Use of Simulation in Medical Curriculum
Simulation Objectives

1. Differentiate levels of Simulation
2. Discuss where simulation fits in both preclinical and clinical
3. Identify how to integrate
4. Review types of simulation experiences available at U of A-Phx
Historical

1. Anatomy Models – 12th – 18th century
2. OB Simulators – 1700’s
3. Bronchoscopy Simulators – 1902
4. 1910 – Flexner Report
Historical

1. 20th Century
Today

What is pushing simulation

1. Patient Safety Initiative
   • See one, Do one, Teach one – Not acceptable
2. Competency
3. Confidence
4. High Risk – Low Volume
5. Ability to reproduce experience over and over
6. Team building – integrating health professions
7. Animal Labs thing of past
8. Clinical experiences vary
9. Ethical issues of practicing on sedated patients
10. Much of Healthcare is now Out-Patient
Today

The Simulation Technique

Ensure all students have an experience with all types of relevant patient cases. AIMS - 2005

*We must not allow technology to drive our educational agenda*

Allows us to fill the Gap between theory and practice

Simulation is not a replacement
It is a supplement to animate existing curriculums
Today

What's new in medical school simulation?
Areas of Simulation
Simulation Today

1. Part Task Trainers
2. Computer Based Systems
3. Virtual Reality / Haptic
4. Simulated Patients
5. Simulated Environments
6. Integrated Simulators
Simulation Today

1. Part Task Trainers
Simulation Today

Computer based systems
Simulation Today

Virtual Reality / Haptic
Simulation Today
Simulated Patient
Simulation Today

Standardized Patients
Simulation Today
Integrated
The University of Arizona
College of Medicine - Phoenix

Integrating Simulation in Curriculum
Integrating Simulation in Curriculum

The Preclinical – Clinical Foundation

Research - Preclinical

Building a “Grounded Cognition” – Barsaluv - 2008

Encapsulation – Schmidt – 2007

Immersive Simulation – Brown 2006

Basic Science – Brown - 1998
Integrating Simulation in Curriculum

Preclinical

Goal is not to teach clinical medicine but offer a frame work in which students may better understand scientific principles.

Sample Curricular additions;
1. Cardiology – anterior / inferior MI (Preload / Afterload)
2. Cardiology – Cardiogenic Shock (Starlings Law)
3. Pharmacology – Narcotic Overdose (Narcan)
4. Pharmacology – Concepts of Pulmonary Pathology (Epi)
5. Infectious Disease – Hep – C / TB (Communications)
Integrating Simulation in Curriculum

Preclinical

Prologue – Intro to Simulation
Clinical Anatomy - Procedures
Neuro – Head/Spinal injuries /CVA
Cardio – ECGs / Heart sounds......
Musculo - Injury
Biomedical Informatics- Physiology
GIMDO – Diabetic, GI-Bleed,...
RGDL – OB, Pediatric communications
ID – Ethics in medicine cases,
HEMON – Ethics in medicine cases
Capstone -
Doctoring -
SP -
Integrating Simulation in Curriculum

Preclinical Skills

CPR
Interpretation ECGs / Radiographs
Oxygen delivery / Airway Management
Sterile Procedures
IVs
Wound Care - Suture
Basic Laparoscopy skills
OSCE and OSCE remediation requirements
Integrating Simulation in Curriculum

Preclinical

Self-Directed Learning Experiences

Student Groups

Mentor Lead Conceptualizations
Integrating Simulation in Curriculum

The Preclinical – Clinical Foundation
Research - Clerkships

Emergency Medicine Cases: Ten Eyck - 2009

MI: McCoy - 2010

Disaster Medicine: Franc-Law - 2010
Integrating Simulation in Curriculum

Clerkships

Use Simulation Center to conduct orientation prior to each rotation

Simulation Center can help with missed Patient Encounters or Cases that students desire further review.

Feedback is formative not summative
Integrating Simulation in Curriculum

Clerkships

Simulations:
Transitions -
Family Medicine – Communications Scenarios
Pediatrics – Physical Exam - Communications
OB/GYN – Delivery scenarios, Infant Care...
Surgery – Suturing, intravascular, laparoscopy
Internal Medicine – ICU Patients, HOV, Diabetic.....
Neuro – CVA, head trauma, Neuro disorders..
Psych – addiction, PTSD........
EM – Trauma, Burn, OD, MI...........
Intersessions – Self Directed Student Learning
Integrating Simulation in Curriculum

Clerkships

Skills: (Task Trainers)
1. Paracentesis
2. Arthrocentesis
3. Thoracentesis
4. Amniocentesis
5. Cricothyrotomy / Trach
6. Thoracotomy
7. Ultrasound
8. Lumbar Puncture
9. ETT
10. GYN
11. IV
12. Central Line
13. NG / Foley
14. ..........
Integrating Simulation in Curriculum

Clerkships

Student Electives

4th Year Immersive Rotation – Preparing for Residency

Team Building
Integrating Simulation in Curriculum

Challenges

Content Experts without Simulation Training can Struggle

Time – both scheduling and commitment

Faculty have difficult time not intervening

Keeping up with changes both in simulation and medical practice
The Simulation Center

Simulation

Sim Man 3G
Sim Junior
Sim Baby
Sim NewB
Sim Mom
Gaumard Susie
METI ISTAN
The Simulation Center

Task Trainers

SYNDAVER
The Simulation Center
The Simulation Center

Equipment

Ultra Sound
Cardiac Monitors
Crash Carts
Laparoscopy Trainers
Medications
Operating Room
IV Pumps
Feeding Pumps
Doppler
Debriefing Rooms
The Simulation Center

Next Phases of Faculty Development

Orientation to Simulation Center
Sim Center Faculty Training
Building Scenarios
How to Debrief
Simulation and Research........
The Simulation Center

Thank you

"If you want a second opinion, I'll ask my computer."