

Creating the Emergency Medical Services System of the Future: the role of the EMS Education Agenda.

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Executive Summary

Paramedicine clinicians (including emergency medical technicians and paramedics) in the U.S. respond to 40 million calls for assistance every year. These clinicians are a critical component of the health care, disaster management, public health, and public safety systems in the U.S. The millions who call for their help depend on the Education Agenda to ensure that they will receive the best possible care, and the paramedicine clinicians recognize that the Agenda forms a foundation for the success of the emergency medical services (EMS) system in the U.S.

The authors applaud this initiative to revise the Education Agenda. Our comments offer insights meant to help both the development of the new Agenda as well as the development of the system. For only success in the development of both will ensure the ultimate goal of providing our communities with the best possible services.

Over the past four decades the EMS system in the U.S. has fallen far behind the systems in other countries. Three of the most glaring examples of the poor state of EMS in the U.S. are the:

- 1) huge differences in quality of EMS care and access to EMS care in communities across the country (for example, today there can be more than a 10 times difference in a patient's chances of survival depending on which community the patient is in when they have an event such as a heart attack),
- 2) appallingly low salaries paid to paramedicine clinicians, and
- 3) the 24% turnover per year in the profession.

The Agenda will not, by itself, solve the system problems but the Education Agenda must both advocate for the development of the profession and acknowledge that without improvements in the system there can be no meaningful improvements in education.

The specific areas of focus we advocate include:

Personnel. In other professions, professionals with 10, 15 and 20 years of experience play critical roles in both the development of the profession and in supporting that profession to provide services in the most effective ways. The 24% turnover a year in EMS means that very few professionals spend more than five years in the EMS profession. The EMS system, and the U.S., desperately need a large cadre of paramedicine professionals who can devote their careers to EMS. The Agenda must recognize that professionals at different stages in their careers have different educational needs.

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Education. The only road to the ultimate goal of providing optimal care to our communities goes through the university. The Agenda must note and emphasize the critical need for paramedicine clinicians to have academic requirements.

Process. The development of the EMS Education Agenda should be led and controlled by paramedicine professionals. If this was the creation of a nursing, medicine, firefighting, or police education agenda, those professionals would be leading the process. It is not only the right thing for paramedicine professionals to lead the process, but also the best way to ensure the success of the Agenda.

System issues. When the Agenda addresses, for example, the National EMS Scope of Practice Model it should be doing so while advocating for the systems issues necessary to support a scope of practice that will provide optimal care to our communities. Those system issues include:

- A reliable funding model that provides the resources for operational responses (including professional salaries), systems development (including risk reductions and planning), and disaster preparedness.
- A professionally autonomous EMS system.
- A federal lead agency with adequate resources.

The EMS Education Agenda is an important foundation for the EMS system in the U.S. It is an essential component of an interrelated system that must work together in order to accomplish the ultimate goal of improved health for our communities.

Responses to Questions Regarding EMS Education Agenda 2050

1. What are the most critical issues facing EMS education system that should be addressed in the revision of the EMS Education Agenda? Please provide specific examples.

Paramedicine clinicians in the U.S. respond to 40 million calls for assistance every year.¹ These clinicians are a critical component of the health care, disaster management, public health, and public safety systems in the U.S.

The role of the “modern” emergency medical services (EMS) system has evolved since the National Research Council published the 1966 white paper titled “Accidental Death and Disability: The neglected disease of modern society.”² Since then, EMS has moved beyond just decreasing deaths from transportation accidents. Now, EMS has begun contributing to the healthcare of our communities by educating the public, providing critical services during the pandemic, identifying and treating acute and chronic disease, and even assisting in traditional public health roles through initiatives such as injury prevention and community paramedicine programs. However, the development of EMS in the U.S. has been severely obstructed by the ineffective finance systems at the federal, state and local levels.³⁻⁵

The EMS system in the U.S. achieved significant advancements during the 1970s and into the 1980s, garnering international recognition as a model to emulate. However, since the 1980s,

progress within the U.S. has lagged behind global standards. Striking examples of the significant system problems include:

- 1) Huge differences in quality of EMS care and access to EMS care in communities across the country (for example, today there can be more than a 10 times difference in a patient's chances of survival depending on which community the patient is in when they have an event such as a heart attack).⁴
- 2) Appallingly low salaries paid to paramedicine clinicians^{6,7} compared to their counterparts in professions such as law enforcement, firefighting, and nursing.⁸ While paramedicine clinicians in other countries receive salaries on par with these professions, those in the U.S. earn considerably less.^{4,9}
- 3) the 24% turnover per year in the profession.¹⁰

Consequently, over the past four decades, the higher salaries offered in other countries have enabled paramedicine clinicians to pursue their education, with an increasing number of nations now requiring or moving toward a requirement for a bachelor's degree for paramedic certification.¹¹ Conversely, the relatively low salaries in the U.S. have hindered many clinicians from furthering their education.

Today, while we contribute to the healthcare of our communities, EMS is poorly integrated into the healthcare system. EMS education must shift from a focus on acute care and transport to also communicating and working with other healthcare providers and public health, in order to have a maximum impact on the health of our populations.¹²⁻¹⁶

The primary objective of an EMS education system is to foster the development of a proficient and capable workforce within the EMS operational system. This entails equipping professionals with the necessary skills and knowledge to deliver optimal clinical care to their communities. This also translates into ensuring this education system promulgates successful end state candidates that are in compliance with all of the regulatory body directives and requirements for performing within the EMS operational environment.

Personnel

There are about a million paramedicine clinicians in the U.S.,¹⁷ about a quarter of the population is employed (most are volunteers), about a third are women,^{1,18} and about half are white¹. These dedicated professionals include emergency medical technicians (EMT), advanced EMTs, and paramedics.

As the world focuses on Diversity, Equity, and Inclusion (DEI),¹⁹ EMS must also address gaps in DEI. While Freedom House Ambulance Service was the first EMS service in the U.S. to be staffed by paramedics, and was staffed primarily by African-Americans,²⁰ as the data states above, there is still disparity in EMS. Education programs, including programs to introduce the concept of EMS, basic safety and first aid components, and career pathing should be offered in diverse communities to better allow all communities and cultures to understand the work we do, and to encourage a career or volunteer path in EMS.

Other countries have EMS operational systems that are staffed with professionals who have undergraduate and graduate degrees and who have been able to dedicate their entire careers to EMS. In the U.S., the annual turnover rate in EMS is 24%¹⁰ compared to, for example, a turnover rate for paramedics in Australia in 2018 that was 3.3%.²¹

A 24% turnover rate means that only a small proportion of the workforce has more than four years of experience. It is easy to imagine what a 24% turnover rate would mean in medicine. There would be almost no specialists, few senior physicians to train new residents, and a tiny pool of potential leaders. In police departments, a 24% turnover rate might mean having no one with the experience necessary to be a detective, or be on a bomb squad, or be in hostage negotiation, or in aviation. Professions are critically dependent on having people with 10, 15 and 20 years of professional experience. The U.S. needs to have paramedicine clinicians with 10, 15 and 20 years of professional experience.

Education or training

Our nation relies heavily on EMS professionals who courageously put themselves in harm's way to deliver critical aid to their communities. It is imperative that any Agenda supporting these professionals does so without imposing unnecessary hardships. While the authors do not propose mandating immediate enrollment in higher education programs, we strongly endorse the objective that, by a predetermined date in the future, paramedicine clinicians should hold an academic degree. This will ensure a well-educated and skilled workforce while allowing current professionals time to pursue further education at their own pace.

