# Improving ICU Care: Lessons Learned

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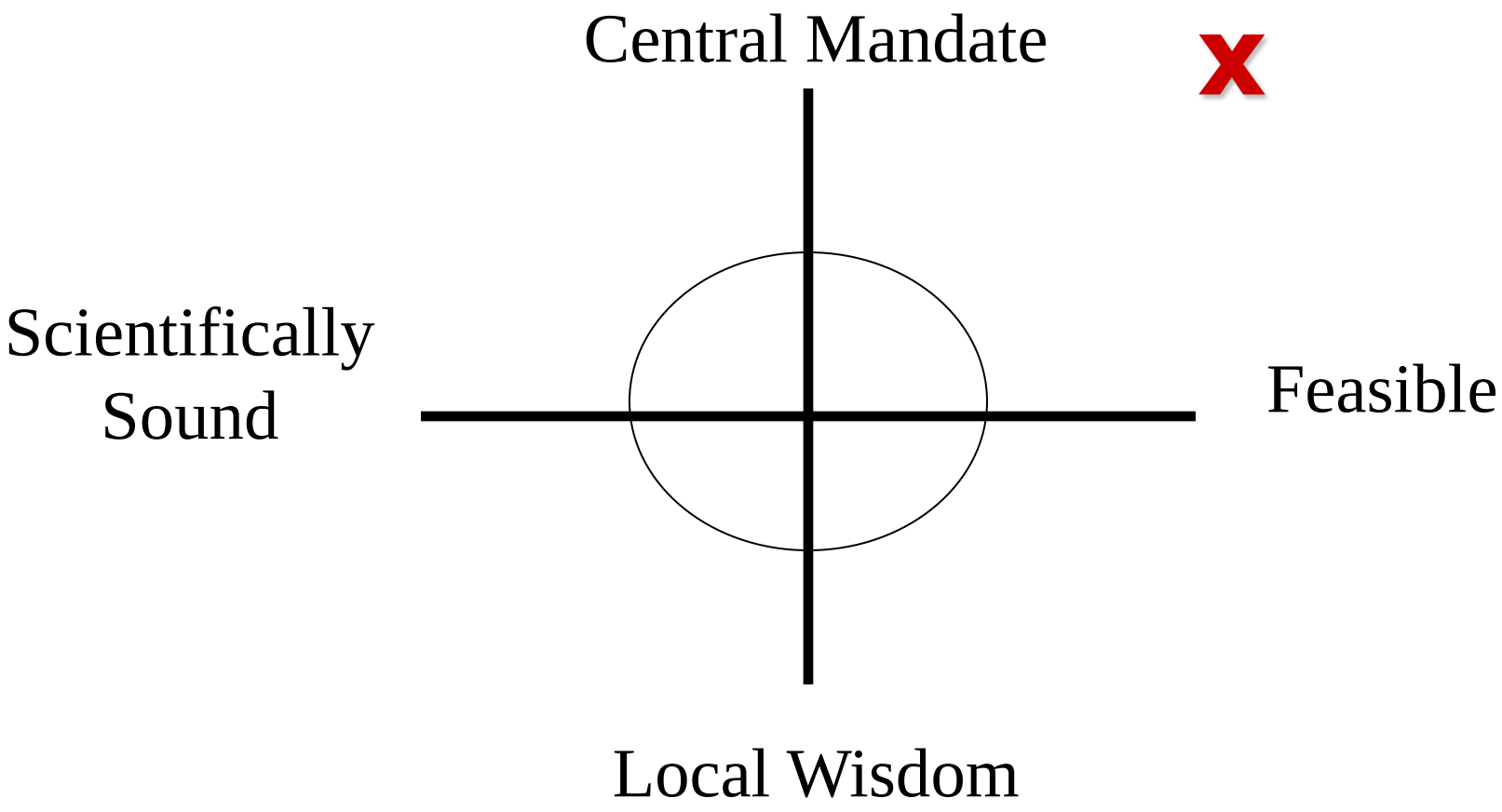


