

Deep South Biosafety



Worker Training Program

**A BI-MODAL
APPROACH TO
EXPERIENTIAL
LEARNING AND
SIMULATION IN THE
HEALTH CARE
ENVIRONMENT**

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EBOLA

HIV

SARS

HBV

MERS

MALARIA

PRESENTATION OBJECTIVES:

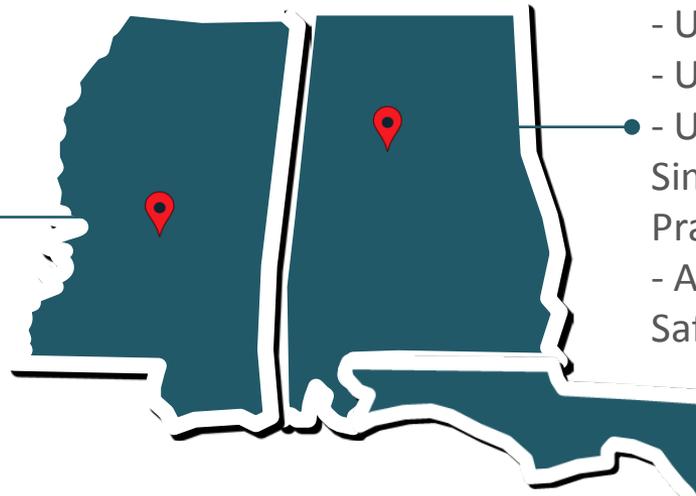
- Review basic principles of healthcare simulation
- Know key components of effective individual, team, and system-based simulations
- Develop 3 simulation-based tactical plans to use in outbreak planning
- Implement effective simulations to help train personnel in the event of an outbreak

The Deep South Biosafety Worker Training Program (WTP)

ABOUT:

One of eight institutions funded in 2016 by the **National Institute of Environmental Health Sciences (NIEHS)** to provide infectious disease safety training for a range of high risk occupations.

Mississippi
University of Mississippi
Medical Center



Alabama

- UAB School of Medicine
- UAB School of Public Health
- UAB Office of Interprofessional Simulation for Innovative Clinical Practice
- Alabama Fire College Workplace Safety Training Program

WHAT WE DO:

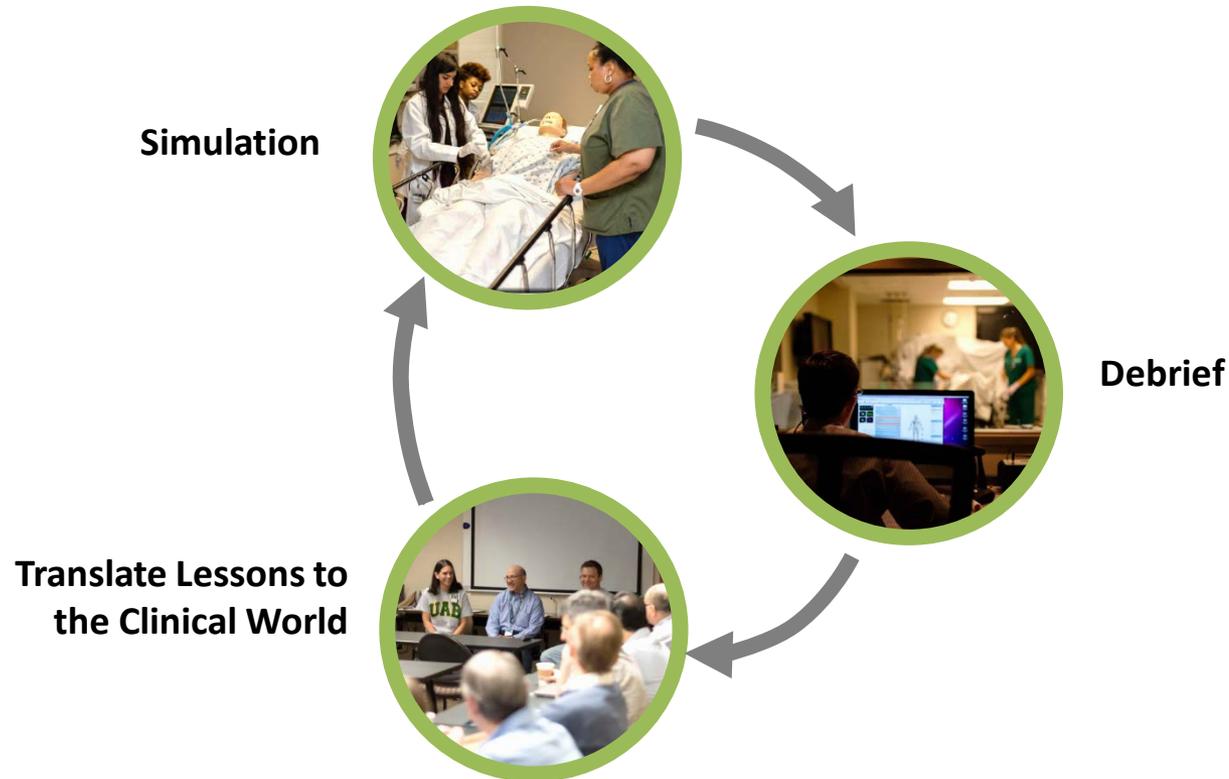
- **Four (4) levels of trainings** (awareness, operations, train-the-trainer, and refresher/simulation)
 - Chain of infection and routes of exposure
 - Infection control measures
 - Exposure risk assessment and categorization
 - Relevant government standards, regulations and guidelines
 - Hand-on training using PPE
 - Review of infectious disease resources
- Develop a cadre of workers equipped with the skills and knowledge needed to protect themselves in an ID response.



