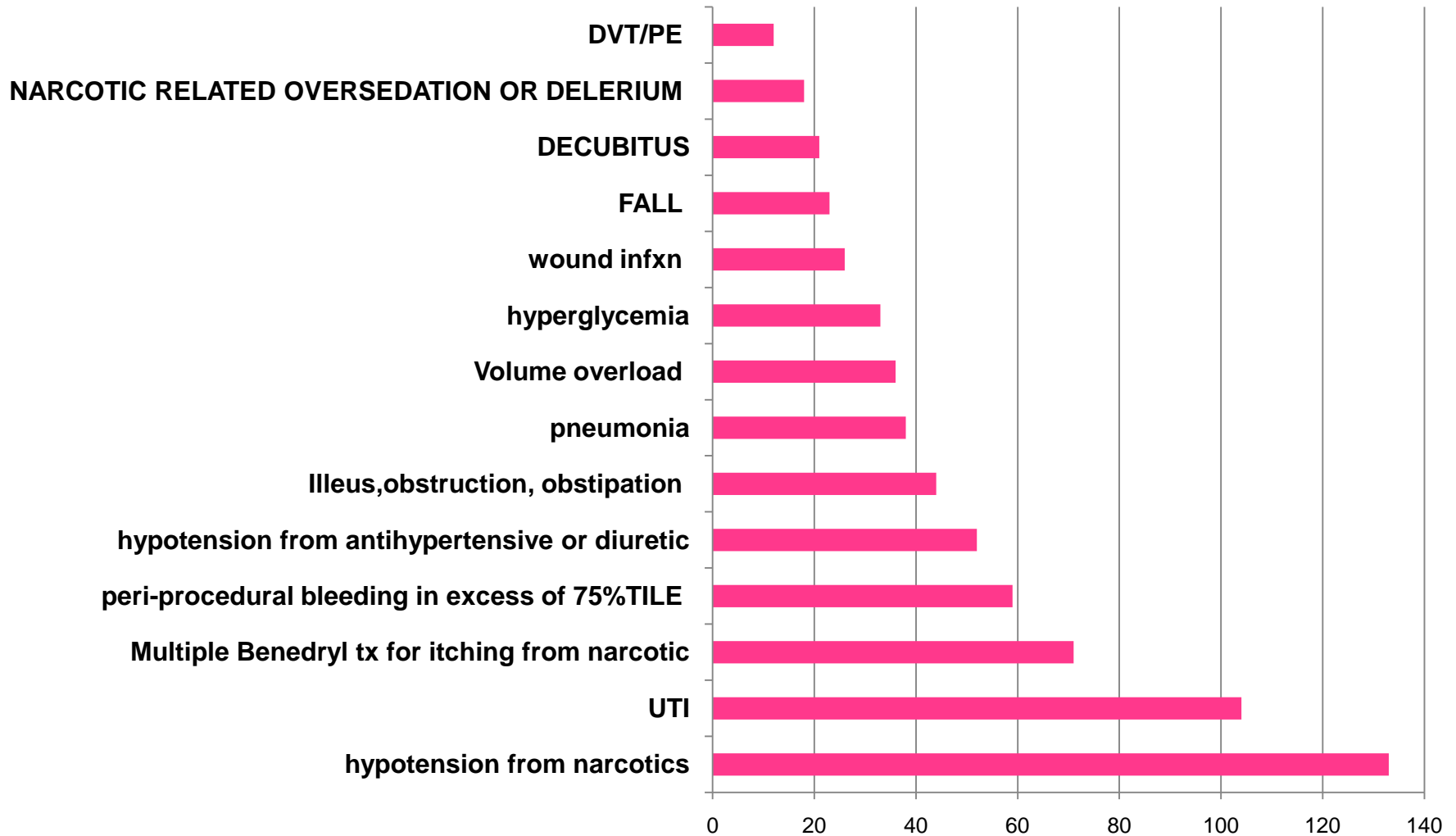
MEDICATION Reactions