The longstanding debate about education or training within the EMS community²² persists, yet a simple premise remains: if our community can collectively acknowledge that a paramedic who graduated from medical school would offer superior clinical care, then it follows that education undeniably enhances clinical practice.

Some groups in the U.S. have voiced opposition to implementing academic prerequisites for paramedicine clinicians. However, this resistance reflects a narrow perspective that overlooks the intricate network of essential elements required to ensure that the profession can best accomplish its mission to deliver optimal care its communities. Achieving the mission necessitates acknowledging the interconnectedness of various components. Moreover, it's worth noting that the existing system already fulfills a significant portion of the requirements. For instance, many paramedic academic programs offer a substantial amount of college credit, often surpassing that of nursing professional education.²³

The advancement of the paramedicine profession necessitates a cohort of paramedics equipped with graduate degrees, including in education.²⁴ The EMS professionals with educational credentials play a pivotal role in shaping paramedicine program standards, adeptly utilizing emerging educational technologies such as simulation and artificial intelligence, and pioneering novel approaches essential for continuing education. Moreover, paramedics holding graduate degrees in education are crucial for conducting ongoing research aimed at identifying best practices for EMS education, and for teaching evidence-based clinical care. The Education Agenda must not only prioritize the cultivation of new clinicians but also the continuous

development of educators and preceptors who will mentor and guide the next generation of paramedicine professionals and educators.

A well-established cogent EMS education system must possess the capacity to facilitate seamless integration and collaboration between EMS education and other healthcare disciplines including nurses, physicians, and allied health professionals. Those professionals are not educated in a silo, they are educated as part of a system of care. It should be the same for EMS. In addition, EMS education has operational emergency response and public safety education components. This coherent and comprehensive discipline integration fosters opportunities for interprofessional learning and practice, enabling healthcare professionals from diverse backgrounds to collaborate effectively in delivering comprehensive patient care in any operational environment. By promoting interdisciplinary cooperation, EMS education can enhance teamwork, communication, and coordination among the public safety, public health, and the full healthcare provider enterprise, ultimately improving patient outcomes, advancing the quality of care across the healthcare continuum, and promoting EMS safety and effectiveness.

The Agenda should note that in addition to the importance of having paramedics with graduate degrees in education, there is a crucial need for paramedics with graduate degrees in various other disciplines such as disaster management, research, clinical care, management, and leadership. The continued advancement of the profession hinges upon the presence of a cohort of paramedicine clinicians who are academically prepared in diverse areas. Regrettably, the U.S. lags significantly behind in this regard. For instance, Australia has about thirty times the per-capita number of paramedics holding doctoral degrees compared to the U.S.²⁵ This glaring disparity underscores the imperative for the U.S. to prioritize academic advancement within the paramedicine field to keep pace with international standards and foster innovation and excellence within the profession.

System needs

At this moment in history, it is critically important to reevaluate the EMS Education Agenda for the future. However, while doing so, we must keep in mind that achieving education goals for the future depends largely on achieving progress in the development and advancement of the EMS profession and the EMS system in the U.S. Advancement is dependent upon a framework that supports the on-going development of the system and:

- provides appropriate salaries for paramedicine clinicians
- addresses the needs of rural and underserved areas
- actively plans for and pursues the future needs of the EMS profession and the public
- pursues the development of a professionally autonomous EMS system²⁶
- establishes an independent, adequately funded professional body at the national level
- pursues the establishment of the multiple pathways needed by the EMS profession including clinical, management, education, research, and disaster management.

In addition to the myriad of established critical emergency procedures, paramedicine clinicians are now being tasked with executing increasingly complex procedures in the field, such as blood administration and point-of-care ultrasound, amidst the evolving landscape of technological advancements. This heightened clinical responsibility places significant demands not only on the

providers themselves but also on the operational, educational, and quality improvement facets of EMS.

While advancements in patient care are undoubtedly beneficial, the existing gap in education has imposed considerable strain on services seeking to integrate these innovations. The disparity between the growing scope of practice and the level of education among EMS professionals has created significant challenges in effectively implementing new procedures and technologies. Addressing this disparity is essential to ensure that paramedicine clinicians are adequately equipped to deliver high-quality care in an ever-changing healthcare landscape.

The integration of degree requirements into the EMS education framework represents a significant advancement for the profession with far-reaching benefits. By aligning EMS professions with other healthcare disciplines, such as nursing and allied health professions, a degree-based educational pathway elevates professional recognition, enhances career mobility, improves compensation, and fosters interdisciplinary collaboration.

Degree programs offer a more comprehensive education, equipping EMS professionals with essential skills such as critical thinking, problem-solving, and a deeper understanding of medical sciences, social determinants of health, healthcare systems, ethics, etc. This broader knowledge base empowers practitioners to make informed clinical decisions and effectively adapt to evolving healthcare landscapes.

Countries like the UK and Australia have transitioned to degree-level qualifications for paramedics, resulting in notable enhancements such as expanded scopes of practice and greater integration into healthcare teams.²⁷ These advancements have led to improved clinical capabilities.^{14,28}

Adopting similar standards in the EMS Education Agenda in the United States would better prepare practitioners for the complexities of modern healthcare delivery. It would equip them to excel in roles such as community paramedicine and facilitate seamless collaboration within integrated healthcare models, ultimately enhancing the quality and efficiency of patient care nationwide.

In Germany, for example, paramedicine clinicians during the pandemic had the education and experience to not only treat patients but to help keep the health care system from becoming overburdened.²⁹ Paramedics with clinical master's degrees not only provide optimal care to their patients but can also help to alleviate pressure on overcrowded emergency departments and hospitals.³⁰

Today we could not imagine physicians, physician assistants, or nurses not having academic qualifications. Likewise, the 2000 EMS Education Agenda noted that since the 1960s, "most allied health fields instituted more and better training and have adopted educational requirements that include formal academic degrees."³¹ (page 6)

The EMS Education Agenda must unequivocally acknowledge and emphasize that any efforts to create a system in which paramedicine clinicians provide optimal care to the community will

only be successful if they incorporate an academic requirement for clinicians. Without a formal educational pathway, paramedicine clinicians will continue to face challenges in achieving the full level of recognition, standardization, and clinical excellence. Academic requirements ensure that EMS practitioners receive the comprehensive training and knowledge base necessary to provide high-quality care, make informed clinical decisions, and adapt to evolving healthcare environments. By mandating academic qualifications, EMS can align with other healthcare professions, enhance its credibility, attract top talent, create an environment that supports paramedicine clinicians to devote their careers to EMS, and ultimately will elevate the standard of care provided to our millions of patients.

The EMS Education Agenda must note and emphasize that there is no pathway to providing optimal care to our communities that does not include an academic requirement.

Improving Clinical Opportunities

Clinical experiences are fundamental to EMS education, providing students with invaluable opportunities to apply their knowledge and skills in real-world settings. However, securing adequate and diverse clinical placements poses a persistent challenge for EMS educational programs. Competition with other healthcare disciplines for limited clinical spots, coupled with the unpredictable nature of emergency medical services, exacerbates this challenge.

To address this issue, the EMS Education Agenda should prioritize advocating for strategic partnerships between EMS educational programs, hospitals, and EMS agencies. These partnerships can facilitate the creation of dedicated clinical opportunities tailored to the needs of EMS students. For instance, specialized rotations in areas such as pediatrics, obstetrics, intensive care, surgery, mental health, family medicine, and trauma can enrich students' learning experiences and prepare them for the complexities of prehospital care.

