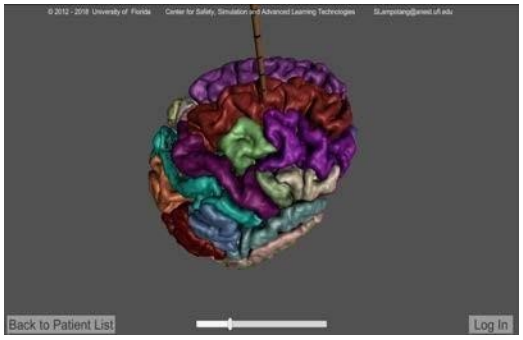
Mixed Simulator of Ventriculostomy Fact Sheet

University of Florida Center for Safety, Simulation & Advanced Learning Technologies



This robust, turnkey mixed reality simulator simulates part of an anatomically correct head and skull for practicing, learning, teaching and debriefing a ventriculostomy (aka external ventricular drain, EVD) procedure.

Designed for austere environments, it does not require wireless or internet access or wet fluids; accepts 110/220V, 50/60Hz. It can be unpacked/set up/be operational in 5-7 minutes by an unfamiliar person. The portable simulator ships inside a military-spec padded case with inbuilt wheels and telescoping pull-handle that meets airline checked luggage size limits (L+W+H=60”); weight < 50 lbs.

https://simulation.health.ufl.edu/technology-development/augmented-reality-mixed-simulation/ventric-sim/

Procedures:

- Ventriculostomy (EVD)

Components:

- CT Scan-based 3D-printed physical head and skull
- Virtual model of the anatomy of the brainstem, scalp, brain and ventricles
- Tracked instruments: needle, catheter loaded onto stylet, hand drill and virtual camera
- Common SMMARTS modular stand with interoperable instruments for use with other modular anatomies
- Automated scoring algorithm and replay system
- Instructional materials teach how to perform procedure on the simulator

Technology:

- Adheres to SMMARTS (System of Modular Mixed and Augmented Reality Tracking Simulators) rapid simulator development platform specifications
- Quick-release placement and indexing of SMMARTS-compliant anatomies to SMMARTS platform
- Anatomically correct, based on medical imaging scans of a real human
- Precise sub-millimeter tracking of all tracked tools
- Skin-like replaceable insert with scalp can be rejuvenated in-situ for indefinite re-use
- Replaceable skull inserts (can be used up to 9 times) with inner and outer tables and dura
- Optional pre-drilled skull inserts w/ matrix of holes to practice catheter placement and drilling location selection

Features:

- Adjustable view modes for realism and AARs
- Cognitive aids for catheter orientation
- Tactile feedback of bone and brain matter
- Debriefing with replay of past procedures
- Library of 140 interchangeable 3D brains based on real patient MRI scans with variable ventricle sizes

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US Pat: 9626805, Other Patents Pending