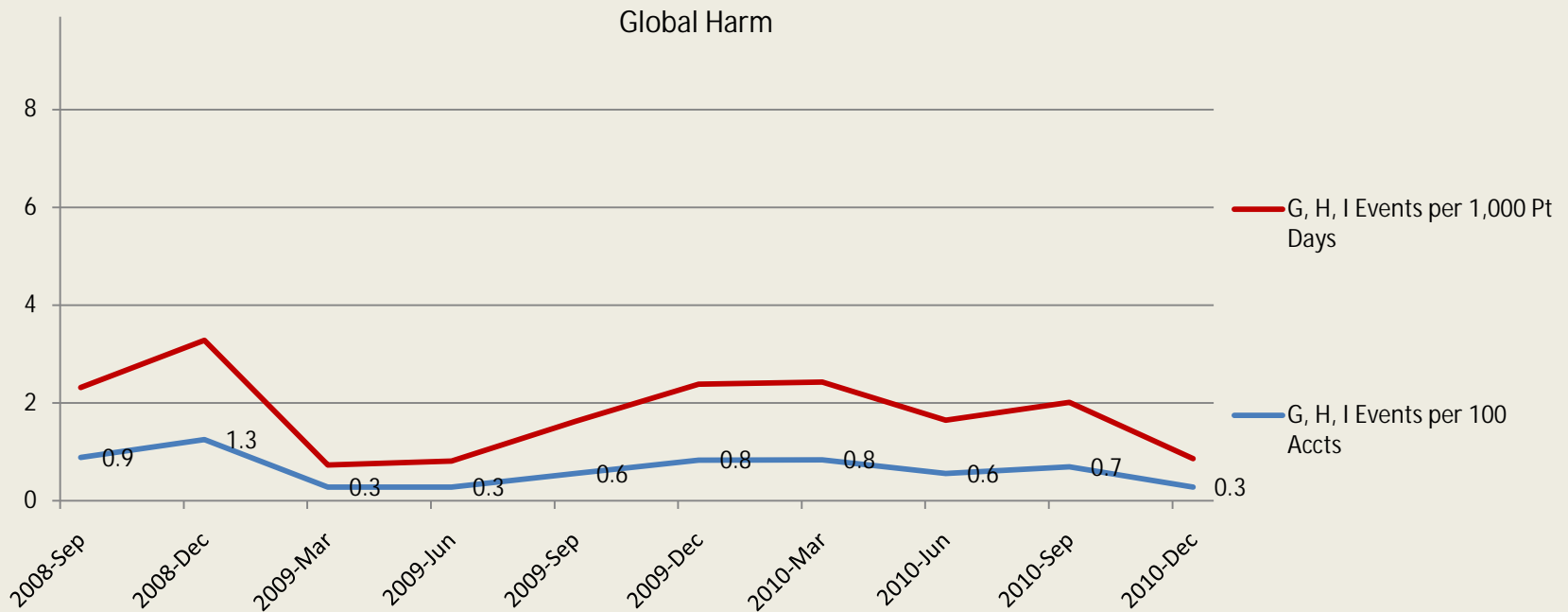
Global FGHI Harm per 1000 Patient Days and per 100 accounts



