Simulation:
A New Trend for Patient Safety Improvement

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Objectives

- Reflect on the healthcare simulation ‘movement’ and its drivers
- Describe the basic terminology in simulation and types of simulators
- Discuss the key elements in Simulation-Based Education (SBE)
- Discuss the use of simulation for team training
- List the advantages and limitations of SBE
- Discuss the evidence of SBE
LAU-CSC: Simulation for Education and Patient Safety
http://csc.lau.edu.lb

LAU-SOM
Byblos campus
Recognition of the Value of Simulation

Aviation, military, NASA, nuclear etc..

• Simulation used and in many cases now *required*
• Adopted as a matter of necessity and expediency
• Now culturally embedded e.g. Federal Aviation Administration (FAA) requirement for pilot simulation
What is Simulation Based Education?

SBE is an **instructional process** that substitutes real patient encounters with artificial models, live actors, or virtual reality patients. *Gaba, 2004*

Why To Consider SBE?

Societal expectation
- Failure of traditional learning modes
- Changing clinical experience
- Shorter time in training
- Working time restrictions
- Team-based learning and working

Political accountability
- Learning through simulation enabled by new technologies
- Clinical governance
- Patient safety agenda
- Interprofessional learning
- Professional regulation
Typical Uses of SBE

Psychomotor skills

Physical exam

Clinical reasoning

Communication and teamwork skills

Communication skills
Simulation Modes / Goals-Tools Match

- Task trainers
- Standardized patient simulations
- Immersive simulations
- Hybrid immersive simulations
- In situ simulations
Simulation Fidelity

Fidelity = the level of realism

*and not necessarily reflect the degree of technology*
Features of Effective Simulation

- Clinical Variation
- Integrated into overall curriculum
- Team Training
- Feedback
- Increasing Difficulty
- Deliberate Practice
- Mastery learning
- Individualized learning

Team Training

- Team training allows practitioners from ≠ disciplines to improve clinical skills
- Team training helps to avoid miscommunication, which is a huge source of error in healthcare delivery

Information Exchange: Communication contributes to nearly 2/3 of sentinel events because effective communication does not come naturally

http://www.jointcommission.org/assets/1/18/Root_Causes_Event_Type_04_4Q2012.pdf
Implementation of traditional CRISIS algorithms by well trained TEAMS of HealthCare professionals working with Drugs and Equipment they understand. Ex: Anesthesia Crisis Resource Management
TeamSTEPPS
What Does it Take for Simulation-Based Training be Effective for Patient Safety?

Table 1. Guidelines for Designing and Delivering Simulation-Based Training

- Guideline 1. Understand the training needs and requirements
- Guideline 2. Instructional features, such as performance measurement and feedback, must be embedded within the simulation
- Guideline 3. Craft scenarios based on guidance from the learning outcomes
- Guideline 4. Create opportunities for assessing and diagnosing individual and/or team performance within the simulation
- Guideline 5. Guide the learning
- Guideline 6. Focus on cognitive/psychological simulation fidelity
- Guideline 7. Form a mutual partnership between subject matter experts and learning experts
- Guideline 8. Ensure that the training program worked

Conceptually, simulation training makes sense. What is the evidence?

There is limited but growing evidence that simulation training can translate to improved overall patient care.

This limitation is due to:

- Relatively new focus on simulation as an educational tool.
- Many of the important questions in SBE and assessment cannot be answered by traditional randomized controlled trials.

Simulation Based Education: What is the Value?

- Must consider costs of: Simulator, faculty time, training expenses, facility fees, opportunity cost

- Cost reporting is infrequent and incomplete- No study has offered a complete accounting of simulation costs

- More expensive simulators are not necessarily better

  *Low-fidelity, low-cost training models can yield outcomes equal to much more expensive simulators*


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<tr>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
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<tr>
<td>✓ No threat to patient safety</td>
<td>• Resource intensive</td>
</tr>
<tr>
<td>✓ High degree of realism</td>
<td>• High staffing ratio</td>
</tr>
<tr>
<td>✓ Low educator/learner ratio</td>
<td>• Anxiety of learner interferes with performance</td>
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<tr>
<td>✓ Active involvement of learner</td>
<td>• Learner’s disbelieving attitude or hypervigilance</td>
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<td>✓ Consistent experience for all students</td>
<td>• Lack of comfort with simulator as teaching strategy for educators</td>
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<td>✓ Creates a standardized setting for enhancing critical-thinking, problem-</td>
<td>• No clear validation of transfer of learning to clinical setting</td>
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<td>solving, and decision making skills</td>
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<td>✓ Practice communication with multidisciplinary team members</td>
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<td>✓ Psychomotor skills can be applied and refined</td>
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Ideal areas for SBE

- Technical Skills - common and uncommon
- Physical examination
- Team performance
- History taking skills and Problem-solving

**Pitfalls**

- Simulation is not « THE » objective
- Unique session of simulation
- Appropriate level of difficulty for the learner
- Technology and high-fidelity ≠ successful learning experience

Conclusion

• Simulation Based Education is important and is here to stay

• To optimize both the learning and assessment experience of simulation, remember:
  o Principles of effective simulation
  o Advantages /Disadvantages of simulation
  o Goals-tools match: most important limitation

✓ Get started!
The Third International Conference on Medical Education
Simulation for Education and Patient Safety

RIDE THE WAVE

March 24, 2017: Hilton Metropolitan Hotel
March 25, 2017: Clinical Simulation Center, Byblos Campus

SAVE THE DATE

TOPICS
- Simulation and Interprofessional Collaboration
- Simulation and Patient Safety
- Art of Debriefing and Feedback
- Building a Simulation Center
- Use of Standardized Patients
- Hybrid Simulation
- Simulation for Assessment
- Moulage and Makeup
- Technology for Simulation

INTERNATIONAL SPEAKERS
René Amalberti, MD, PhD
Professor of Medicine
Senior Advisor, Patient Safety
Haute Autorité de Santé (HAS), France

Lance Bailey
Founder - SimGHOSTS.org & HealthySimulation.com
Healthcare Simulation Entrepreneur

Peter Dieckmann, PhD
Head of Research
Copenhagen Academy for Medical Education and Simulation (CAMES)
Center for Human Resources
Herlev Hospital, Capital Region of Denmark
Past President of the Society in Europe for Simulation Applied to Medicine (SESAM)

Marc Lazaro, MD
Head of the Human Simulation Center
Head of IT department
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HIGHLIGHT: HANDS-ON EXPERIENCE THROUGH WORKSHOPS

Endorsed By: SIMGHOSTS