

New Directions in Perinatal Quality Assessment

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Perinatal Quality Assessment

- DEFINITION OF QUALITY IN MEDICINE:
 - ◆ Outcomes of patients with similar problems meet or exceed expectations from known best practice models and are homogeneous with little variation in cost.

Purposes of Assessing Quality

- Assure the public, general legislature
- Ranking units/doctors/specialty teams, etc
- Financial purposes – insurance companies
- Improving care of patients

Historical Perspectives on Quality Initiatives

- Review of individual performance - sentinel events, Morbidity/Mortality Review
- Outcomes based programs
 - ◆ PI, QI, TQI, CQI, TQM, Six Sigma
- System based programs
 - ◆ System Reengineering, Critical Pathways
- Process Evaluation
 - ◆ Deming - do, measure, evaluate, adjust

***QUALITY
IMPROVEMENT
BY OUTCOMES
EVALUATION***

Outcomes Programs

- VERMONT OXFORD – NICU outcomes
- NACHRI – National Association of Children's Hospitals
- AHRQ – Agency for Healthcare Research and Quality
- NATIONAL HOSPITAL RANKINGS - Newsweek
- MARKETING OF INDIVIDUAL HOSPITALS OR NETWORKS

Outcomes Programs

- VERMONT-OXFORD
 - ◆ A self administered data sheet for patients meeting certain criteria
 - ◆ Costs – membership and data collection
 - ◆ Limited data set
 - ◆ Outcomes
 - ◆ Clinical trials
 - ◆ Quality forums

