



**VITAL2015**

*Connect. Inspire. Lead.*

# How Safe Is Your Hospital? Really?

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At a cocktail party, the topic turns to safety in health care. Someone notes that you work in health care, and asks, “Well, how safe is your hospital?”

**Answer the question.**



# How safe is your hospital..

## ...for WHOM?



# SAFETY



The most common way to answer the question “How safe is your organization?” is to describe how much harm has occurred in the past (a “lagging indicator”)



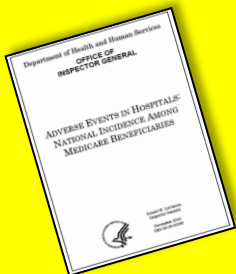
## **But we don't see most of the harm**

- 484 Incident reports (voluntary)
- 462 Incidents detected in administrative data
- 221 complaints
- 176 health and safety incidents
- 21 inquests
- 10 malpractice claims
- **4,900 adverse events on record review**

Hogan et. al Quality and Safety In Health Care 2008: 13 (4) 242-3



# In the US, Public Reports Capture only 10% of the Harm



## For Medicare Hospitalized Patients

- 13.5% (1 out of 7) had an adverse event but..
  - ...only 0.6% had an NQF Serious Reportable Event
  - ...and only 1.0% had a Medicare “Healthcare Acquired Condition”
- 1.5% had an adverse event that contributed to death
  - ~ 15,000 deaths in October 2008 alone!

“44% of the harm was preventable”

**To get a more complete answer to the question  
“How safe are we?,” leaders must also ask  
questions about “leading indicators”**

- How well are we performing our key safety processes? **(Reliability)**
- How safe are we today? **(Sensitivity to Operations)**
- How safe are we going to be tomorrow? **(Anticipation and Preparedness)**
- How well are we responding to past events? **(Integration and Learning)**

Vincent, Burnett, and Carthey: The Measurement and Monitoring of Safety.  
Health Foundation, 2013



# Reliability of Core Clinical Systems in 7 Hospitals

- Systems studied:
  - Equipment in operating rooms
  - Peripheral IV line insertion
  - Availability of information in surgical clinics
  - Prescribing for hospital inpatients
- Defect rate: 13-19%!
- Burnett S, Franklin BD, Moorthy K, Cooke MW and Vincent C. How reliable are clinical systems in the UK NHS? A study of seven NHS organisations. *BMJ Quality Safety* 2012;21(6):466- 472.



# Characteristics of Different Levels of Process Reliability: (Amalberti, Nolan)

Chaos	80-90%	97-99%	$10^{-3}$ , $10^{-4}$	$10^{-5}$
No written specifications. Processes are custom-crafted each time	Standard <u>specifications</u> in policies and guidelines, then staff are trained and expected to perform	Specifications become <u>standard work</u> through high reliability methods	Anticipate and contain failures through HRO culture. Loss of autonomy.	Loss of identity  Error-proofing
Doctor examines patient, writes orders on blank sheet of paper, gives them to a nurse to execute	Watch 5 people doing the process, see 5 different processes.	Watch 5 people doing the process, see <u>one</u> process.	Pre-task safety briefings, pre-occupation with failure, deference to expertise, ...	Equivalent actor
Most chronic and acute disease treatment in the US	Handwashing, barrier precautions, care guidelines...	Top hospitals infection control “bundles”	Blood banking	Safety in anesthesia

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Errors in these processes can be immediately catastrophic

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Doctor examines patient, writes orders on blank sheet of paper, gives them to nurse to execute	<div>Errors in these processes don't usually lead to an <u>immediate</u> catastrophe</div>		Pre-task safety briefings, pre-occupation with failure, deference to expertise, ...	Equivalent actor
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# Why such low levels of reliability?

- We become accustomed to it, and think it's normal
- We tend to rely on vigilance and hard work
- We focus on outcomes rather than process (no harm, no foul)
- We don't understand human factors, and don't use sophisticated designs for reliability



# These concepts are fine, but they will never get you past 80-90% reliability!

- Standard equipment
- Standard order sets
- Care protocols and pathways
- Written policies/procedures
- Personal check lists
- Feedback to individuals on compliance
- Exhortations to work harder, pay attention



# Improvement Concepts Associated with 98-99% Reliability (4)

## **Level-load using sophisticated scheduling methods**

- Examples:
  - Smooth the elective surgical schedule by shifting 2 surgeons' blocks from Tuesday to Thursday
  - Schedule discharge appointments at steady pace between 10 and 5
  - Use “advanced access” scheduling in primary care



# Improvement Concepts Associated with 98-99% Reliability (5)

**Harness the process you wish to make  
reliable to existing workflows, habits and  
patterns of work**

- Example:
  - How does the nurse know when to start the pre-op antibiotic? When she sees the lead surgeon starting to scrub!





