Understanding and Measuring Harm

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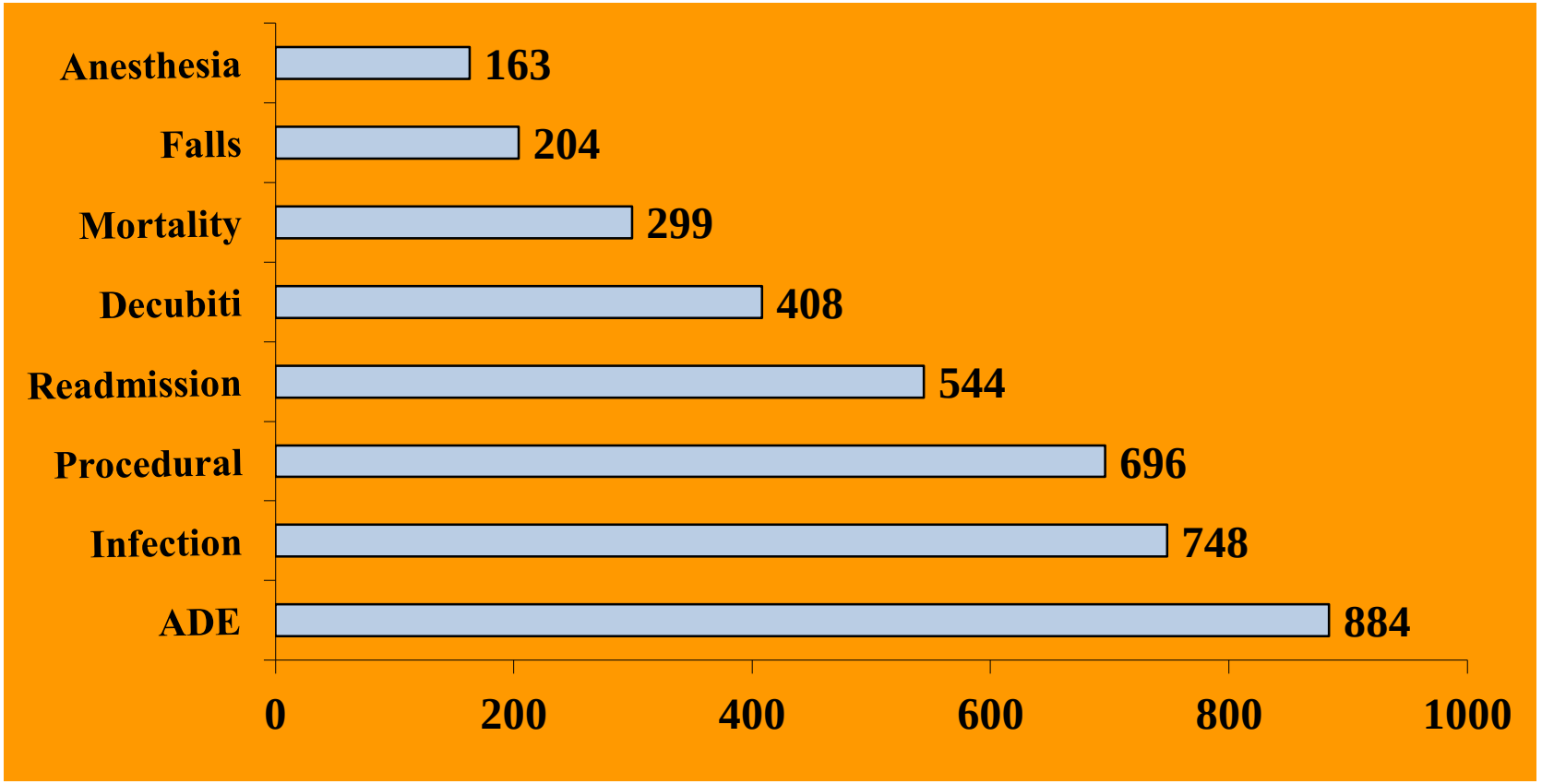
What promises are you prepared to make to patients and their families?

Can We Promise…?

- A place with no needless…
  - Deaths
  - Pain
  - Delays
  - Helplessness
  - Waste