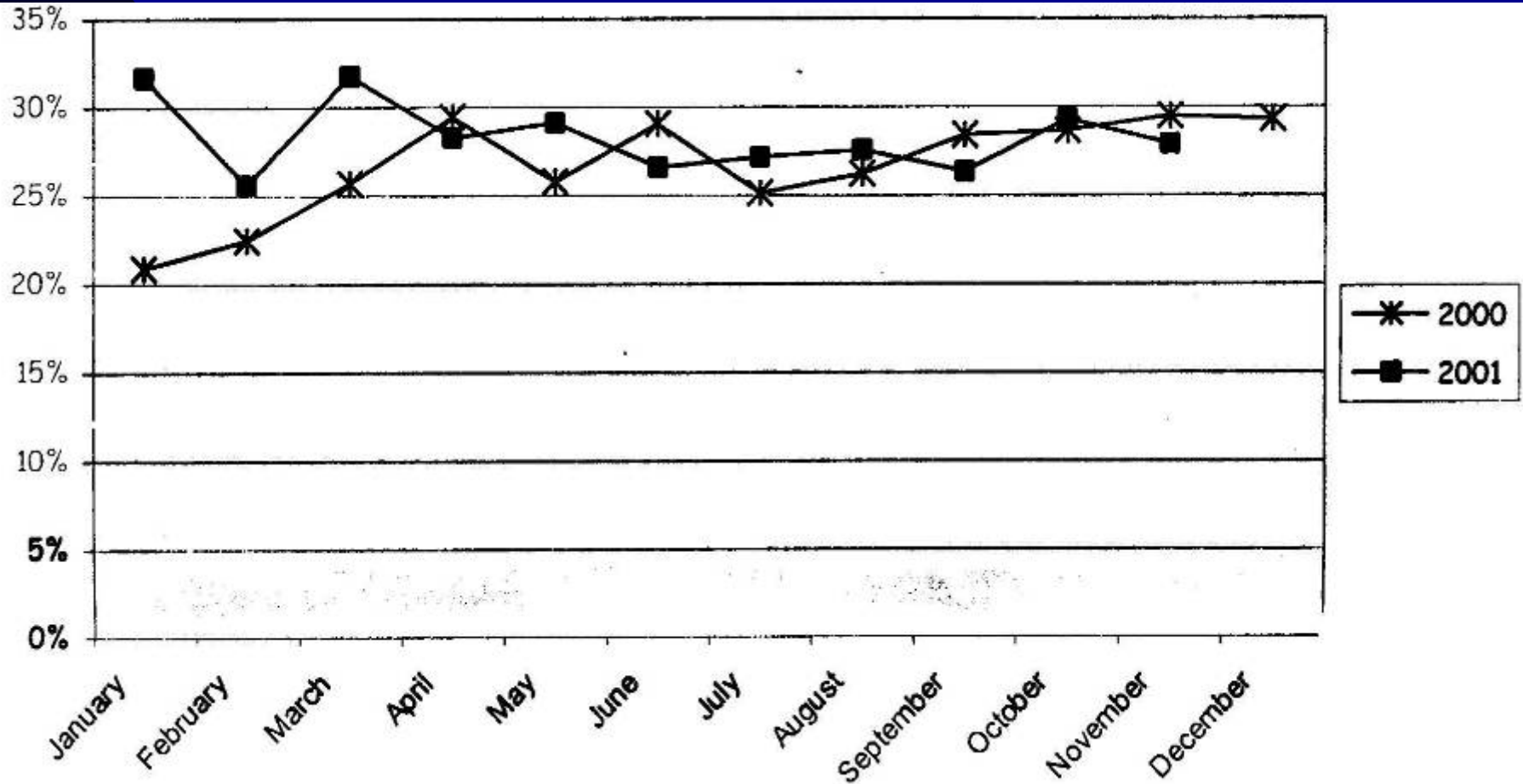
Outcomes Programs

- MARKETING OF INDIVIDUAL HOSPITALS OR NETWORKS
 - ◆ The biggest
 - ◆ The most personal - "we have the nicest nurses"
 - ◆ Nicest Amenities - Jacuzzi deliveries, NIDCAP
 - ◆ Most specialists, most wanted subspecialties (Women's Center)
 - ◆ Population surveys

How Should Outcomes be Assessed?

- Patient Satisfaction Surveys
- Morbidity
- Mortality

Outcomes Assessment: C/S Rate



Adjusting for Variability

- Demographics
 - ◆ Race, gestation, SES
 - ◆ inborn v outborn
 - ◆ Referral v community
- Scoring Systems
 - ◆ SNAP, SNAP II, Hoble, CRIB

Advantages of Assessing Outcomes

- Hawthorne Effect – if you study it, it becomes better
