Patient Safety Training for Residents Using Virtual Patient Simulation

Aartee Ignaczak, M.P.H.1, Scott D. Wood, Ph.D.2, Linda C. Williams, R.N., M.S.I.1, Tina Nudell, M.S.1, Douglas E. Paull, M.D.1

1 National Center for Patient Safety, Department of Veterans Affairs, Ann Arbor, Mich.; 2 Informatics Patient Safety, VHA Office of Informatics and Analytics

The Problem
Each year approximately 55,000 resident-physicians train at VA medical centers (Brotherton et al., 2004). Instructor-led high-fidelity simulation-based training is effective for teaching teamwork, communication, and patient safety principles, but does not necessarily scale well for large organizations.

Approach
Test feasibility of combined didactic instruction and branch-narrative simulation for teaching a specific patient safety process, the Five Steps to Ensure Correct Surgery (ECS) and Invasive Procedures:

• Consent
• Patient identification
• Marking the site
• Reviewing images
• Conducting time out

Method
• Patient safety training scenario adapted from prior live, high-fidelity simulation training experience (Paull et al, 2012)
• Branch-narrative simulation of scenario developed using DecisionSim© (McGee, 2012)
• 21 residents participated in didactic learning and in a virtual patient simulation.
• Patient safety score based on completing key steps and avoiding “never” events

Results
• Learners took a mean of 8.2 minutes to complete scenario
• 81 percent achieved acceptable patient safety score
• Most common error was failure to detect incorrect X-ray image

Conclusions
• Learner success rate indicates teaching fundamental patient safety “bottom line” behaviors (e.g. time out) is important
• Branch-narrative simulation is a valuable addition to more traditional training curricula allowing for standardized, anytime training for a broader student audience

Legend
- Optimal Path
- Safety-Neutral Path
- Moderate Patient Safety Risk
- High Patient Safety Risk
- Never Events

Branch-Narrative Scenario for Thoracentesis

The simulation begins at the top-left corner of the case map. Each node represents a state of the simulated case, each with a set of choices. Progression from one state to another is determined by student decisions.

Legend

1. History and Physical

Students are placed in the role of intern and given patient information, treatment options and decisions

2. Diagnostic Tests

Students decide on most relevant tests.

3. Test Results

Students review simulated imagery and laboratory results

4. Diagnosis

Diagnostic and procedural questions test students’ medical and standard-of-care knowledge

5. Procedures - Checklists

Students practice safe processes such as the routine use of checklists...

6. Procedures - Timeout

...and time-outs prior to engaging in surgery or an invasive procedure

7. Mistakes

Students can experience mistakes, learning valuable lessons in a safe way

8. Evaluation

Evaluation is based on impact of decisions on patient safety

Lessons Learned
• Human factors principles are critical for learners, trainers and content creators
• Current tools require considerable and varied technical expertise to produce content
• Content design requires “gamedeveloper” mentality to immerse and engage learners
• Distractor elements such as time and cost can be manipulated to add realism to scenarios
• Scoring rubrics are challenging with multiple success metrics

Contact
Douglas Paull, M.D.
Director, Patient Safety Curriculum
VA National Center for Patient Safety
24 Frank Lloyd Wright Dr, M2100, P.O. Box 486
Ann Arbor, Mich. 48106-0486
Phone: 734-935-8900
Email: Douglas.Paull@va.gov

References

Acknowledgements
We would like to acknowledge VA SimLearn for facilitation of access to the virtual patient simulation and the VA Greater Los Angeles Healthcare System.