Simulation in EMS Education: Charting the Future

A Vision Paper from the National Association of EMS Educators

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VISION

To expand the evidence base supporting the use of simulation in the context of EMS education, advance the development of simulation best practices, and create a dynamic, effective framework for the inclusion of simulation in paramedic education.

VALUES

Relevance, effectiveness, excellence, lifelong learning, efficiency

INTRODUCTION

EMS holds a special position at the intersection of public health, health care, and public safety. Cooperation and integration of EMS and public health not only provides an essential infrastructure for daily response, but also can improve a community's preparedness and response to acts of terrorism as well as other identified public health needs.[1]

Among healthcare disciplines, EMS is unique in that the appropriate resources and approach to care may vary widely based on patient location. Paramedics must contend with environmental factors in addition to patient condition — a factor not typically seen by other healthcare providers. In addition, the broad skill set demanded of a paramedic requires a more intense onboarding process upon hiring, a luxury not yet offered by many employers.

Given an increased focus on patient safety, the need for standardized, on-demand educational opportunities to help ensure "road readiness," and the ability to practice and hone skills in a controlled environment, simulation has become an increasingly important tool in EMS education and skill acquisition.[2]

By examining the use of simulation in initial paramedic education programs, The National Association of EMS Educators (NAEMSE) sought to assess the current landscape — the simulation resources currently available to paramedic education programs, how those resources are used, and faculty perceptions about simulation.

The resulting report, *Simulation Use in Paramedic Education Research (SUPER): A Descriptive Study*,[3] as well as this vision paper, hope to build a more complete body of knowledge regarding use of simulation, uncover barriers to effective implementation, and outline recommendations for improvement.

DEFINITIONS

Advanced (fully programmable) manikin

A type of manikin that can be programmed to mimic a variety of physiologic functions. This includes features such as chest rise to simulate breathing, audible breath sounds, pupil response, heart rate and rhythm, heart sounds, palpable pulses, and automated vocalization. These manikins permit a variety of invasive interventions including vascular and intraosseous insertion, intramuscular medication administration, airway management and artificial ventilation among others. Programming allows the manikin to respond to interventions with predetermined physiologic responses and to track and time performance and outcomes.

Assessment

Formative Assessment

Assessment for learning; usually includes both observation of a learner's actions and feedback. Formative assessment informs the educator if the learner's needs are being met.

Summative Assessment

Measurement of knowledge, skills or abilities at a discrete moment of time, usually for a high-stakes evaluation. Data is often used to determine a learner's proficiency or competency.

Clinical Scenario

A plan of an expected and potential course of events for a simulated clinical experience. The clinical scenario provides the context for the simulation and can vary in length and complexity, depending on the objective. A clinical scenario may include the following components:

- Participant preparation
- Prebriefing: objectives, questions, and/or materials
- Patient information describing the situation to be managed
- Learning objectives
- Environmental conditions, including mannequin, patient, embedded simulated person preparation
- Related equipment, props, and tools and/or resources for assessing and managing the simulated experience, e.g. pathology results, defibrillator
- Expectations, limitations, and potential roles of participant
- A progression outline including a beginning and an ending
- Debriefing process
- Evaluation criteria

Debriefing

A formal, reflective stage in the simulation learning process; a process whereby educators/instructors and learners re-examine the simulation experience and fosters the development of clinical judgment and critical thinking skills designed to guide learners through a reflective process about their learning.

Deliberate Practice

A highly structured activity explicitly directed at improvement of performance in a particular domain.

Experiential Learning

The use of concrete experiences (real or simulated) to gain knowledge. Simulation is a type of experiential learning. In contrast, didactic learning is often used synonymously with unidirectional learning implying teaching content focused on cognitive knowledge in a sitting or lecture style, as opposed to hands-on training.

Faculty Development

A systematic process of preparing educators to provide educational content of experience and improve their skills.

Feedback

Information given or dialogue between participants, facilitator, simulator, or peer with the intention of improving the understanding of concepts or aspects of performance.

Fidelity

The believability or the degree to which a simulated experience approaches reality. The level of fidelity can involve a variety of dimensions, including (a) physical factors such as environment, equipment, and related tools; (b) psychological factors such as emotions, beliefs, and self-awareness of participants; (c) social factors such as participant and instructor motivation and goals; (d) culture of the group; and (e) degree of openness and trust, as well as participants' modes of thinking.