Drawing inspiration from successful models in nursing education, where university-hospital partnerships have expanded clinical placement opportunities and enhanced educational outcomes, EMS programs can similarly benefit from collaborative initiatives. By fostering stronger partnerships and leveraging shared resources, EMS education can ensure that students receive comprehensive and diverse clinical training, ultimately enhancing the quality of care provided by future EMS professionals.

Mental Health Resilience Protection

The mental health and wellbeing of EMS professionals are of paramount concern, given their high exposure to traumatic incidents, critical stress, and the overall demanding nature of their work. Initial education on mental health resilience and protection strategies is not just beneficial but essential for preparing paramedicine clinicians to manage the psychological challenges of the job. Incorporating comprehensive mental health training within the EMS education curriculum can equip future clinicians with the tools to recognize signs of mental health struggles, apply coping mechanisms, and seek professional help when needed. Programs like the Road to Mental Readiness (R2MR) in Canada,³²⁻³⁴ initially developed for military personnel and adapted for first responders, offer a framework for mental health education that could be integrated into EMS

programs. Such initiatives can foster a culture of mental health awareness, resilience, and support within the EMS community, ultimately enhancing the longevity and quality of practitioners' careers.

Improving clinical outcomes

The ultimate goal of the EMS system is to provide the best possible care for our communities. However, the fragmented and underfunded system in the U.S. has clinical outcomes that vary dramatically across the country. One report noted that a patient's chances of surviving a ventricular fibrillation varies from 45% to 3% depending on where you are when your heart stops beating.³⁵ The fragmented and underfunded system has also resulted in many communities across the country having essentially no access to EMS.³⁶ The Agenda can help improve clinical outcomes through both education and advocacy for improved system coordination and increased system funding.

2. What progress has been made in implementing the EMS Education Agenda since 2000?

A goal of the 2000 Agenda was “There will be a variety of outstanding instructional materials including instructor lesson plans available from publishers, educational institutions, and other interested parties to support local EMS instruction. EMS instructors will utilize published materials or develop their own for classroom use.” Where we want to be is having EMS educators who have graduate degrees in education to create those outstanding EMS instructional materials. Having a sufficient number of academically prepared EMS educators is predicated on having a pipeline of educated paramedicine clinicians who can advance into education leadership roles. Nursing, for example, has recognized the critical role of nurses with graduate degrees in education.^{37,38}

We cannot expect publishers or other non-EMS professionals to design the ideal EMS education system for us. It is our responsibility as EMS professionals to take ownership of this task. To succeed in this endeavor, our profession requires a cadre of paramedics with graduate degrees in education. These individuals will play pivotal roles in shaping and improving EMS education, both in operational settings and as university faculty members.

By having paramedics with graduate degrees in education actively involved in the development and implementation of EMS education programs, we can ensure that the curriculum is tailored to the unique needs and challenges of our profession. These individuals can bring firsthand experience from the field combined with expertise in educational theory and practice to create effective and innovative educational strategies.

Furthermore, having paramedics with graduate degrees in education as university faculty members can enrich the academic environment by providing students with insights and perspectives grounded in real-world EMS practice. Their presence can also help bridge the gap between academia and practice, fostering greater collaboration and mutual understanding between these two spheres.

In summary, it is essential that EMS professionals take the lead in shaping the future of EMS education. By investing in the development of paramedics with graduate degrees in education and actively involving them in educational initiatives, we can ensure that EMS education meets the highest standards of quality and relevance, ultimately benefiting both current and future generations of EMS providers.

3. How have you used EMS Education Agenda? Please provide specific examples.

4. As an EMS Stakeholder, how might a revised EMS Education Agenda be most useful to you?

Those with a forward-looking vision for the future of EMS understand that an Education Agenda will be most effective when it not only outlines future goals but also offers practical tools and pathways for achieving them. The document can also serve as a foundational framework upon which the EMS community can build and share information.

By articulating clear goals and providing actionable strategies, the Education Agenda empowers EMS stakeholders to identify areas for improvement and implement targeted initiatives within their local systems. It serves as a guiding beacon, inspiring collaboration, innovation, and continuous improvement across the EMS landscape.

Moreover, the Education Agenda facilitates knowledge sharing and collaboration among EMS professionals, educators, policymakers, and other stakeholders. By fostering a culture of open dialogue and information exchange, it enables the collective wisdom of the EMS community to drive progress and innovation in education and practice.

In essence, the Education Agenda can serve as a dynamic roadmap for advancing EMS education and practice, providing the necessary guidance and resources for realizing our collective vision for the future of EMS. Through ongoing collaboration and dedication to continuous improvement, we can navigate the evolving challenges and opportunities facing the EMS profession, ultimately enhancing the quality of care and outcomes for patients and communities alike.

5. What significant changes have occurred in the EMS education system at the national, Federal, State, and local levels since 2000?

Many decades ago, the EMS education system benefited from an abundant pool of 20-year-olds eager to pursue careers as EMS professionals. However, by 2005, there was a notable shift in EMS personnel preferences, with many expressing a preference for education programs that conferred college credit or licensure rather than professional certification alone.³⁹ This shift underscored a growing recognition within the EMS community of the value of formal education in advancing their careers and professional development.

Today, the EMS education landscape faces a different reality compared to decades ago. The supply of young adults eager to pursue careers as paramedicine clinicians is not limitless. Furthermore, the EMS profession has yet to fully address the needs of those professionals who seek college credit rather than just professional certification.

This shift in demographics and preferences highlights the evolving demands of the EMS workforce. It underscores the importance of adapting EMS education programs to meet the expectations and aspirations of today's professionals. By offering educational pathways that provide college credit alongside professional certification, EMS programs can attract and retain a diverse pool of talent while equipping practitioners with the knowledge and skills needed to excel in their roles.

In the United States, there has been minimal significant changes in the EMS education system since 2000. Meanwhile, other countries have made substantial strides in developing and expanding their undergraduate and graduate EMS education programs.

These international advancements underscore the importance of continuous innovation and evolution within EMS education. While other countries have embraced the need for higher education qualifications in EMS, the U.S. has lagged behind in implementing similar changes.

This discrepancy highlights the urgent need for reform and modernization within the U.S. EMS education system. By adopting best practices from around the world and incorporating advancements in educational methodologies and curricula, the U.S. can better prepare EMS professionals to meet the evolving challenges of modern healthcare delivery.

Ultimately, prioritizing investments in EMS education and training is essential for ensuring that EMS professionals have the knowledge, skills, and qualifications needed to provide high-quality care and support to their communities.

6. What significant changes will impact the EMS education system in the next 25 years?

Online education, augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) will all impact EMS education internationally. Only through a recognition of the value of these technologies, and the support to be able to acquire, master, and deploy the technologies, will there be any successful efforts to pursue the full benefits that these technologies can offer. In other countries, paramedicine clinicians a decade ago were having their students do VR scenarios in their living rooms that were helping them to become expert clinicians.

The integration of online education, AR, VR, and IA into EMS education represents a transformative shift, offering unparalleled opportunities for immersive learning, flexibility, and access to cutting-edge training simulations. These technologies can replicate complex medical scenarios, allowing learners to practice procedures, decision-making, and critical thinking skills in a risk-free environment. However, the reliance on these digital learning modalities introduces

significant challenges, particularly regarding the social and experiential aspects of learning that are intrinsic to the development of well-rounded EMS professionals.

