

Simulation Metrics: Does Simulation Really Affect Patient Safety? Prove It!



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UT Interprofessional Immersive Simulation Center

- ▶ Medicine
- ▶ Nursing
- ▶ Pharmacy
- ▶ Physician Assistant Studies
- ▶ Health Science and Human Services
- ▶ UTMC Hospital
- ▶ Community Hospitals and Groups



Simulation Metrics:

Does Simulation Really Affect Patient Safety?

Objectives:

- Understand the role of metrics in simulation centers
- Share the challenges of attaining metrics
- Articulate common metrics measured in simulation centers
- Formulate methods for collaboration between simulation centers

Format:

- Presentation
- Presentation/Interactive
- Round Table Discussion
- Presentation/Discussion



Medical Errors: Estimated Impact

Clinicians

Physicians reported³:

- Increased anxiety about future errors (61%)
- Loss of confidence (44%)
- Sleeping difficulties (42%)
- Reduced job satisfaction (42%)
- Harm to their reputation (13%)



US Economy

- Preventable errors are the 8th leading cause of death ¹
- In 1999 errors translated into costs of \$17 billion¹
- In spite of “best efforts” medical errors have remained constant”
- Preventable patient errors cost the US \$17.5 - \$40 billion annually²
- Recruitment and retention of healthcare professionals

Understanding the Role of Metrics

- ✓ Simulation equipment is costly
- ✓ Running advanced simulation centers can cost millions per year
- ✓ Simulation centers do not usually generate sufficient revenue
- ✓ Must demonstrate financial and value ROI
- ✓ Impact of educational and clinical outcomes on patient safety & clinical quality must be demonstrated.



Share the Challenges of Obtaining Metrics

Interactive
Discussion



The Challenges

Ultimately, simulation is about increasing patient safety & quality outcomes

- Measuring and proving the effectiveness of simulation training on patient outcomes is challenging
- Multiple variables can affect the outcome of patient care in the clinical environment
- Certain clinical processes or procedures are complex to measure