In-situ

An educational activity that takes place in the actual patient care area, professional practice areas, or clinical setting in which the healthcare providers would normally function; this does not include a setting that is made to look like a work area.

Manikin[4]

A human-like simulator used for healthcare simulation. A mannequin (French origin) is "a form representing the human figure, whereas a manikin (Dutch origin) is a life-sized anatomical human model used in education". Both terms have been used interchangeably for human-like simulators with a majority of simulation literature using "mannequin" and a majority of resuscitation literature using "manikin." After much debate and research, in the summer of 2006, "mannequin" was the term recommended by *Simulation in Healthcare,* the journal for the Society for Simulation in Healthcare. Some authors have also used the term human patient simulator; however, Human Patient Simulator is the trade name of a METI (CAE) product and appending "human" to patient is thought to be a pleonasm.

Psychological Fidelity

The extent to which the simulated environment evokes the underlying psychological processes that are necessary in the real-world setting, this includes the degree of perceived **realism** or **fidelity**, including psychological factors such as emotions, beliefs, and self-awareness of participants in simulation scenarios. A feeling (explicit or implicit) where in a simulation-based learning activity, participants can speak up, share thoughts, perceptions, and opinions without risk of retribution or embarrassment.

Simulation[5]

A technique that uses a situation or environment created to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions. Simulation is the application of a simulator to training and/or assessment.

Standardized Patients

Individuals who are trained to portray a patient with a specific condition in a realistic, standardized and repeatable way (where portrayal/presentation varies based only on learner performance); used for teaching and assessment of learners including but not limited to history/consultation, physical examination and other clinical skills in simulated clinical environments; SPs can also be used to give feedback and evaluate student performance.

Task Trainer

Models, part-mannequins, or other jigs and working simulations used to reproduce components of a task, usually by imitating patients' anatomy generally used to support procedural skills training and may be used in conjunction with other learning technologies to create integrated clinical situations.

Validity[6]

A construct that determines how well an assessment instrument is accurate and measures the intended dimension of learning.

SCOPE & CHALLENGES OF EMS EDUCATION

A critical component of the nation's healthcare system, EMS encompasses the initial stages of the emergency care continuum. Though the competencies required for EMS professionals are relatively consistent, education and training requirements are not.

Progress has been made toward standardizing EMS education via work such as the National EMS Education Standards, completed in 2009 to define the minimal entry-level educational competencies for each level of EMS personnel as identified in the *National EMS Scope of Practice Model*.

This outcomes-based approach has largely replaced the National Standard Curricula, supporting a system of credentialing common in other allied health professions. By following the *EMS Education Agenda for the Future*, states are moving toward increased consistency of the nomenclature and competencies of EMS personnel nationwide.

Despite the progress made in recent years, inconsistent education, training requirements and scope of practice remain among the challenges of EMS education today. Educators, administrators, students and practitioners must also take into account:

Faculty training — As national education standards set a high bar for students, faculty training requirements must follow suit. Educators must be proficient in not only instilling evidence-based clinical skills, but in also developing the types of experiential learning activities that lead to true student mastery.

Roughly a third of paramedic programs (31%) have simulation equipment that sits unused.

Source: SUPER study

Faculty workload — Educators report working a median of 57 hours per week, with just 56% of those hours spent on instructional tasks. Not surprisingly, 40% are dissatisfied with their current workload.[7]

Access to clinical sites — Competition for access to diverse patient populations is nothing new. EMS educators and students must vie with their allied health colleagues for appropriate clinical sites, and for patients with the appropriate levels of acuity to provide opportunities to perform basic and advanced skills and to develop time-sensitive clinical decision-making skills. Unfortunately, clinical sites rarely replicate the challenging environmental conditions in which paramedics must often deliver care.

Transition to practice — As with many careers, newly minted EMS professionals require ongoing development and support to grow into their chosen profession. Without a thorough, consistent onboarding process by employers, "road ready" status can be inconsistent at best. Adoption of a new portfolio assessment in development by the National Registry of Emergency Medical Technicians (NREMT) may ease the transition to practice in the future.