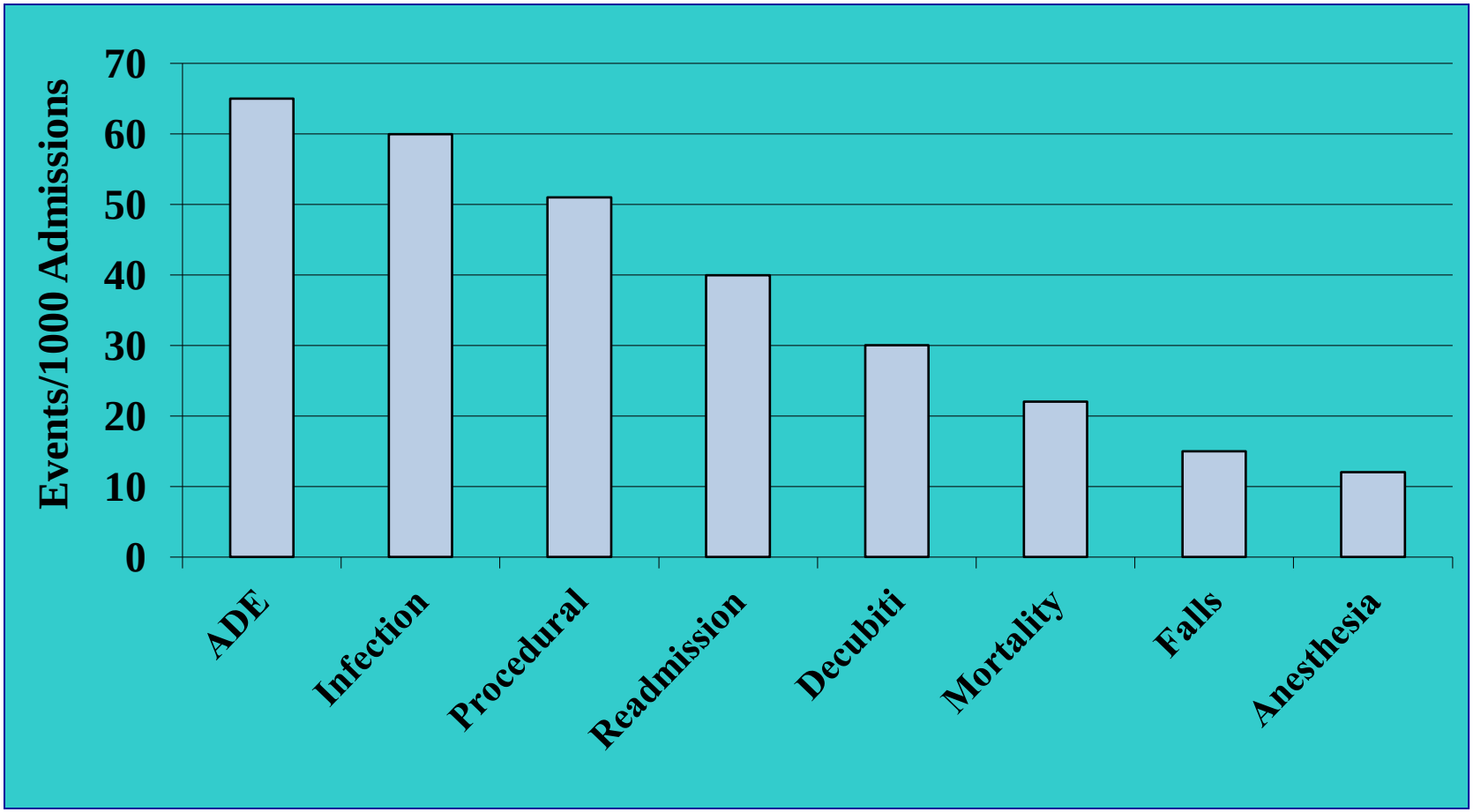
Sources of harm- how many times do we need to re-learn this?

Serious Events in Average Hospital 350 beds with 13,600 admissions and 5,400 surgeries



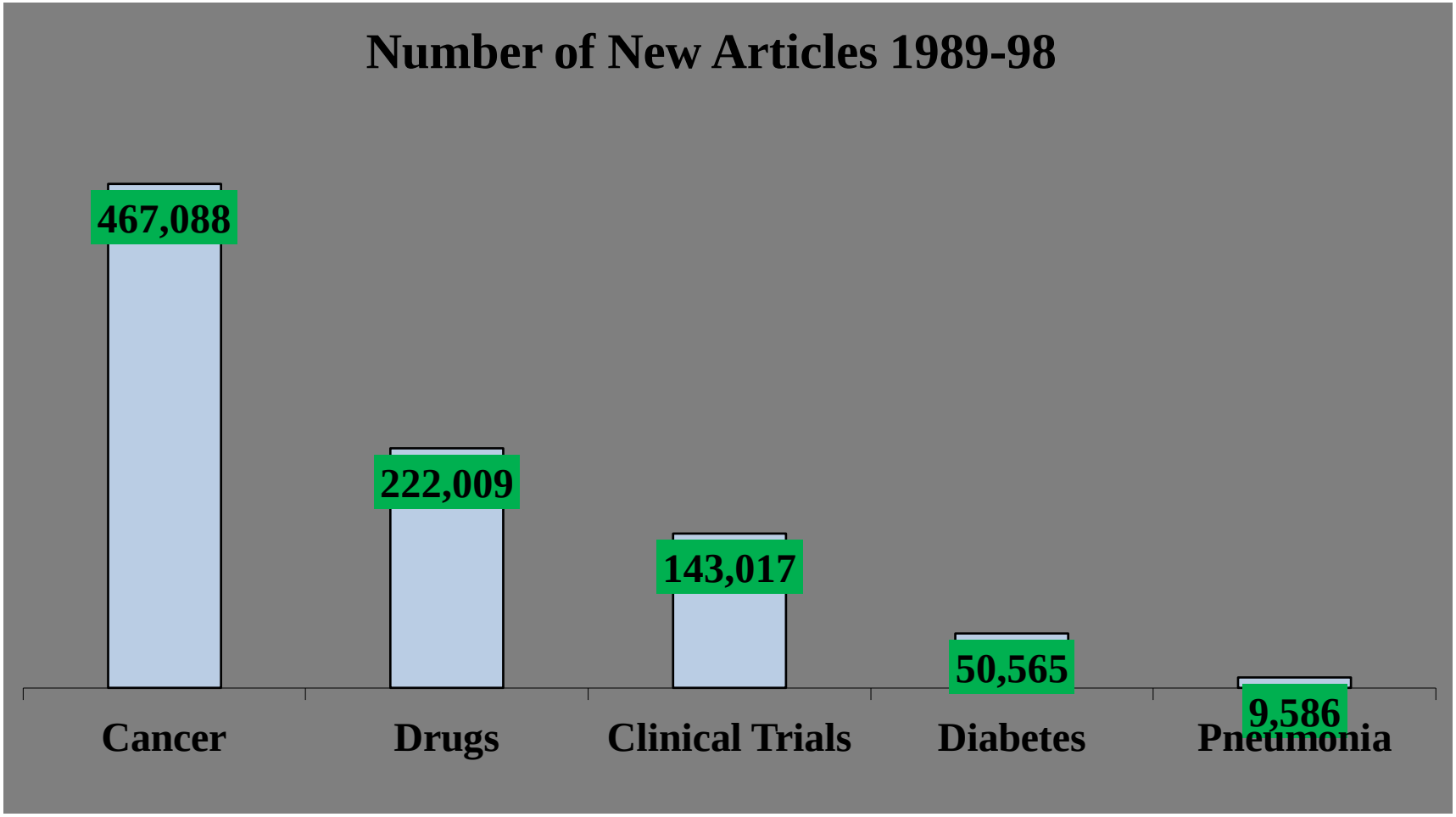
Source: Advisory Board Company Analysis

Serious Events in Hospitals



Source: AHA Statistics

Keeping Up With Science



Source: Advisory Board Company

Designing for Safety

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Every system is perfectly designed to achieve exactly the results it gets.

