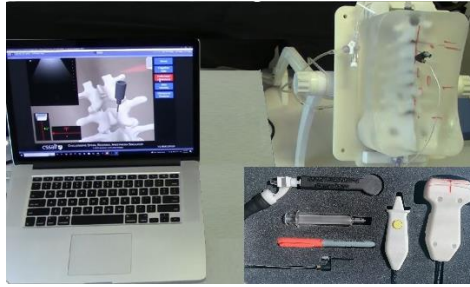


## Fact Sheet: Combined Spinal Epidural Mixed Simulator

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



This mixed-reality simulator simulates part of an anatomically correct regular lumbar spine for practicing, learning, teaching, and debriefing blocks and placement of epidurals with and without ultrasound guidance or assistance. Designed for austere environments, it does not require wireless or internet access; 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/combined-spinal-epidural-simulator/>

### **Procedures:**

- |                                                                |                           |
|----------------------------------------------------------------|---------------------------|
| • Spinal with Ultrasound Guidance/Assistance/Landmark          | <i>Midline/Paramedian</i> |
| • Epidural with Ultrasound Assistance/Landmark                 | <i>Midline/Paramedian</i> |
| • Combined Spinal Epidural with Ultrasound Assistance/Landmark | <i>Midline/Paramedian</i> |

### **Components:**

- 3D printed lumbar spine plastic model encased in gel
- Virtual model of the anatomy of the spinal cord, nerves, ligaments
- Tracked instruments: Spinal Needle Introducer, Tuohy needle (Tracked at the hub), ultrasound probe, virtual camera (interoperable between SMMARTS-compliant simulators)
- Common SMMARTS modular stand for use with other modular anatomies 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
- Precise sub-millimeter tracking of all tracked tools
- High-durability simulated tissue can be rejuvenated in-situ for indefinite re-use

### **Features:**

- |                                                                                    |                                                                    |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| • Functional Loss-Of-Resistance syringe                                            | • Optional fat pad                                                 |
| • Hybrid cross-sectional view (3D viz in back half)                                | • Tactile feedback of bone and ligament puncture                   |
| • Anisotropy simulation for needle                                                 | • Capable of passing an epidural catheter through the Tuohy needle |
| • Compatible with real Ultrasound Machines                                         | • Uses actual spinal needles and actual Tuohy needle               |
| • Cognitive aids for US probe and needle orientation                               | • Accepts the Anatomical Block for Challenging Spinal Simulator    |
| • Simulated curvilinear ultrasound probe with depth markers and two depth settings |                                                                    |