Competency maintenance — Most states have implemented or intend to implement the National Scope of Practice Model as a foundation for state licensure. However, relicensure processes are a different story. From a national perspective, there are few consistencies among states regarding the amount, type, and source of continuing education courses — particularly because those based on the National Standard Curricula are now considered obsolete.

Practice analysis — Periodic practitioner surveys conducted by the NREMT help ensure that certification exams reflect contemporary, real-life practice in the prehospital environment. Educators must keep pace with the results of the most recent practice analyses in order to hone their curricula, given that the NREMT cognitive exam blueprint is updated with every practice analysis.

Lack of available outcomes data — Though the speed and quality of emergency care are critical factors in a patient's ultimate outcome, the evidence base for many routine practices is limited. To bridge the gap between pedagogy (including simulation) and clinical outcomes, one must first establish the cause and effect relationship between pedagogy and educational outcomes. Strategies for EMS training — both initial and continuing education — have often been adapted from settings that differ substantially from the prehospital environment; consequently, their value in the field is questionable, and some may even be harmful.[8] There is a rapidly growing body of literature reporting evidence for the use of various simulation techniques to promote learning, but only a scant few actually involve the context of EMS education or EMS providers.

Geography and demographics — From patient transport challenges to religious or cultural barriers, EMS professionals can be faced with wildly disparate demands based on practice area. Educators must consider possible geographic and demographic implications when designing curricula and simulations.

The most significant challenge facing today's EMS educators and practitioners is likely an increased diagnostic focus, with new thinking and technologies requiring EMS professionals to adopt more complex roles. Most prevalent is the rise of Mobile Integrated Healthcare (MIH). Recognizing that many 911 calls are not related to emergencies but rather to non-acute care such as chronic disease, Mobile Integrated Healthcare-Community Paramedic (MIH-CP) programs partner with hospitals, primary care physicians, nurses, public health and mental health and social services providers to help navigate patients to the right level of care.

These MIH-CP programs send paramedics with additional training and education into patients' homes or into the community to conduct patient education and fill gaps in areas that have a shortage of primary care and other basic health resources. Post-hospital discharge follow-up by EMTs, paramedics or community paramedics to ensure patients with conditions such as congestive heart failure, COPD and diabetes have the tools and information they need to manage their condition at home and reduce the risk of a preventable readmission to the hospital setting — a goal embraced by healthcare stakeholders such as hospitals, physicians and home health agencies because it impacts their reimbursement levels and will likely affect the approach to EMS reimbursement in the coming years.

In shifting the emphasis from short-term emergency care to longer-term support and education, the community paramedic role necessitates additional training.

By moving into new non-acute treatment roles, EMS is increasing its value to the community — as well as its level of risk. By expanding the use and array of simulations, EMS educators can help ensure that their students are prepared for a broad variety of situations, while maximizing patient safety as well as improving outcomes.

BARRIERS TO IMPLEMENTING SIMULATION

Over the past decade, simulations have become an integral part of medical education at all levels, including EMS training. Findings from *Simulation Use in Paramedic Education Research (SUPER): A Descriptive Study* indicated that most accredited paramedic programs (91%) have or have access to advanced, fully programmable manikins.

Over three-fourths (78%) of respondents called for expanded use of simulation in their programs. Yet just 71% of programs with access to advanced manikins actually use them.

Clearly a disconnect exists between simulation resource acquisition and implementation. Why? Consider the following:

Faculty training

Appropriate faculty training is an essential element to the development of an effective simulation program.[9] Less than half of respondents to the SUPER study (48%) indicated their faculty training was adequate. This could be due in part to the multitasking demands placed on many EMS faculty —functioning as instructional designer, simulation designer, equipment operator, classroom facilitator, debriefing guide, counselor, confidence booster and more. Educators must also keep pace with current evidence in the clinical practice of EMS in order to develop and deliver effective learning experiences that will lead to EMS provider certification and ongoing clinical competence.

In the SUPER study, respondents using advanced manikins cited manufacturers' representatives as their primary means of faculty training (87%); 19% said faculty had no training specific to the manikins owned by their programs.

