Blessed are the flexible...
A multidisciplinary approach to designing a simulation center

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Session objectives

• Describe the team-based process used in the construction of our 5000 sq. foot center
• Discuss challenges and lessons learned
• Explore use of an improved team-based model in managing a recent 1200 sq. foot expansion
About us

• Mid-sized public university
  – 8000 undergraduates
  – 1000 graduate students

• Only nursing program on Eastern Shore of MD
  – BS, MS, DNP

• Only BS in respiratory care in Maryland
Finding a location

- New construction vs renovation
  - Distance from main campus
  - Available land scarce
  - Accelerated timeline for occupation
Floor plan at purchase
Securing funding

- Building purchase ($380,600)
- Architectural services ($90,000)
- Demolition/construction ($662,500)
- Technology infrastructure
Budgetary support

• Seed money from Maryland Hospital Association grant (~$937K)
  – Permission to redirect ~$450K to construction
• School dean support from endowment fund (~$350K)
• University foundation purchased space
• University president endorsed additional expenditures
• Private naming gift announced at ribbon cutting (~$1M)
  – Support for technology costs

• When we needed money, the university found it!
Additional technology costs

- Learning Space video-capture
  - $277,595
  - $20,000 annual maintenance
- Training
  - $45,000 over 2 years
- PNCl curriculum subscription
  - $31,800 for 3 years
- Manikin purchase/rental
  - 108,905 yearly
- Computers
  - $18,000
Decisions...physical layout

• Degree of realism
• Flexibility in space utilization
• Maximizing the square footage
• Traffic flow
• Types of simulation
  – High fidelity
  – Standardized patients
  – Hybrid
  – Task training
More decisions...

• Audio/visual capabilities
• IT needs
• Utilities (medical air, oxygen, suction)
• Access
• Staffing
• Security
• Parking
Initial planning team

- School dean
- Nursing department chair
- Nursing faculty content experts
  - Maternal/newborn
  - Pediatrics/FNP
  - Psych/mental health
- Respiratory therapy program director
- University architect
Our approach to design

- Research, research, research!
- Attend conferences
- Site visits
  - One room schoolhouse
    - Hospital-based
    - School-based
  - Multiple rooms
  - Free-standing centers
Philosophical decisions

• How observation will take place
  – Direct observation with one-way glass
  – Indirect observation via cameras

• Manikin/camera control
  – Separate small rooms
  – Large rooms with multiple stations
Final design
Other decisions...

• Architectural design
  – Internal/external
• Construction
  – Bid process
  – Internal/external
• A/V recording
  – CAE support
  – University classroom technology
  – IT security
  – Server space and environmental control
• Telecommunications
  – High speed internet
  – Phone system
Still more decisions...

- Organizational structure for center management
- Scheduling
- User training
- Center Policies
  - Food & beverages
  - Writing utensils
  - Permission to record
  - HIPAA
- Manikin purchase vs rental
Additional vital team members

• VP for Finance
• VP for Advancement
• Provost
• Associate Provost
• Director of Facilities & Physical Plant
• CIO
• Director of Grants and Sponsored Research
• Architectural/design company
• Condo association representative
• CAE
Surprises!!

- Interface of off-campus location with university support/services
- High speed internet to location
- Space allocation-housekeeping equipment/supplies vs utilities and server
- Managing within a condominium setting
  - Construction issues
    - Maximum ceiling heights
    - Plumbing
    - IT
    - Roofing
    - Parking
- HVAC issues
  - Uneven heating/cooling
  - Noise
  - Need for supplemental units in several locations
- Debriefing room too small***
- Storage fills up really quickly***
- No detailed plan for operating budget
## Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2010</td>
<td>MHA grant awarded</td>
</tr>
<tr>
<td>March 2010</td>
<td>Sim Center property identified</td>
</tr>
<tr>
<td>June 2010</td>
<td>Decision to hire external architect</td>
</tr>
<tr>
<td>July/August 2010</td>
<td>Site visits for design ideas</td>
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<tr>
<td>October 2010</td>
<td>First design meeting</td>
</tr>
<tr>
<td>February 2011</td>
<td>Bid process begins</td>
</tr>
<tr>
<td>April 2011</td>
<td>Bid awarded</td>
</tr>
<tr>
<td>May 2011</td>
<td>Construction begins</td>
</tr>
<tr>
<td>December 2011</td>
<td>Ribbon cutting</td>
</tr>
</tbody>
</table>
Challenges