Interactive Discussion: Challenges

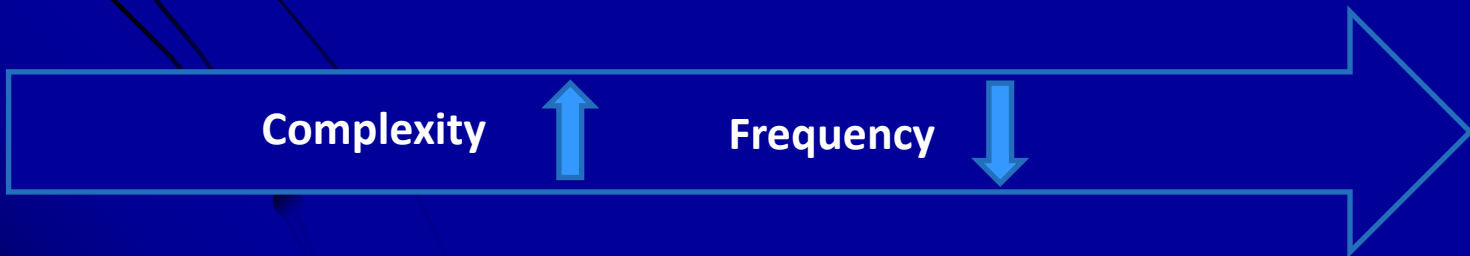


Current Challenges

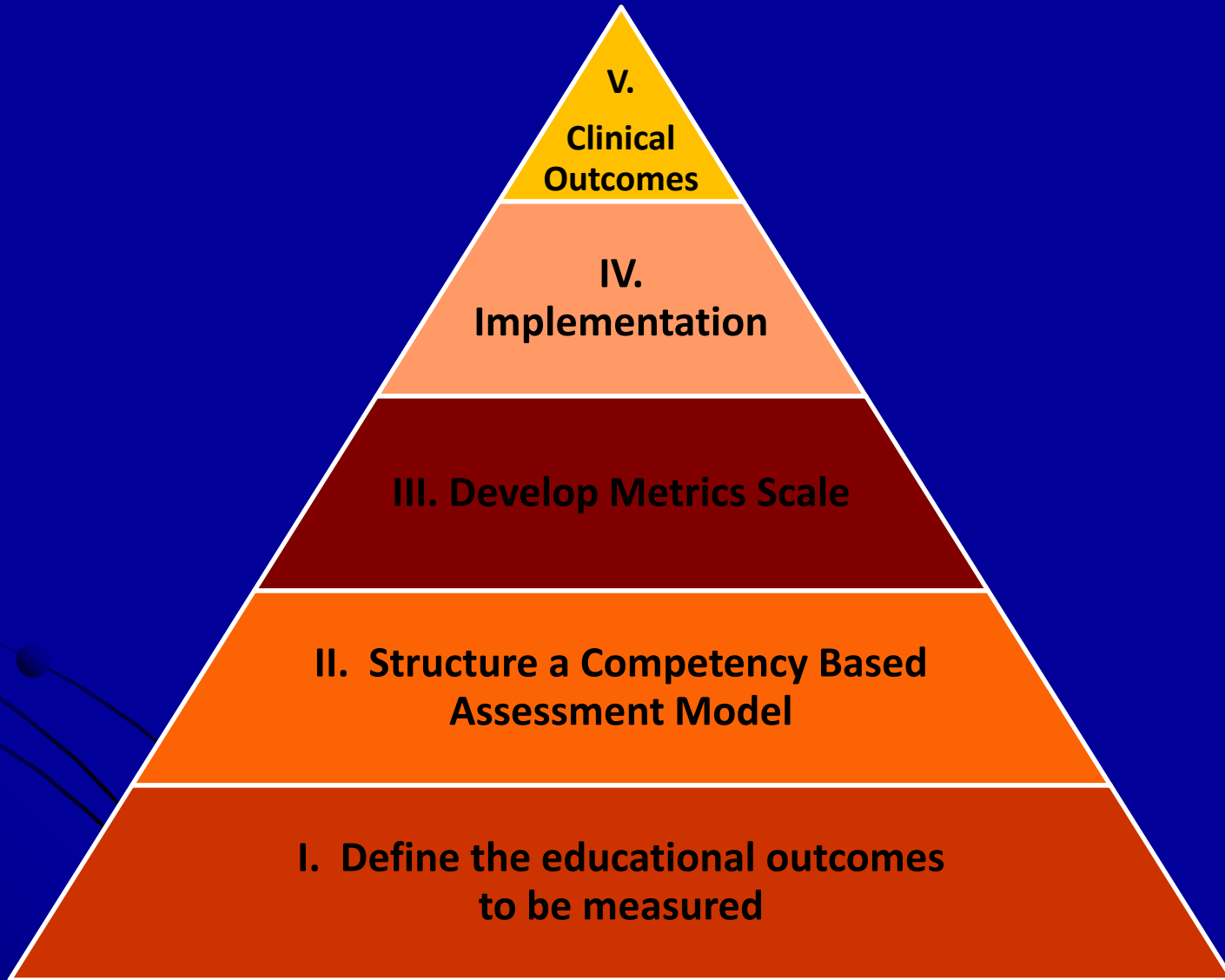
Group Discussion Points

- Determining how simulation impacts patient outcomes (Safety and quality)
- Support for the sessions
- Supporting cost overhead
- Identifying partners for current metric data (ex. Risk Management)
- Defining the denominator
- Benchmarking with other centers
- Collaboration among disciplines
- IRB process (slows down the planning/training process)
- Interprofessional financial support
- Clinical and business background desired to run a simulation center effectively

Challenges of Educational and Clinical Competency Measurement



Take Action



I. Define the Educational Outcomes to be Measured

Establish partnership with faculty early in the process

- Skill Development
- Medical Knowledge
- Professionalism
- Communication
- Individual or Team



I. Define the educational outcomes to be measured

I. Define the Educational Outcomes to be Measured
(cont.)

Assessment of Learner Skill & Competency

- Improved accuracy
- Improved proficiency
- Improved efficiency / time
- Following procedures / protocols
- Incorporating patient safety standards
- Professionalism & communication skills
- Teamwork

