

Mixed Simulator of IV Access Fact Sheet

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



This robust, turnkey mixed reality simulator simulates a hand and forearm for practicing, learning, teaching and debriefing IV placement procedures. 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/iv-access-simulator/>

Procedures:

- Deep IV placement forearm under ultrasound guidance
- Shallow IV placement in forearm
- IV placement in back of hand

Components:

- 3D-printed physical hand and forearm including bones
- Virtual model of the anatomy of the veins, arteries, muscles, bones, and nerves
- Tracked instruments: IV needle, IV catheter, and virtual camera
- Common SMMARTS modular stand with interoperable instruments for use with other modular anatomies - Automated checklist algorithm and replay system

Technology:

- Adheres to SMMARTS (System of Modular Mixed and Augmented Reality Tracking Simulators) rapid simulator development platform specs
- Quick-release placement and indexing of SMMARTS-compliant anatomies to SMMARTS platform - Precise sub-millimeter tracking of all tracked tools
- Skin-like gel can be rejuvenated in-situ for indefinite re-use

Features:

- Adjustable view modes for realism and AARs
- Cognitive aids for US needle alignment
- Tourniquet pressure monitor
- Debriefing with replay of past procedures
- Virtual vein size responds to tourniquet pressure and wrist slap
- Steadiness of virtual veins in hand responds to proper skin traction
- Real catheter advancement