Simulation in Healthcare

Healthcare simulation is a range of activities that share a broad, similar purpose—to improve the safety, effectiveness, and efficiency of healthcare services.

Simulation Should Be a Cycle



Simulation Locations



In Sim



In Situ

Simulation Types



Immersive



Procedural

Simulate to Train All Levels of Healthcare Delivery



Systems Training



Individual Training



Team Training

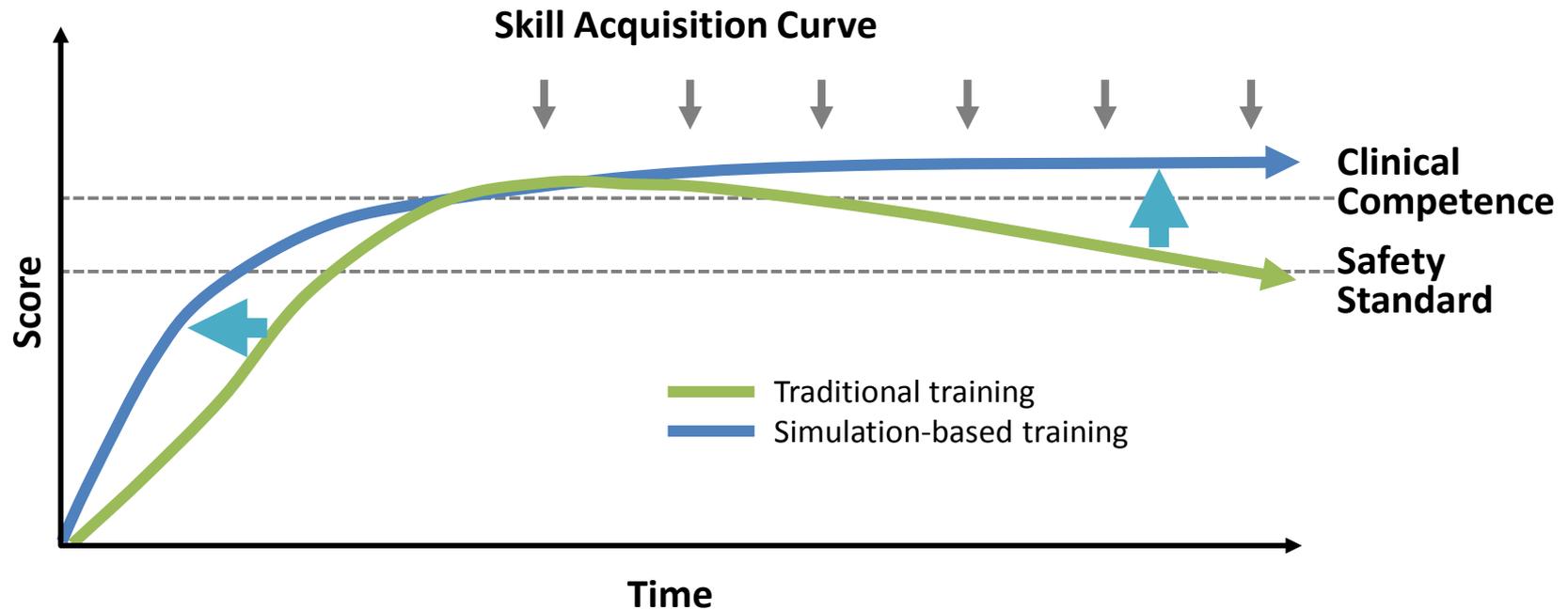
Procedural Training—Key Principles

- Deliberate practice
- Mastery learning
- Novice vs expert—development of expertise
- Development and use of checklists

Significant educational theory underpins procedural simulation training. Which of the following is not included in this?