The level of safety, timeliness, responsiveness, and cost are all qualities of a system.

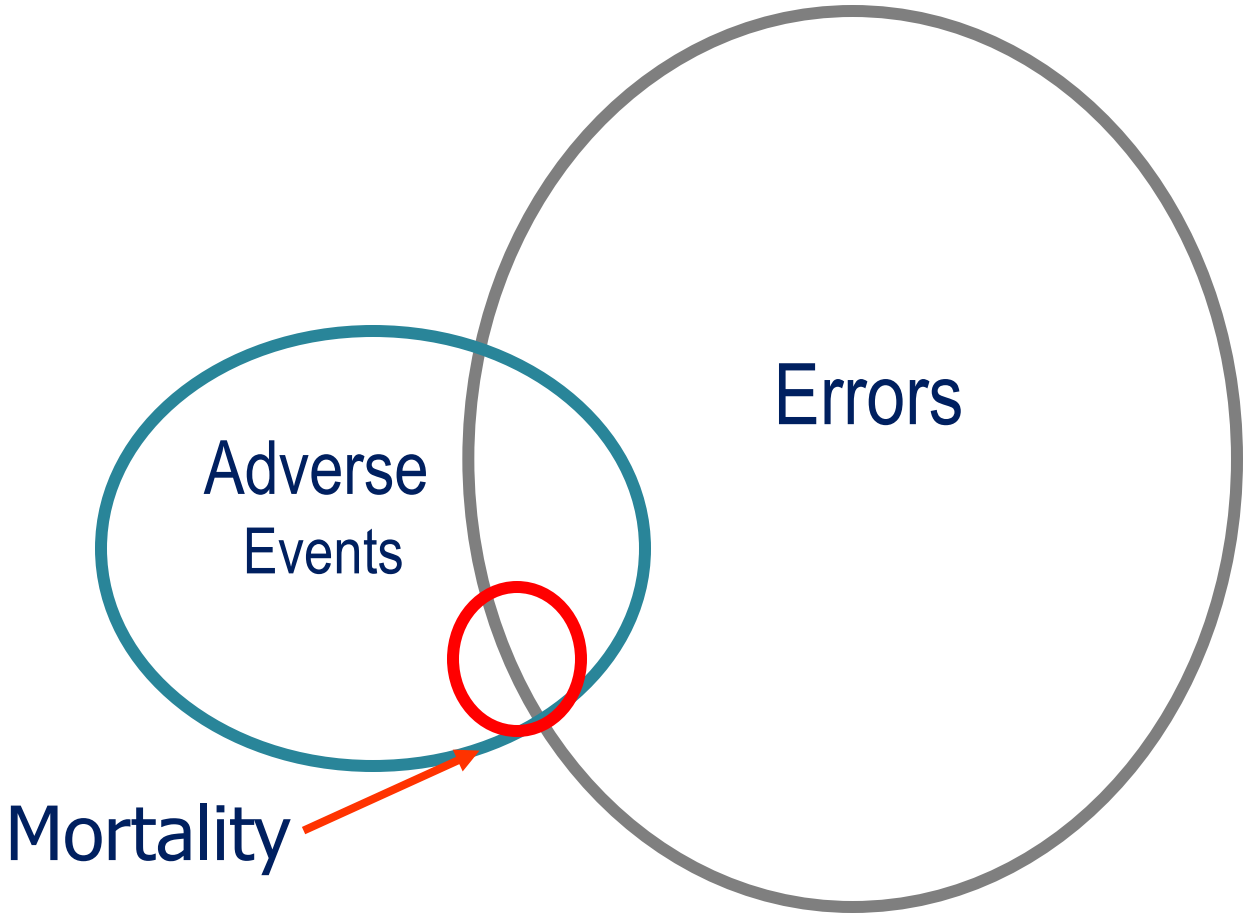
Safety and Current Conditions

FOCUS	FOCUS
tasks	risks
checklist complete	continuous learning
today	over time
my work	my team
designs in human frailty	relies on human factors and system resilience