- Answers audit questions – how many, how complex, how expensive, how long
- People are used to this

Disadvantages of Assessing Outcomes

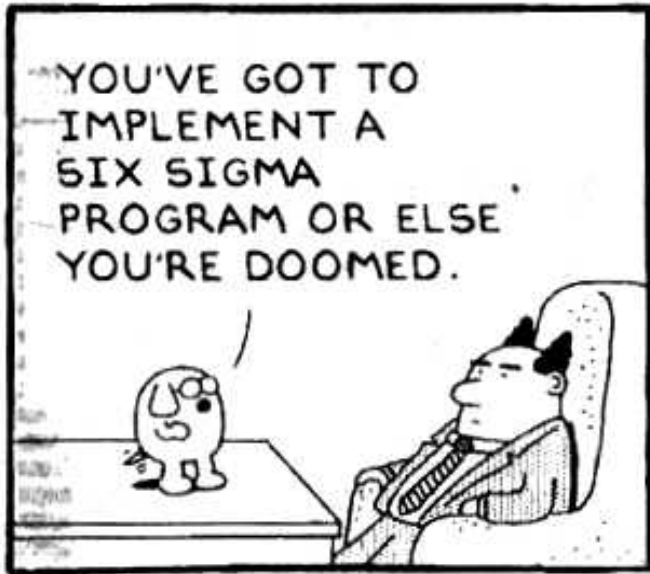
- Unpredictable effects
 - ◆ C-section rates
 - ◆ Maternal LOS
 - ◆ Infant LOS
 - ◆ Mortality – effect of prenatal screening program
- Definitions of outcomes
- Do the definitions change by observer or time

Disadvantages of Assessing Outcomes

- Too many factors affect the outcome
- Outcome may not be affected by quality of care
- Outcome may be attributed incorrectly
- Outcome apparently worsened by improved quality
- VON – # VLBW admissions not a good proxy for outcomes, but year over year mortality is predictive (JAMA 291:202, 2004)