Most frequent harm categories – Global Trigger Tool



Severe (GHI) harm per 1000 pt days



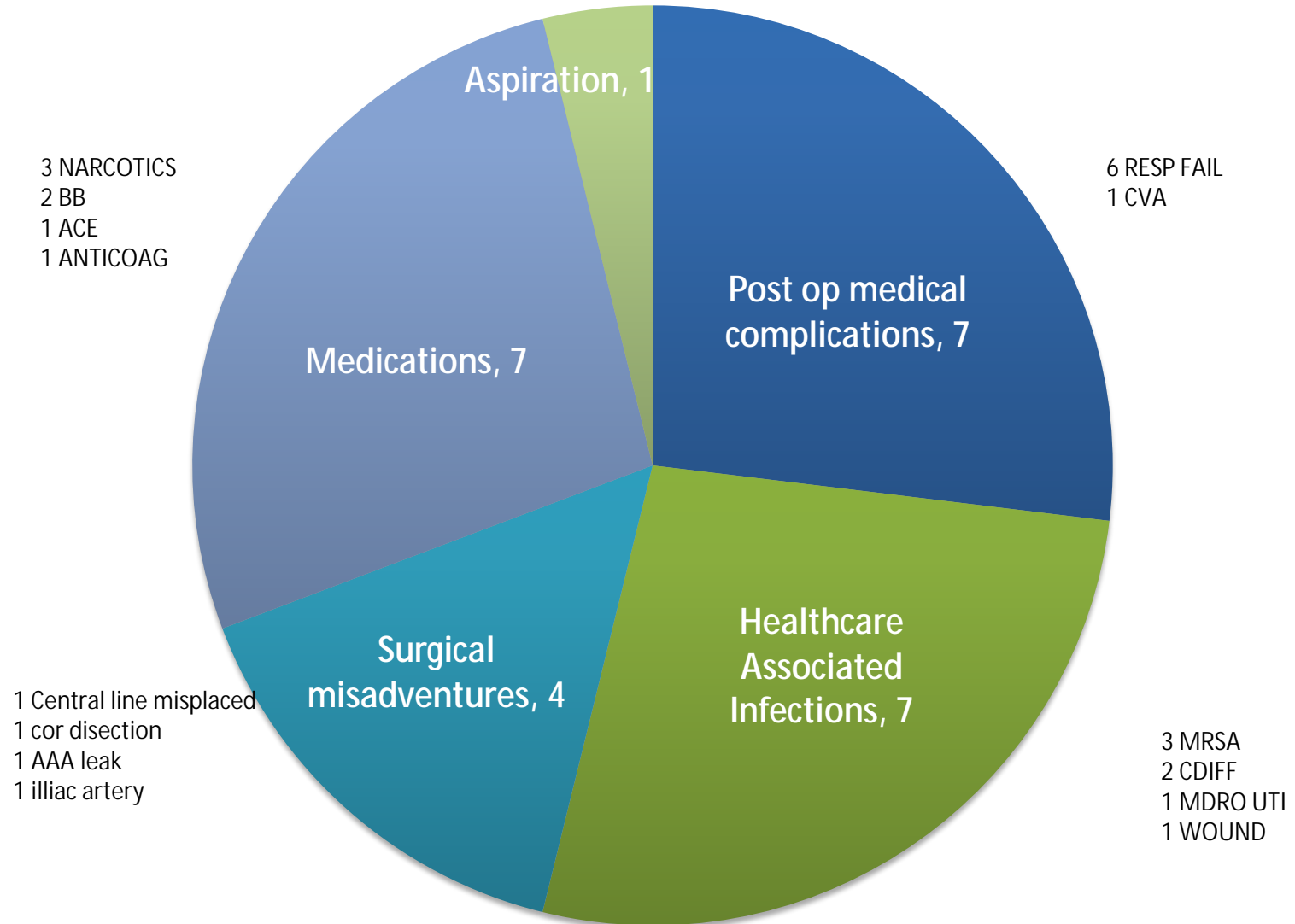
We review approximately 6% of adult inpatient charts

In FY10 - 26 events were severe – GHI harm

3% of total events found were severe

Approximately 0.6 out of 100 patients discharged had severe healthcare associated harm

Global Trigger Tool: 26 GHI EVENTS FY10





5 Sources of Information to Guide our PH Safety Strategy

Reports/Sentinel Events/Claims

- What strategy have we implemented to prevent this from happening again? What are common themes and root causes?
- Serious Events / High level harm

GTT Audits

- How often are events happening?
- What types of events are most frequent? How should we prioritize?
- Includes both serious and low level harm

Culture of Safety Survey

- If someone sees it happening will they be empowered to stop it? Are we handling events well? Are we improving on key areas of teamwork and communication?