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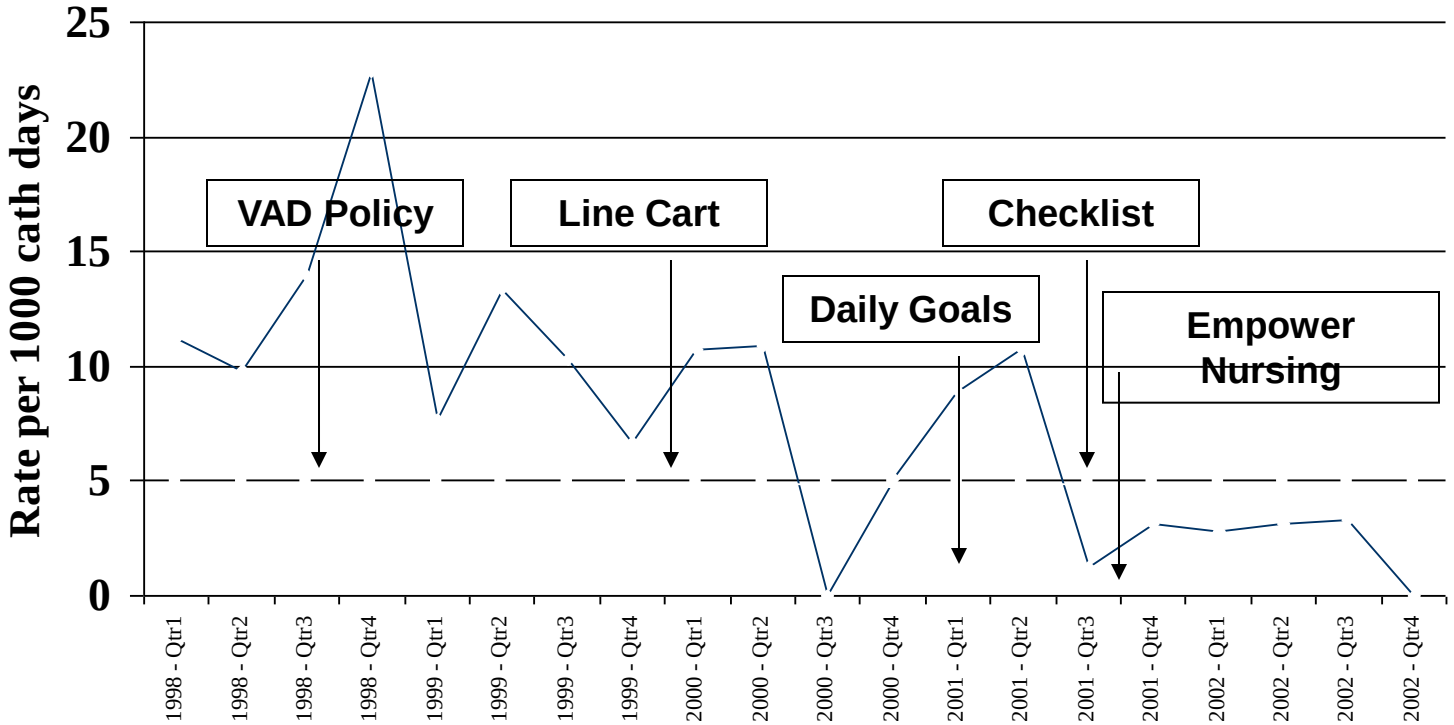
# Can One Institution Get to Zero?

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Berenholtz et al. Crit Care Med. 2004;32:2014.