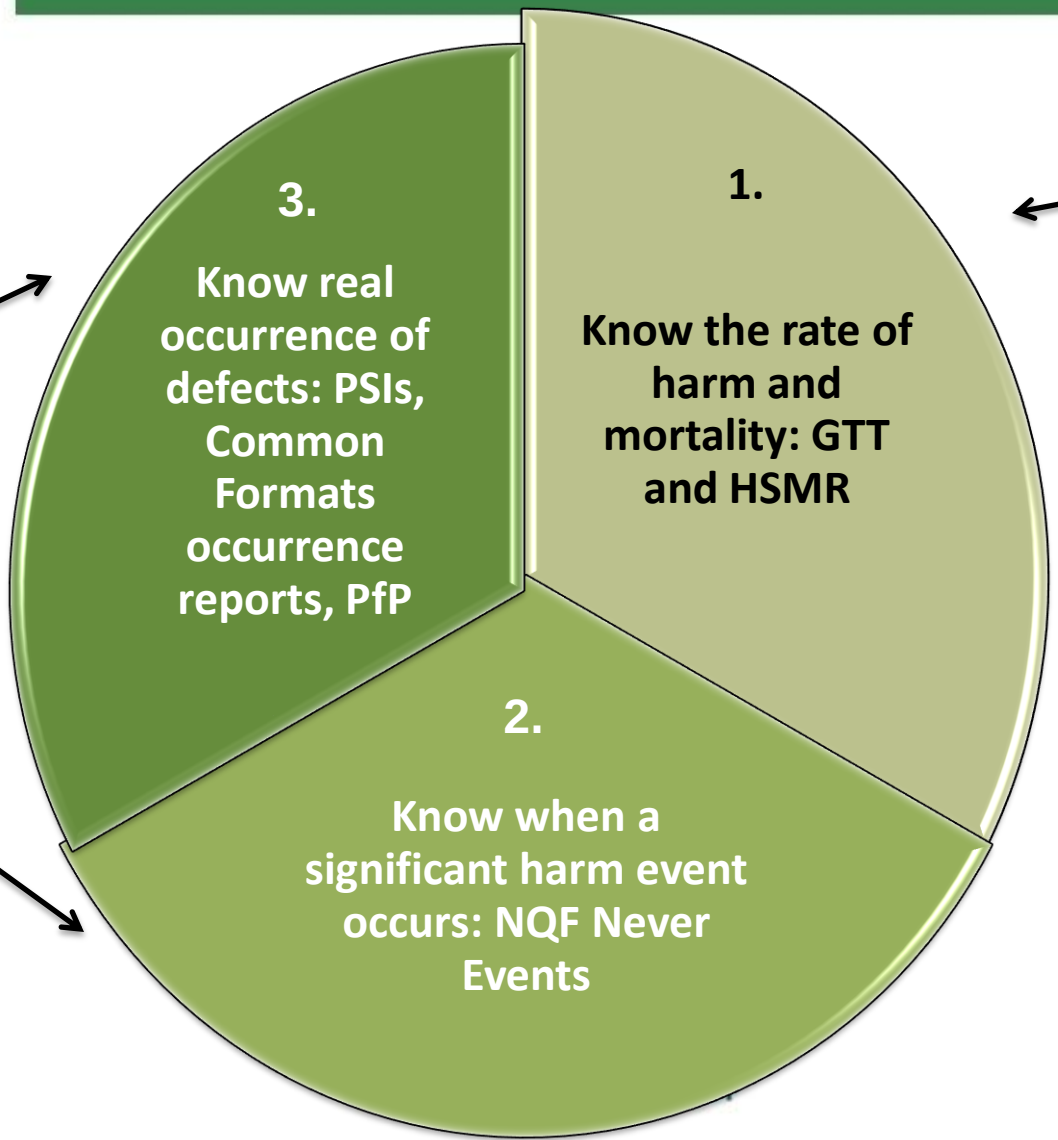
How can we learn about our system performance?

The search for and understanding of errors has not made patient care much safer.

Adverse Events and Error



What Organizations Need from a Portfolio of Measures



Make the connection to 2 and 3

Know the impact on finances

How Safe is Our System Report

Indicator		FY Goal		Best In Class		Q.1		Q.2		Q.3		Q.4		FY 12 Actual
Sensitive to Financial Risk														
Non-reimbursable serious hospital-acquired conditions" (HACs) (CMS)* Number: rate/100 patient days:	↓													
Serious Reportable Events (NQF) Number: rate/100 patient days:	↓													
Funds spent or withheld due to harm/error	↓													
Core Measures Reliability (CMS, insurers) Composite	↑													
30 day readmission rate	↓													
Global Trigger Tool Rate 1) percent of admissions that had an AE 2) events per 100 admissions	↓													
Sensitive to Mortality Risk														
A standardized measure of hospital mortality	↓													
Sensitive to Patient and Family Perceptions of Safety Risk	↑													
(looking for a good measure here- HCAPS does not have one)														
Sensitive to Staff Safety Risk														
-Staff Work-Related injuries or Illnesses -Lost Time Case Rate	↓													
Sensitive to Safety Culture Risk														
Patient complaints number this quarter	↓													
Self-reported error/harm rate	↓													
Safety Culture Survey Outcome Scores: #1 Overall perceptions of safety #2 Frequency of events reported #3 Number of events reported #4 Overall patient safety grade	↑													

Measuring the Harm

1. Occurrence rates- preferably real time
2. Measure of all-cause harm over time: Trigger tool or other like instrument
3. Self reporting systems

YOU NEED ALL!

WHY?

Error Reporting Alone

- Relies on self-report
- Is notoriously unreliable
- Can not accurately measure or use to see improvement over time
- What would a ‘good’ level look like?
- Works only in a just culture
- **Critical for improving the culture**

Preventability and Harm

- Every system is designed to produce the outcomes it gets.
- We have systems of care designed to produce certain levels of harm.
- These levels of harm have become acceptable as a property of the system.
- All harm is theoretically preventable.

IHI Trigger Tool

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Background

- Computerized triggers for ADE identification and concurrent intervention David Classen (1990)
- ADE review identifying 14 triggers accounting for majority of ADE's David Classen (1994)
- Adverse drug event trigger tool developed for the IHI Idealized Design of the Medication System (1999)
- ICU Adverse event trigger tool, IHI Idealized Design ICU (2002)
- Global Trigger Tool testing and spread to US and international hospitals (2004)

What is the IHI Global Trigger Tool?

- "Triggers" indicate which medical records are likely to include documentation of an adverse event (harm)
- 20 minute chart review finds most adverse events
- The GTT is far more sensitive than voluntary reporting and AHRQ's Patient Safety Indicators
  - Voluntary reporting to detect errors and "near misses" is an important adjunct to harm detection with the GTT
- Harms present on admission and related to medical care are counted, as are all events whether or not considered preventable
- The GTT is not designed to detect diagnostic errors or errors of omission, so rates of harm found with the GTT underestimate the total harm burden

North Carolina Safety Study

- Stratified random sample of 10 North Carolina Hospitals
- North Carolina chosen because strong Campaign node and commitment to safety
- Conducted by independent health services researchers (Landrigan and Sharek) and a Clinical Research Organization (Battelle, Inc.)
- Random charts from 2002-07 reviewed with GTT (external and internal reviewers)
  - Internal reviewers more reliable, so hospitals can do the reviews themselves
  - Sensitive, specific, good psychometric properties
  - Suitable for evaluating change in harm rates at hospital, regional and national levels