One of the fundamental limitations of heavily digitalized EMS education, encompassing online platforms, AR, and VR, is the diminished capacity for social interaction and the rich, nuanced exposure to diverse cultural and educational backgrounds that traditional educational settings provide. Interaction with peers, educators, and patients in a variety of real-world situations cultivates soft skills such as communication, empathy, and teamwork. These interactions are critical for developing a deep understanding of patient care, which extends beyond clinical skills to include cultural competence, ethical decision-making, and the ability to navigate complex emotional landscapes.

As an example, if you think back to when you were in grade school the first time you may have met someone who came from a different religious background or a different race, this occurred in the classroom. These interactions formed the basis for your transition to other points in life, including your first job for example.

If we take this to the EMS environment, in traditional clinical settings, EMS students are exposed to a wide array of patient demographics and conditions, necessitating adaptations in communication styles and patient care approaches that reflect cultural sensitivities and individual patient needs. This direct exposure is vital for preparing students for the realities of pre-hospital care, where encounters with diverse populations are the norm. The transition to clinical environments can be notably smoother for those who have had the benefit of such interactions during their education, as they likely are better equipped to engage effectively and empathetically with patients and colleagues from day one.

However, in educational frameworks that rely predominantly on online, AR, and VR methodologies, there is currently a notable absence of these dynamic, interpersonal experiences. While these technologies offer significant advantages in terms of scalability, accessibility, and the ability to simulate medical procedures, they cannot fully replicate the subtleties of human interactions and the richness of learning that occurs in multi-cultural and multi-disciplinary settings.

Addressing this challenge necessitates a deliberate and thoughtful integration of digital and traditional learning modalities. Solutions might include hybrid models that combine the strengths of online and immersive technologies with face-to-face learning experiences and clinical placements. Structured peer interaction opportunities, such as virtual study groups, online discussion forums, and collaborative projects, can also help mitigate the shortfall in social learning. Furthermore, the development of AR and VR simulations that incorporate interactive components with AI-generated patients or avatars representing diverse backgrounds could enhance cultural competency training within a digital framework.

Ultimately, the goal should be to create an EMS education ecosystem that leverages the best of both worlds: the innovation and accessibility of digital learning tools, complemented by the invaluable human-centric experiences that traditional educational pathways offer. By acknowledging and addressing the limitations of online and immersive technologies in fostering

essential social interactions and cultural competencies, EMS education can evolve to produce highly skilled, empathetic professionals ready to meet the complex demands of pre-hospital care.

Further, the EMS education system must become more integrated with the medicine, nursing, public health, and allied health education systems that support professionals to participate in cross-disciplinary educational programs.

Finally, the U.S. is in the midst of a health care worker shortage that is projected to get worse; at the same time, an aging population is putting more pressure on the already strained system.⁴⁰ A well-developed EMS education system could help mitigate the impact of these shortages and deficits.

These potentially massive beneficial changes will not be realized in the U.S. without the development of an education system that provides an academic structure to support the harnessing and utilization of those new capabilities.

7. How might the revised EMS Education Agenda contribute to enhanced EMS for children?

The revised EMS Education Agenda can play a crucial role in enhancing EMS for children by incorporating specific strategies and initiatives tailored to pediatric care. For example:

- Updated / Enhanced Pediatric-focused Curriculum: The Education Agenda can prioritize the development and integration of updated pediatric-focused content into EMS education curricula. This includes topics such as pediatric assessment, management of pediatric emergencies, and age-appropriate communication techniques.
- Simulation Training: Incorporating pediatric simulation training into EMS education programs can help providers gain hands-on experience in managing pediatric emergencies in a safe and controlled environment. Simulation exercises can cover a wide range of scenarios, from neonatal resuscitation to pediatric trauma care.
- Interdisciplinary Collaboration: The Education Agenda can emphasize the importance of interdisciplinary collaboration in pediatric EMS. Encouraging partnerships between EMS providers, pediatricians, emergency department staff, and other healthcare professionals can improve communication and coordination of care for pediatric patients.
- Specialized Pediatric Training Programs: Supporting the development of specialized training programs for EMS providers focused solely on pediatric care can ensure that providers have the knowledge and skills needed to deliver high-quality care to children of all ages.
- Continuing Education: The Education Agenda should promote ongoing professional development opportunities for EMS providers in pediatric care. This includes access to pediatric-specific conferences, workshops, and online resources to stay updated on the latest evidence-based practices and guidelines.

- Quality Improvement Initiatives: Implementing quality improvement initiatives focused on pediatric care can help identify areas for improvement and enhance the overall quality of pediatric EMS services. Regular review of pediatric cases, feedback mechanisms, and performance metrics can drive continuous improvement efforts.
- Community Engagement: The Education Agenda can encourage EMS agencies to engage with the community to raise awareness about pediatric emergencies and promote injury prevention strategies. This includes providing education to parents, caregivers, and schools on topics such as CPR, choking prevention, and car seat safety. These are all issues that in the past EMS had engaged with the community, but support and funding has been sporadic.

By incorporating these strategies into the revised EMS Education Agenda, EMS systems can enhance their capacity to provide optimal care to pediatric patients, ultimately improving outcomes and reducing morbidity and mortality in this vulnerable and unique population.

8. How might the revised EMS Education Agenda support and/or promote data-driven and evidence-based improvements in EMS education systems and EMS practitioner practice?

Data-driven and evidence-based improvements in EMS requires cadres of graduate-prepared paramedicine clinicians to develop data systems, conduct research, and publish recommendations for improved EMS practices. The revised EMS Education Agenda could support and promote those improvements by creating pathways for paramedicine clinicians to develop an academic foundation and expertise in these areas.

EMS data primarily focuses on data internal to the EMS agency, instead of focusing on the impact to the healthcare of the community. Many measurements focus on response and scene times, successful and unsuccessful attempts of procedures, and medications utilized. EMS should consider measurements that impact the community, such as incidence of diabetes and increase or decrease in diabetic emergencies, trauma reduction (e.g., falls among the elderly, teenage drunk driving related injuries, etc.) through outreach programs, and increase or decreases in family medicine visits (by having EMS collaborate with the patient, versus making a decision to refuse or transport).

As we reassess the EMS Education Agenda for the Future, we must also recognize that accomplishing educational objectives for the future is contingent upon making strides in the development and enhancement of the EMS profession and the EMS system in the U.S. Progress hinges on establishing a framework that fosters the continual evolution of the system and:

- Investment in Infrastructure: Allocating resources towards improving infrastructure, including equipment, technology, and facilities, to ensure optimal functioning of the EMS system.
- Training and Professional Development: Providing comprehensive training and continuous professional development opportunities for EMS practitioners to enhance their skills, knowledge, and capabilities.

- Research and Innovation: Encouraging research initiatives and fostering a culture of innovation within the EMS community to drive advancements in clinical practices, protocols, and technologies.
- Collaboration and Integration: Promoting collaboration and integration among EMS providers, healthcare institutions, public health agencies, and other stakeholders to facilitate seamless coordination and delivery of care.
- Advocacy and Recognition: Advocating for the recognition of EMS as an essential component of the healthcare system and advocating for policies and initiatives that support the professional growth and well-being of EMS practitioners.

By prioritizing these key areas and fostering a supportive environment for the ongoing development of the EMS system, we can pave the way for achieving the educational goals essential for the future success of the profession.

The mental health and well-being of EMS professionals are paramount, given the intense exposure to traumatic incidents and critical stress inherent in their work. Providing initial education on mental health resilience and protection strategies is not only beneficial but essential for preparing paramedicine clinicians to effectively manage the psychological challenges of their profession.

