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Simulation for Emergency Medicine Residency Training: A Sampling of Key Devices

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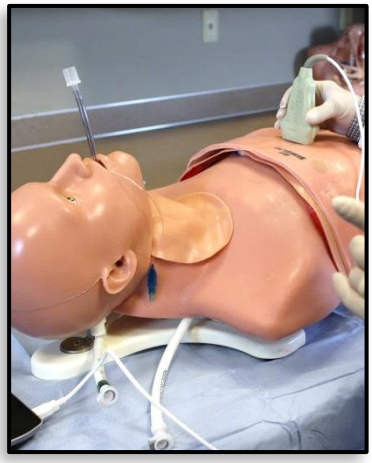
In recent years, a growing number of emergency medicine residency programs have switched from using live animals to medical simulation and other human-based training methods. These methods allow trainees to improve their skills through repetitive practice. Numerous factors—including improvements in artificial tissue technology and an imperative to reduce and replace the use of animals in medical training courses—have led to a new era in emergency medical simulation. The advancement of programmable mannequins, computer-based models, and other forms of medical simulation has expanded the number of adult and pediatric scenarios which can be effectively simulated and incorporated into emergency medicine curricula. In this document we highlight only a few of the many simulation devices available for this field.



TraumaMan System

Simulab Corporation

The most widely used surgical simulator in the world, the TraumaMan System is a high-fidelity human-body mannequin with lifelike skin, subcutaneous fat, and muscle. The TraumaMan System allows students to practice a variety of surgical procedures, such as cricothyroidotomy, chest tube placement, pericardiocentesis, intravenous cutdown, diagnostic peritoneal lavage, transtracheal needle ventilation, and ultrasound examination. Replaceable tissues provide each trainee with a first cut experience and make this simulator ideal for team training scenarios.

SimMan 3G

Laerdal

SimMan 3G is a high-fidelity, full-body patient simulator that displays both physiological and neurological symptoms. It can be used to teach cricothyroidotomy, endotracheal intubation, retrograde intubation, thoracostomy, intraosseous needle insertion, intravenous insertion, chest decompression, and urinary catheterization. The SimMan 3G can be programmed to simulate a multitude of scenarios requiring defibrillation and the administration of cardiac medications.

Human Worn Partial Task Surgical Simulator (a.k.a. “Cut Suit”)

Strategic Operations

The Cut Suit is a surgical training device worn by a course participant or actor which features breakable bones, interchangeable organs, and variable blood flow. It combines the sensation of working on live tissue with the realism of performing emergency assessment and treatment on a live patient. Wounds are created by the user, and the skin and other organs are repairable, allowing for multiple uses and team-training opportunities. The Cut Suit can be used to practice thoracotomy and intra-thoracic exploratory surgery, hemorrhage control of gross organ structures, chest tube placement, cricothyroidotomy, and urinary catheterization.

CentraLineMan

Simulab

CentraLineMan is a high-fidelity, partial-body simulator with an optional articulating head and replaceable tissues available to simulate a variety of patients (i.e., average, obese, and those with anatomical anomalies). It is the most widely used central venous catheterization simulator and allows trainees to practice performing full catheterization using ultrasound guided or landmark directed insertion.

BabySIM

CAE Healthcare

BabySIM is an infant-sized, high-fidelity simulator featuring advanced physiology for trauma management and critical care. Trainees can experience seesaw breathing, cooing, crying, variable pupil size, and secretions from the ears, eyes, and mouth. It provides simulation scenarios for airway trauma or obstruction, defibrillation and cardiac pacing, needle decompression, chest tube insertion, and intraosseous insertion.