Simulation guidelines released in 2015 by the National Council of State Boards of Nursing (NCSBN) call for qualification of lead faculty and simulation lab personnel to assure quality simulation delivery. They suggest this be achieved via submission of CVs and evidence of qualifications such as: simulation conferences attended, coursework on simulation instruction, certification in simulation instruction, training by a consultant, or targeted work with an experienced mentor.[10]

Psychological fidelity

The loftiest goal of simulation is to provide highly realistic experiences in which students can safely apply knowledge and practice skills without endangering a live patient. Conversely, poorly designed experiences can introduce and reinforce bad habits. While the initial development of an isolated skill using a task trainer relies more heavily on the fidelity (i.e. realism) of the equipment being used, the integration of knowledge and skills development during scenario-based simulation must also take into account the fidelity of the entire experience, including the fidelity of the environment and psychological fidelity, the latter of which is believed to be a product of the former two.[11]

Unpublished data from the SUPER study showed that most paramedic program simulation is conducted in the program skills lab, classroom or simulation lab, rather than in realistic field settings such as an ambulance (fixed [33%], drivable [33%]), or in-situ outdoors (44%) or indoors (39%). This suggests that educators might need to evolve their mindset and recognize that simulation equipment (i.e. simulators) is merely a tool to be used during the process of simulation. It is further imperative that simulation in EMS education be conducted in a manner that realistically represents the dynamic EMS environment so that the overall experience of a student taking part in a simulation is one that builds a believable experience in their mind, which they may later call upon, much like an experienced clinician reflecting on past patient care experiences during present moment clinical decision-making.

Insufficient personnel resources

As noted above, EMS faculty members are often tasked with multiple roles, from simulation designer to career counselor. More than half of programs participating in the SUPER study reported no staffing resources to support simulation beyond regularly scheduled faculty hours. Additionally, 19% cited inadequate personnel as the reason simulation equipment lay idle.

Pediatric intubation is the most frequent skill substituted for required field or clinical skills via simulation.

Source: SUPER study

Lack of equipment across the patient life span

Among SUPER study respondents using advanced manikins, the frequency of simulation with adult manikins was substantially greater (99%) than simulations using child (43%), infant (46%), or neonate (18%) manikins.

While advanced manikins were found to be limited in their ownership/use, unpublished SUPER study data indicated more broad use of simple child (91%), infant (98%) and intermediate child (72%) and infant (76%) manikins. It is difficult to determine the impact of availability or lack of appropriate age-related simulation resources has on learning outcomes, which illustrates the need for more extensive EMS-specific simulation research.

Shared resources

Though 91% of programs reported having or having access to advanced manikins, just 71% use them. Not surprisingly, the study made it clear that having or having access to simulation equipment does not guarantee its use. This is especially true when programs share resources, which significantly reduces their use of those resources. Statistical analyses showed that programs that reported “having access to” a given simulation resource use that resource less frequently than programs that reported “having” the same resource.

Lack of understanding of available resources

Educators, administrators and students are rarely encouraged to “get creative” in leveraging institutional resources in new ways for the mutual benefit of multiple departments; for example, engaging drama students to serve as standardized patients, or partnering with engineering students to build supplementary equipment.

Inadequate funding

Less than half (48%) of SUPER study respondents indicated they had adequate budget funding specifically allocated to simulation. Though the equipment itself might be available, the resources necessary to take full advantage of it — such as the availability of trained faculty — was not. This is at odds with the recently released NCSBN simulation guidelines, which call for simulation-related professional development for faculty, including webinars, conferences, journals, clubs, and certifications such as certified health care simulation educator (CHSE).

Educators and administrators must become more adept at making the business case to justify increased funding to support effective use of simulation — for example, linking operational needs to a particular educational standard, or discussing the implications for accreditation if sufficient training, clinical experiences and resources are not made available.

TRENDS INFLUENCING SIMULATION IN EMS EDUCATION

Research has shown that exposure to patients in a clinical environment with ad hoc educational sessions is no longer sufficient to create competent healthcare practitioners.[12]

Competition for clinical sites, limited patient encounters, and focus on patient safety have led to new ways of thinking about training, increasingly involving technology and innovative ways to provide a standardized curriculum. Indeed, medicine has learned much from professions that are successfully using simulation for training, such as aviation, the military and space exploration.[13]

The increasing availability of quality resources is helping to make sophisticated simulation technologies more accessible than in the past. Paired with the increasing emphasis on educational outcomes and broad competency-based assessment, one can anticipate that the demand for simulation will only grow.