Incorporating comprehensive mental health training within the EMS education curriculum is crucial to equipping future clinicians with the necessary tools to recognize signs of mental health struggles, apply coping mechanisms, and seek professional help when needed. Programs such as the Road to Mental Readiness (R2MR) in Canada,³² initially developed for military personnel and adapted for first responders, offer a proven framework for mental health education that could be seamlessly integrated into EMS programs.

By implementing such initiatives, EMS education can foster a culture of mental health awareness, resilience, and support within the EMS community. This, in turn, can significantly enhance the longevity and quality of practitioners' careers while promoting overall well-being and resilience in the face of the unique challenges encountered in the field.

Paramedicine clinicians should be trained for cultural literacy for several important reasons:

- Effective Communication: Cultural literacy training helps EMS responders understand diverse cultural norms, beliefs, and communication styles. This enables them to effectively communicate with patients from different cultural backgrounds, enhancing patient-provider interactions and ensuring accurate information exchange.
- Respect for Diversity: Cultural literacy training promotes respect for cultural diversity and sensitivity towards patients' beliefs, values, and practices. Respecting cultural differences fosters trust and rapport between EMS responders and patients, leading to better patient outcomes and satisfaction.
- Tailored Care: Cultural literacy training enables EMS responders to provide culturally competent care that considers patients' cultural preferences and needs. This may involve adapting treatment approaches, considering dietary restrictions, or involving family members in decision-making, ultimately improving the quality of care delivered.
- Addressing Health Disparities: Cultural literacy training equips EMS responders with the awareness and skills needed to address health disparities that may exist among different

cultural groups. By understanding the social determinants of health and cultural factors influencing health behaviors, responders can advocate for equitable care and support marginalized populations.

- **Conflict Resolution:** Cultural literacy training includes strategies for navigating cultural differences and resolving conflicts that may arise during patient interactions. This helps EMS responders navigate and de-escalate challenging situations with cultural sensitivity and professionalism, working towards ensuring safe and positive outcomes for patients and providers alike.

Overall, cultural literacy training for EMS responders is essential for promoting patient-centered care, reducing health disparities, and fostering inclusivity within the healthcare system. By valuing cultural diversity and incorporating cultural competence into their practice, EMS responders can better serve the needs of all individuals in their communities.

The present curricula adequately address the basic clinical skills necessary for the positions sought, however, it tremendously fails to address the operational environment for which these aspiring professionals will find themselves functioning. In fact, a student (career or volunteer) who completes the present education construct, in most cases, will still find themselves requiring numerous classes and many hours of education to satisfy federal regulatory requirements for operating in the field—including but not limited to: 29CFR1910.120(q), HSPD-5 (ICS100, 200, 700, 800), highway operations, and various other OSHA safety standards. Moreover, in many instances, students can complete the present training without being required to complete EVOC and have little to no familiarization with the litany of rescue or disaster scenarios they may have to respond to on day one. Incorporating comprehensive emergency operations and rescue is essential for ensuring a comprehensive and effective emergency response and clinical operations at these complex scenes.

Emergency medical services responders play a vital role in providing immediate medical care during emergencies in chaotic and uncontrolled environments where their responsibilities often extend beyond medical treatment. Educating EMS responders in emergency operations and rescue is essential for several reasons:

- **Comprehensive Response Capability:** EMS responders are frequently the first on the scene during emergencies, including natural disasters, mass casualty incidents, and highway vehicle crashes. By being trained in emergency operations and rescue techniques, they can provide a more comprehensive response, addressing both medical and non-medical needs safely and effectively.
- **Scene Safety:** In many emergency situations, the scene may be hazardous due to factors such as structural damage, fire, or hazardous materials. Training in emergency operations ensures that EMS responders can assess scene safety effectively, minimizing risks to themselves, patients, and bystanders.
- **Extrication and Rescue:** EMS responders often encounter patients who are trapped or require extrication from vehicles, buildings, or other precarious situations. Proper training in rescue techniques equips responders with the skills and knowledge needed to both operate safely on the scene and to safely extricate patients while providing critical care. Remember that we do rescue for patient care... not patient care for rescue... this evolution's primary obligation is the removal of the mechanism of injury; the EMS responders should be forefront during this process to ensure the best interventions and to avoid exacerbating the prevailing injuries.

- Collaborative Efforts: Effective emergency response requires collaboration among various agencies and disciplines, including fire departments, law enforcement, and search and rescue teams. Training EMS responders in emergency operations fosters a better understanding of interagency roles and responsibilities, facilitating seamless coordination during complex incidents and ensuring that the medical concerns for the affected and the other responders are primary and not a command footnote.
- Expedited and Enhanced Patient Care: EMS responders can safely expedite access to patients, initiate life-saving interventions, and stabilize patients for transport to medical facilities. This integrated approach to patient care improves outcomes and maximizes the chances of survival and recovery.
- Preparedness for All Hazards: Emergencies come in various forms, from natural disasters to terrorist attacks. Comprehensive training of EMS responders in emergency operations and rescue prepares them to respond effectively to a wide range of incidents, ensuring their safety and readiness for any scenario they may encounter in the field.

9. How could the revised EMS Education Agenda enhance collaboration among EMS systems, health care providers and facilities, public safety answering points, public health, public safety, emergency management, insurers, and others?

In the future, students in paramedicine bachelor's degree programs could participate with their academic colleagues in other disciplines where they would not only learn about those other professions but also be educating those other students about the paramedicine profession. One of the major benefits of the revised Agenda could be to support the integration of EMS education into the higher education system and from there a more integrated approach to educating all medical and health professionals.

One of the primary ways the revised Agenda can enhance collaboration is through the strategic integration of interdisciplinary training programs. By incorporating collaborative training exercises that involve multiple stakeholders, EMS professionals can gain a deeper understanding of the roles, responsibilities, and operational protocols of their counterparts in healthcare facilities, public health, emergency management, public safety, and other related fields. This understanding is crucial for facilitating seamless patient handovers, coordinating multi-agency response to public health emergencies, and engaging in comprehensive disaster preparedness and response efforts. Interdisciplinary training programs have the potential to illuminate and address problems that may occur in the future. While a resolution may not be easily obtainable, being aware of the problem will lessen the blow if it occurs.

Today in many universities, nursing students, medical students, and allied health students are all sharing experiences together. These integrated experiences have the value of helping each of the students develop a better understanding and appreciation for the roles, responsibilities and capabilities of the other professions.

An example of an interdisciplinary education program is the Urban Service Track/AHEC Scholars program, where participants represent a select group of students enrolled in the UConn Schools of Pharmacy, Nursing, Medicine, Dental Medicine, Social Work, and Quinnipiac

University's Physician Assistant Program. This program provides an opportunity for students to interact with peers from other disciplines, while developing a broad understanding of the many social factors that influence the health of their patients.⁴¹ Programs such as these help clinicians develop broad understanding of the many health system factors that contribute to the health of a community.

In another example simulation exercises that replicate large-scale emergency scenarios can help forge effective communication channels and teamwork strategies among EMS, hospitals, public safety, and emergency management agencies.

These types of experiences will help future paramedicine clinicians to not only be better clinicians but also to be better system planners as they develop the EMS systems of the future.

10. How could the revised EMS Education Agenda be used to promote community sustainability and resilience?

Integration of Public Health Principles

One of the primary strategies for promoting community sustainability and resilience through the revised EMS Education Agenda is the integration of public health principles into EMS training. By understanding public health concepts, EMS professionals can identify and address the broader health needs of the communities they serve, beyond responding to acute emergencies. This includes recognizing patterns of disease, understanding social determinants of health, and participating in health promotion and disease prevention initiatives. EMS professionals, with their unique position within communities, can act as frontline public health advocates, educating the public on health risks and prevention strategies, thus contributing to a healthier, more resilient population.

