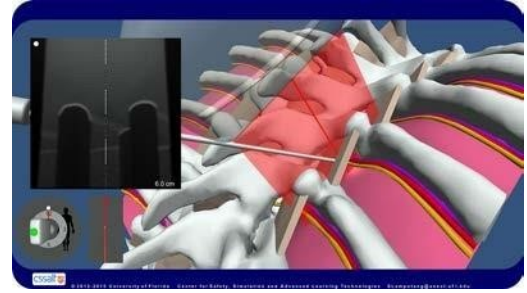


Mixed Simulator of Thoracic Regional Anesthesia Fact Sheet

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



This robust, turnkey mixed reality simulator simulates part of an anatomically correct thorax for practicing, learning, teaching and debriefing thoracic paravertebral blocks and placement of thoracic epidurals with and without ultrasound guidance or assistance. 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 by an unfamiliar person in 5-7 minutes. The portable simulator fits inside a military-spec padded case with in-built wheels and telescoping pull-handle that can travel as checked airline luggage and weighs < 50 lbs (23 kg).

<https://simulation.health.ufl.edu/technology-development/augmented-reality-mixed-simulation/ra-sim/>

Procedures:

- Thoracic Paravertebral with Ultrasound Guidance/Assistance/Landmark *Out-of-Plane/In-plane*
- Thoracic Epidural with Ultrasound Assistance/Landmark *Midline/Paramedian*
- **Under Development: Thoracic Intercostal with Ultrasound Guidance/Assistance/Landmark*

Components:

- CT Scan-based 3D printed high-anatomical fidelity spine plastic model encased in gel
- Virtual model of the anatomy of the spinal cord, nerves, lungs, ligaments, veins and arteries
- Tracked instruments: needle, ultrasound probe, virtual camera (interoperable between SMMARTS-compliant simulators)
- Common SMMARTS modular stand for use with other modular anatomies and procedures
- Automated scoring and replay system for after action review (AAR)
- Automated curriculum (including videos, lectures, mini-skills, and detailed scoring algorithms) for ultrasound-guided, assisted and landmark techniques and procedures

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 real humans
- Precise sub-millimeter tracking of all tracked tools
- High-durability skin can be rejuvenated in-situ for indefinite re-use

Features:

- Functional Loss-Of-Resistance syringe
- Hybrid cross-sectional view (3D viz in back half)
- Simulated hydrolocation in US image & 3D visualization
- Anisotropy simulation for both needle and lung
- Adjustable lung and epidural space for difficulty levels
- Cognitive aids for US probe and needle orientation
- Ultrasound probe with depth markers
- Tactile feedback of bone and ligament puncture
- Debriefing with replay of past/saved procedures
- Adjustable view modes for realism and AARs

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US Pat: 9626805, Other Patents Pending