Specific to EMS education, several additional factors are contributing to the use of simulation technologies:

CAAHEP competencies

The Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions periodically reviews and revises the *Standards and Guidelines* developed by the Commission on Accreditation of Allied Health Education Programs. New standards, effective January 1, 2016, specify that field internships provide students with an opportunity to serve as team leader in a variety of pre-hospital situations. Simulation may offer the opportunity to fill gaps in areas where there are insufficient field internship experiences. In the future, the details regarding how that should be achieved will undoubtedly be defined.

NREMT portfolio of vital skills

Certification eligibility standards being phased in beginning in 2016 will require that EMS students develop a portfolio of vital skills and demonstrate competency in order to qualify for the NREMT Paramedic Certification examination. Students must demonstrate progression from simple psychomotor skill performance and simple scenarios to integration of skills and assessments within complex simulated scenarios in either a team leader or member role. This will help prepare them to team lead in field patient settings, and to prepare for the scenario portion of the revised NREMT psychomotor exam, slated for rollout in January 2017.

Inconsistent clinical opportunities/patient encounters

As noted in the “Scope & Challenges of EMS Education” section of this document, EMS students and educators must compete with medical, nursing and other allied health students for limited clinical opportunities. Simulation allows educators to replicate a variety of patient situations, so students can develop, practice and hone their skills in a safe environment. Results of the NCSBN National Simulation Study provide substantial evidence that substituting high-quality simulation experiences for up to half of traditional clinical hours (in this case, for nursing) produces comparable end-of-program educational outcomes and new graduates that are ready for clinical practice.[14]

Progression of critical thinking skills

Continued emphasis on outcomes-based education necessitates the development of higher-level critical thinking skills for students to succeed. Using Miller's Pyramid of Assessment, educators are making the distinction between knowing (the foundation or lowest level of the pyramid) and actually doing (the highest level) in assessing students' clinical competence.[15]

The Six Domains of Clinical Medical Competence

The Accreditation Council for Graduate Medical Education began an initiative in 1998 to improve resident physicians' ability to provide quality patient care and to work effectively in current and evolving healthcare delivery systems. Known as the Outcome Project, the initiative identified six domains of clinical medical competence:

- Patient care
- Medical knowledge
- Practice-based learning and improvement
- Interpersonal and communication skills
- Professionalism
- Systems-based practice

Simulation technology is increasingly being used to assess the first three levels of learning because of its ability to a) program and select learner-specific findings, conditions, and scenarios; b) provide standardized experiences for all examinees; and c) include outcome measures that yield reliable data.

Source: Issenberg, SB, McGaghie, WC, Petrusa, ER, Gordon, DL, Scalese, RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. Medical Teacher, Vol. 27, No. 1, 2005, pp. 10–28.

Risk reduction

Simulation scenarios are ideal for rehearsing skills essential for patient safety by permitting practice of high-risk, low-frequency skills or situations. They also allow students to develop routines and practice safety behaviors, such as "safety checks, interruptions, stressors, adverse events, and handoffs" that help shield themselves as well as patients from risk.[16]

ATTRIBUTES OF SUCCESSFUL SIMULATION PROGRAMS

Evidence increasingly shows that simulation-based healthcare education with deliberate practice leads to improved results compared with traditional clinical education.[17]

The research evidence seems to indicate that high-fidelity simulations facilitate learning when used under the right conditions (see sidebar).

Meyer, Connors, Hou and Gajewski (2011)[18] evaluated student performance when 25% of pediatric clinical hours were replaced with simulation. At the end of the course, no differences in clinical evaluation scores existed between students using simulation and those who did not. Similarly, students with more simulated clinical experiences had clinical competency ratings comparable to those of students who spent the majority of their clinical hours in the traditional setting.

When viewed in the context of medical error reduction and patient safety, simulations are a crucial component for addressing miscommunication and other sources of error, especially in the context of team training and systems-based practice.[19]

10 Habits of Highly Effective Simulation Programs

In 2005, Issenberg, et al, set out to extract from existing literature the features and uses of medical simulations that lead to most effective learning. They identified 10 essential characteristics:

1. Feedback
2. Repetitive practice
3. Integration into the standard educational curriculum
4. Range of difficulty level
5. Adaptability to multiple learning strategies
6. Capture of a wide variety of clinical conditions
7. Controlled environment to make, detect and correct errors without adverse consequences
8. Individualized, active learning
9. Defined outcomes and tangible measures
10. Simulator validity

With these 10 characteristics present, simulations allow learners to practice and acquire patient care skills in a controlled, safe and forgiving environment. Skill acquisition from practice and feedback also boosts learner self-confidence and perseverance, educational outcomes that typically accompany clinical competence.