• Interface of off-campus location with university support/services
• Expanding our revenue stream
• Balancing SU educational needs with those of external groups
• Making decisions about manikin acquisition
• Managing ongoing training
• Securing value-based purchasing
  – Electronic health record
  – IV pumps
Successes

• Only center of its kind on the Eastern Shore of Maryland
• Over 800 student experiences/year
• Multi-professional scenarios
• Faculty research and scholarship
  – 10 publications
  – 26 national/international presentations
• Innovative pedagogy “counts” in promotion & tenure decisions
• Cutting edge work with SPs in Psych/mental health
• Beginning collaborations with health professionals in the community
Let’s take a virtual tour
High fidelity simulation waiting area
Hallway towards nurses’ station
Adult Health Room
Labor, delivery, recovery, post-partum (LDRP)
Neonatal Intensive Care Unit (NICU)
Medical supply room
Psych/mental health group counseling
Small psych/mental health room
Funding for ongoing operations

- Grants
- Gifts
- Entrepreneurial endeavors
Entrepreneurial endeavors

• Certifications for students/health professionals
  – CPR, NRP & others
• Professional development
  – Wicomico County school nurses
• Educational sessions
  – UMES physician assistant students
  – Eastern Shore Faculty Academy
March 2016

The university acquires the space next-door!
Expansion Design Team

• Sim Center Coordinators
  – MS Exercise Physiologist
  – RN, BS-DNP student
• Delmarva Veteran Builders
  – Construction superintendent
• Director of Facilities and Physical Plant
• University architect
• Sim Center Co-Directors
  – Nursing
  – Respiratory
• Condo association representative
• IT
  – Security
  – Classroom technology
• Telecommunications
• CAE
Design objectives for expansion

• Increase debriefing space
• Construct additional storage
• Create flexible “classroom” space
• Re-purpose control room
• Provide office(s)
## Timeline for expansion

<table>
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<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>March 2016</td>
<td>Additional space acquired</td>
</tr>
<tr>
<td>April 2016</td>
<td>University architect associated with original project assigned to expansion</td>
</tr>
<tr>
<td>May 2016</td>
<td>First design meeting</td>
</tr>
<tr>
<td>June 2016</td>
<td>Final plans for expansion layout</td>
</tr>
<tr>
<td>September 2016</td>
<td>Bid process begins</td>
</tr>
<tr>
<td>October 2016</td>
<td>Bid awarded/construction begins</td>
</tr>
<tr>
<td>February 2017</td>
<td>Project completed</td>
</tr>
</tbody>
</table>
Design for expansion
Challenges during expansion

• Managing construction around Sim Center usage
• Re-design to accommodate HVAC
• Roof replacement concurrent with expansion
  – Weather
  – Disruption to Sim Center activities
• Managing in a condo situation
  – Plumbing
  – IT/Telecommunications
  – Parking
Successes

• IT/classroom technology well-planned
  – Improved A/V capabilities
• Spacious debriefing room
• Large multi-purpose “classroom”
• Ability to expand adult health high fidelity area
• New office space
• Multi-purpose office/control room
New office space
New debriefing space
New classroom space
Overall lessons learned

• A multi-disciplinary team assures a variety of viewpoints and more comprehensive approach
  – Increased campus-wide support
  – Engaged many departments in project
  – Improved outcomes
  – Favorable publicity
Our goals:
Increased recruitment and improved education of health professions students

- Increased enrollment and graduation of health professionals to meet workforce needs
- Well-prepared graduates make better employees
  - Fewer medical errors
  - Shorter orientation time
  - Better patient outcomes
  - Reduced costs of clinical care

http://www.salisbury.edu/henson/simcenter/default.html
References


• Davies A, & Davies J.(2015). Initial steps in designing a simulation center and program to support the opening of a new women and children’s hospital in Qatar, Avicenna. http://dx.doi.org/10.5339/avi.2015.1

Thanks for joining us!

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