***QUALITY
IMPROVEMENT
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Six Sigma - Industry

- **DMAIC Define**

 - Measure**

 - Analyze**

 - Improve**

 - Control**

- Define the project goals
- Measure the process to determine current performance
- Analyze and determine the root cause(s) of the defects
- Improve: eliminate processes causing defects
- Control future process performance

What is Process Evaluation

- The processes are component parts of a critical pathway that result in the outcomes (proximity)
- Use metrics to evaluate a process that is under control of the team being assessed
- Determining the steps within a process that affect the measured variable
- Iterative cycles of: 1) do, 2) measure, 3) evaluate, 4) adjust

Process Evaluation: Pathway

ADMISSION
Temperature
Antibiotics
Weight

VENTILATION
Blood gases

FLUIDS/NUTRITION
Serum electrolytes

DISCHARGE
Immunizations
Eye check



Characteristics of Measurable Processes

- Measurable or objectively observed quality
- Process is within the control of the team or individuals
- Resources are available to measure and change the process
- Comparisons of outcomes are to past performance, not against other units

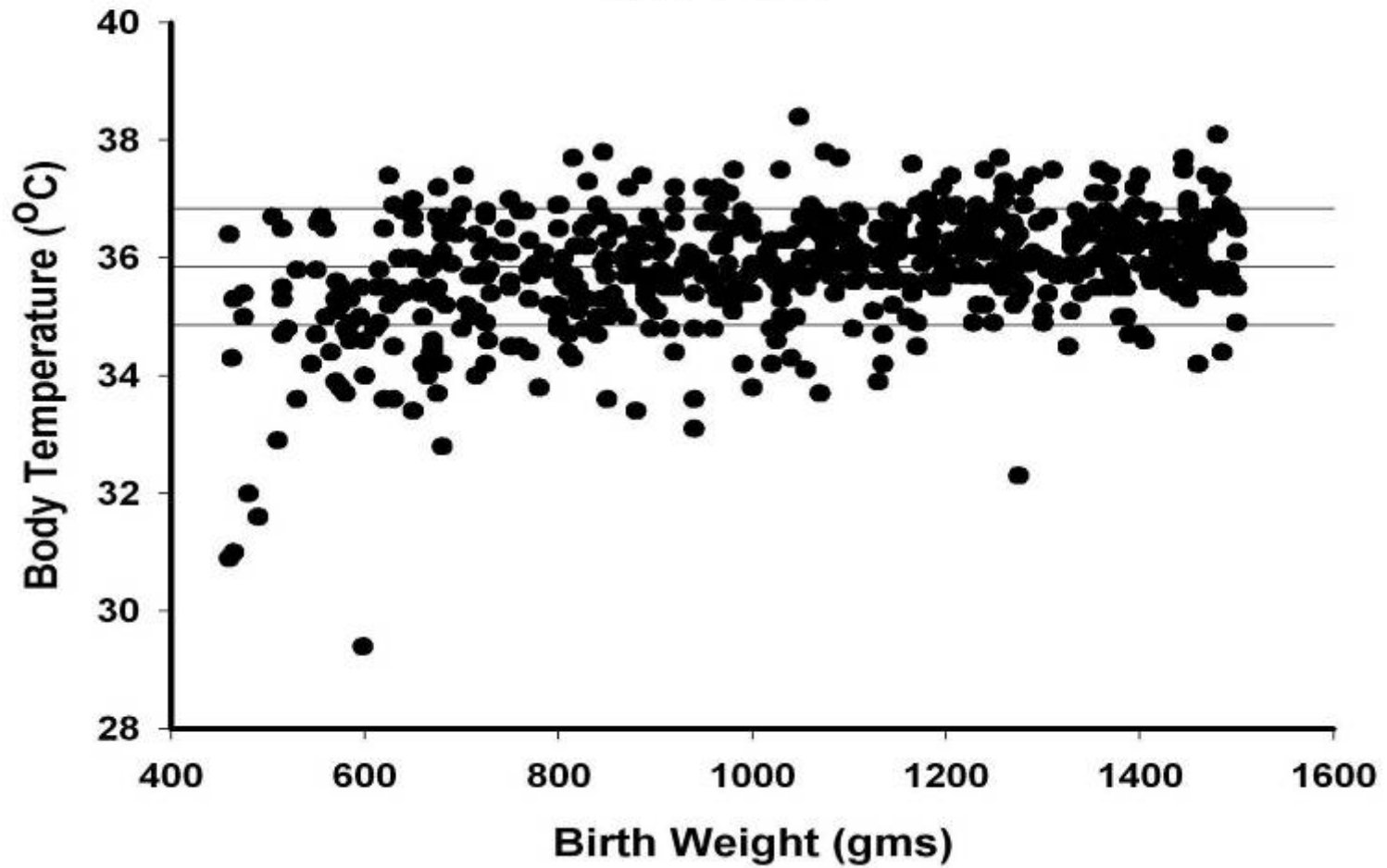
Characteristics of Measurable Variables

- Should occur with some frequency
 - ◆ Falls have little relevance to NICUs
 - ◆ Sentinel event monitoring for kernicterus requires evaluation of a relevant proxy
- Proven relevance to outcomes
- Continuous v discreet variables
- Objective v subjective metric
- Variance from mean is bad in either direction
- Amenable to change in process

Process Evaluation Examples

- Time required for maternal ABX Rx with + GBS culture
- Infant admission body temperature to NICU
- Time required for ABX Rx in critically ill newborn
- # donor exposures for blood transfusions
- Serum sodium at 48 hours of age
- Time for transport team to leave hospital
- SaO₂ of ventilated infants

Johns Hopkins Hospital
Admission Temperature
1995-2001



Advantages of Process Evaluation

- Objective is to reduce variance in processes
 - ◆ Reduced variability of clinical results equals quality medicine
- Clarity of process results in reproducibility of desired outcome
 - ◆ Processes with limited number of steps (25-50).
- Improving the parts of the process actually under control should improve overall outcome

Advantages of Process Evaluation

- Process evaluation compared only within unit so adjustments for unit acuity not important
- Reduces personalization of improvement process

Processes: Conclusions

- Follow the 80:20 Rule – 80% of the patients will have relatively uncomplicated hospital course. This is where homogeneity of care will dramatically improve outcomes.
- Do not manage patients in a chaotic manner because they may be one of the complex 20% of patients. That will ensure they do!

