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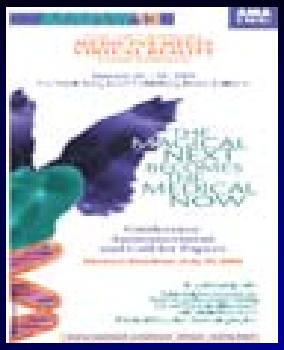

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Emerging Trends in Medical Simulation
http://simcen.usuhs.mil/mmvr2005

Emerging Trends in Medical Simulation: A Clinical Perspective

MMVR 2005 Tutorial

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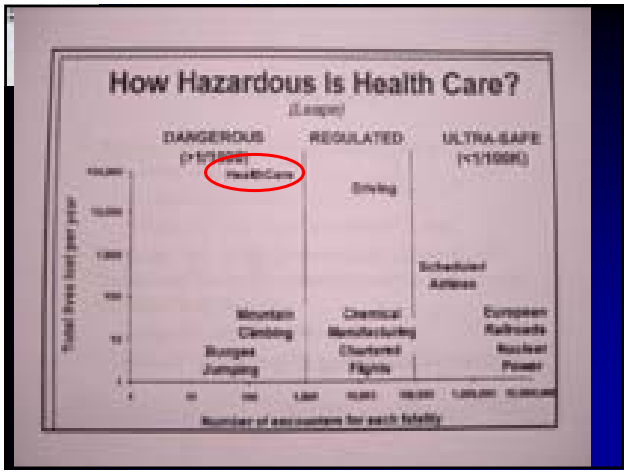
Emerging Trends: A Clinical Perspective

- The Expanding Need for Medical Simulation.
- The Role of Validation.
- Incorporating Simulation into Curriculum.
- Simulation What's Missing, What's Needed.

The Need

- Less physician teaching time
- Less resident time
- Fewer patient hours available for teaching
- Larger number of procedures
- Teaching high risk procedures without endangering patients
- "To Err is Human" Institute of Medicine report



"To err is human"

How do we Minimize Error?

THE BOTTOM LINE

How Do We Train Medical Personnel for the Future?

- Patients as "Guinea Pigs" not acceptable
- Less tolerance for error
- Training hours shortened

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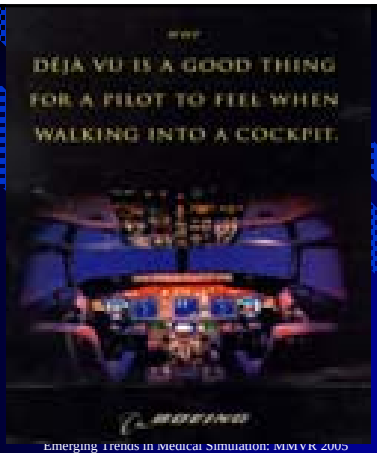

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ACS Proposed uses of Simulation

- Screening for aptitude
- Provide initial training
- Promote ongoing education
- Enable periodic assessment
- Maintain proficiency through rehearsal pt specific procedures

SIMULATION WILL BE READY FOR PRIME TIME ONLY WHEN PROPONENTS CAN SHOW THAT CLINICALLY USEFUL LEARNING RESULTS FROM SIMULATOR USE!!

Designing a Validation Study for simulation

- Need clear (unambiguous) definition of what constitutes error and success for the procedure.
- Need high inter-rater reliability

Research Questions

- Can Simulator training provide an equal or better training experience than what is currently available?
- How do you incorporate appropriate simulators into curricula?

Need to apply Proper Scientific Methodology to the Process

It "looks good" and it "feels good "just don't cut it

Choice of procedure for simulation

- Common procedure
- High stakes
  - Consequences severe if done wrong
  - Time sensitive
- Limited opportunity for training

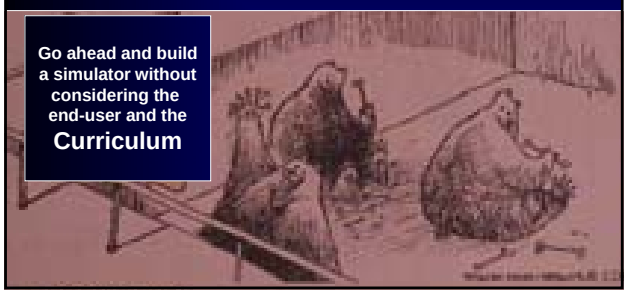
Validation Lessons Learned

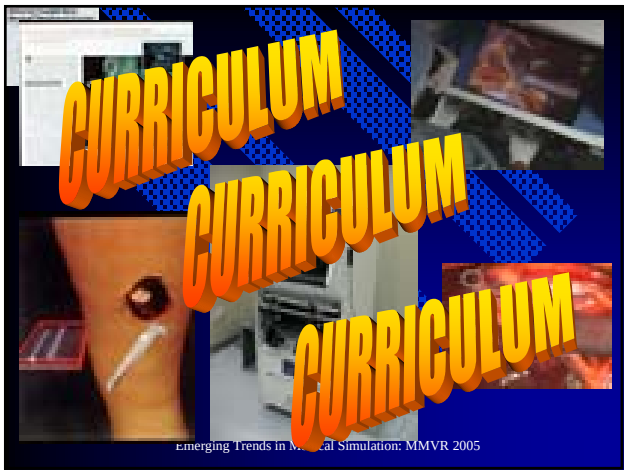
- Many of our "gold standards" are not validated
- There are no widely established standards for validation of medical simulators
- IRB's not familiar with validation

