

**SIMmersion LLC**

Immersive Simulations

## Computer Simulated Standardized Patients for Training Health Professionals

On Chemical and Biological Agent Exposures

*Debbie L. Sticha, M.B.A., SIMmersion LLC, Columbia, MD U.S.A*

*LTC Michael J. Roy, MD, MPH, FACP, Department of Medicine, Uniformed Services  
University, Bethesda, MD U.S.A*

*Dale E. Olsen, Ph.D, SIMmersion LLC, Columbia, MD U.S.A.  
Department of Medicine, Uniformed Services University, Bethesda, MD U.S.A.*

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## Research Overview

- **Product:** *PC-based, prototype training system*
- **Key Element:** *Simulation technology*
- **Topic:** *Bioterrorism recognition & management*
- **Skills:** *Social interaction with patients*
- **Training approach:** *Experiential learning*
- **Interface:** *Conversation with Virtual Standardized Patient [VSP]*

## Current training methods

- Performing medical procedures  
*Simulations, mannequins, “see one, do one, teach one”*
- Learning new information  
*Textbooks, lectures, e-learning*
- Developing interactive, social skills  
*Role plays, including: MASCAL enactments & Standardized Patients (SPs)*

## Limitations of Role Play training

- **Variable amount & type of feedback**
- **Low knowledge retention**
- **Little opportunity for continued practice**
- **Restricted availability to students**
- **High cost per person**
- **High level of coordination and resources**

## Training Health Professionals

- *How can we satisfy the need to train social and conversational skills to health professionals?*
- *Can simulation technology and e-learning be used to train these skills using an experiential training strategy?*

## Solution: Develop & Test a prototype

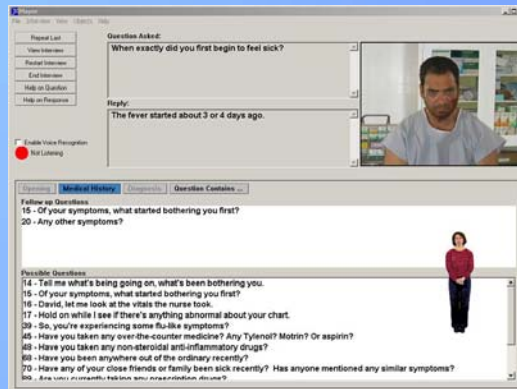
- Planned a training module prototype
- Created a Virtual Standardized Patient
- Implemented simulation technology
- Paired simulation with e-learning material
- Gathered feedback from physicians

## Teaching objectives & Skill set

- Taking a medical history
- Responding to an ill patient
- Delivering a difficult diagnosis

## Simulation Technology Overview

- Character Versions
- Emotional Model
- Actors & Video
- Constant Feedback
- Unique Logic
- Voice Recognition
- Unique Conversations



## Survey results

*15 military physicians*

- Interest & Repeat Use
- Comparison to Standardized Patients
- Topic & Content
- Training & Function
- Usability

## Interest & Repeat Use

- 87% agreed that the simulation was entertaining
- 87% agreed that they were curious to run the simulation again

## Comparison to Standardized Patients

- 56% indicated that the experience compared favorably to interacting with a live SP [Of the 9 participants that had experience with SPs]
- Realism of interaction with the Virtual Standardized Patient:
  - 47% rated as Good
  - 47% rated as Very Good
  - 7% rated as Excellent

## Topic & Content

- 87% assessed the set of medical conditions as appropriate
- 13% assessed the set of medical conditions as being appropriate ONLY for skin manifestations

## Training & Function

- *Would you use this in medical curriculum?*

66%: Yes

- *How should this simulation be implemented as a training tool?*

Supplement: 85% chose as BEST FIT

Refresher training: 67% chose as 2<sup>nd</sup> BEST FIT

Stand-alone product: 58% chose as WORST FIT

## What's Next?

- Launch prototype into full training system
- Conduct research study to test efficacy
- Develop additional medical simulations
- Introduce technology to other disciplines

## What's Next?: *Develop full system*

- **Modify simulation elements:**

- \**Enrich e-learning content*

- \**Expand selection of discussion topics*

- \**Include multi-media medical exam features*

- \**Increase variety of character responses for richness*

- \**Add Marburg hemorrhagic fever character version*

## What's Next?: *Research study*

- **Purpose:** *Test efficacy of repeated practice of simulation*

- **Sample size:** *60 health care professionals*

- **Research Design:**

- 60 use e-learning component*

- 30 use simulation [randomized]*

- 60 will perform 2 interviews with live SPs*

- 60 will receive double-blind assessments*

- **Statistical method:** *Student's two-tailed t-tests, chi square*



## What's Next?: *Other applications*

- **Medical simulations:**

- \**Risk Assessment & Diagnosis: PTSD*

- \**Diagnosis & Mgmt: CBRNE/Pulmonary Syndromes*

- **Simulations for non-medical disciplines:**

- \**Functional Skills Training: Children with Autism/ASD*

- \**Motivational Interviewing: Substance Abuse*

## Summary & Outlook for future

- Conducted initial R&D as proof-of-concept
- Gathered feedback for second iteration
- Proved that interest in simulation function and interface exist among physicians
- Pursue future R& D efforts in diagnosis & patient mgmt.
- Continue R&D efforts and expand topic areas

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## Questions?

Debbie Sticha: [Debbie.Sticha@simmersion.com](mailto:Debbie.Sticha@simmersion.com)

Dale Olsen: [Dale.Olsen@simmersion.com](mailto:Dale.Olsen@simmersion.com)

Michael Roy: [MRoy@usuhs.mil](mailto:MRoy@usuhs.mil)

Website: <http://www.simmersion.com>

Demo: Cyberarium