

SIMmersion LLC

Immersive Simulations

Computer Simulated Standardized Patients for Training Health Professionals

On Chemical and Biological Agent Exposures

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Immersive Simulations

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

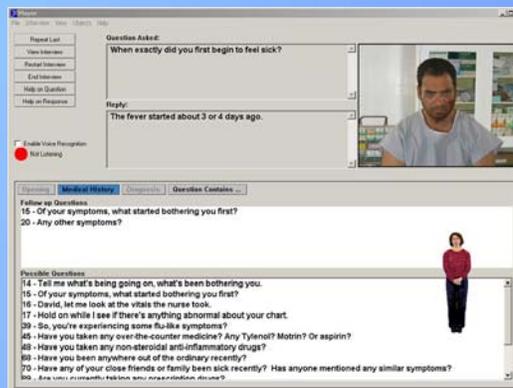
- Planned a training module prototype
- Created a Virtual Standardized Patient
- Implemented simulation technology
- Paired simulation with e-learning material
- Gathered feedback from physicians

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 2nd 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?

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