OK, so what safety  
processes should we  
focus on?  
What MUST be highly  
reliable?



# Patient Safety Processes Ready for Adoption: **Strongly Encouraged**

1. Preoperative checklists and anesthesia checklists to prevent operative and postoperative events
2. Bundles that include checklists to prevent central line–associated bloodstream infections
3. Interventions to reduce urinary catheter use, including catheter reminders, stop orders or nurse-initiated removal protocols
4. Bundles that include head-of-bed elevation, sedation vacations, oral care with chlorhexidine, and subglottic suctioning endotracheal tubes to prevent ventilator-associated pneumonia
5. Hand hygiene
6. The do-not-use list for hazardous abbreviations
7. Multicomponent interventions to reduce pressure ulcers
8. Barrier precautions to prevent health care–associated infections
9. Use of real-time ultrasonography for central line placement
10. Interventions to improve prophylaxis for venous thromboembolisms

# Patient Safety Processes Ready for Adoption: **Encouraged**

1. Multicomponent interventions to reduce falls
2. Use of clinical pharmacists to reduce adverse drug events
3. Documentation of patient preferences for life-sustaining treatment
4. Obtaining informed consent to improve patients' understanding of the potential risks of procedures
5. Team training
6. Medication reconciliation
7. Practices to reduce radiation exposure from fluoroscopy and CT
8. The use of surgical outcome measurements and report cards, such as those from ACS NSQIP
9. Rapid-response systems
10. Use of complementary methods for detecting adverse events or medical errors to monitor for patient safety problems
11. Computerized provider order entry
12. Use of simulation exercises in patient safety efforts

# Reality Rounds: A Leadership Practice to Improve Reliability of Safety Processes

1. Pick a major safety practice critical to your aims for this year
2. Develop a scripted set of questions designed to expose operational barriers to implementation of that practice, and to drive positive feedback to staff who know and implement the practice
3. Commit the leadership team to round
  - CE 1 hour per month
  - Director 1 hour per week
  - Unit manager 1 hour per day
4. Fix the operational problems you learn about! Teach and use sophisticated reliability concepts!
5. Pick another safety practice, and repeat

# An example script:

- Hi, I'm \_\_\_\_\_, the Medical Director. Do you have a minute to chat about the hospital's work in infection control?
- I see this patient has a urinary catheter. Could you tell me the elements of the “bundle” for preventing infections in this patient?
- Great job! So here's a question. Which of the elements of the bundle is hardest for you and the other nurses to implement?
- Thanks. Let's move beyond bundles: are there any other things that worry you about patients getting infections in our hospital?
- As long as we're chatting, do you have any other concerns about safety, either of the patients, or of the staff?
- Thanks!

# Reliability:

## Summary of Key Points

- Health care processes function across a wide range of levels of reliability.
- The methods used to improve process reliability depend to a great extent on the starting level of reliability, and whether a defect in the process is potentially catastrophic.
  - Basic process is reliable, defect is catastrophic—use HRO methods
  - Basic process is chaotic or low reliability—use “Level II” reliability methods to improve reliability to 99% or better

# Where can you go to learn more?

- IHI White Paper
  - [http://www.ihi.org/education/IHIOpenSchool/Courses/Documents/CourseraDocuments/08\\_ReliabilityWhitePaper2004revJune06.pdf](http://www.ihi.org/education/IHIOpenSchool/Courses/Documents/CourseraDocuments/08_ReliabilityWhitePaper2004revJune06.pdf)
- Weick and Sutcliffe
  - Managing the Unexpected: High Performance in an Age of Complexity



# Sensitivity to Operations

- “Safety is a **dynamic** non-event” (Reason)
- Timely Sensing and Responding to
  - Ebbs and flows in volume
  - Staffing problems
  - “Organizational entropy”
  - Unexpected events
    - Equipment failure
    - Natural disaster
    - Epidemic
  - Etc.