# Can A State ?

Project funded by the Agency for Healthcare Research and Quality

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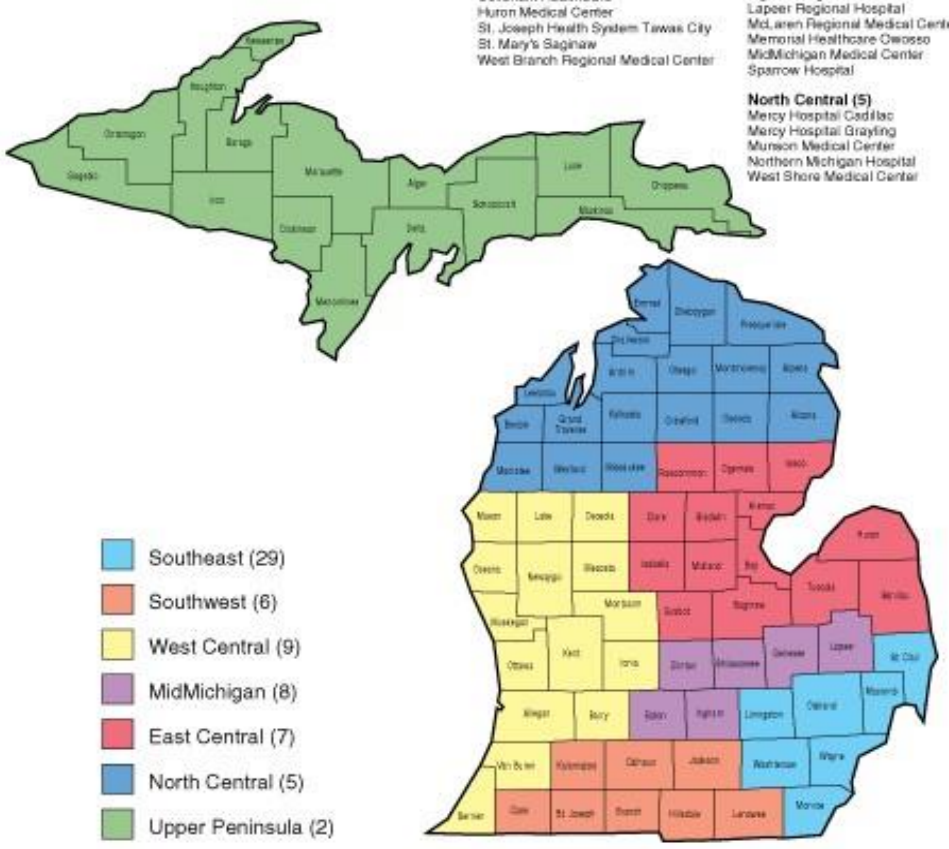
# State wide effort to improve ICU care in Michigan




**East Central (7)**
Alida E. Lutz VAMC
Bay Regional Medical Center
Covenant HealthCare
Huron Medical Center
St. Joseph Health System Tawas City
St. Mary's Saginaw
West Branch Regional Medical Center

**Mid Michigan (8)**
Genesys Regional Medical Center
Hurley Medical Center
Ingham Regional Medical Center
Lapeer Regional Hospital
McLaren Regional Medical Center
Memorial Healthcare Owosso
MidMichigan Medical Center
Sparrow Hospital

**North Central (5)**
Mercy Hospital Cadillac
Mercy Hospital Grayling
Munson Medical Center
Northern Michigan Hospital
West Shore Medical Center

**Southeast (29)**
Beaumont Hospital-Royal Oak
Beaumont Hospital-Troy
Botsford General Hospital
Chelsea Community Hospital
Crittenton Hospital Medical Center
Garden City Hospital
Harper University Hospital
Henry Ford Health System
Henry Ford Wyandotte Hospital
Huron Valley Sinai Hospital
Mercy Memorial Hospital (Monroe)
Mt. Clemens General Hospital
Oakwood Annapolis Hospital
Oakwood Dearborn
Oakwood Heritage Hospital
Oakwood South Shore Hospital
POH Medical Center
Port Huron Hospital
Providence Hospital
St. John Detroit Riverview Hospital
St. John Hospital & Medical Center
St. John Macomb Hospital
St. John Oakland Hospital
St. John River District Hospital
St. Joseph Mercy Hospital (Ann Arbor)
St. Joseph Mercy Oakland
St. Joseph's Mercy of Macomb
St. Mary Mercy Livonia
University of Michigan Health System

**Southwest (6)**
Battle Creek Health System
Borgess Medical Center
Bronson Methodist Hospital
Community Health Center of Branch County
Three Rivers Area Hospital
W.A. Foote Health System

**Upper Peninsula (2)**
Marquette General Hospital
War Memorial Hospital

**West Central (9)**
Gerber Memorial Health Services
Hackley Hospital
Holland Community Hospital
Lakeland Hospital
Mercy General Health Partners
Metropolitan Hospital
Spectrum Health
St. Mary's Mercy Medical Center
United Memorial Health Center

**Out-of-state (5)**
Mercy Medical Center - Des Moines (IA)
Mercy Medical Center (Sioux City, IA)
Mercy Medical Center Clinton (IA)
St. Agnes Medical Center (Fresno, CA)
St. Joseph Regional Medical Center (South Bend, IN)

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**Funded by AHRQ**

# 2 year results from 103 ICUs

| Time period | Median CRBSI rate | Incidence rate ratio |
|---|---|---|
| Baseline | 2.7 | 1 |
| Peri intervention | 1.6 | 076 |
| 0-3 months | 0 | 0.62 |
| 4-6 months | 0 | 0.56 |
| 7-9 months | 0 | 0.47 |
| 10-12 months | 0 | 0.42 |
| 13-15 months | 0 | 0.37 |
| 16-18 months | 0 | 0.34 |