North Carolina Safety Study

- 25.1 harms/100 admissions
- Procedures, medications, healthcare associated infections most common
- Most harms minor and transient, but some serious
  - 41.7% temporary with intervention required
  - 44.7% temporary with prolonged hospitalization
  - 2.9% permanent
  - 8.5% life threatening
  - 2.4% caused or contributed to death
- 63.1% “preventable”
- No detectable improvement over the 6 year study period (adjusted for case mix)

Office of the Inspector General (OIG) Medicare Study

- IHI GTT, but harms *present on admission excluded*
- **13.5 harms/100 admissions** (excluding temporary harms that did not require prolonged hospitalization)
  - Estimated 134,000 Medicare patients had at least one adverse event in the one month study period (contributing to 15,000 deaths)
- **Another 13.5/100** admissions had temporary harms
- Small minority NQF "serious reportable events" or Medicare "hospital acquired conditions"
- 44% clearly or likely preventable
- Medication, patient care, infection most common causes
- Total cost $324 million in the study month (3.5% Medicare hospital expenditures)
- Implications

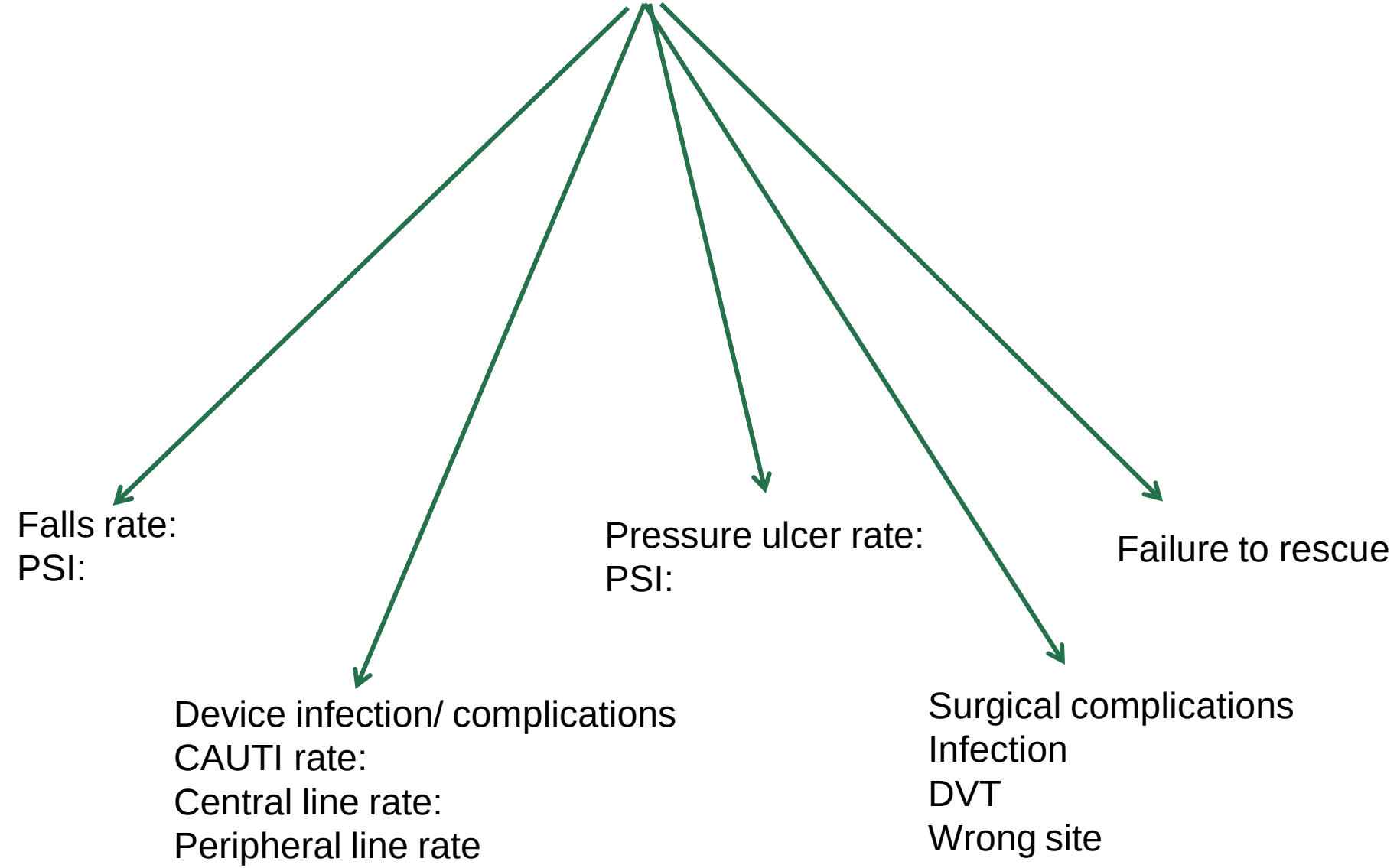
What does this mean to you?