# Questions for Hospital Leaders

- How well does your hospital monitor and respond to safety issues resulting from the wide variety of “things that go awry” in organizations?
- **What specific leadership processes are in place to do this?**



# Examples of Practices that Improve Sensitivity to Operations

- Charge Nurse on each unit without direct patient care responsibility
- Executive Rounding
  - Patient Interviews
  - Informal Conversations with Staff
- Bedside shift changes
- House-wide Daily Safety Briefings



# House-wide Daily Safety Briefings: A **Superb** Leadership Practice to Build “Sensitivity to Operations”

- 15 minute daily meeting of key operational leaders, led by Chief Executive
- Agenda:
  - Quick report on house-wide safety status: “It’s been 31 days since our last Serious Safety Event and 5 Days since our last employee lost work day event.”
  - Brief scripted report on any safety issues from each manager, including security, facilities, bio-med...
  - Brief follow-up on any previously identified urgent safety issues
- *Note: Generally works best around 8:30 or 9 am, allows managers to have their own “pre-huddles” with their teams.*
- ***Don’t skip Saturday and Sunday!***
- ***Don’t ignore nights!***

# Where to learn more about sensitivity to operations

- HPI White Paper
  - Daily Safety Check-in
- Vincent, Burnett, and Carthey: The Measurement and Monitoring of Safety. Health Foundation, 2013
- <http://www.health.org.uk/publications/the-measurement-and-monitoring-of-safety/>

# Anticipation and Preparedness



What could **possibly** go wrong?



Aircraft Crews...