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Pronovost NEJM 2006

# Keystone ICU Safety Dashboard

| | 2004 | 2006 |
|---|---|---|
| How often did we harm | 2.8/1000 | 0 |
| How often do we do what we should | 66% | 95% |
| How often did we learn | 100s | 100s |
| At least 60% of staff say culture is safe | 16% | 59% |
| Teamwork is good | 18% | 53% |

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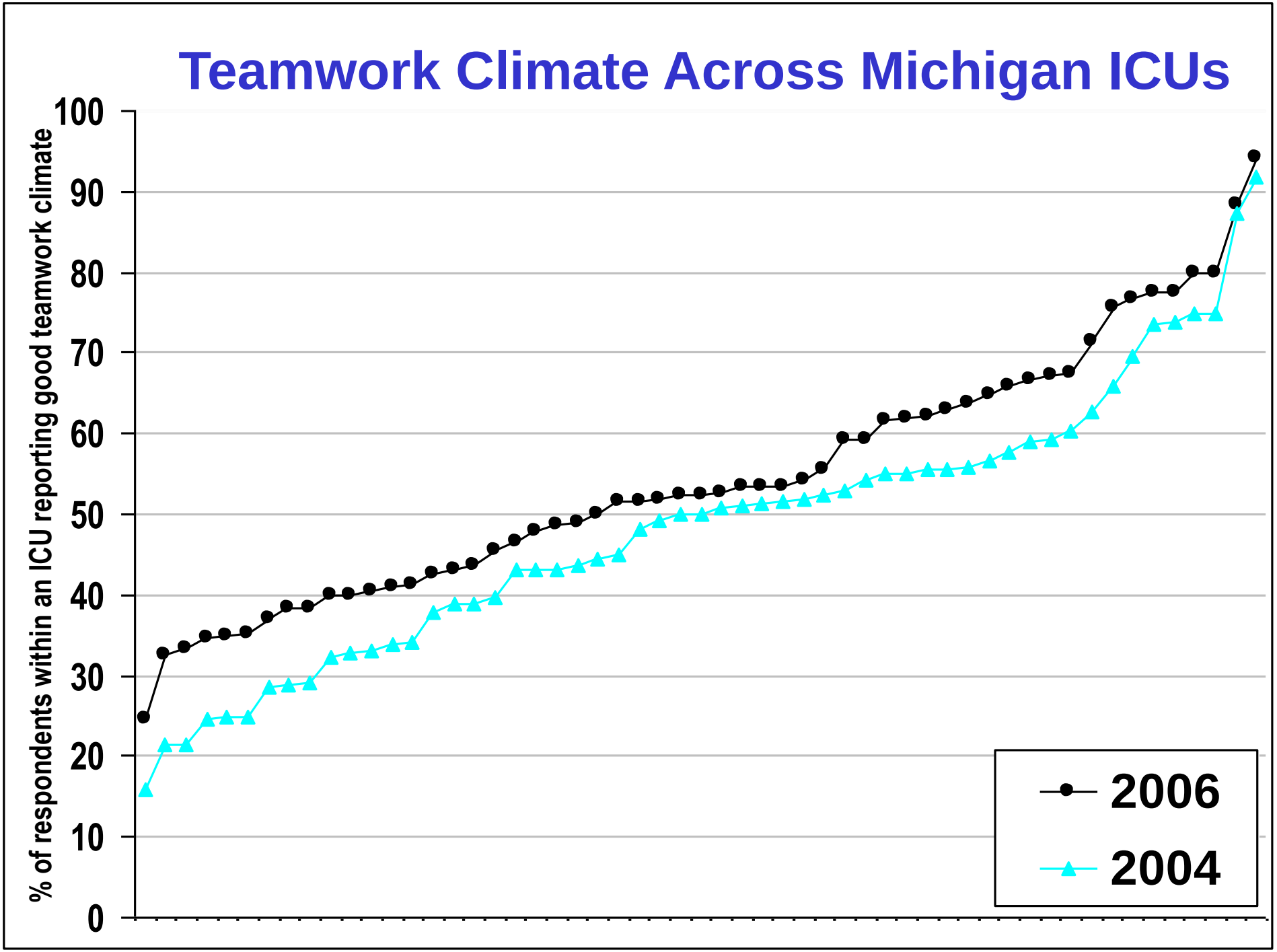