National Organizations

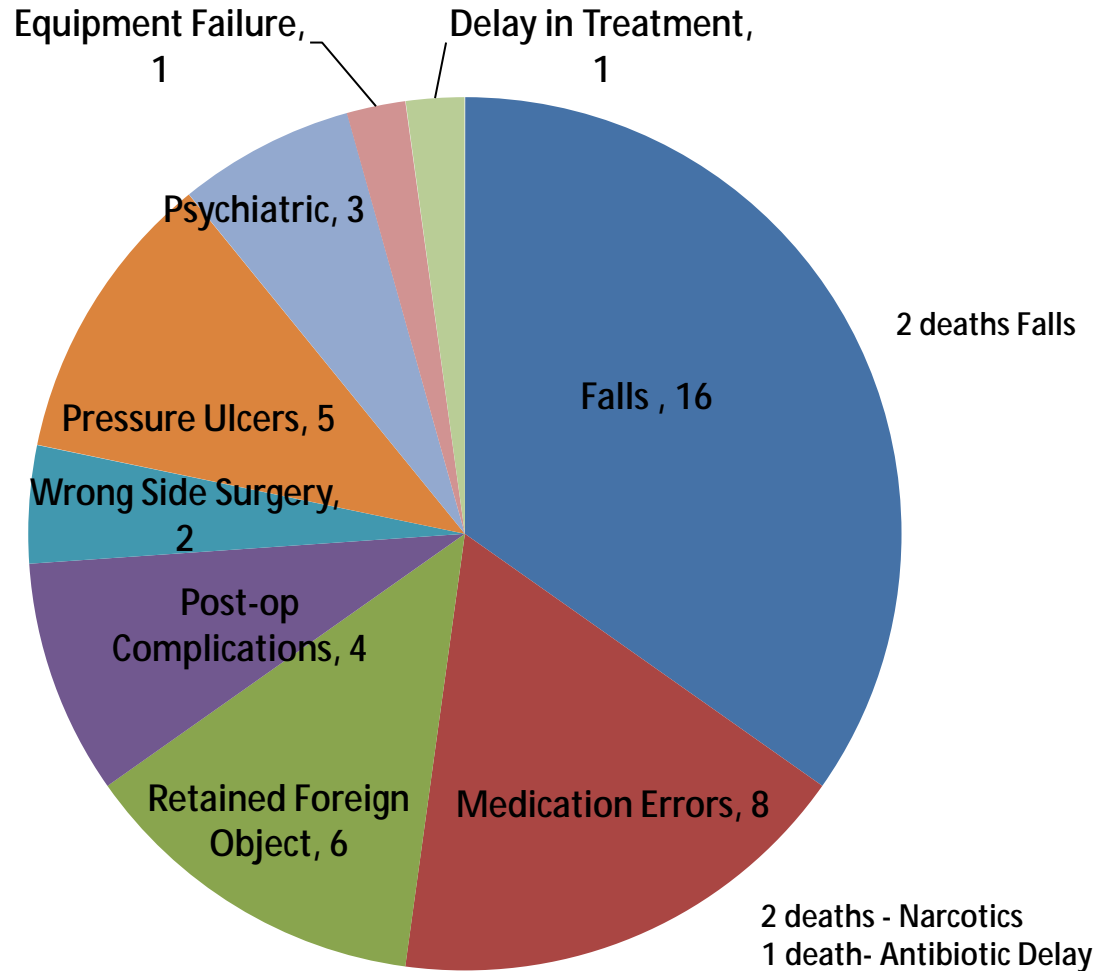
- NQF, AHRQ, NPSF, IHI, JC
- Could it happen here? Are we following identified best safety practices?

Frontline Barometer

- Does this make common sense?
- Is this the right thing to do?
- Walk rounds, open door policy on safety

Shared Events for FY10

FY 10
46 Total Shared
Events
5 deaths



Patient Stories – The Wake up CALL : Examples of Serious Adverse Events

- Combination of opiates, benzodiazepams, ETOH, and unrecognized sleep apnea → respiratory arrest and death in radiology dept
- Failure to properly treat and monitor sleep apnea in post operative total joint patient receiving high dosages of opiates and benzodiazepams → respiratory arrest and death
- Failure to recognize a deteriorating patient with OSA and narcotic and benzodiazepam induced respiratory depression → intubation and costly ICU stay

Why are we doing this? Why are we doing this now?