An early example of how paramedicine clinicians can impact community health occurred in Pinnellas County Florida. There, paramedics saw that the pediatric drowning rate was increasing, and they developed and implemented a project that ultimately cut the pediatric drowning rate in half.⁴² Future projects could focus on reducing teenage drunk driving, or falls among the elderly. Paramedicine clinicians could be uniquely qualified to help dramatically reduce risks and improve health in their communities.

Disaster Preparedness and Response Training

The revised EMS Education Agenda can emphasize disaster preparedness and response training, equipping EMS professionals with the skills needed to respond effectively to natural disasters, man-made disasters, pandemics, and other emergencies that can impact community sustainability.⁴³ This involves not only technical skills for emergency response^{44,45} but also training in coordination with other emergency services, disaster risk reduction strategies, and community disaster planning. By being prepared to respond to disasters and assist in recovery

efforts, EMS professionals can help mitigate the impact of such events on communities, thereby enhancing resilience.

11. How could the revised EMS Education Agenda contribute to improved coordination for disaster response, recovery, preparedness, and mitigation?

Enhanced Interdisciplinary and Interagency Training

Emphasizing interdisciplinary and interagency training through simulations and exercises is essential for fostering effective collaboration and coordination among various stakeholders in emergency response. Involving EMS, law enforcement, fire services, public health officials, emergency management agencies, local elected officials, and other relevant parties in joint exercises helps cultivate mutual understanding of roles, capabilities, and limitations.

Simulations and exercises provide a controlled environment for stakeholders to practice communication, decision-making, and operational alignment in complex emergency scenarios. For instance, tabletop exercises that simulate a large-scale disaster scenario can help stakeholders anticipate challenges, identify gaps in response plans, and develop strategies for overcoming obstacles collaboratively.

By engaging in joint exercises, stakeholders can enhance their ability to work together seamlessly during actual disaster events, leading to more efficient and coordinated responses. This collaborative approach also promotes trust, mutual respect, and a shared sense of responsibility among stakeholders, which are crucial for effective emergency management.

Furthermore, interdisciplinary and interagency training can uncover opportunities for improvement in policies, procedures, and resource allocation across agencies. It enables stakeholders to learn from each other's experiences, share best practices, and develop innovative solutions to common challenges.

Overall, incorporating simulations and exercises that involve multiple stakeholders into the EMS Education Agenda fosters a culture of collaboration, preparedness, and resilience within the emergency response community. By practicing together, stakeholders can better serve their communities and mitigate the impact of disasters and emergencies.

Paramedicine clinicians with master's degrees in disaster planning could not only develop and lead initiatives such as these, but also serve as local community disaster response leaders.

Specialized Disaster Management Education

Integrating specialized modules on disaster management into the EMS academic curriculum can greatly bolster preparedness and response capabilities among paramedicine clinicians. These modules would encompass various crucial topics such as disaster medicine, responder safety,⁴⁶ mass casualty incident management, triage protocols in disaster settings, psychological first aid, and disaster risk reduction strategies.

By including these specialized modules in their education, EMS professionals gain a comprehensive understanding of the unique challenges and complexities associated with disaster response and recovery. They learn evidence-based practices and protocols for effectively managing mass casualty incidents, providing medical care in resource-constrained environments, and addressing the mental health needs of survivors and responders.

Specialized training in disaster management equips EMS professionals with the skills and knowledge to collaborate seamlessly with other emergency responders and agencies during large-scale emergencies. This interdisciplinary approach fosters effective communication, coordination, and teamwork, which are essential for ensuring a cohesive and efficient response effort.

Furthermore, by emphasizing disaster risk reduction strategies, EMS professionals can contribute to building more resilient communities that are better prepared to withstand and recover from disasters. They can engage in community outreach and education initiatives to raise awareness about disaster preparedness, promote preventive measures, and empower individuals to take proactive steps to mitigate risks.

In essence, introducing specialized modules on disaster management within the EMS academic curriculum enhances the overall preparedness and response capabilities of EMS professionals. By equipping them with the necessary knowledge and skills, these modules enable EMS professionals to fulfill their critical role in safeguarding public health and safety during times of crisis.

Paramedicine clinicians with disaster management graduate degrees will possess a deep understanding of these areas, can better anticipate the challenges and complexities of disaster response and recovery, can educate disaster responders, and can implement evidence-based practices that minimize the impact of such events on affected communities.

12. How could the revised EMS Education Agenda enhance the exchange of evidence-based practices between national, Federal (and military), State, and local levels?

Today we know that paramedicine clinicians have one of the most dangerous jobs in the U.S.^{18,47} Violence, transportation events and back injuries all contribute to those risks. Anecdotal reports indicate that many of the 20,000 EMS agencies in the U.S. have done interventions to try to reduce these risks. However, there are almost no published reports on the outcomes of the interventions. As a result, year after year, agencies across the country reinvent the wheel by implementing interventions that may have already been tried many times. This massive waste of limited resources would be reduced if there was an exchange of evidence-based practices among the country's EMS agencies.

With an educated cadre of writers, exchanges of evidence-based practices between national, Federal (and military), State, and local levels could also be done for a myriad of topics including ambulance deployment, clinical care, scheduling, community injury prevention programs, etc.

A revised EMS Agenda could also help determine if the federal oversight of EMS should remain under the Department of Transportation, or would it be better served through the creation of the U.S. EMS Administration, or an Assistant Secretary of EMS under Health and Human Services. Currently there is a disparity between law enforcement, fire, and EMS when it comes to federal support and resources. While EMS is provided by some fire services (and some law enforcement agencies, and some hospitals), it is a specialty of its own, and should have its own federal support system. The critical importance of a sufficiently funded federal EMS lead agency has previously been noted;⁵ in 2007 the National Academy of Sciences recommended that the EMS lead agency be housed in the Department of Health and Human Services.⁴ Perhaps more important than where it is located is the critical need for it to be adequately resourced.

13. How could the revised EMS Education Agenda support the seamless and unimpeded transfer of military EMS personnel to roles as civilian EMS providers?

Numerous anecdotal reports note the many highly trained, highly experienced military medics who return to civilian life but do not take civilian EMS positions because of the pay and because the process to become credentialed is too much of a burden. At the same time, physicians and nurses who transition from military to civilian careers are faced with neither of the problems and instead find that the military experiences enhanced their careers. The Agenda could recommend that a committee be formed to determine the factors that make the transition effective for other health care professionals and create recommendations for improving the process for paramedicine clinicians.

The revised EMS Education Agenda can also play a pivotal role in facilitating the seamless and unimpeded transfer of military EMS personnel into civilian EMS roles by addressing several key areas of compatibility, accreditation, and transitional education.