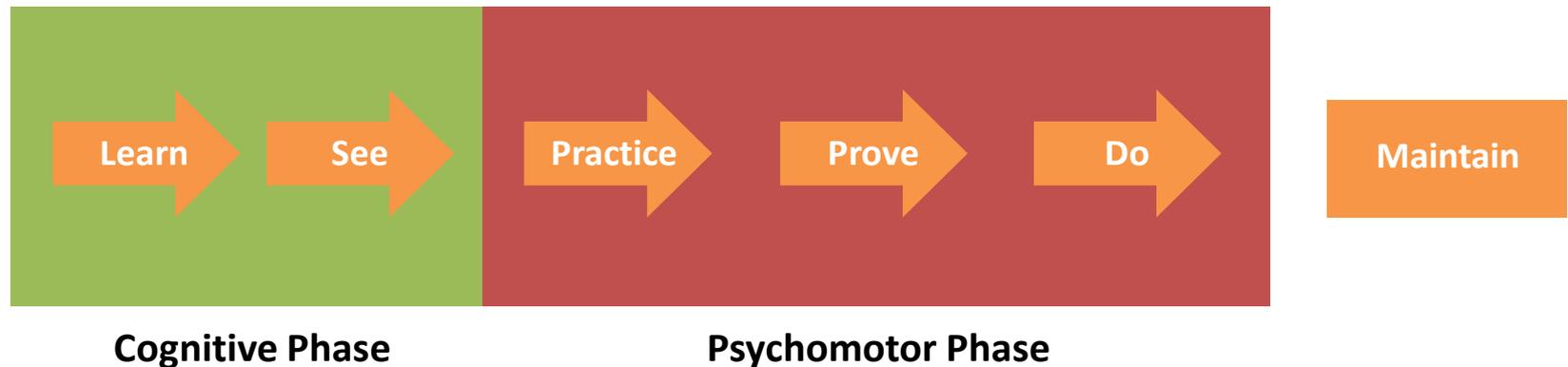
- A. Deliberate practice
- B. Mastery learning
- C. Cognitive & psychomotor learning
- D. Communication styles**

Simulation Prevents Skill Decay and Ensures Clinical Competence



Dong Y, et al. *Chest*. 2010;137:1050-6.

Procedural Skills Acquisition Framework



Sawyer T, et al. *Acad Med.* 2015;90:1025-33.

Simulation can be integrated into the training plan for which of the following:

- A. Practicing donning & doffing of PPE
- B. Assessing IT system readiness for computer screening
- C. Preparing specialized teams for unique patient care tasks
- D. All of the above**

Application to Outbreak Response Training

- Donning and doffing
- Performing procedures in PPE



Ebola Care PPE/Open Lab Sessions/ Doffing Expert Training



Procedural Training

- Pre-training
- Training
- Post-training
- Ongoing maintenance

Team Training—Key Principles

- Requires standardization of process and communication patterns before training
- Will need to use as much of the actual patient care equipment as possible

Team Training

- Pre-training
- Training
- Post-training

Ebola Care Team Training



Ebola Care ED Training



Care Team Tasks

- Language
- Work flow in situ
- Team member communication

Integration of Patient Care Tasks

- Starting IVs
- Drawing lab samples
- Performing handoffs

Ebola Care Floor Training



Patient Care Tasks

- Portable radiographs
- Bedside lab testing
 - i-STAT
 - Rapid malaria and influenza testing
- Waste removal and disposal
- Patient bathing and changing

Team Dynamics

- Calling for help
- Using alternative communication measures
- Team member down

System-Based Testing—Key Principles

- Anytime, anywhere, through any point of access
- Can be low budget to high stakes

In Situ Simulation

- In situ simulation is an experience that is integrated into the actual clinical environment and involves participants who are on-duty employees, clinical and nonclinical, during their actual workday

System-Based Testing

- Secret shoppers
- In situ drills
- Table-top exercises

Across your enterprise



Tips and Tricks for Designing Simulations

- Ensure that procedures/processes are developed & vetted by content experts
- Pilot test scenarios with friends and family who will give vigorous feedback
- Involve observers from multiple content areas to provide context, feedback
- Train observers and provide standardized data collection tools
- Record the activity for follow-up review and future training opportunities

Importance of Simulation

- Provides a safe environment to test systems and protocols
- Allows an opportunity for experiential learning for individuals and interprofessional teams to reinforce appropriate behaviors
- Provides high-fidelity training environment for high-stakes patient care
- Employs repetitive performance of cognitive and psychomotor skills
- Employs rigorous skills assessment and individual feedback from experts

Take-Away Points

- Individual simulation can prevent skill decay and ensures safety
- Simulation should be used as a training tool at the individual, team, and system level of healthcare delivery
- Team training reinforces the workflow and communication that would be critical in an outbreak situation
- In situ simulation is system-based and prepares hospitals for outbreak response and emergent healthcare situations

ACKNOWLEDGEMENTS:

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ADDITIONAL INFORMATION

Additional information about our consortium and the trainings offered can be found on our website:

<https://www.soph.uab.edu/dsb>.

Additional Resources

- Harvard Center for Medical Simulation. www.harvardmedsim.org/resources.php
- Hennepin County Medical Center Simulation Center: Resources. www.hcmc.org/education/sim/sim-resources/index.htm
- Donning and Doffing PPE Competency Validation Checklist. [www.apic.org/Resource /TinyMceFileManager/Topic-specific/Donning and Doffing PPE COMPETENCY VALIDATION CHECKLIST.pdf](http://www.apic.org/Resource/TinyMceFileManager/Topic-specific/Donning_and_Doffing_PPE_COMPETENCY_VALIDATION_CHECKLIST.pdf)
- Deep South Biosafety Worker Training Program. <https://www.soph.uab.edu/dsb/>
- University of Alabama at Birmingham Office of Interprofessional Simulation for Innovative Clinical Practice. <https://www.uab.edu/simulation/>