Simulation as Part of a Family Planning Curriculum

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Challenges in Surgical Education

• Explosion of knowledge
• Incorporation of new technology
• Financial pressures
  – Increase in volume of patients
  – Increase in ambulatory surgery
  – Decrease in hospital stay
  – Decrease operating room time
Current Model of Surgical Education

- Experiential-based learning
- Graded responsibility
- Didactic teaching
- Supervision and mentorship
- No standardized competency
The Addition of Simulation Training in Medical Education
What is medical simulation?

The use of a device or scenario to emulate a real patient care situation or environment for the purposes of training, evaluation, or research.
Goal of Surgical Simulation

• To provide a safe, low-stress venue for learning and evaluation with the intent to improve operative performance and patient management through directed practice and assessment
<table>
<thead>
<tr>
<th><strong>GYNECOLOGIC SKILLS:</strong> 66% (16/24)</th>
<th><strong>OBSTETRICAL SKILLS:</strong> 41% (10/24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Planning: Vacuum aspiration and FP emergencies PGY 1-4</td>
<td>Shoulder Dystocia PGY 1-4</td>
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<tr>
<td>Hysteroscopy Skills PGY 3</td>
<td>Forceps and vacuum PGY 1-4</td>
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<tr>
<td>IUD Insertion PGY 1-4</td>
<td>Cesarean section surgical teaching PGY 3</td>
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<tr>
<td>Knot tying PGY 1</td>
<td>Normal vaginal delivery PGY 1</td>
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<tr>
<td>Laparoscopy advanced skills PGY 3-4</td>
<td>Team training PGY 1-4</td>
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<tr>
<td>Laparoscopy simulation: FLS skills PGY 1-4</td>
<td>Circumcision PGY 1-2</td>
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<tr>
<td>Pelvic and perineal anatomy PGY 1-4</td>
<td>Vaginal breech delivery PGY 1-4</td>
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<tr>
<td>Suturing PGY 1-2</td>
<td>Operative Vaginal Delivery PGY 1-4</td>
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<tr>
<td>Wound vacuum training/ wound healing principles PGY 1-4</td>
<td>Post partum hemorrhage PGY 3</td>
</tr>
<tr>
<td>Female sterilization methods PGY 1-4</td>
<td>Neonatal resuscitation PGY 1-4</td>
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<tr>
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<td>Episiotomy repair PGY 1</td>
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Societal Drivers of Simulation

• National guidelines in education
  – ACGME requirement

  “The institution and the program must jointly ensure the availability of adequate resources for resident education....Resources should include simulation and skills laboratories.”

• Patient Safety

  44,000 - 98,000 Deaths due to avoidable medical errors in US hospitals each year!!
Societal Drivers of Simulation

• Residents expect it
  – Frequent use of simulation in medical school
    • Simulation centers
    • Simulated patients
  – Part of exams
    • Shelf exams
    • USMLE
      – Step II – Simulated patients
      – Step III – Computer-based simulated cases
Educational Theory as a Driver of Simulation

- It works!
Types of Simulation to Spark Inspiration
Types of Simulation: BWH Family Planning Case Examples

- Partial task trainers
- Full procedure simulators
- Virtual reality simulators
- Human patient simulators
- Team training
- Crisis resource management
Partial Task Trainers

- **BWH FP case example: sterilization techniques**
  - 5 stations: Adiana, Essure, Interval Filshie, PP Filshie, Falop Ring, Single-port cautery
Full Procedure Simulators

• BWH FP case examples:
  – IUD insertion and papaya D&E simulation with all Medical Students every 6 weeks
Virtual Reality Simulators

- BWH FP case examples:
  - Laparoscopic BTL, Essure sterilization
Human Patient Simulators

NOELLE
Team Training

• BWH FP case example:
  - The D&E hemorrhage
Crisis Management

• BWH FP case example:
  – The D&E hemorrhage
Simulation Curriculum Development
The Approach to Curriculum Development

• Start with specific goals and objectives

• 6 critical questions
  – Who am I teaching?
  – What are the objectives?
  – In what context in the learning process?
  – What tools do I have to use?
  – Who is the faculty?
  – How will I assess the success of the program?
Checklist for designing a simulation scenario

① Define aim
② Needs assessment & learning objectives
③ Learning outcomes *(for evaluation)*
④ Develop a matrix
⑤ Work on evaluation strategy
⑥ Identify resources and people required
⑦ Programming and software
⑧ Dry run
⑨ Pilot with real participant
⑩ Run program
Task # 1: Consider evaluation options

- Written record
- Log
- Attendance
- Case Presentations
- Direct Observations

- Written exam
- Oral examination
  - Structured (oral patient management problem)
  - Short answer
- Videotape and audio tape review
- Simulated Patient
- Objective Structured Clinical Examination
Task # 2: Review learning objectives and select the most appropriate evaluation method according to these criteria:
BWH D&E hemorrhage example

- Pre- and post-written test
- Our OSCE checklist
- Video
- Clinic team debrief

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<tr>
<th></th>
<th>PERFORMED</th>
<th>NOT PERFORMED</th>
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<tbody>
<tr>
<td>1</td>
<td>Surgical pause</td>
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<tr>
<td>2</td>
<td>Check with anesthesia to confirm appropriate level of sedation before starting</td>
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<tr>
<td>3</td>
<td>Confirms need for cervical block ± vasopresin</td>
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<tr>
<td>4</td>
<td>Overall, D&amp;E simulated</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Demonstrates complete DDx of hemorrhage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Atony</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retained POCs</td>
<td></td>
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<tr>
<td></td>
<td>Perforation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cervical/Vaginal laceration</td>
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</tr>
<tr>
<td></td>
<td>DIC</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Communicates bleeding/tony to anesthesia</td>
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</tr>
<tr>
<td>7</td>
<td>Requests additional help (nursing)</td>
<td></td>
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<tr>
<td>8</td>
<td>Demonstrates ability to update nurse</td>
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<tr>
<td>9</td>
<td>Demonstrates/communicates need for fluid</td>
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Simulation-based team training
The Debrief

Frames → Actual Actions → Performance Gap → Desired Actions