IRB APPROVAL Medical Students

FEEDING TIME AT THE NATURAL SELECTION ZOO

Go ahead and build a simulator without considering the end-user and the Curriculum





- How do we incorporate simulation into medical and surgical curricula?
- How much validation is needed to introduce simulation into existing curricula?

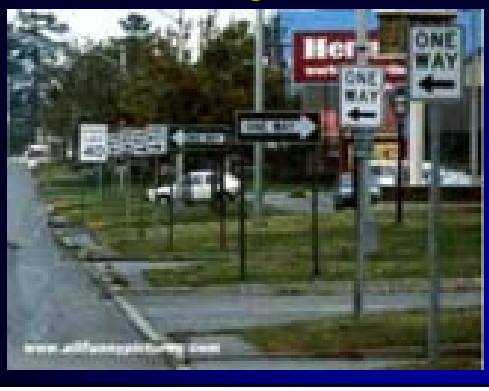
Potential benefits of adding simulation into medical and surgical curricula

- Mastery of skills – perform as advertised
- Asynchronous learning
- Decreased faculty lecture time increased time for assess & remediation
- Decreased use of animals

Choice of Curriculum (where should we start to introduce simulation)

- Well established course
- Procedure Dependent
  - Lends itself to simulators
- Established Metrics

Where do we go from here?



Realizing the Potential of Simulation

- Allow boards to certify skill rather than oral discussion
- Permit prototyping "*in silico*"
- Testing of new devices in a simulated environment
- Patient specific rehearsal of operations

What is Required

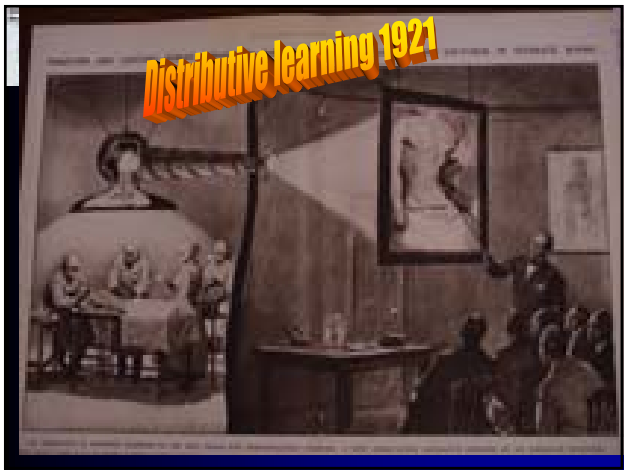
- REALISM – realistic organ responses, tissue-tool interaction, visual display
- AUTHENTICITY – Educational content that is clinically useful and provides validated transfer of learning
- ACCEPTABILTY- teaching physicians and specialty organizations

Can You Simulate This?

Or This?

Distributive Learning

- Training groups who are geographically separated
  - Real time
  - . disparate
- Training teams



What's needed (desired)

- Improved fidelity
- Improved Tissue tool interaction
- End user input
- Curriculum Driven Development
- Funding – national initiative
- Mandate/by-in from organized medicine
- Continued validation "VR to ER or OR"

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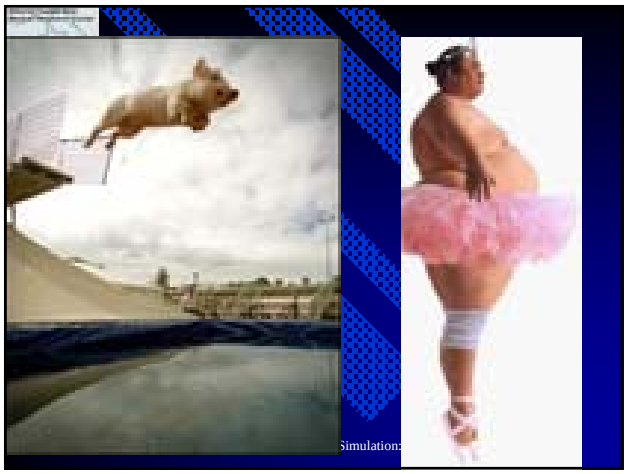
- Collaboration
- Integration
- National Agenda
- Teamwork


Simulation:


Thank You!