*Anticipate Disasters*

*Prepare a Checklist*  
*Just in Case*

*Rehearse*

# Alcoa Crews Use a Pre-Task Safety Briefing

Alcoa GPP-US EHS Pre-Job Brief			
Date:	Prejob Leader:	Department:	
Location:	Ambulance Stop:	Who is your help chain?	
What are you getting ready to do?			
Does a written procedure exist for the task?: <input type="checkbox"/> Yes <input type="checkbox"/> No		Have you reviewed it?: <input type="checkbox"/> Yes <input type="checkbox"/> No	
What Performance Mode is each crew member in? (check all that apply)			
<input type="checkbox"/> <b>Knowledge-Based</b> - You don't know what you don't know (lack of knowledge about the task). Example: Troubleshooting. EROD RATE = 1.2 - 1.10 <input type="checkbox"/> <b>Rule-Based</b> - There is a rule and you know the rule exists (includes written procedures or an unwritten rule). EROD RATE = 1.100 <input type="checkbox"/> <b>Skill-Based</b> - Using habit, routine, not thinking, low or no conscious thought (done successfully over 50-100 times). Task has less than 7-10 distinct steps. EROD RATE = 1.1, 1.00			
Error Traps: (check all that apply)			
<input type="checkbox"/> Time Pressure, Stress, High Work load - tight time schedule, doing more than one task at a time, anxiety, impatience <input type="checkbox"/> First time/Infrequent task - not done the task in > 6 months, unfamiliar with the details, little or no experience <input type="checkbox"/> Distractions - feeling pulled in too many directions, getting pulled off another job, not completing original job <input type="checkbox"/> Vague/poor work guidance - guidance conflicts with past experience, instructions out of date, minor errors in instructions <input type="checkbox"/> End of Shift or Work Cycle <input type="checkbox"/> Poor Verbal Communication <input type="checkbox"/> First Day Back > 4 days <input type="checkbox"/> Over-Confidence			
EHS Hazard Assessment: (check all that apply)			
<input type="checkbox"/> Trouble Shooting <input type="checkbox"/> Adjacent work area hazards <input type="checkbox"/> Electrical /High or Low Voltage <input type="checkbox"/> Vertical Drop Zone <input type="checkbox"/> Truck/Crane Traffic <input type="checkbox"/> Working in Remote Area <input type="checkbox"/> Hand Finger Placement Hazard <input type="checkbox"/> Slip/Trips - walking working surfaces <input type="checkbox"/> Different level fall/elevated work <input type="checkbox"/> Other Pinch Points <input type="checkbox"/> High temperature <input type="checkbox"/> Line of Fire or struck by <input type="checkbox"/> Body Placement <input type="checkbox"/> Unstable loads <input type="checkbox"/> Prybar/Crowbar <input type="checkbox"/> Hot work <input type="checkbox"/> Power Outage <input type="checkbox"/> Flood Work <input type="checkbox"/> Close Clearance, Congestion <input type="checkbox"/> Exposure to caustic /acid /fluids <input type="checkbox"/> Stored Energy (i.e. hydraulic, caustic) <input type="checkbox"/> Excessive reaching, bending, twisting <input type="checkbox"/> Digging/Excavation <input type="checkbox"/> Confined Space <input type="checkbox"/> Exposure to asbestos, lead, noise, dust, PCB <input type="checkbox"/> Repetitive Motion/Vibration of tools <input type="checkbox"/> Lifting, Pushing, Pulling <input type="checkbox"/> Machine Guard removed/by-passed <input type="checkbox"/> Alumina/carbon/dross/SPU/oil spillage <input type="checkbox"/> Pump/drain/transfer/discharge liquids <input type="checkbox"/> Waste be generated <input type="checkbox"/> Containers/labels <input type="checkbox"/> Can spilled material enter storm drain(s) <input type="checkbox"/> Will weather impact the task <input type="checkbox"/> Fugitive dust or visible emissions <input type="checkbox"/> Impact/ shut down any part of a pollution control system (i.e. dust collector, scrubber, treatment plant, cooling tower, lift station, etc.) <input type="checkbox"/> Shut down/startup a major (MACT) process (i.e. Potline, Bake Oven, Furnace, etc.) <input type="checkbox"/> Increase Anode Effects/fluoride/other emissions <input type="checkbox"/> Other Explain:			
Will any Specialized PPE/Tools, Inspections, Checklists, Permits, Barricading, Notifications, Observers be needed? (List below.)			
<input type="checkbox"/> Pre-cleanup: <input type="checkbox"/> Specialized PPE: <input type="checkbox"/> Specialized Tools: <input type="checkbox"/> Pre-inspection: <input type="checkbox"/> Barricading/Observers: <input type="checkbox"/> Permits/Notifications:			
<input type="checkbox"/> Other:			
Critical Steps to complete the task: Action that is irreversible AND if performed incorrectly could result in significant harm to personnel, quality environmental or equipment.	What Could Go Wrong?	CounterMeasures	Stop Criteria
Describe the worst thing that could happen & how it could occur? (serious injury, fatality, significant equipment damage, Non-Compliance)			
Additional situations/conditions you would choose to STOP THIS TASK? (Be specific)			
Additional HPI Tools: <input type="checkbox"/> STAR (point/touch, verbalize) <input type="checkbox"/> Step By Step <input type="checkbox"/> Stop and Seek Help <input type="checkbox"/> 3-Way Communication			
Can we do the job safely and environmentally compliant? <input type="checkbox"/> YES <input type="checkbox"/> NO - STOP - Do not proceed with Task!			
Who Participated in this Prejob:			
Post-Job Debrief: (Section filled out after the job has been completed)			
HRTD Observations: Supervisor was present during Pre-job Briefing & Execution of HRTD? <input type="checkbox"/> YES <input type="checkbox"/> NO Complete reverse side			
Does the Written procedure need updated? <input type="checkbox"/> Yes <input type="checkbox"/> No	RN / IFE / EEE need to be written? <input type="checkbox"/> Yes <input type="checkbox"/> No	Did everything go as planned? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, hold a post job review	

- What are we getting ready to do?
- Does a written procedure for this task exist?
- Have we reviewed it?
- What performance mode is each crew member in? (Knowledge, Rules, Skills)
- What error traps are present today?
- What safety hazards can we anticipate with this task?
- What could go wrong?
- What's the WORST thing that could happen?
- How would we know it was about to happen?
- What countermeasures are we going to take to make sure it doesn't happen?
- What are our STOP criteria?
- Is everyone ready to go?