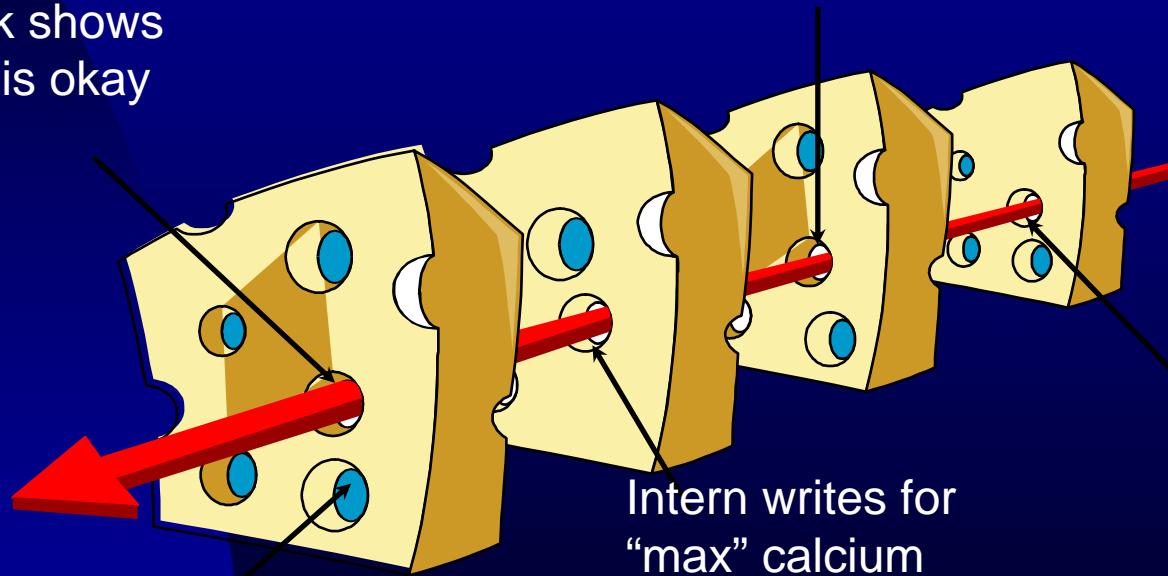
Sentinel Events / Root Cause Analysis

- A sentinel event may be identified as an event where serious or potentially serious patient harm occurred
- Near-miss events occur with more frequency and may be more important to evaluate
- Root cause analysis results in identifying the process that resulted in the adverse outcome
- This is followed by changing the process and re-evaluating the effect

A Medication Error Story

New Pharmacist
thinks too high,
but check shows
program is okay

4 y/o Patient has
low calcium



NICU TPN
Ordering System
is adapted to
Pediatric floors

Intern writes for
“max” calcium

ICU nurse
staffing too low
for independent
check

Improve Safety and Quality Using Technology

Using Information Technology

- Advantages
 - ◆ Data acquisition and management to assess outcomes of individual processes
 - ◆ Creation of new processes that reduce variability and errors of old processes

Using Information Technology

■ Suggestions

- ◆ IT is a tool – plan what is needed.
- ◆ Understand what is to be assessed (i.e. the process steps) and then assess system needs; include growth of system.
- ◆ Project Management – how is project to be implemented, what changes are necessary and how will this affect current workloads. Ultimately identifying inefficient steps will identify needed change.
- ◆ Small steps lead to success.

Using Information Technology

- Total Parenteral Nutrition Calculator
 - ◆ NICU TPN orders were hand calculated with many errors
 - ◆ The calculations were known
 - ◆ A computer program allowed consistency and efficiency in creating these orders that were also clearly written and the data retrievable for analysis
- Unexpected Problem
 - ◆ Eventually extended into older age groups where the assumptions were not correct – Sentinel event and Root cause analysis ensued.

Communications to Improve Safety and Quality

Creating Teams

By Land or By Sea

Station #1: *Please divert your course 15 ° north to avoid a collision*

Station #2: *Recommend you divert YOUR course 15 ° south to avoid a collision*

Station #1: *This is the captain of a US Navy ship, I say again, divert YOUR course*

Station #2: *No, I say again, divert YOUR course*

Station #1: This is the
aircraft carrier
Enterprise. We are a
large warship of the
U.S. Navy

*DIVERT YOUR
COURSE NOW!*



Station #2: This is the
Puget Sound
Lighthouse.

