cssalt
Center for Safety, Simulation &
Advanced Learning Technologies
UF FLORIDA

cssalt
Center for Safety, Simulation &
Advanced Learning Technologies
UF FLORIDA

Mixed Reality Simulator of Central Venous Access Fact Sheet
University of Florida Center for Safety, Simulation & Advanced Learning Technologies

This turnkey, mixed reality simulator is for practicing, learning, teaching and debriefing central venous access by the internal jugular, infraclavicular, supraclavicular and axillary approaches with and without ultrasound guidance. Designed for austere environments, it does not require wireless or internet access or wet fluids; accepts 110/220V, 50—60Hz. It can be unpacked and set up by a person unfamiliar with it and be operational in 5-7 minutes. The portable simulator fits inside a military-spec padded case with inbuilt wheels and telescoping pull-handle that meets airline checked luggage size limits (L+W+H=60") and weighs less than 50 lbs.

https://simulation.health.ufl.edu/technology-development/augmented-reality-mixed-simulation/central-venous-access-simulator/

Procedures:

Internal Jugular (IJ) Vein Access	*Out-of-Plane/In-Plane/Oblique US-Guided, Landmark*
Infraclavicular (aka Subclavian) Vein Access	*Out-of-Plane/In-Plane US-Guided, Landmark*
Supraclavicular Vein Access	*Out-of-Plane/In-Plane US-Guided, Landmark*
Axillary Vein Access	*Out-of-Plane/In-Plane US-Guided*

Components:

- CT Scan-based 3D printed physical mannequin
- Virtual model of the anatomy of the neck and upper chest
- Tracked interoperable instruments: needle, ultrasound probe, virtual camera
- Common SMMARTS modular stand for use with other modular anatomies
- Automated scoring and replay system
- Automated instructional materials teach how to perform procedures

Technology:

- Adheres to SMMARTS (System of Modular Mixed and Augmented Reality Tracking Simulators) rapid sim. development platform specs
- 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
- High-durability skin is rejuvenated in-situ for indefinite re-use

Features:

- Integrated tutor for self-study and self-debriefing
- Adjustable difficulty levels (Easy/Medium/Hard)
- Adjustable view modes for realism and AARs
- Ultrasound probe with depth markers
- Anisotropy simulation for both needle and lung

- Vein compression
- Cognitive aids for probe and needle orientation
- Tactile feedback of bone and vein access
- Debriefing with instant replay of past procedure

Mixed Simulator of Central Venous Access Fact Sheet; February 17, 2021   Contact: slampotang@anest.ufl.edu
US Pat: 9626805, Other Patents Pending