

A Simulation Program to Enhance Team Communication and Neonatal Resuscitation Skills

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Introduction

2004 JCAOH published a sentinel event involving 109 Perinatal cases

- 93 resulted in death
- 16 resulted in major permanent disability
- Root cause analysis of 47 of these cases found that 72% had issues with communication hierarchy, and intimidation, failure to function as a team and failure to follow proper chain of communication



Definition/Purpose

To provide learners with the opportunity for deliberate practice while learning in a safe environment

To complement, not replace, hours of actual clinical experience

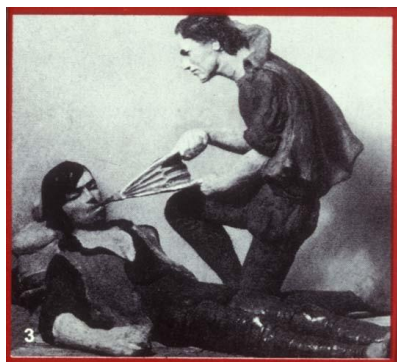
"Primum non nocere," To do no harm



History

In the 16th century Mannequins or "phantoms" were developed to teach OB skills and reduce high maternal and infant mortality rates¹

Patient based simulation began using a lay individual who was taught to simulate a medical condition



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History

Developed into OSCE, (Objective Structured Clinical Examination)

30 years of OSCE has shown it to be a valid and reliable method of assessment across a wide spectrum of learners²



History

First Simulator 1970's

Harvey, the Cardiology Patient Simulator
Developed @ University of Miami
Hybrid simulator between a sophisticated task trainer
and a computer-enhanced mannequin simulator



Harvey the mannequin. [Print Photo].
Retrieved from wikipedia.com



History

Flight simulation history

1980's Gaba developed and implemented use of computerized mannequin for anesthesiology trainees.

- Began key focus on debriefing



Types of Simulation

- Low-tech simulators
- Simulated/standardized patients
- Screen-based computer
- Complex task trainers
- Realistic patient simulators
- In Situ simulation



Advantages of Simulation

Do not need to have high fidelity equipment

Does not need to be complex

Scenarios can be modified to meet trainee's skill level

Learned tasks are role specific



Advantages

Expose trainees to situations that don't occur frequently in true practice

Immerse trainees in simulation environments that may be too dangerous in real world

Uses adult learning theories

In situ simulation³

- Physically integrated into clinical environment
- Provides method to improve reliability and safety in high risk areas



Advantages of Simulation

Recreates stressful critical events in a safe situation, involving highly realistic scenarios requiring complex decision making and interaction between multiple personnel⁴

Trainees can make errors and learn to recognize and correct them in a safe environment without fear of being penalized or causing harm to patients⁵



Advantages of Simulation

*An important factor in acquiring cognitive knowledge, technical skills, and behavioral ability to work as part of a team to provide competent and safe patient care*⁶



(n.d.). Retrieved from une/echp/simulation/debriefing.cfm



Advantages

Provides real time feed back which allows participants to evaluate current situation, analyze options for moving forward and measure results of past decisions and actions?



une/echp/simulation/debriefing.cfm



Disadvantages of Simulation

Cost can be prohibitive

Simulations require multiple hours of development for each hour of training

Equipment Issues



Disadvantages of Simulation

Intimidating

Confidentiality

Need to be able to accept constructive criticism



Disadvantages of Simulation

Limits to accurately modeling complex human pathophysiology

Resistance or failure of buy in from staff

"Debriefers" needs to be skilled



Future Implications

Demands for scientific evidence of effectiveness

Few studies done to prove efficacy and impact of simulation

- Need to do randomized controlled studies comparing conventional education modes to simulation to determine most effective modality



Team Communication

Complex Environment + High Risk Situation =

Potential for Communication Disaster



Team Communication

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Team Communication

47% of issues were with staff competence

40% of issues were related to lack of orientation and appropriate training⁸



Team Communication

1.5% of hospitalized obstetric patients experience an adverse event. Approximately 22,980 of these adverse events are caused by medical errors with communication failures present in 72% of root cause analyses done in perinatal units across the United States.⁹



Team Communication

Sharing the Mental Model

CRM

- Organizes members of a team to think and act as a team with a common goal of safety¹⁰

Closed Loop Communication



Closed Loop Communication

The exchange of information between a sender and a receiver irrespective of the medium

- Follow up with team to ensure message was received
- Acknowledging that message was received
- Clarifying with the sender of the message that the message received is same as the intended message¹¹



Debriefing

Goal is supportive environment where participants feel valued, respected, and free to share their experience in an open honest manner¹²



Debriefing

Debriefing allows team members to recognize and reinforce appropriate performance while learning how mistakes occurred

Self reflection

Closes the gap between the experience and the making sense of it and allows the participant to reflect on the active experience¹³



Neonatal Resuscitation Program

First edition introduced 1987

Collaboration of AAP and AHA

Didactic program



Neonatal Resuscitation Program

6th edition 2012

- Didactic exam on-line
- Integrated skills station
- Simulation with debriefing



Pulse Oximetry

Focus on decreased oxygen exposure

Targets non distressed term and preterm infants

Requiring substantial retraining!



Thermoregulation ¹⁴

Polyethylene wrap for infants less than 29 weeks

Delivery room temps 77-79



NRP Simulation 6th edition 10 targeted skills

Know environment
Anticipate and plan
Assume the leadership role
Communicate effectively
Delegate work load optimally



NRP simulation 6th edition 10 skills

Allocate attention wisely
Use all available information
Use all available resources
Call for help when needed, be timely
Maintain professional behavior



S.T.A.B.L.E

Sugar
Temperature
Airway
Blood Pressure
Lab
Emotional Support



S.T.A.B.L.E

Kris Karlsen, PhD, APRN, NNP-BC

Established 1996

Evidenced based education on post resuscitation
Pretransport stabilization of sick newborns



S.T.A.B.L.E

Originally didactic in nature
Perinatal team in any birth setting
Addresses 14 causes of neonatal mortality



S.T.A.B.L.E

Sugar – associated clinical complications
Temperature – Therapeutic Hypothermia
Airway – use of LMA's
Blood Pressure – Dopamine primary pressor for hypotension



S.T.A.B.L.E

Pre – discharge pulse oximetry screening for CHD

Simulation based scenarios for training



Questions



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