



Comment Letter on PPT Centers of Excellence

January 31, 2022

NIOSH Docket Office
1090 Tusculum Avenue, MS C-34,
Cincinnati, Ohio 45226-1998

RE: NIOSH and CDC Request for Comment on Personal Protective Technologies Centers of Excellence

To Whom This May Concern –

On behalf of the National Association of Emergency Medical Technicians (NAEMT), thank you for providing us the opportunity to comment on the need to establish Personal Protective Technology (PPT) Centers of Excellence to address research and practice gaps. Overall, NAEMT supports the establishment of PPT Centers of Excellence. The COVID-19 pandemic has identified many critical gaps in personal protection equipment (PPE) practice and the need for additional PPT research.

Formed in 1975 and more than 72,000 members strong, NAEMT represents the professional interests of all emergency and mobile healthcare practitioners, including emergency medical technicians, advanced emergency medical technicians, emergency medical responders, paramedics, advanced practice paramedics, critical care paramedics, flight paramedics, community paramedics, and mobile integrated healthcare practitioners. NAEMT members work in all sectors of EMS, including government service agencies, fire departments, hospital-based ambulance services, private companies, industrial and special operations settings, and the military.

Please accept the following comments and feedback to the questions posed by NIOSH and CDC. Our comments represent the point of view and needs of emergency medical services and their providers in the out-of-hospital medical environment.

What are the perceived needs for and benefits of establishing centers of excellence to advance PPT research and practice as it relates to your organization or for you personally?

We support creating a diverse group that focuses on the goal of national PPT standardization for emergency medical services. In addition, we encourage interoperability between hospitals and out-of-hospital stakeholders. Needs and benefits include:

- Standardized technology that provides interoperable functionality for both hospital and out-of-hospital needs.
- A standardized process to distribute PPT to create continuity and equity across all stakeholders.

Are there specific PPT research and practice needs for certain industry sectors and/or occupations?

Yes, EMS needs an advocate in PPT research and practice. Specific needs include:

- High level of protection
- Easily cleaned and decontaminated
- Easily donned and doffed
- Comfort and durability, including a focus on reducing heat stress
- Creation of durable PPT for multi-use sustainability and reducing the environmental impact

Are there specific PPT research and practice needs for different types of hazards (e.g., biological, chemical, gas and vapor, thermal, physical)?

There are different PPT practices and research needs specific to out-of-hospital medicine. EMS practitioners face the same hazards as other healthcare providers, but EMS faces those hazards in unique environments. Although there is a clear need to conduct research and develop PPT practices for the well-known risks, including biological, chemical, gas and vapor, and thermal, the environment in which these hazards are encountered needs to be considered. As out-of-hospital medical practitioners, EMS personnel require PPT that effectively mitigates the risks of the different hazards. We also require PPT that can withstand an inherently dangerous environment, including combative patients, illicit drug labs, opioid exposure, and gun violence. The challenges for the PPT in the out-of-hospital environment include physical damage to the technology and the negative impact on EMS practitioners to perform critical and essential job functions.

Are there specific PPT research and practice needs for certain anatomical categories of protection (e.g., dermal, vision, hearing, respiratory)?

All anatomical categories need to be researched and considered when developing PPT practices for the EMS practitioner. A critical element for EMS practitioners when using PPT is that the material or fit must not prohibit the necessary mobility and actions essential to function as an EMS practitioner. The dynamic nature of out-of-hospital medicine is unique, and those challenges need to be addressed by the proposed PPT Centers of Excellence. Examples are as follows:

- Eye protection that fogs and impairs vision
- Gloves that reduce dexterity
- Gowns that reduce the range of motion
- N95s that restrict airflow
- Tyvek suits that may induce extreme heat to the wearer and thus hyperthermia symptoms

Which particular academic disciplines, research domains, or technical expertise should contribute to addressing PPT research and practice needs? Describe multi- or inter- disciplinary needs to most effectively advance research and practice.