- Validation that the GTT is a reliable method to detect harm
- Other methods may not be identifying all harm events – “Are you identifying the same harm?”
- International application
- Position as a critical component of measurement strategy

Determining Improvement Projects using GTT

- GTT allows understanding of:
  - Harm types and proportion
  - Performance over time
  - Effect on mortality
- Select Main improvement projects
- Obtain occurrence data
- Look for confirmatory information and data
- Charter improvement
- Spread/Scale-Up
- Track occurrence rates for improvement
- Track improvement over time with GTT

Over all rate of harm over time: GTT



ICU Days and Adverse Events

- Study of a “trigger tool” for adverse events in ICU (IHI/VHA)
- Approximately 2 adverse events/ICU day
- Seventeen intensive care units around the nation

Consecutive Adverse Events

- 1-Iatrogenic pneumothorax
- 2-Sternal wound infection
- 3-Thrombophlebitis
- 4-Post Surgical bleed
- 5-ICU delirium
- 6-Nosocomial pneumonia
- 7-Theophyline toxicity/arrhythmia
- 8-GI bleed
- 9-Iatrogenic pneumothorax
- 10-ICU delirium
- 11-Fluid overload
- 12-Oversedation
- 13-Urinary obstruction
- 14-ICU delirium
- 15-Rash
- 16-Aspiration pneumonia
- 17-Nausea
- 18-Pulmonary embolus
- 19-Nosocomial pneumonia
- 20-Sternal wound dehiscence
- 21-Dialysis induced hypotension
- 22-Severe hypotension with NTG
- 23-Renal failure post surgery
- 24-ICU delirium
- 25-Sternal wound infection

Cost Analysis

Pt. #	Impact	Charge Impact	Net Revenue Impact	Variable Direct Cost Impact	Favorable/(Unfav) NOI Impact
1611504	entire stay	$57,484	$15,525	$16,700	($1,175)
1614049	2 extra hospital days	$3,428	$0	$1,170	($1,170)
1610409	2 extra ICU days	$10,422	$0	$2,650	($2,650)
1612904	2 extra ICU days	$7,930	$0	$2,500	($2,500)
1615479	Total ICU costs	$1,502	$0	$865	($865)
1612683	Total Hospital Costs	$21,500	$3,958	$6,430	($2,472)
1616084	3 extra ICU days	$6,592	$0	$2,695	($2,695)
7025810	Indwelling Cath, 8 vent hours, 1 critical care day	$8,768	$0	$3,245	($3,245)
1610401	2 extra ICU days	$9,180	$0	$2,345	($2,345)
1615100	4 days ICU care	$13,756	$0	$4,485	($4,485)
1574521	No additional cost	n/a	n/a	n/a	n/a
1559036	5 extra ICU days	$19,341	$0	$7,150	($7,150)
1560556	3 extra ICU days	$19,032	$0	$3,730	($3,730)
1561070	2 extra ICU days and return to OR	$16,436	$0	$5,125	($5,125)
1560964	3 extra ICU days	$15,090	$0	$4,408	($4,408)
1566180	no additional cost	n/a	n/a	n/a	n/a
1565261	2 extra ICU days	$4,086	$0	$1,619	($1,619)

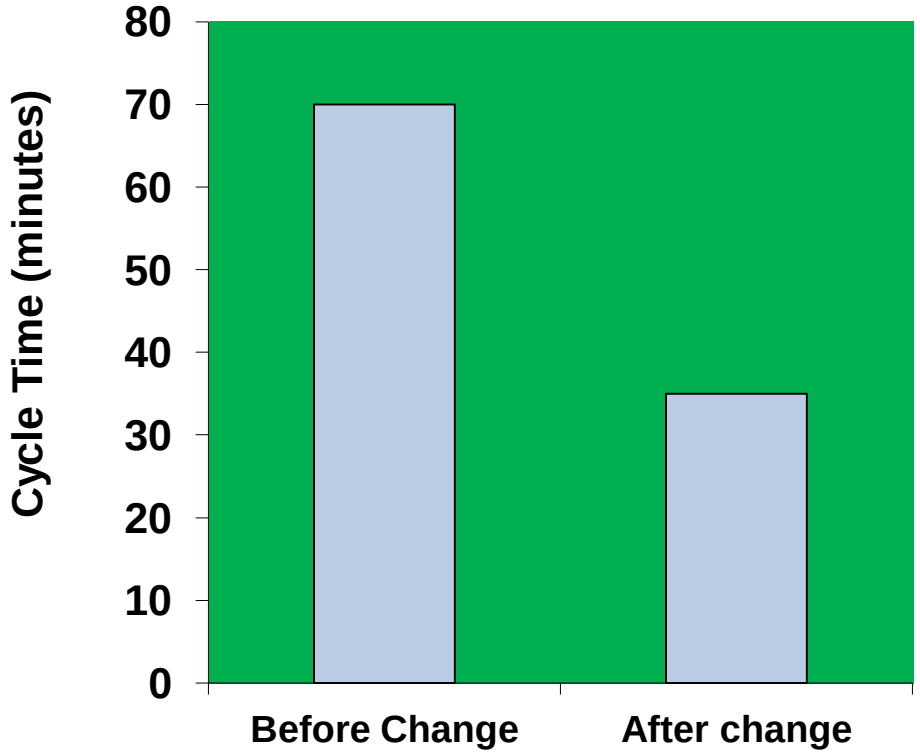
ICU Days and Adverse Events

- In dept evaluation of 25 consecutive events showed 54 extra ICU days

What You Measure Matters

….and how you measure and display it matters, too.

Improvement in Time to Antibiotic for CAP (Hospital A)