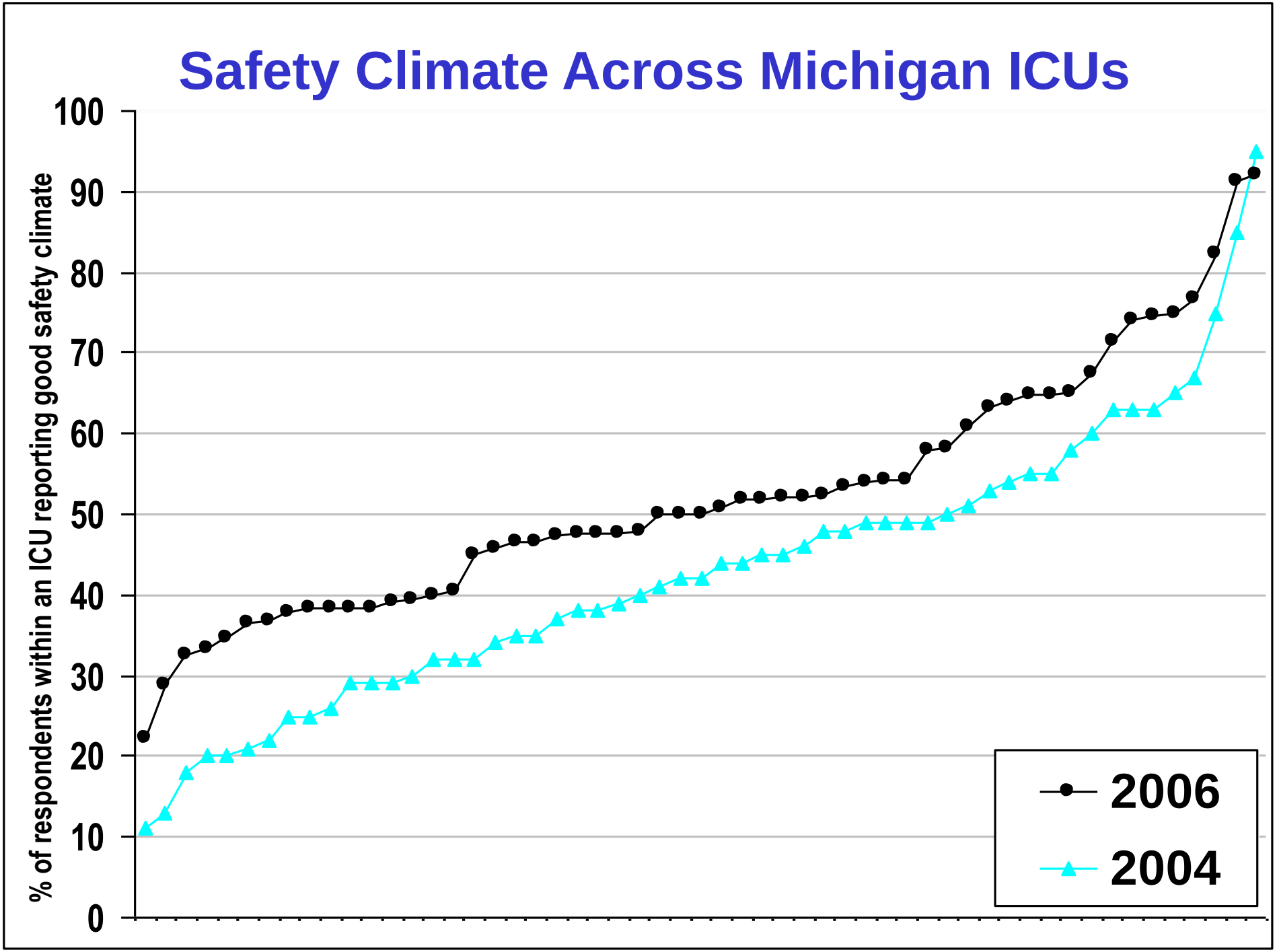
# Teamwork Climate Across Michigan ICUs



# Safety Climate Across Michigan ICUs



# Working Together

- Formal letters of commitment
  - Content~ Hopkins
  - Coordination~ MHA & Hopkins
  - Context~ Local Sites
- Bi-monthly conference calls (content and coaching)
- Bi-annual workshops
- Monthly Data Submission
- Ohana