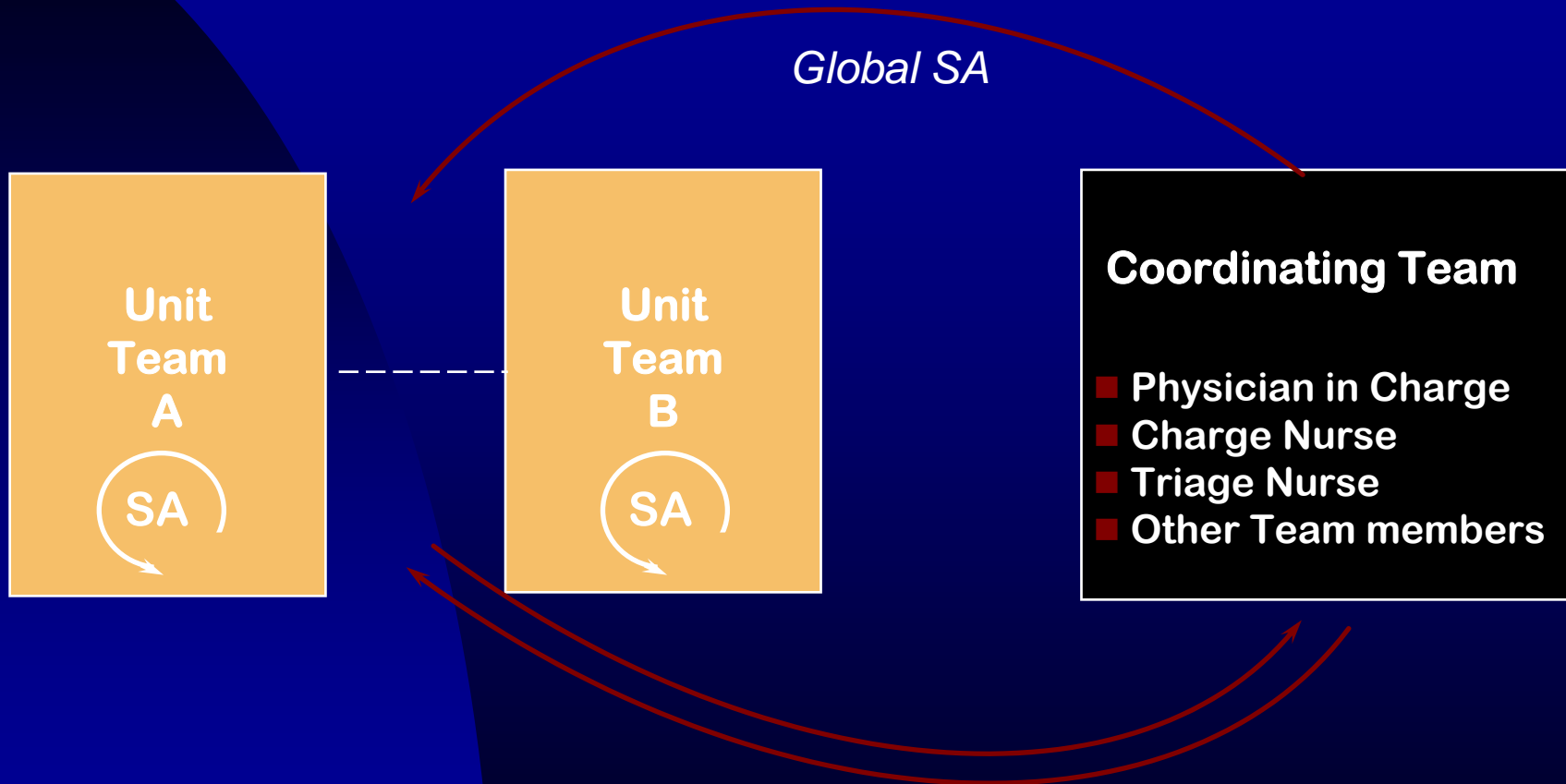
It's your call.

(Actual radio transcript released by Chief of
Naval Operations, 10/10/95)¹

¹Wooten, P. Jest for the Health of It.



Situation Awareness Within And Across Teams



*Information
Exchange*

Standards Of Effective Communication

- Clear
- Timely
- Complete
- Verified

Check-back

- All medical verbal orders are to be verified *verbatim*.
- All operational orders are to be acknowledged.
- All written orders should be questioned if:
 - ◆ they are not perfectly clear
 - ◆ there is a question that they are correct

Call-out

- Communicate critical information
- Help team anticipate next steps
- Benefits the recorder

Hand-off

- Transfer responsibility
- Transfer accountability
- Communicate verbally
- Acknowledged

