



Mobile Simulation Training and Teaching Overview

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Key Points

1. Mobile simulations offer advantages over simulations in a fixed location.
2. Mobile simulations must be carefully planned based on trainee needs.
3. Mobile simulations have some disadvantages compared to simulations in a fixed location.

Caring for patients in a rural or remote area has many challenges. One such challenge is the need for opportunities for real-life training for rare, high impact medical events. In fact, even the more common medical emergencies may be considered a rarity due to the low population density in these settings and the time and distance between providers.

Advantages of Mobile Simulation Training

Research has shown a volume-outcome relationship in improvement of skills among emergency responders. A greater volume of repeated skill practice is related to improved skill performance. In remote areas where the frequency of

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emergency events is infrequent, mobile simulation provides current review, refreshing of skills, and presentation of new knowledge to the emergency medical personnel.

Mobile simulation can provide equipment and staff to deliver advanced educational resources to a broader audience of health care professionals (compared to a fixed location simulation lab) with a goal of improving the quality and safety of patient care throughout any region.

Location is an important component to consider when planning, executing, and assessing mobile simulation scenarios. Mobile simulation provides unique opportunities for learners to train and practice in their home care environment. It is safer for rural or remote communities (compared to providers traveling to distant sites for training in fixed lab facilities) as it reduces the time employees must be away from their community for travel. In addition, it allows for entire communities to be trained together, allowing for real-life team, using their own equipment. It allows for simulation of healthcare in the communities own emergent or urgent situations such as flooding, mass trauma triage, or chemical and factory accidents. Today's high-fidelity manikins and supporting equipment are designed to travel and can be used in almost any location.

Mobile Simulation Caveats

See one. Refresh the skills. Learn new skills. Practice many through simulation. Teach one. Simulation has been used successfully to achieve these goals.

Logistically, setting up training in a mobile simulation program consists of a series of complex tasks that occur well before the simulation session.

Personnel must be hired and trained and educational methodology selected. The simulation scenario must be designed based upon resources and needs. The simulation session should be recorded for debriefing and review. Appropriate facilities must be secured, and the learning outcomes need to be defined.

Each component of simulation training needs to be assessed, along with ongoing evaluation of the instructors, equipment, and simulation environments. Educational objectives need to be established, including outcomes measurement.

A well-planned session will be enjoyable. The key is to ensure that the session is doable, and that educational objectives are achieved.

Drawbacks of Mobile Simulation Training

The transport of manikins increases wear and tear on the mannequin. Technical support in remote areas can be problematic, and the requirement of portability limits simulation of some physiologic functions in some manikins. Planning for equipment purchases for mobile simulation training must include consideration of the effects of transportation and use in a variety of conditions on manikins and supporting equipment.

More complex scenarios, which require physically moving the mannequin during simulation, may cause the mannequin to lose power. It is possible to lose fidelity due to limited mannequin function without full connectivity to power or the Internet.

With increased complexity comes increased cost, including transportation cost, increased personnel travel time, remote technical support, and wear and tear on fragile equipment.

Another difficulty with mobile simulation is that it is cumbersome to transport large equipment. It is necessary to develop transport protocols for manikins, computers, and medical equipment including code carts or anesthesia machines. Large mobile simulation vehicles may have limited access to remote sites due to maneuverability and may require level terrain.

Skills and Programs Which Work Well with Mobile Simulation

Training in some skills and certain programs and scenarios are well suited for mobile simulation. These include use of low-fidelity task trainers, such as airway, IV, chest tube trainers.

Common task trainers include:

- Chest tube trainer: Trauma Man
- Central line trainer: Blue Phantom
- Femoral line trainer
- Lumbar puncture trainers
- IV trainers
- Intubation trainers
- Glidescopes
- Foley/GI trainers

Communication scenarios are also well suited for mobile simulation, especially those focusing on inter-professional communication and patient handover.

Pediatric advanced life support, advanced cardiac life support, and basic life support are very successful examples of programs which can be performed using mobile simulation.

Examples of Successful Mobile Simulation Models

Helmsley's Rural Healthcare Program including Simulation in Motion Nebraska, Simulation in Motion Montana, Simulation in Motion North Dakota, Simulation in Motion South Dakota

The Helmsley's Simulation in Motion is a statewide, mobile education training system, which brings state-of-the-art, hands-on training, using high-fidelity human patient simulators, to all pre-hospital and hospital personnel in the region. These teaching tools are some of the most technologically advanced training tools

available to the medical community today. This unique program delivers standardized education to every emergency care team in each funded state. More information may be found at: Helmsley Charitable Trust: <https://helmsleytrust.org/programs/health-rural-healthcare-workforce>.

University of Missouri Mobile Simulation Unit

In 2011, the University of Missouri launched a mobile simulation unit in response to the need for interactive and high-tech training resources in rural areas. The mobile sim unit provides an opportunity to take simulation training on the road. On board the 30-foot vehicle are four computerized patient manikins and virtual reality devices with the ability to simulate more than 110 medical scenarios. The mobile sim's trained staff provides on-site set-up and assistance for each session. Patient actors can be employed to make learning experiences even more realistic and effective. The mobile sim is also equipped with two cameras to record participants and data storage devices to capture a variety of information from training sessions. The eight-hour mobile simulation orientation class is included in the initial cost. More information may be found at: Sheldon Clinical Simulation Center: <https://medicine.missouri.edu/centers-institutes-labs/shelden-simulation-center/services/mobile-sim>.

Mobile simulation training has proven useful in improving the skills and knowledge for those providers who practice in rural or remote areas. The uses of mobile simulation will expand as the technology matures and its utility continues to grow.

Suggested Readings

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