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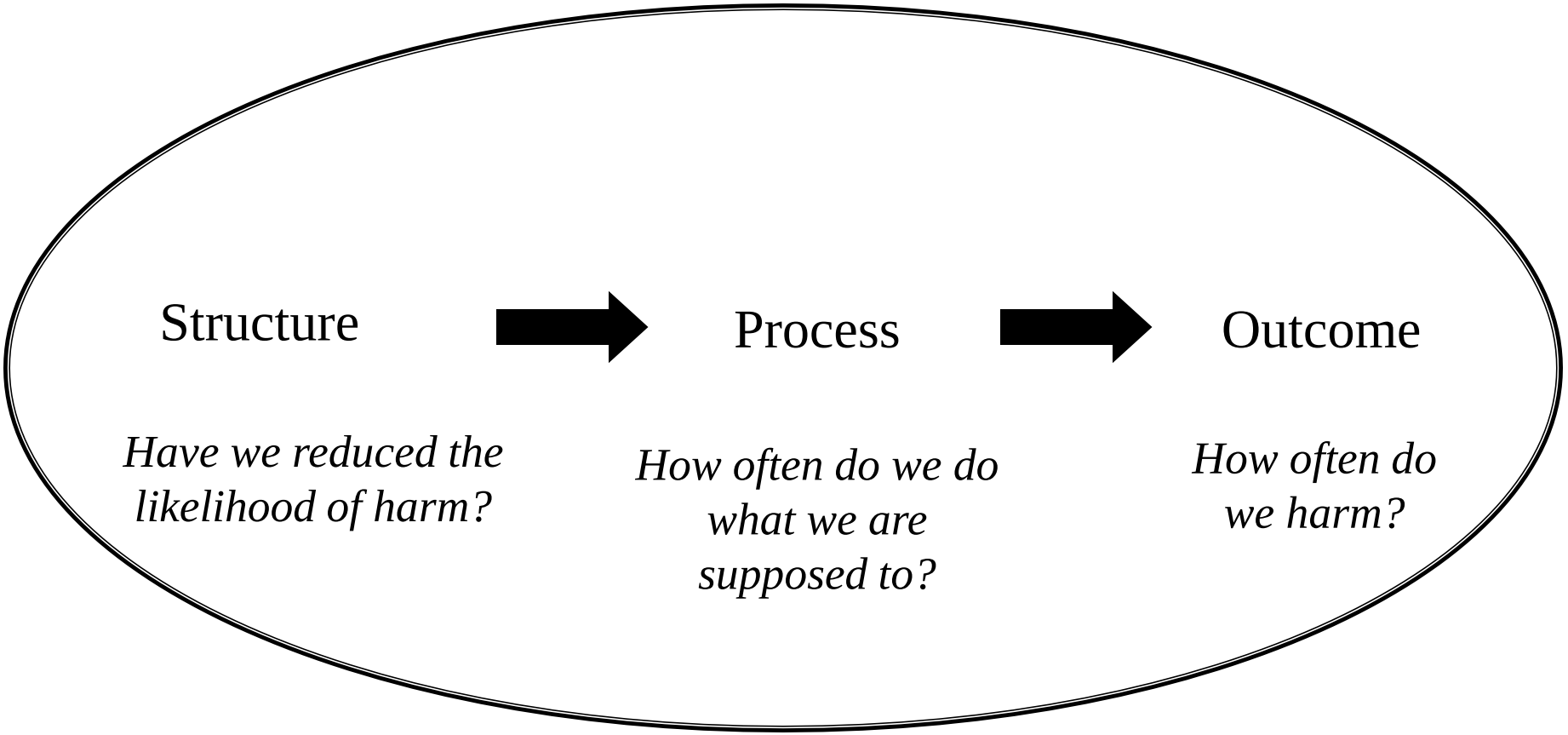
# The Teams

- Research Team from Hopkins provided evidence and interventions, data analysis and face to face time with teams
- Keystone Team from MHA coordinated project (enrollment, data collection and management, conference calls and meetings)
- Teams from each ICU Implement Interventions and report data. Senior leaders serve as members of each ICU team

# Goals

- Work to eliminate CLABSI
- Ensure 90% of ventilated patients receive evidence-based interventions
- Learn from 2 defects a quarter
  - One local one central
- Improve culture by 50%