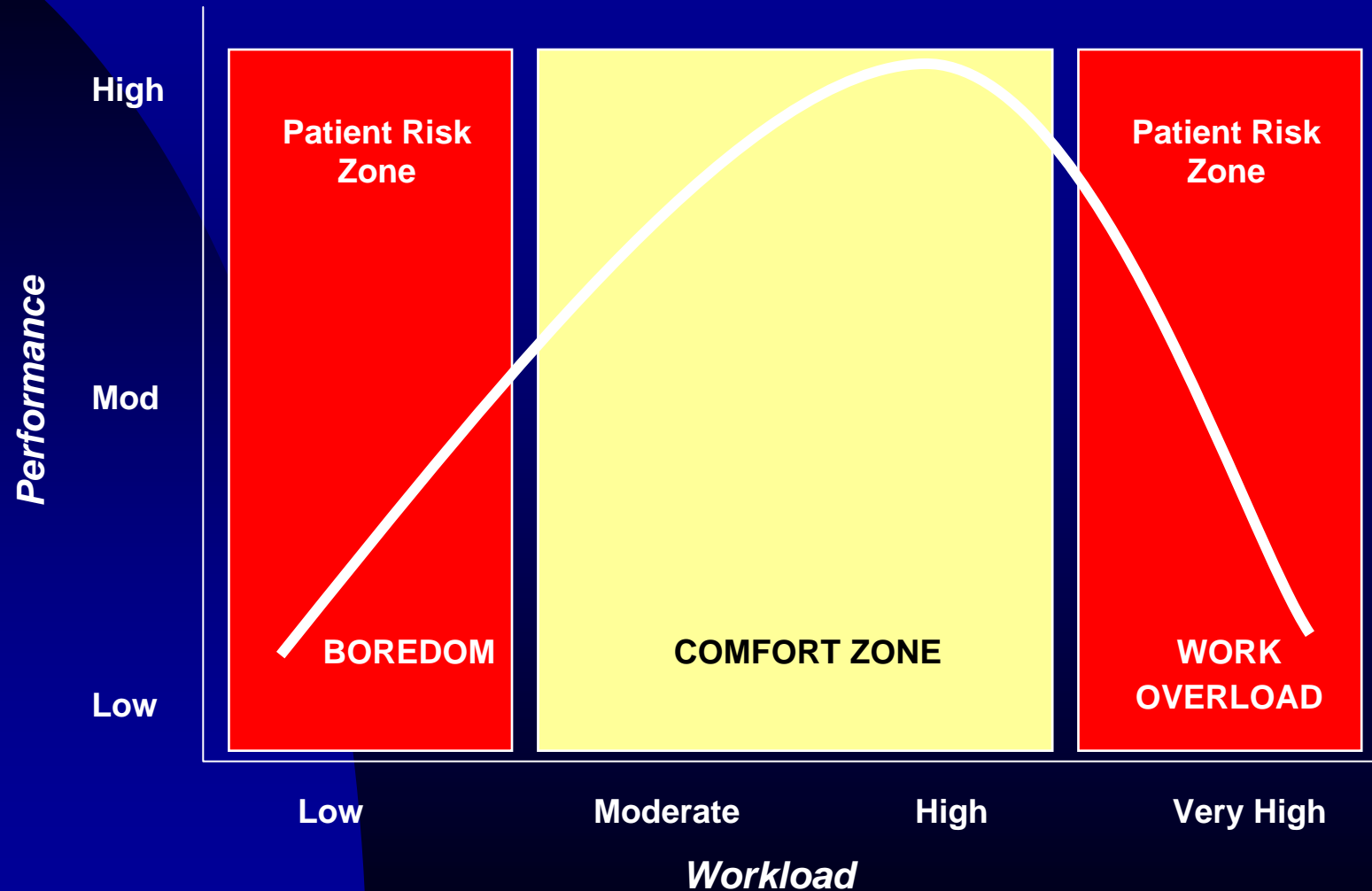
Key Teamwork Actions

- Request and provide situation awareness updates to team members.
- Use standard terminology in all team communications.
- Use the check-back system to verify information transfer.
- Call out critical information during emergent events.
- Systematically hand off responsibility during team transitions.
- Communicate decisions and actions to team members.

Improve Safety and Quality

Managing Team workload

Workload Comfort And Performance



Prioritization

- Process that considers fluctuation in patient's status and overall status changes in all of the patients on the team.