- Recognition and Accreditation of Military Training. Most of this can be addressed through developing crosswalks between the military and civilian competencies. The EMS Education Agenda should provide the framework for a crosswalk, or at the bare minimum suggest that one be developed. Most of what is required from military medics is probably covered during their initial education. Develop detailed mappings that identify how military EMS training and experiences align with civilian standards. This involves recognizing military training programs and experiences as equivalent to or exceeding civilian certifications, where applicable.
- Accreditation of military training programs to CAAHEP standards. This would significantly reduce redundant training and facilitate a smoother transition.
- Bridging educational gaps in the training/education that military EMS personnel receive. While military EMS personnel receive extensive training, there may be gaps between their training and the competencies required in civilian settings. The EMS Education Agenda can support the development of transition courses/bridge courses that focus on filling those specific gaps between military and civilian EMS competencies.
- Participation in continuing education programs, where military personnel are encouraged to use continuing education as a means to acquire the specific KSA's needed for civilian practice. These may be military specific continuing education, but even better would be to

- leverage state, regional, and national conferences to provide programs geared to military-civilian EMS transition.
- Mentorship programs. Establish mentorship programs pairing transitioning military EMS personnel with experienced civilian EMS providers. This can help with understanding the cultural nuances of civilian EMS work and building professional networks.
 - Advocating for state and federal policy changes by working with regulatory bodies and legislators to remove unnecessary barriers for military EMS personnel transitioning to civilian roles. This includes advocating for laws and regulations that recognize and facilitate the transfer of military EMS certifications to civilian credentials.
 - Build partnerships between military and civilian EMS organizations to support research, education, and policy initiatives aimed at easing the transition process.

14. How could the revised EMS Education Agenda support interstate credentialing of EMS personnel?

15. How could the revised EMS Education Agenda support improved patient outcomes in rural and frontier communities?

In countries that have state-based ambulance services, all the residents of the state have access to the same service. Queensland, Australia, for example, is about three times the size of Texas and has one ambulance service that covers the entire state. In the U.S., the fragmented EMS system leaves four out of every five counties with ambulance deserts where the closest ambulance is far away and there is no access to immediate help.³⁶

Improving patient outcomes in rural and frontier communities requires an updated EMS Education Agenda that provides a strong education base for all paramedicine clinicians, and also supports the development of new educational approaches that will better meet the needs of rural and frontier clinicians. The Agenda should also note the need to educate the clinicians about the special health care needs of rural and frontier communities.

However, the Education Agenda is not a solution by itself. In order to provide optimal care for all people in the U.S., the country must address its fragmented EMS system and, where appropriate, transition to state-based EMS systems. State-based EMS systems meld paid and volunteer paramedicine clinicians with helicopter and air transport systems to provide optimal coverage for everyone living in, or visiting, the community.

16. How could the revised EMS Education Agenda lead to improved EMS systems in tribal communities?

17. How could the revised EMS Education Agenda promote a culture of safety among EMS personnel, agencies, and organizations?

Today, EMS is a highly dangerous profession with occupational fatality and injury rates far above the national average for all occupations.^{18,47} Violence,⁴⁸⁻⁵⁰ transportation incidents,⁵¹ exposures,⁵² diseases,^{53,54} disasters,⁴⁶ and lack of appropriate PPE,^{9,25,53,55} all contribute to the many occupational risks.^{56,57} A recent newspaper article documented 363 violent incidents in one year against EMS personnel in an agency with about 4,500 EMS personnel.⁵⁸

A revised EMS Education Agenda has the potential to foster a culture of safety among EMS personnel, agencies, and organizations by prioritizing the development and implementation of solutions aimed at improving safety outcomes.^{59,60} Institutionalizing this philosophy and skill set driven by the various regulatory bodies and consensus standards organizations within the educational structure, will mean not being reliant on “merit badge” classes that may not fully address the critical risks that threatens the health and safety of paramedicine clinicians.

Components of this initiative must address and include:

- **Intervention Research:** The Education Agenda should support the funding of intervention research projects aimed at identifying and addressing safety hazards and risks within the EMS environment. This research can inform evidence-based interventions and best practices for promoting safety among EMS personnel. Such funding could also help support the development of paramedicine clinician researchers who can meld their EMS experiences with academic approaches to develop best practices for provider safety.
- **Better Training:** The Education Agenda can advocate for the integration of comprehensive safety training into EMS education programs that complies with all of the regulatory requirements imposed for the operating environments. This includes training on topics such as, but not limited to scene safety, infection control, disasters, hazardous materials emergencies, mass transportation events, collapses, personal protective equipment (PPE) usage, ergonomic techniques for lifting and moving patients, and strategies for managing workplace stress and fatigue. By equipping paramedicine clinicians with the knowledge and skills to identify and mitigate safety risks, the Education Agenda can help prevent injuries and incidents in the field. Clearly, a professional working group of senior experienced EMS professionals will need to be convened to work through identifying the most important scenarios that should be addressed initially with that list becoming the foundation for expanding to embrace other unique threat events that may be of regional concern.
- **Standardized Safety Protocols:** The Education Agenda can support the development, testing, and dissemination of standardized safety protocols and guidelines for EMS agencies and organizations to follow. These protocols can address common safety concerns such as vehicle operations, equipment maintenance, infection control practices, lifting, and violence prevention and de-escalation strategies. By promoting consistency and adherence to best practices, standardized safety protocols can help create a safer working environment for EMS personnel.

- Culture Change: The Education Agenda can encourage a shift towards a culture of safety within the EMS profession, where safety is prioritized and valued at all levels of the organization. This involves promoting open communication, reporting systems for safety concerns, and a commitment to continuous improvement in safety practices. By fostering a culture of safety, EMS agencies and organizations can create an environment where EMS personnel feel empowered to speak up about safety issues and take proactive steps to address them.

Overall, a revised EMS Education Agenda can play a crucial role in promoting a culture of safety within the EMS profession by supporting research, training, standardized protocols, and culture change initiatives aimed at improving safety outcomes for EMS personnel. Our mission should be to move EMS from being one of the most dangerous professions to being one of the safest professions.

18. Are there additional EMS attributes that should be included in the revised EMS Education Agenda? If so, please provide an explanation for why these additional EMS attributes should be included.

With the anticipated shortages of hundreds of thousands of physicians and nurses in the near future,⁴⁰ the Agenda should include an emphasis on how paramedicine clinicians can help reduce the impact on a strained health care system by treating some patients at home. For example, in other countries community paramedic programs have been very successful at preparing clinicians to treat a wide variety of conditions at home.^{14,61,62}

An example of a real-world need is the current state of EMS academic education. Today, EMS academic programs are largely taught at community colleges, and the content has been assigned to first- and second-year courses. Many of these courses should, and will need to be, transitioned to third- and fourth-level academic programs and offered at the bachelor's degree level. The Education Agenda could help facilitate that transition.

A component of the EMS Agenda should be to educate the public. For years, we've created these documents aimed at relatively small groups of potential readers. Instead, we should also be educating the public about the accomplishments of EMS, as well as the real challenges that EMS is facing today; challenges that are obstructing our ability to provide the best possible care for our communities. These challenges include inadequate system funding, poor salaries, high occupational risks, high turnover of paramedicine clinicians, and system fragmentation. A component of the Education Agenda should be written to educate the public.

19. Are there EMS attributes in the 2000 EMS Education Agenda that should be eliminated from the revised edition? If so, please provide an explanation for why these EMS attributes should be eliminated.

No. The objectives and goals of the 2000 EMS Education Agenda are both inspirational and aspirational. We may not be able to implement all of the elements contained within, but they represent an opportunity to plant the flag for successive generations to achieve those goals.

Think about it like this: the achievements that EMS has accomplished to date would not have been possible 40 years ago, but technology has catapulted us into the future. Identifying a patient with a STEMI, and being able to transport them to specific center to manage their care was a mere idea 40 years ago, but now is the standard of care. POCUS has the potential to radically change the resuscitation landscape, as does portable EEG's in relation to patients with large vessel occlusion stroke.

It is the same with the 2000 EMS Education Agenda.