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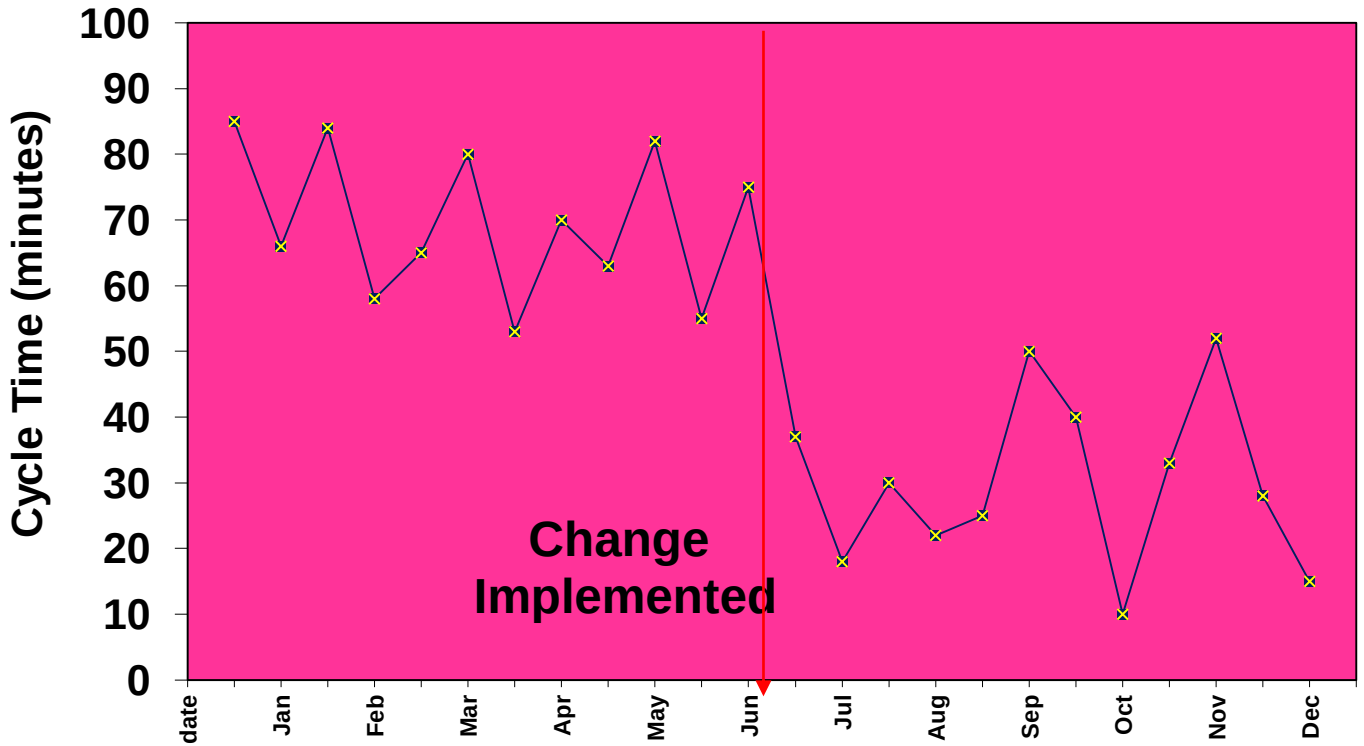
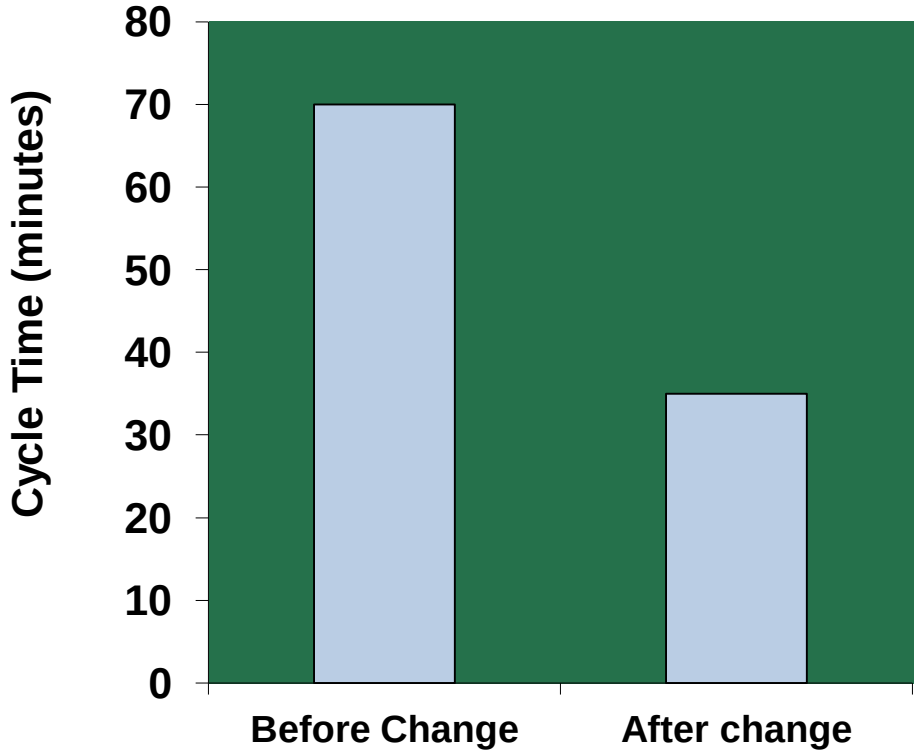
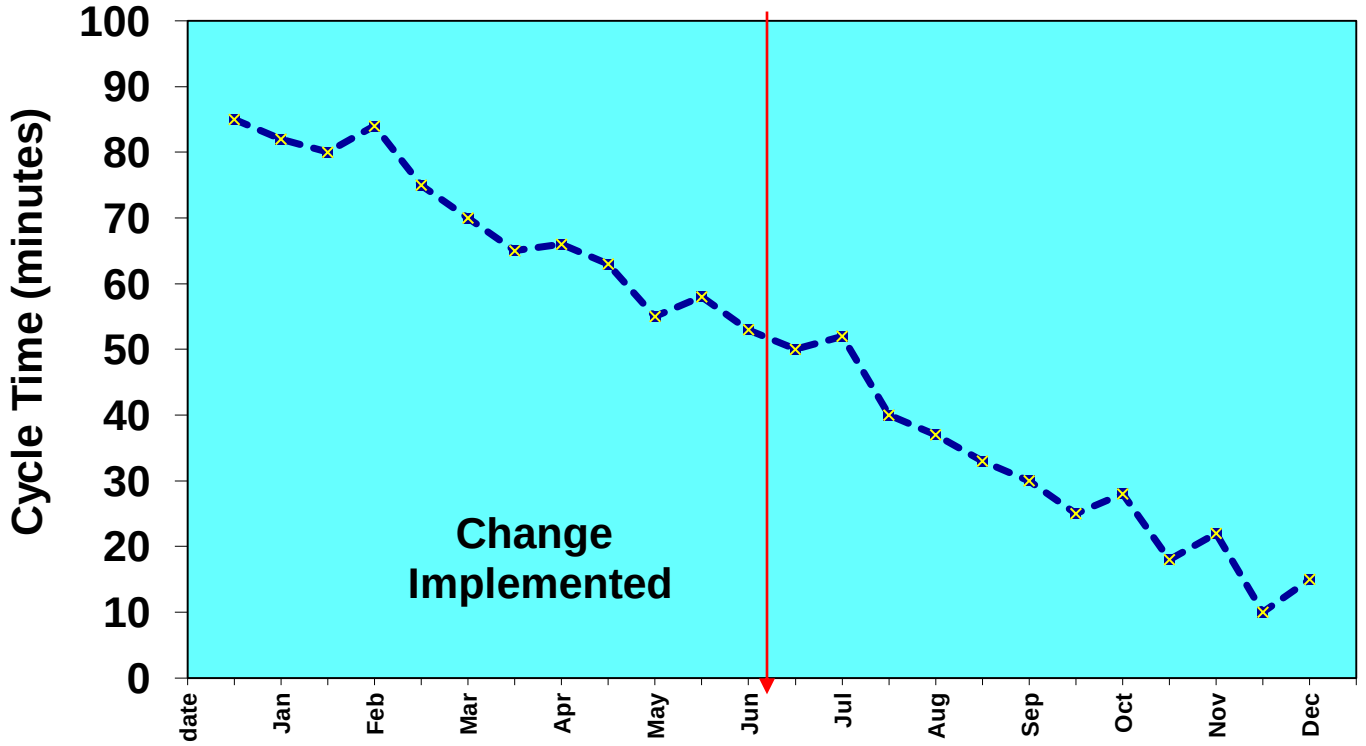


