High Fidelity Clinical Simulation – Does It Have To Be So Complicated?

Sandra Banas MS PA-C
Karen Thrasher BS PA-C
Objectives

• At the conclusion of this session, the audience will be able to:
  – Define the term high fidelity simulation
  – Describe how high fidelity simulation is utilized in medical training programs
• Describe the benefits and limitations of high fidelity simulation
• Briefly describe the technical skills required to program high fidelity simulators
• Describe a time efficient and step wise approach to integrate simulation technology across physician assistant curriculum
Eastern 401 Video Reenactment

http://lessonslearned.faa.gov/L1011Everglades/reenactment_pop_up.htm
High Fidelity Simulation

- “Simulator that changes and responds to the user”

Benefits of HFS

- Provides opportunity to integrate simulation based exercises into standard educational curriculum
- Provides repetitive practice
- Provides practice with increased levels of difficulty
- Adaptability to multiple learning strategies
Benefits of HFS

• Provides controlled learning environment
• Learners are active participants
• Learners participate in self reflection
• Learners receive immediate feedback
Limitations of HFS

- Cost of equipment
  - Acquisition
  - Maintenance
- Physical space
- Cost of training
  - Conference costs
  - Faculty time
Limitations of HFS

- “Does not exactly duplicate education involving real patients in genuine settings”

HFS in Medical Education
HFS in Medical Education

- Medical Subspecialties
  - UGME
    - Medical schools
  - GME
    - Pediatric Residency Programs
    - Emergency Medicine Residency Programs
    - General Surgery Residency Programs
    - Anesthesia Residency Programs
  - PA Programs
Integrating HFS into PA Curriculum

The Challenge of It All
You Want Me To Do What?

- Faculty Time Constraints
  - Planning Curriculum
  - Teaching Curriculum
  - Departmental Responsibilities
  - Accreditation Responsibilities
  - University Responsibilities
  - Scholarship Expectations
  - Clinical Responsibilities
  - Personal Obligations & Responsibilities
I’m a PA Educator - Not a Computer Geek!

- Creating Pre-Programmed Scenarios
  - Build scenarios in “tools” or “edit”
    - Add frames
      - Initial, Improvement, Deterioration
      - Set cardiac rate, rhythm, RR, BP in each frame
    - Add trends
      - Hypoxia trend
        - Hypoxia deterioration
        - Hypoxia improvement
      - Hypovolemia trend
        - Hypovolemia deterioration
        - Hypovolemia improvement
I Told You I’m No Computer Geek!

• On-the-Fly Scenarios
  – Set initial state
    • Vitals, monitor
  – Change settings manually as scenario progresses

• Maintain unchanged vitals throughout scenario
SUNY Upstate Medical University PA Program

Our Strategy for Integrating HFS Into Our Curriculum
Simulation Enhancing Didactic Lecture

- Use simulation as an adjunctive tool when teaching abnormal physical findings in acute illness or chronic disease states
- Classroom scenario
  - Croup
Simulation Enhancing Didactic Lectures

• Other possible teaching scenarios:
  – Cardiac pathology
    • Heart murmurs
    • CHF – S3 gallop
    • CHF – fine/coarse crackles
  – Other pulmonary diseases
    • Asthma – Wheezing
    • Pneumonia – Rales
    • Pneumothorax – Absent breath sounds
Simulation Lab Integrated with General Medicine Class - Didactic

• Randomly select 4 or 5 students to participate in faculty guided scenario
• Remainder of class observes scenario in classroom via live stream video

– Pneumonia Scenario
Simulation Lab Integrated with General Medicine Class - Didactic

- Debrief with participants in setting with mannequin
  - All students in classroom observe debriefing
Simulation Lab Integrated with Clinical Curriculum – Call Back Day

- Randomly select 4 or 5 students to participate in team guided scenario
- Remainder of class observes scenario in classroom via live stream video

– STEMI
CO₂ No Sensor

Touch when sensor connected

116/69

(74)

115 30 37.2

Physician Assistant Program

Simulation Case
Simulation Lab Integrated with Clinical Curriculum – Call Back Day

- Debrief with participants in setting with mannequin
  - All students in classroom observe debriefing
Other Plans in Development

- Video capture 4 or 5 students as they work through a student guided scenario
- Save video on server and assign viewing of video to entire class
- Students comment via blog or BB discussion board that afternoon/evening
  - How things went overall, strengths of team, things that could have been done better
- Conduct debriefing session in class the next day
Acknowledgements

• We would like to thank the Department of Emergency Medicine for their guidance, expertise and support as we develop our program’s simulation curriculum.

• We extend a special thank you to:
  – Rodney Freeman, EM-STAT Simulation Lab and Technology Specialist, Department of Emergency Medicine, SUNY Upstate Medical University
  – Deborah Hermann, Director of Operations, Department of Emergency Medicine, SUNY Upstate Medical University
  – Gary Johnson MD, Chair, Department of Emergency Medicine, SUNY Upstate Medical University
Questions ??
References