Reports/Sentinel Events/Claims

- Serious events related to narcotics, sedatives and OSA
- Litigation environment on OSA

GTT Audits

- Narcotic induced harm: Hypotension, nausea, constipation, delirium, over sedation, respiratory arrests
- Highest harm in orthopedic and gynecology patients

Culture of Safety Survey

- Shift to shift handoffs – OSA hx not being communicated

National Organizations

- ASA guidelines on OSA management, APSF recommendations

Frontline Barometer

- Clinicians said this is a problem!

Reducing Narcotic Harm



Measure :

Today we are **18** Days since our last GHI (severe) level over sedation event (permanent harm with anoxic encephalopathy, code blue/intubation, death)

Sleep Apnea

Screening
with STOP-
BANG

Criteria to
delay
elective
surgery

Continuous
O2 Sat
Monitoring

Proper
Appliance
Use in
hospital

PeaceHealth System PCA Orders

INTRAVENOUS Patient Controlled Analgesia

All Unboxed or Pre-selected Boxed Orders Are Initiated by Default Unless Crossed Out by Practitioner
All Boxed Orders Require Practitioner Check to be initiated.

Order #	Practitioner Order Form
---------	-------------------------

Intravenous PCA infusions are prepared in approximate equipotent doses: **Morphine 1 mg per mL equals HYDROMorphone 0.2 mg per mL.**

Instruction for ordering: Initiate treatment with Morphine for most patients. If pain control is inadequate with morphine discontinue morphine and begin HYDROMorphone. If patient is allergic to Morphine, contact pharmacy for Fentanyl. Continuous (basal) infusions are not recommended unless patient is opioid tolerant or on comfort care. Verbal orders are limited to dosage changes.

Definition: Opioid tolerant patients are those who have been taking, for 7 days or longer, at least: 60 mg of morphine daily, or 25 microgram transdermal fentanyl per hour, or 30 mg or oral oxycodone daily, or 8 mg of oral HYDROMorphone daily, or 25 mg of oral oxymorphone daily or an equianalgesic dose of another opioid.

Select one drug and one dosage option:

<input type="checkbox"/> Morphine 1 mg/mL (preferred)	<input type="checkbox"/> Most Patients	<input type="checkbox"/> Age 65 yrs or older or known or suspected sleep apnea	<input type="checkbox"/> Opioid-tolerant	<input type="checkbox"/> Other Dose (in mg)
Patient controlled dose	1 mg (1 mL)	0.7 mg (0.7 mL)	1.5 mg (1.2 mL)	
Lockout Interval	10 minutes	10 minutes	10 minutes	
Max doses per hour	_____ per hr	_____ per hr	_____ per hr	_____ per hr
Loading dose	2 mg (3 mL)	1 mg (2 mL)	3 mg (4 mL)	
<input type="checkbox"/> HYDROMorphone 0.2 mg / mL	<input type="checkbox"/> Most Patients	<input type="checkbox"/> Age 65 yrs or older or known or suspected sleep apnea	<input type="checkbox"/> Opioid-tolerant	<input type="checkbox"/> Other Dose (in mg)
Patient controlled dose	0.2 mg (1 mL)	0.1 mg (0.5 mL)	0.3 mg (1.5 mL)	
Lockout Interval	10 minutes	10 minutes	10 minutes	
Max doses per hour	_____ per hr	_____ per hr	_____ per hr	_____ per hr
Loading dose	0.3 mg (1.5 mL)	0.1 mg (2 mL)	1 mg (5 mL)	



Deteriorating Patient Alert Tool

An Early Warning System Leveraging the Electronic Health Record

Stephanie Jackson, Brian Churchill, Tim Cooper, Elaine St. James, Mary Duke, Margie Moore-Aten, Colleen O'Connell, Jill Harwell, Eileen Reynolds, Maureen Ellisor, Heather Wall, Kathleen DePape