**BEFORE** handing out assignments, announce the following:

Uncommon or High Risk Procedures and Patients This Shift. *State patient name, room number, and suggestions.*

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>○ <b>Central Line:</b> Remind RN to utilize IV Therapy and consult you if he/she needs to remove the line.</li><li>○ <b>Restraints:</b> Remind RN to assess for need and proper placement, obtain order, and document completely.</li><li>○ <b>Trach:</b> Remind RN to review "<u>Trach Checklist</u>" with you after BSR.</li><li>○ <b>Chest Tube:</b> Ask RN to have you come assess set up after BSR.</li><li>○ <b>Post-Angio:</b> Tell RN to let you know when <u>pt</u> returns so you can make sure the RN has resources.</li></ul> | <ul style="list-style-type: none"><li>○ <b>High Fall Risk</b></li><li>○ <b>Medically Unstable</b></li><li>○ <b>Combative</b></li><li>○ <b>Inappropriate</b></li><li>○ <b>High Frequency Diagnoses</b></li><li>○ <b>Name Alerts</b></li><li>○ <b>No Release of Information</b></li></ul> |
|---|---|

**Who has been off work for more than 4 days?** *Ask the other staff to offer extra help and support that person.*

**Today/Tonight, what is the worst thing that could happen?** *Try to make it specific if you get vague answers.*

- How do we know if it's happening?
- How can we stop it?

**Will you report to me if you have a safety concern?** *Each person in the room must respond with a verbal, "Yes."*

**Tardy Staff:** Pull aside any staff who came in after the Huddle began and say to them, "We do a Safety Huddle every day at 0700/1900 in order to ensure all staff are on the same page about things that could potentially harm patients. It is essential that all staff are here for the Safety Huddle, so please be in the Report Room no later than 0700/1900. Thank you"

## Pre-shift safety briefing at Legacy Emmanuel Hospital.





How well do you use your pre-surgical checklists to “anticipate and prepare for the unexpected?”





## Pediatric Critical Events Checklists

### Call for help!

Overhead	1605
Blood Bank	45850
PICU	45952
Fire	*9999
GOAT	64161
Charge RN	64160
PACU	45712

Revised March 8, 2013

<b>Air Embolism</b>	2
<b>Anaphylaxis</b>	3
<b>Bradycardia</b>	4
<b>Cardiac Arrest</b>	5-7
<b>Difficult Airway</b>	8
<b>Fire: Airway and OR</b>	9-10
<b>Hyperkalemia</b>	11
<b>Hypertension</b>	12
<b>Hypotension</b>	13
<b>Hypoxia</b>	14-15
<b>Local Anesthetic Toxicity</b>	16
<b>Loss of Evoked Potentials</b>	17
<b>Malignant Hyperthermia</b>	18
<b>Myocardial Ischemia</b>	19
<b>Tachycardia</b>	20
<b>Transfusion &amp; Reactions</b>	21-22
<b>Trauma</b>	23-24

# Fire: Airway

Fire in tracheal tube, circuit, canister

9

- ☐ **Call for help.**
- ☐ **Stop** all gas flow ( $O_2$ ,  $N_2O$ )
- ☐ **Disconnect** breathing circuit.
- ☐ Pour saline into airway.
- ☐ **Remove** ETT.
- ☐ Remove sponges and other flammable materials from airway.
- ☐ Re-intubate and re-establish ventilation.
- ☐ If intubation difficult, don't hesitate to obtain surgical airway.
- ☐ Consider bronchoscopy to assess for thermal injury, look for tracheal tube fragments, and remove residual material.
- ☐ Impound all equipment and supplies for later inspection.



Picture from ECRI: [www.ecri.org](http://www.ecri.org)



How well do you learn from things that went wrong? How well do you integrate the learning across silos?