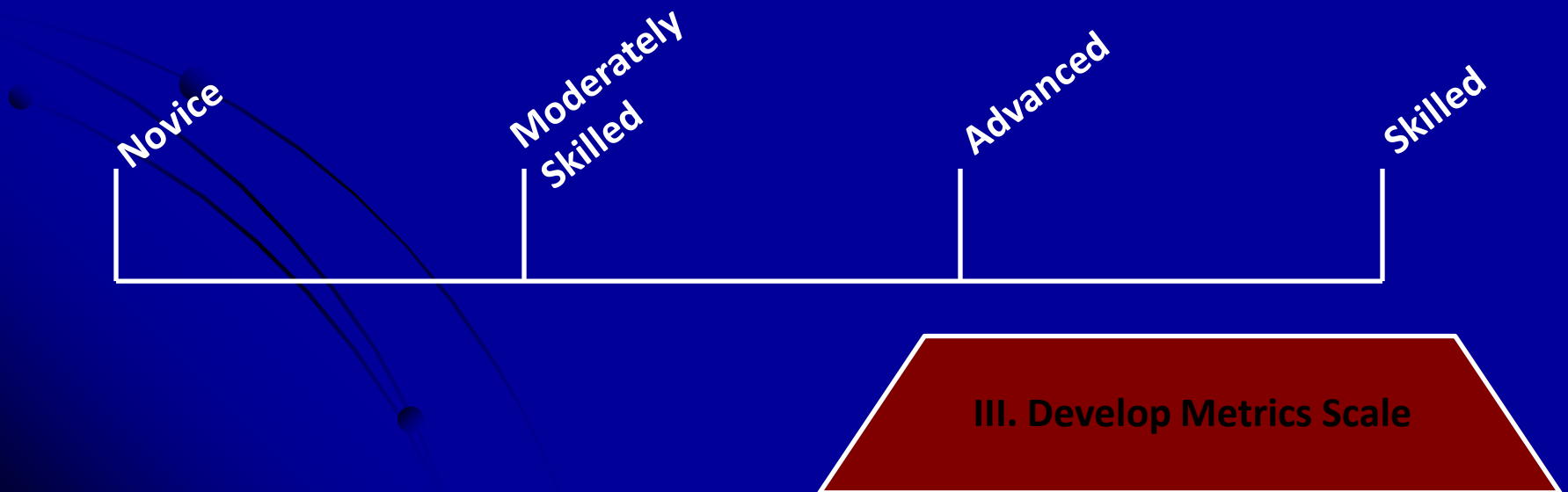
II. Structure a Competency Based Assessment Model

- ✓ Provide the framework for identifying learning/curriculum objectives
- ✓ Select competencies to be taught and assessed
- ✓ Develop skills to be assessed
- ✓ Specify criteria (steps) to be measured for the procedure or scenario
- ✓ Create assessment form
 - Pre and post assessment?
 - Learner & Rater

II. Structure a competency based assessment model

III. Develop Metrics Scale

- Provide consistent scale for measuring learners
- Determine relevant descriptors for the assessment scale
- Learners and evaluators BOTH need to understand the scale and the definitions



IV. Implementation

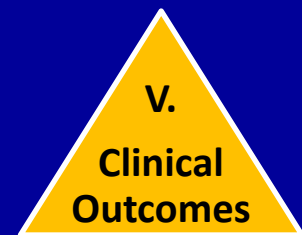
- Faculty development
- Staff development
- Electronic data capture and storage
- Organize and analyze data
- Report to faculty
- Feedback loop
 - Curriculum
 - Learner
 - Hospital
- Research/Publish