Goal:

Catch patients who are deteriorating BEFORE they reach code blue or RRT status

Pilot Methodology

- Two-Week Trial of tool on 2 Surgical Units at Sacred Heart RiverBend (Springfield OR), each with 36 beds. September 2010
- Tool scans EHR for charted values each hour; looking for values outside parameter within the previous hour
- If alerts found, pager alert sent to unit charge nurse cell phone; AND, print ed at designated printer for each unit (if no alerts, no page and no printed report)
- Charge Nurse reviewed printed alert (prints by patient), contacted assigned nurse and evaluate
- For pilot, added some documentation prompts for action taken
- Alert Parameters: Adjustments made after each pilot.
- Additional pilots done: cardiovascular, orthopedics, neurology, med-surg. in CAH; Scheduled pilots on medical/neuro, med-surg.

Alert Parameters

- o Temp - Below 35 or above 38.5, a subsequent result between 35 and 38.5 resets.
- o Pulse - Below 50 or above 120, a subsequent result between 50 and 120 resets.
- o Pulse Oximeter - Below 88%, a subsequent result 88% or above resets the alert.
- o Respirations - Below 8 or above 28. A subsequent result between 8 and 28 resets.
- o O2 Flow - 5 to 15 Liters and an increase from previous flow. Resets with any reduction in flow.
- o O2 Flow + Sat - 4 Liters and Pulse Oximeter 92% or less.
- o Systolic BP - Below 90 mmHg and at least 20% below the previous 24-hour average for the patient. a subsequent result above 95 resets.
- o Neurological - Change to NOT WNL from WNL. This alert is displayed, but is not used to select patients for reporting.
- o LOC - Change to Unresponsive or Lethargic from any other result.
- o Weight (Kg) - Change of 3.00kg from prior documented weight.

Sample Alert Report

Thursday, May 05, 2011 *** Confidential Information ***

Deteriorating patient alert

Unit: 999 Unit: NEUR Room: 287b MED

Age: 65.7 Its chronic pain,DM,HTN,hypertipidemia

Patient: Jimmy D O2 FX

Is Data Accurate? Y / N ... Explain:

Was Nurse Aware? Y / N Was RRT called? Y / N Weight/IO Assessment done? Y / N

Interventions?

	1. Temporal ax	2. Respira- tione	3. Pulse	4. Systolic Blood	5. Pulse Oximeter (%)	7. O2 Flow Rate (LPM)	6. Oxygen therapy Mode	11. Neurologi- cal
5/4/11 7:00	36.0	12	72	140	91%			
5/4/11 8:15								WNL
5/4/11 14:30					93	2	NC	
5/4/11 15:30	35.8	18	88	134	98	2	NC	
5/4/11 16:15								WNL
5/4/11 21:00	36.2	18	79	136	94	2	NC	
5/4/11 22:30								WNL
5/5/11 2:48	35.9	17	79	122	87	4	NC	
5/5/11 3:00	35.5	18	88	120	91	5	NC	

Last Narrative: May 5 2011 3:05AM - HYDROMORPHONE HCL/CLIFF DMO/MS, DIS SVR INJ

Last Nurse Note:
May 4 2011 11:30PM-> 2330 Pt reports no NIT, NIV at this time. Soft collar is on, Pt on bedrest and NPO after midnight. 0210 Pt woke up with painful HIA - "feels like the top of my head is coming off." CN notified. 0230 PCA bolus given per Pharmacy for severe HIA pain. 0255 Pt still extremely painful. Pt experienced some nausea but no emesis. 0510 Pt has been resting quietly, pain appears to be under control. Report given to OR for surgery at 0530 this morning. Pt will be picked up at 0700.