Improvement in Time to Antibiotic for CAP (Hospital B)



Improvement in Time to Antibiotic for CAP (Hospital B)



BREAKTHROUGH CHANGE

"There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success than to take the lead in a new order of thinking."

Machiavelli

The status quo is a tyrant...

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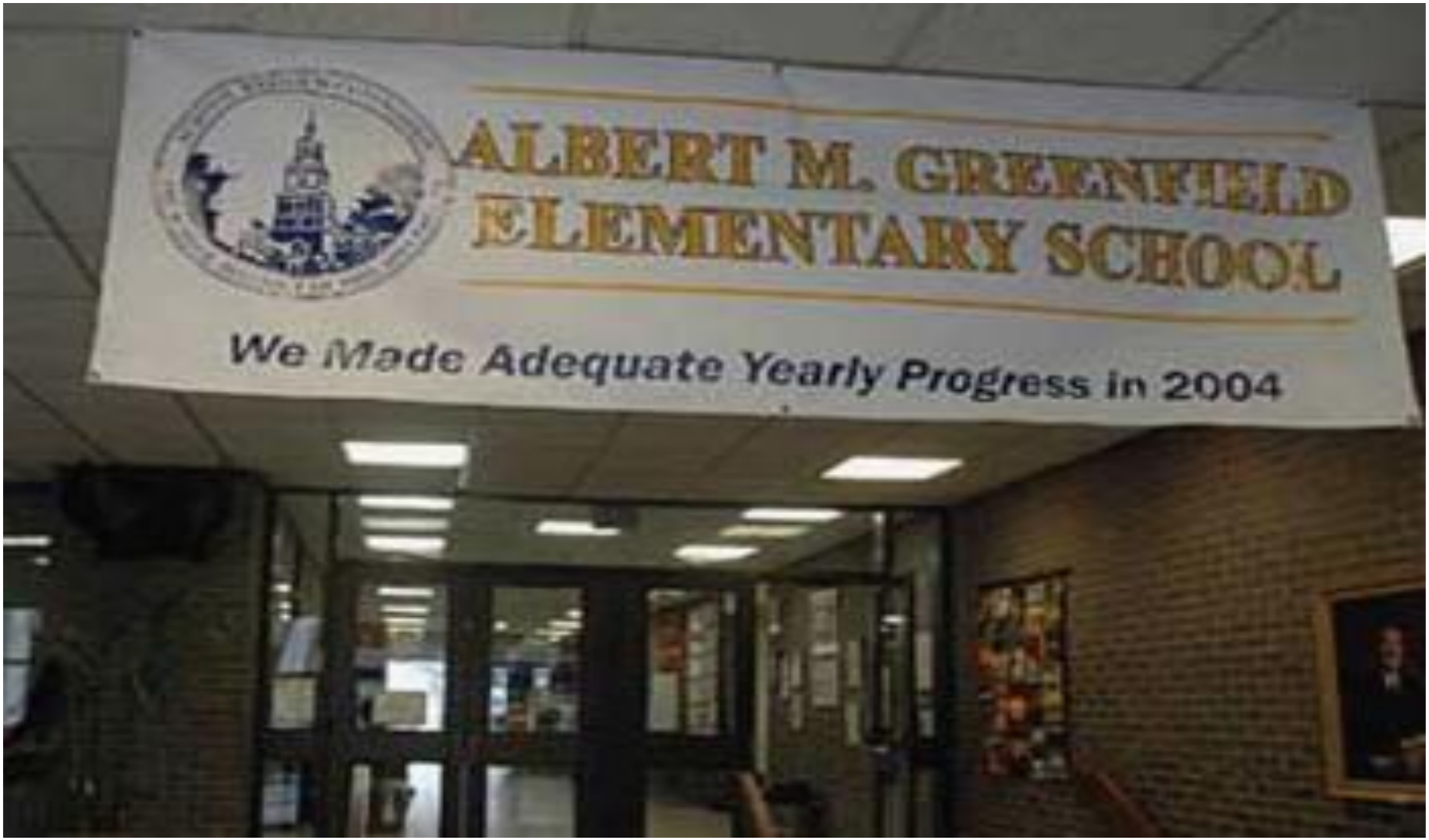

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