IV.
Implementation

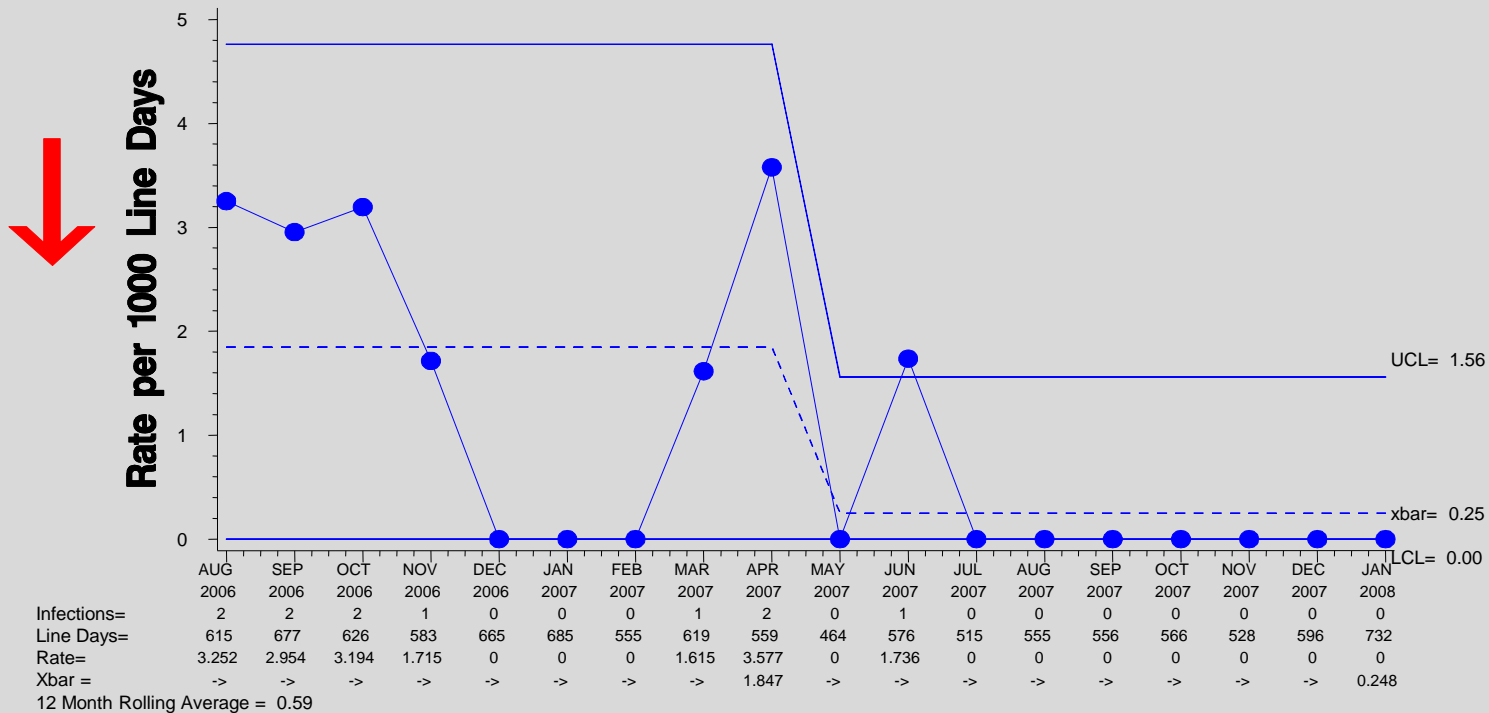
V. Clinical Outcomes

- Partner with clinical teams and hospital/clinic
- Identify the most significant challenges the hospital faces
- Identify variables that impact outcomes
 - Hand Washing
 - Checklists
 - Training/Competency Issues
 - Policies and Procedures
 - Knowledge deficit



Reduction in Central Line Infection Rates

Test3



The Recent Control Limits are Calibrated from 5/2007 to 11/2007 (missing values were not counted)

Riverside Methodist Hospital, Columbus, Ohio

Articulate the Most Common Metrics That are Measured in Simulation Centers

Group Discussion



Metrics Currently Measured

Group Discussion Points:

- Hours of learners
 - Basic skills (time to CPR, intubation, compression)
 - Number of staff required to staff a simulation
 - How many simulators used or equipment used to support training session
 - Types of current measurement scales
 - Dryfus scale
 - Likert scale
 - Met / Not Met (This used to decrease learner anxiety level)
 - Is simulation the most cost effective way to produce positive outcomes? Simulation gives us the 20,000 foot view and allows us to catch other potential issues or concerns that may not have been part of the original program focus

Top Simulation Metrics

Hospital Acquired Infections

- Central Line Infection (Pneumothorax, Sepsis)
- VAP (Ventilator Acquired Pneumonia)
- Urinary Catheter Infections
- Surgical Site
- Bloodstream Infections

Obstetrics

- Ruptured Ectopic Pregnancy
- Shoulder Dystocia
- Placental Abruption
- Eclampsia
- Postpartum Hemorrhage
- Forcep Delivery
- CPR

Top Simulation Metrics

Recruitment & Retention

- Recruitment and Retention of Nurses
- Nursing Orientation
- Student Recruitment

Time Savings (Also Life Saving)

- Time in OR
- Time from ED to Cath Lab
- Task Oriented Time (Improved Techniques)

Top Simulation Metrics

Surgical/Procedural Proficiency

- Bronchoscopy
- Endovascular procedures
- Laparoscopy
- Cholecystectomy
- CPR
- Airway Management

Healthcare Teams

- Efficiency
- Communication
- Rapid Response Teams
- Stroke

Formulate Methods for Collaboration Between Simulation Centers

Presentation/
Discussion



What is SIMetrics™?

An initiative created to inspire clinical simulation professionals to work together in order to recognize that sharing metrics is a benefit to everyone and it is a means to an end - to increase patient safety globally.

Questions?



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References

¹Institute of Medicine. *To Err is Human: Building a Safer Health System*. Washington, D.C.: National Academy Press; 1999.

²The Medical Errors Behind Medical Malpractice Claims (2010), n.d. Retrieved from website [www.loblawyers.com/library/the - medical-errors-be.cfm](http://www.loblawyers.com/library/the-medical-errors-be.cfm)

³*Joint Commission Journal on Quality and Patient Safety*, Volume 33, Number 8, August 2007