20. What are your suggestions for the process that should be used in revising the EMS Education Agenda?

The development of the EMS Education Agenda should be led and controlled by paramedicine professionals. If this was a process to create a nursing, medicine, firefighting, or police education agenda, those directly involved in the profession would be leading the process and their expertise and perspectives would be recognized as invaluable in shaping the direction and priorities of the educational framework.

Paramedicine professionals possess unique insights into the challenges, needs, and opportunities within their field. They understand the intricacies of EMS practice, the demands of the job, and how the evolving landscape of healthcare delivery intersects with EMS. Therefore, they are best positioned to identify the educational goals, competencies, and training requirements necessary to prepare future EMS practitioners for success.

While input from other professions is welcome, and can provide valuable perspectives and insights, ultimately, decisions regarding the EMS Education Agenda should be made by career paramedicine professionals. This will ensure that the Agenda is tailored to the specific needs and realities of EMS practice, promoting the highest standards of education and training.

21. What specific agencies/organizations/entities are essential to involve, in a revision of the EMS Education Agenda?

The essential organizations are those that focus on the EMS profession including IAEMSC, NAEMT, and the NHTSA EMS Office.

22. Do you have any additional comments regarding the revision of the EMS Education Agenda?

All roads must lead to a professionally autonomous EMS system in the U.S.^{26,63} This is not just a grand aspiration, it is a necessary precursor to the development of an EMS system that provides the most effective and efficient care to the citizens of the U.S. A professionally autonomous system is also necessary to support a workforce dedicated to the provision of paramedicine clinical care. The current condition of losing a quarter of the workforce every year is both unsustainable and counterproductive. Every effort must be made to create working conditions that allow dedicated professionals to have full careers as paramedicine clinicians.

To some, this may seem like an unrealistic goal, but it seeks no more than what other professionals have sought and gained. In the early days of emergency medicine for example, the profession was dominated by surgeons and cardiologists. Today, emergency medicine is professionally autonomous and emergency medicine physicians control the development of their own profession. Police, firefighters, and nurses all have become professionally autonomous. Those achievements have benefited not only the members of those professions, but also our society as a whole. Paramedicine clinicians must not be held back from achieving this goal. Achieving that goal will be good for the profession, good for our society, and good for the 40 million people who call for our help every year.

The Agenda should also note and highlight the other critical components needed for an effective EMS system in the U.S. These components include the need for a federal lead agency for EMS,⁴ and the need for a coordinated finance system that will provide the funds needed to develop the system, provide professional salaries for paramedicine clinicians, reduce occupational risks, and ultimately to meet the need to provide the best possible services to our communities.

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About the authors

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Dr. Brian J. Maguire is a medical research laboratory senior epidemiologist for Leidos, and an adjunct professor at Central Queensland University (CQU) in Australia. His doctoral degree in public health is from the George Washington University in Washington, D.C., and he has a master's degree in health administration from Central Michigan University. His positions in academia have included being a research center director, graduate program director, distance education coordinator, and a university professor. He is a Senior Fulbright Scholar and has presented his research in 12 countries. Since 2010, he has been a member of the CDC, NIOSH, National Occupational Research Agenda, Public Safety Council. From 2006 to 2008, he was a consultant for a U.S. Department of Homeland Security, bioterrorism and pandemic preparedness program.

Dr. Maguire's 120 publications include articles and book chapters in the areas of epidemiology, emergency medical services systems, violence, occupational safety, occupational risks for women, health administration, public health, database design, disaster management, and education. Brian began his career in New York City and worked for two decades in the city's health care system as an agency president, hospital department head, city-wide paramedic training coordinator, emergency medical services operations officer, educator, researcher and paramedic.

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Paul M. Maniscalco currently serves as the National Director of Emergency Management for Medxcel, a part of Ascension Healthcare, the largest not for profit healthcare system in the United States. He has over 45 years of public safety and emergency management response, supervisory, management and executive service and has served as a senior executive consultant to several governmental bodies and private sector organizations. Previously he has held an academic appointment as lead research scientist and principal investigator with The George Washington University — Office of Homeland Security-Center for Emergency Preparedness and Resilience. Maniscalco is president emeritus of the International Association of Emergency Medical Service Chiefs and is also a former president of the National Association of Emergency Medical Technicians. He worked for over 20 years in the New York City Emergency Medical Services as a deputy chief, instructor and paramedic.

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Daniel R. Gerard, MS, RN, NRP, is currently working as an EMS coordinator and is a Nationally Registered paramedic and a registered nurse. He has more than 20 years of experience in one of the busiest EMS systems in the U.S. and was the acting EMS director for a large West Coast

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Scot Phelps, JD, MPH, Paramedic

Scot Phelps is an attorney and licensed paramedic, paramedic instructor, and certified flight paramedic, with over 40 years of EMS experience. He has served in a variety of EMS and Emergency Management-related positions including New Jersey State EMS Director, New York City Assistant Commissioner of Health, Associate Professor of Public Health, Assistant Professor of Public Administration, Assistant Professor of Emergency Medicine, and Paramedic Program Director. He holds a Juris Doctor degree from Brooklyn Law School, a Master's in Public Health from the Yale School of Medicine where he was a Farr Scholar and a Schlesinger Fellow, and a Bachelors in Anthropology with Honors from Columbia University.

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Scott Cormier serves as Vice President, Emergency Management, EC, and Safety, for Medxcel, a part of Ascension Healthcare. In this capacity, he oversees Emergency Management, Environment of Care, and Safety for the largest nonprofit health system in the United States. Scott has led large system response to many disasters, and has published articles on hospital preparedness, emergency medical services, and influenza patient safety. Scott was selected to the Becker's Review "One of 55 Patient Safety Experts to Know in 2023." He is a member of the NFPA 3000 committee dealing with Active Shooter and Hostile Event Response. Scott worked professionally for the City of Pittsburgh EMS and River Rescue teams. He has over 38 years of EMS, emergency management, public safety, and military experience.

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Kathleen Handal, MD

Dr. Kathleen Handal received her medical degree from the Drexel University College of Medicine (1971). She completed her Emergency Medicine internship and residency at Medical College of Pennsylvania in Philadelphia (1978) and subsequently received board certification in Emergency Medicine (EM). She served as an oral examiner for the American Board of Emergency Medicine for decades. Dr. Handal taught and practiced in the Emergency Department as Chief of Emergency Medicine at Long Island Jewish (NSLIJ) Hospital (11/79-5/85). She started the NSLIJ EM Residency Program. In 1982, Dr. Handal became the first Emergency Medicine specialist to become a Fellow of the New York Academy of Medicine (NYAM) founded in 1847 for which she was honored in a 2017 ceremony.

She has had national and local EM leadership roles. She served on numerous national committees including Chair of ACEP's EMS Committee and also represented the ACEP internationally and nationally, including at the AMA Commission on EMS and as a member of the Board of Director at the National Commission on Certification of Physician Assistants (NCCPA). Over the years, she has served on numerous federal grants involving EM/EMS, notably she chaired the New York City Trauma Center Designation, and the definition of the national curriculum for pre-hospital care personnel - Emergency Medical Technicians and Paramedic.

Her main area of interest is emergency cardiac care and she continues to lecture/write/blog worldwide on topics related to these issues. The American Red Cross chose Dr. Handal to author their First Aid and Safety Handbook (Little, Brown & Co.) for lay audiences. Presently, she is active in medical education, especially for the lay audience through electronic and print publishing. She has authored a three-book series on ECGs (Cengage Learning) as well as two first aid and emergency medicine books. Her first aid books have been translated into French and Spanish and are available worldwide. Her ER Survival Guide is written as if she was with you throughout your ER stay.