Simulation in Healthcare: Improving Patient Outcomes

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Simulation In Healthcare, Improving Patient Outcomes

Today’s Presenters:

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Healthcare Architect and Planner
Focus on using design to improve patient care

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SMRT Director of Operations
Principal Architect for Hannaford Center for Safety, Innovation and Simulation
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– Introduction and Purpose
– Simulation Enhanced Education is Here to Stay
– The Case for Simulation
  • Why is it important?
  • What makes learning stick?
  • Learner satisfaction
  • The data
– Case Study
  • Hannaford Center for Safety, Innovation and Simulation
– Planning a Sim Center?
  • Top 10 Questions
– Questions and Answers
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Simulation enhanced education is here to stay

Why is simulation needed?
- Improve Patient Safety
- Enhance Medical Education
- Improve Patient Outcomes

When is simulation needed?
- Technically complex systems and equipment
- No margin for error
- Extreme time pressures
- Team interactions critical to success

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Simulation enhanced education is here to stay:
- Safety
- Innovation
- Technical Skills
- Team Effectiveness
- Recruitment and Retention
- Maintenance and Certification
- Clinical Excellence
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CASE STUDY
Hannaford Center for Safety, Innovation & Simulation:

Planning and Design Phase

- Establish Core Design Group:
  - Key Participants Early
- Site Visits to completed similar facilities
- Program Development & Conceptual Planning
- Equipment and Technology
- Estimating/Pricing:
  - Construction Team integral part of process
- Mockups

Hannaford Center for Safety, Innovation & Simulation:

Design Phase

- Establish Core Design Group:
  - Key Participants Early
- Site Visits to completed similar facilities
- Program Development & Conceptual Planning
- Equipment and Technology
- Estimating/Pricing:
  - Construction Team integral part of process
- Mockups
Hannaford Center for Safety, Innovation & Simulation:

Program Total 21,250 SF:

Lobby/ Office of Medical Education:
7,500 SF
• Reception
• Offices
• Conference and Meeting Rooms

Standardized Patient:
4,750 SF
• Exam Rooms and Patient Room
• Control Room
• Standardized patient prep/waiting

Simulation Lab and Skills Lab:
9,000 SF
• Simulation Lab:
  Operating Room: Replica of newly constructed Surgery Center room.
  Trauma Bay: Shared Trauma/Critical Care Room
  Medical/Surgical Patient Room
• Control Rooms
• Debrief Rooms
• Storage
• Skills Lab:
  General Skills Lab
  Surgical Skills Lab

Existing Building Constraints
• Variety of construction both additions and renovations from the late 1950’s to 2000’s.
• Construction types: Combination of steel frames and masonry bearing construction.
• Multi-Level: Minor Ramps
• Occupied spaces below: Inpatient Rehab unit
• Remote from Hospital

Existing Building Opportunities
• Hospital Infrastructure in place
• Existing OR’s
• Vacant: Ability to review existing conditions
• Knowledgeable Facilities Department
Hannaford Center for Safety, Innovation & Simulation:

**Lobby**
- Set the stage:
- Wayfinding
- Recruiting

Before

Hannaford Center for Safety, Innovation & Simulation:

**Design Principles:**
- Technology
- Human Elements
- Medical Education, Science, Biology, Chemistry, History of Medicine
- Create an educational space within a realistic clinical setting
Hannaford Center for Safety, Innovation & Simulation:

Design Features: Technology
• Video connection to simulation rooms
• AV/IT Team integration essential:
  • Cameras throughout facility: Hand washing sinks, Classrooms, Task Trainers
• Internet streaming
• Kiosk check-in

Hannaford Center for Safety, Innovation & Simulation:

Design Features:
• Cells, Veins, Bones
• Light Box, Transparency of the body
Hannaford Center for Safety, Innovation & Simulation:

Design Features:
- History of Medical Education and Training
- Signage
- Art

Hannaford Center for Safety, Innovation & Simulation:
Hannaford Center for Safety, Innovation & Simulation:

Simulation and Skills Lab
- Storage
- Flexible Spaces
- Equipment sizes constantly changing
- Medical Gases are Real
- Sound Control

Operating Room:
- Designed to replicate an actual OR in MMC System
- Ability to control lighting, power, medical gases and line isolation monitor from dedicated control room
- Viewing capabilities – A/V feeds, viewing window 2 way mirror from corridor
Hannaford Center for Safety, Innovation & Simulation:

Trauma / Critical Care and Medical / Surgical Patient Room

- Combined Trauma/CCU: Versatile, all systems installed separately for each setup.
- These rooms are equipped and furnished as MMC’s actual clinical settings.
- Lights, Booms, Anesthesia equipment are all the latest models for students to learn.

Skills and Surgical Skills Lab:

- Flexibility: Variety of trainers
- Staging area for trauma situation
- Integrated A/V System so that it can be used for a classroom
- View and record tests or scenarios
- Space is available 24 hours
Hannaford Center for Safety, Innovation & Simulation:

Conference / Debrief Rooms / Classroom:

- **Dividable**: Utilize simulators in classroom for group demonstrations
- **Control AV Rooms**: Multiply control from podiums, control rooms or debrief rooms
- **Debrief Rooms**: Fully connected for viewing or playback of simulations during and after scenarios.
Hannaford Center for Safety, Innovation & Simulation:

Standardized Patient: Simulate interaction between health professional and patients. Patients hired to act out physically and emotionally various conditions.

• 10 exam rooms.
• Workstation outside exam for students to receive instructions and log observations
• 1 inpatient room
• Control Room: Observe and facilitate simulations
• Flow of students and patients extremely important, avoid interaction before and after
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TOP 10 QUESTIONS
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Question #10 – What is the purpose of Simulation Center?
Question #9 – Who should be involved with the planning and construction?
Question #8 – Where will the center be located?
Question #7 – What are the current trends?
Question #6 – Are there best practice models?
Question #5 – What level of fidelity?
Question #4 – What will it cost?
Question #3 – When scope and budget don’t align, how do you prioritize?
Question #2 – What would you do differently?
Question #1 – What are the politics?

Question #10

What is the Purpose of Simulation Center?
Define Objectives and Business Plan- The Why
1. Teachers and Learners: Who are They?
2. Curriculum Development and Staffing Plan
3. Hours of Operation
4. Staffing Assumptions
### Question # 9
Who should be involved with the planning and construction?

<table>
<thead>
<tr>
<th>Administration</th>
<th>Construction Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Staff</td>
<td>Purchasing</td>
</tr>
<tr>
<td>Simulation Center Staff</td>
<td>IT Department</td>
</tr>
<tr>
<td>User Groups</td>
<td>Clinical Engineering</td>
</tr>
<tr>
<td>Architects, Engineers, Designers</td>
<td>Philanthropy</td>
</tr>
</tbody>
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### Question # 8
Where will the center be located?

- New or Renovated Space?
- White Coat Distance: In-house or Satellite Facility?
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Question # 7

What are the current trends in simulation?
- Planning
- Design
- Operations
- Funding

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Question # 6

Are there best practice models?
- Are site visits necessary?
- How is site visit selection best done?
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Question # 5
What level of fidelity?
Benefits and cost analysis of high fidelity?

Question # 4
What will it cost?
Budget for design, construction and equipment
Annual operating cost
Who is paying: first cost and operational costs?
What are the fundraising parameters?
Question # 3
When scope and budget don’t align, how do you prioritize?

Question # 2
What would you do differently?
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Question # 1
What are the politics?