PPT requires a wide range of academic disciplines and research domains to incorporate all the various PPE entities. Those should include university and university-level academic disciplines in Fire Science, Emergency Management, Construction and Engineering, and all Healthcare realms, including Emergency Medical Services. Community or technical trade schools should incorporate PPT and education to technician-based schooling. Institutions that train and educate on Risk Management will develop policies and procedures for end-users and should be included in developing PPT. Multi- or inter-disciplinary collaboration is critical to the success of implementing new PPT. For instance, a piece of PPE can be developed that is highly protective to the user, but

if the collaborative research does not reflect the evaporative resistance or thermal insulation, then heat stress may not be evaluated and this piece of equipment may be harmful or dangerous. All PPT design and implementation aspects must be considered before they are introduced into the discipline for effective utilization.

Describe emerging or novel technologies that can be investigated with respect to increasing the effectiveness of PPT.

Exciting and promising PPT are in development. Some examples are:

- Health sensors – Similar to Fitbit or Apple Watch, this technology monitors the user’s physiology to prevent injury.
- Compliance sensors – This could serve a purpose from a risk management perspective.
- Respirators that are lighter, more comfortable, and with new strap designs for comfort.
- PPE with cooling properties – Overheating is a primary concern as personnel wear PPE for much more extended periods of time.
- Biodegradable materials for single-use items – As more PPE are worn, there needs to be solutions for responsible disposal.
- Advanced decontamination techniques and equipment to reduce single-use items and maximize multi-use equipment.

How well do the three broad focus areas described above identify critical needs? Are there alternate or additional needs that have not been identified in this notice?

The three (3) focus areas are an excellent foundation. However, the ability for PPE to be quickly deployed is a requirement that may be overlooked yet is critical for EMS practitioners. Additionally, as teams continue to explore innovative approaches to the design, manufacture, and maintenance of PPT, it remains crucial to consider the end-user and the variability and potential customization in the populations. Lastly, as we have experienced with the Pandemic, manufacturers must have the capability to customize and produce PPT rapidly during surges and periods of extended demand. Rapid deployment solutions are critical to this distribution process.

Moreover, the PPT innovation, improvement, and overall availability investment process is obviated when the material remains on ships or in warehouses due to a disruption in the supply chain. Additionally, there should be a simple and efficient process to report. Lastly, users must have a state and local feedback mechanism to ensure that critical needs are communicated and triaged appropriately.

NIOSH anticipates that future PPT centers of excellence will include at least three functional core areas: planning and evaluation, which includes center of excellence administration; research, which can be comprised of pilot projects, small projects, and large projects; and outreach, which can include communication and dissemination activities, education activities, and implementation activities. An academic training functional core area is optional. How important are the different core areas and activities within core areas to the ability of centers of excellence to advance PPT research and practice?

We believe that research and education are imperative to the success of a PPT center of excellence. The three functional core areas seem reasonable; however, we would advocate that the academic training in functional core areas be mandatory. A center of excellence should be a leader in training and education. A center of excellence should have the capability to provide train-the-trainer programs to constituents and ensure that the culture of safety, and best practices, are disseminated with consistency and expertise. Research is also the

foundation for innovation and safety in the face of evolving environmental and biological threats. Additionally, PPT Centers of Excellence should have a dedicated funding mechanism, dedicated grant process, or another reimbursement mechanism to fund high-quality research and disseminate and communicate their findings that support or refute PPT items' safety and evidence-based best practices.

NAEMT requests that a diverse selection of EMS practitioners representing the full spectrum of EMS delivery models - government service agencies, fire departments, hospital-based ambulance services, private companies, industrial and special operations settings, and the military - be included and considered when establishing Personal Protective Technology (PPT) Centers of Excellence to address out-of-hospitals research and practice gaps. In addition, EMS practitioners work in a unique environment from other healthcare providers and requires a special focus on PPT.

We welcome the establishment of PPT Centers of Excellence and look forward to the opportunity to participate as a collaborative partner on PPT research and practices for EMS. If you have any questions or would like to discuss these recommendations further, please do not hesitate to contact me via email at naemt_president@naemt.org.

Respectfully,

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President, NAEMT