The Delegation Process

- Decide ***what*** to delegate
- Determine ***who*** to delegate to
- ***Communicate*** clear expectations of what needs to be done
- ***Verify*** task completion and outcomes

Mutual Assistance

- Request assistance whenever there is a concern for patient safety
- Use common courtesy when asking for help
- Offer assistance when a team member needs help, even if not solicited
- Clearly identify your availability of time and skill when offering assistance
- Foster a climate supportive of task assistance

Key Teamwork Actions

- Integrate individual assessments of patient needs
- Replan patient care in response to overall caseload of team
- Prioritize tasks for individual patients
- Balance workload within the team
- Offer assistance for task overload in others
- Request assistance for task overload
- Use periods of low workload constructively

Conclusions: Top Barriers to Implementing Quality/Safety Systems

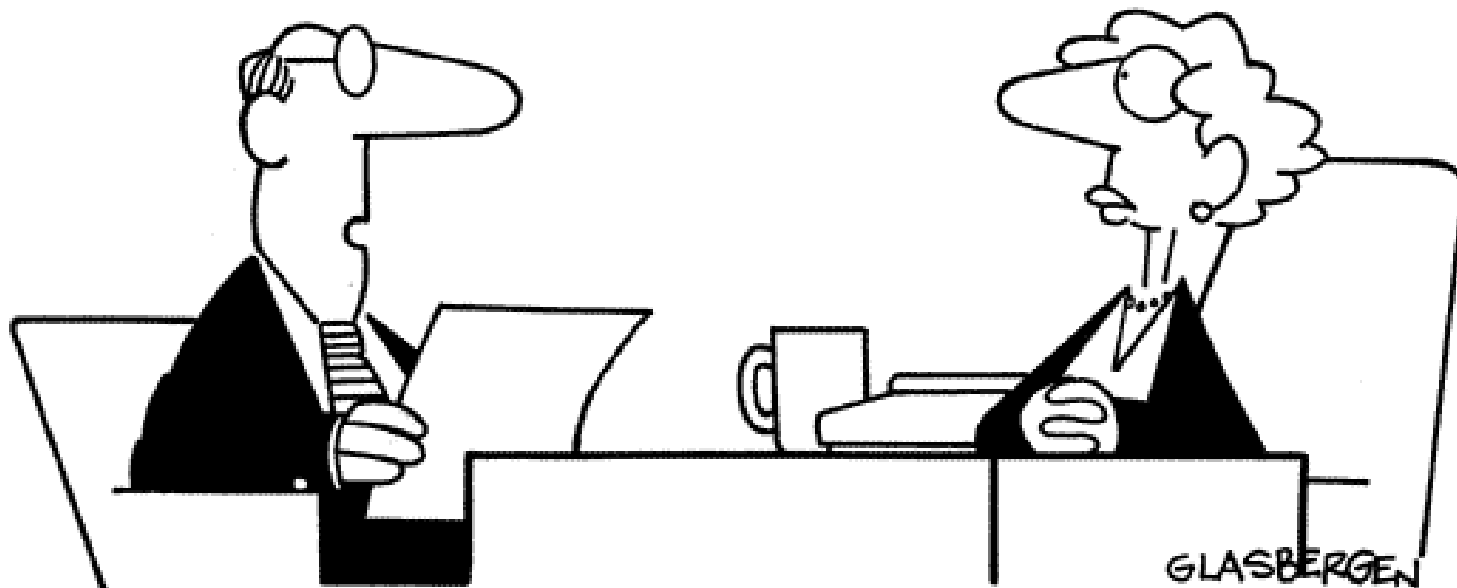
- “Culture of blame”
- Competition for scarce resources
- Inadequate staffing and work overload
- Availability and cost
- Resistance to change
- Lack of commitment at leadership level
- Culture – attitudes and behaviors of “cover-up”

Conclusions: Positive actions

- The high quality program uses a care plan (e.g. critical pathway or NeoMap) to define common processes.
- The processes are continually being evaluated using the do-measure-evaluate-adjust iterative strategy to continually refine the processes and to minimize the variability of patient management patterns.
- Strategies to improve processes include application of Information Technology to assess iterative results
- Team communication skills improve safety and quality by reducing errors

Perinatal Quality Assessment

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“My team is having trouble thinking outside the box. We can’t agree on the size of the box, what materials the box should be constructed from, a reasonable budget for the box, or our first choice of box vendors.”