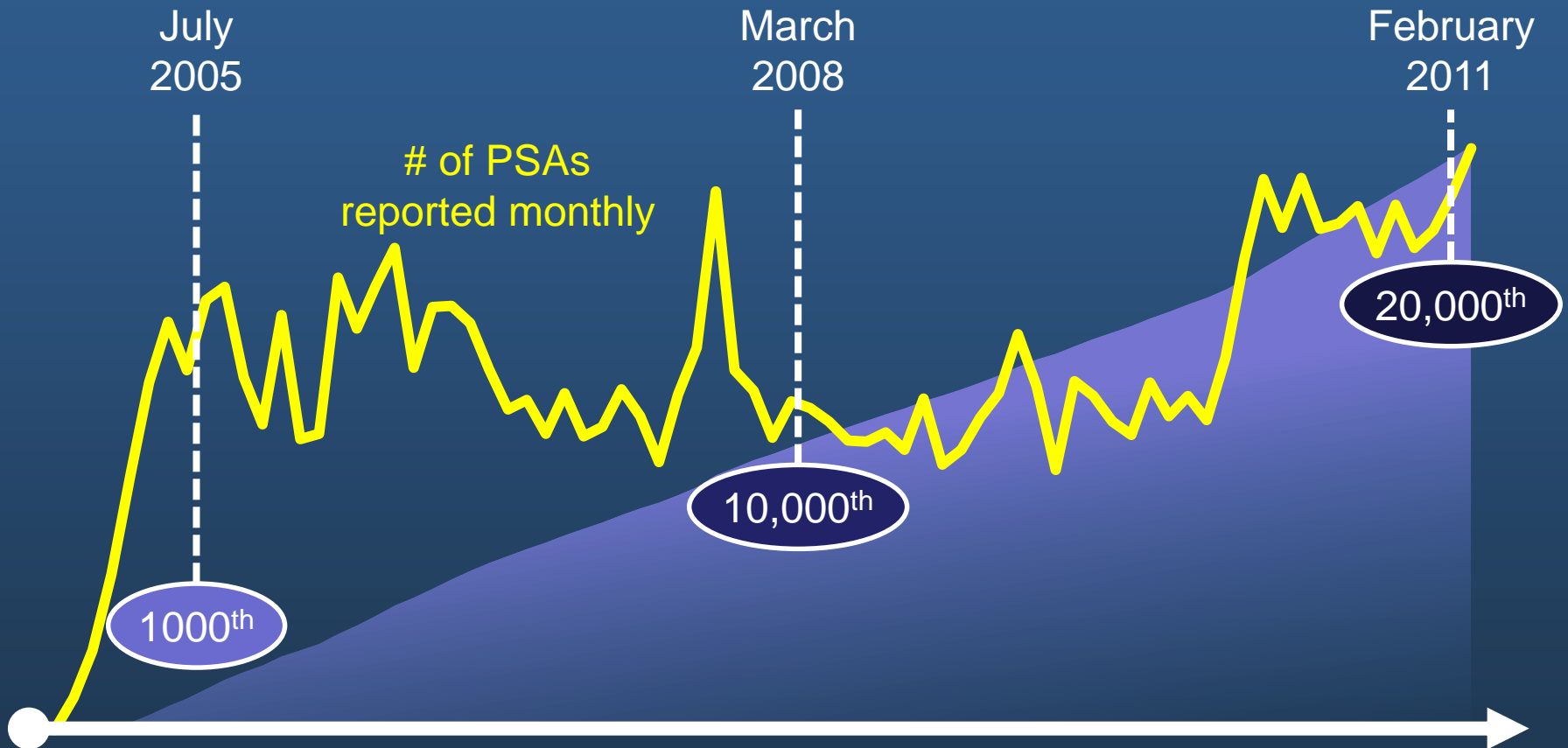


# Sources of information on “things that went wrong”

- Incident reports
  - Patient safety alerts
  - Serious safety events
  - Malpractice cases
  - Publicly reported  
“Never Events”
- What do you do with these?
  - Who reviews them?
  - How do you spread the learning?
  - How do you know that you’ve implemented the learning?



# 20,000<sup>th</sup> PSA Reported



# Patient Safety Alert: Key Concepts

- Every employee is an inspector
- Inspect, stop, and fix at the source
- Every employee can stop the line
- When you can't fix on-the-spot: **STOP**



# Board Quality Oversight Committee

- Meets monthly
- Members include 4 public members (NEDs), CEO and Quality executives
- Standing agenda
  - PSA data and specific case studies
  - Red PSA closure approval
  - Quality subcommittee reports





# Integrating the learning from PSAs

- Tuesday standup: What's the lesson for your area?
  - Stroke and confirmation bias
  - What does this mean for credentialing doctors?



# Beyond “How Much Harm Has Occurred?”

## Key Questions for Safety Leaders

- How well are we performing our key safety processes? (**Reliability**)
- How safe are we today? (**Sensitivity to Operations**)
- How safe are we going to be tomorrow? (**Anticipation and Preparedness**)
- How well are we responding to past events? (**Integration and Learning**)

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Health Foundation, 2013

# To Sum Up

- Leaders are responsible for everything in the organization, especially for what goes wrong.
- Leaders must ensure that safety is measured, monitored, and continually improved—for patients, staff, visitors....
- Don't be satisfied with lagging indicators. These do not tell you how safe you are today, or how safe you will be tomorrow.