# Conceptual model for measuring safety




**IT**

## Context

*Have we created a culture of safety?*

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*Adapted from Donebedian*

# Comprehensive Unit-based Safety Program (CUSP)

1. Evaluate culture of safety
2. Educate staff on science of safety
   **http://www.jhsph.edu/ctlt/training/patient_safety.html**
3. Identify defects
4. Executive partnership with unit
5. Learn from one defect per month; implement teamwork and clinical improvement tools;
6. Re-Evaluate culture

Pronovost J, *Patient Safety,* 2005

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# Science of Safety

- Understand System determines performance
- Use strategies to improve system performance
  - Standardize
  - Create Independent checks for key process
  - Learn from Mistakes
- Apply strategies to both technical work and team work.

# Learning from Mistakes

- What happened?
- Why did it happen (system lenses)
- What could you do to reduce risk
- How to you know risk was reduced
  - Create policy/process/procedure
  - Ensure staff know policy
  - Evaluate if policy is used correctly



Pronovost 2005 JCJQI

| Framework for Change | Senior leaders | Team leaders | Staff |
|---|---|---|---|
| Engage | *How does this make the world a better place?* | | |
| Educate | *What do we need to do?* | | |
| Execute | *How can we do it with my resources and culture? What barriers must we overcome?* | | |
| Evaluate | *How do we know we improved safety?* | | |

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Pronovost: Health Services Research 2006

# JHU Tool Kits

- Engage
  - Opportunity calculator, stories of harm
- Educate
  - Original papers, fact sheet, slides
- Execute
  - Standardize, create independent checks, learn from defects
- Evaluate

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# Teamwork Tools

- Team Checkup Tool
- Daily Goals
- AM briefing Tool
- Shadowing Exercise
- Culture check up tool
- Executive briefings
- Safety Scorecard

# Engage

- Partner with HEIC, ID experts
- Increase awareness about morbidity and mortality associated with CLABSI
- Make harm visible
  - Tell stories
  - Post # infections
- Estimates of opportunity to improve

# Education

- Educate staff and senior leaders about CDC guidelines
  - Develop a resource notebook
  - Develop policies and procedures
  - CDC guidelines and Fact Sheet
  - Power point slides for Inservices
- Consider a quiz to evaluate provider knowledge
- Emphasize that CLABSIs can be eliminated and benchmarking should be abandoned

# Execute Interventions to prevent Blood Stream Infections: 5 Key “Best Practices”

- Remove Unnecessary Lines
- Wash Hands Prior to Procedure
- Use Maximal Barrier Precautions
- Clean Skin with Chlorhexidine
- Avoid Femoral Lines

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MMWR. 2002;51:RR-10

# Evaluate

- Outcome measure: CLABSI rate (central evaluation)
  - Rate (central calculation; local transparency)
  - # infections, weeks/months since last infection (local transparency)
- Process measures  (local evaluation)
  - % checklists completed
  - % violations noted
  - # lines removed
- Culture Scores

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# Safety Scorecard

| | State | Hospital | ICU |
|---|---|---|---|
| How often did we harm? (infections) | | | |
| How often do we do what we should? (JCAHO, ventilator bundle) | | | |
| How do we know we learned from mistakes? (sentinel events, near misses, NQF never events) | | | |
| At least 60% of staff say<br>Culture is safe<br>Teamwork is good | | | |

Pronovost JAMA 2006

# Ideas for ensuring patients receive the interventions

- Engage: stories, show baseline data
  - Transparency throughout project
- Educate staff on evidence
- Execute
  - Create line cart
  - Create BSI checklist
  - Empower nurses to stop takeoff
- Evaluate
  - Feedback performance: TRANSPARENCY at Frontline
  - View infections as defects

# Create Redundancy

- Develop strategy to ask daily if lines can be removed
  - Daily Goals
  - Nursing/physician sign outs
- Implement checklist to be completed at time of insertion
  - Nurses present during line insertion
  - Support for speaking up
  - Modify checklist for local use

# Reduce Complexity

- Central Line cart
  - www.armstrong.com
  - Content list provided as an example
  - Modify cart to meet your needs
- Central supply bundles
- Other strategies to reduce complexity??

# Standardize


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# The Team Connections

- Ohana
- Harm is Untenable
- Valid measures
- Rigorous data collection and evaluation
- Patients as the North Star

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