SUMMARY/CALL TO ACTION

Undoubtedly, simulation is a valuable tool amid the changing educational landscape — a tool whose value will only continue to grow over time. How does the EMS community help users to maximize that value?

Research clearly suggests that simulation equipment by itself is of little to no value. It must be part of a thoughtfully and fully integrated strategy within the education system — paired with the necessary faculty training and resources to enhance the practice of safe, effective prehospital care.

Educators must aggressively leverage quantifiable industry data and knowledge gained interprofessionally to establish a solid business case for adequate faculty education, equipment and supporting resources to achieve the full value simulation can deliver.

The EMS discipline must also value the link between the use of simulation and expected outcomes (academic, quality, operational, financial, clinical).

Stakeholders must collectively identify simulation best practices — what works, what resources are needed, what is the return on investment — and use those best practices to create an effective framework for use of simulation in the unique prehospital environment. These best practices and their underlying framework must then be validated through empirical research in order to ensure that we are using evidence-based educational practices.

RECOMMENDATIONS FROM THE CONSENSUS WORKSHOP

At a Consensus Workshop held on June 18-20, 2015 in Wappingers Falls, NY, invited stakeholders came together to review SUPER Study data and contribute recommendations for next steps. NAEMSE gratefully acknowledges the contributions of the following professionals:

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Below are action items suggested by consensus workshop participants to advance the development of simulation best practices, creating a dynamic framework that will serve as a solid pedagogical foundation for paramedic student learning well into the future.

Recommendations for NAEMSE

1. *Identify, and when appropriate develop, faculty resources aimed at promoting early and sustained success, such as:*
    a) Integrating simulation within the curriculum in a manner that reflects the EMS practice environment
    b) Facilitating simulations using expert-authored standardized scenarios
    c) Incorporating simulation in formative and summative student assessment using valid and reliable instruments
    d) Advocating for the use of proven effective strategies for structured debriefing

2. *Partner and foster relationships to create learning system resources such as:*
    a) Scenario development templates/blueprints
    b) Simulation-scenario sharing/partnerships that incorporate a structured process for vetting quality and establishing validity based on a pre-established blueprint
        - Inclusion of subject matter experts (SME) with technical scenario programming expertise in authorship
        - Implementation of peer review at pre-determined intervals
    c) Incorporation of non-technical competencies into learning system resources, including:
        - Teamwork
        - Communication
        - Safety
        - Situational awareness
        - Task allocation
        - Decision making
    d) Collaborative learning communities to support the effectiveness of simulation use in EMS education

3. *Facilitate ease of use by simplifying the planning and facilitation/evaluation of learning to use simulation*
    a) Expand availability of scenario sets
    b) Create aids to facilitate and debrief
    c) Establish validated sets and curriculum for pre- and post-simulation

4. *Conduct research in collaboration with stakeholders to:*
    a) Identify and interpret the scope of existing research in EMS and healthcare simulation
    b) Incorporate relevant summary findings from the literature in all future recommendations
    c) Establish an agenda for simulation research in EMS

Recommendations for Administrators, Program Directors and Deans

1. *Ensure an adequate number of educated faculty with training and expertise in the pedagogy of simulation.*

2. *Include operational support staff as a part of the simulation team.*

3. *Budget annually for faculty development in simulation pedagogy and debriefing based on evidence-based practices from existing medical and healthcare educator competencies.*

4. *Support the development of simulation leaders among the faculty.*

5. *Encourage collaboration among allied health educators to support simulation education rather than the ineffective sharing of resources.*

Recommendations for EMS Educators

1. *Integrate simulation into the EMS curricula with clear connections to student learning outcomes.*

2. *Use evidence-based practices to ensure facilitator competence in all aspects of simulation education.*

3. *Pursue the development of expertise as a simulation leader.*

4. *Partner with other disciplines to create interprofessional simulation experiences.*

5. *Use valid and reliable instruments for assessment in simulation.*

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