Alerts by Type



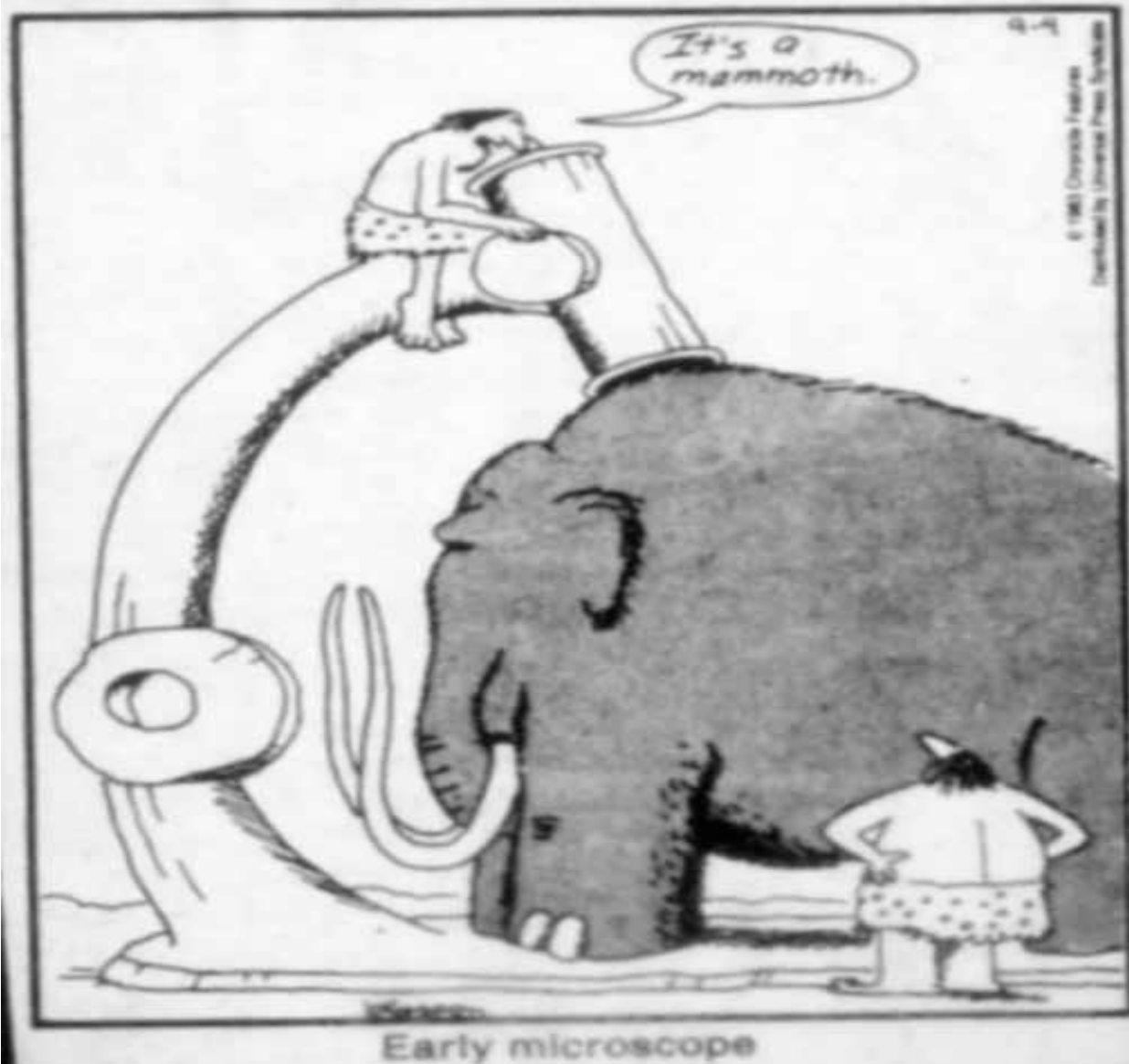
Other Results:

- Charge nurse satisfaction
- Patients rescued-
- Improved timely and accurate documentation

Bottom Line / Final thoughts

- **Must use multiple lenses to get accurate picture of patient safety and harm within the organization**
- **Appetite for measurement and data can easily exceed capacity for change and improvement**
- **Interventions must be broader and deeper to have a meaningful impact on overall harm**

THE FAR SIDE by Gary Larson



Questions and discussion

