IMPACT OF PERSONAL PROTECTIVE EQUIPMENT ON THE PERFORMANCE OF EMERGENCY PEDIATRIC TASKS

WHY WERE THESE STUDIES NEEDED?

Personal protective equipment (PPE) is worn by health care providers to protect them from exposure to hazardous materials such as chemicals or infectious diseases. PPE includes gloves, face masks, respirators, and body suits of varying degrees of coverage and can impact the mobility of health care providers. Previous studies examining the effects of PPE on health care providers' ability to perform emergency tasks have had mixed results. Additionally, there have not been studies evaluating the performance of these tasks on children while wearing PPE. These studies were needed to determine how PPE impacts health care providers' ability to perform emergency care for pediatric groups.

WHAT HAPPENED DURING THE STUDY?

The studies each consisted of two sessions in which health care providers were asked to perform emergency procedures on a manikin of a five-year-old. Tasks included chest compressions, defibrillation, tracheal intubation, bag-valve mask ventilation, IV placement, IM autoinjector, and more. In the first session, participants wore regular street clothes. In the second they wore full PPE. The amount of time it took them to complete each task in each session was measured and compared. The participants were also surveyed about their feelings about the barriers PPE may pose and asked to rate their levels of fatigue after each session.

WHAT WERE THE STUDY RESULTS?

Each study concluded that, overall, **PPE did not have a clinically significant impact on the time of health care providers' completion of the tasks**. The majority of participants in each session completed the tasks within time standards. In most cases, it took up to five seconds longer to complete each task in PPE. Tasks that stood out as more challenging in PPE were tracheal intubation, IM autoinjector, defibrillation, and IV placement. During the chest compressions, self-reported fatigue was higher at two and five minutes among all providers and during both sessions. Fatigue was significantly higher performing chest compressions while wearing PPE. For other tasks, there was not a significant increase in fatigue.

Before the PPE sessions, most health care providers surveyed indicated that they did not expect the PPE to be so claustrophobic or restrictive that they couldn't complete the tasks, and they felt even less so after the second session. Participants also said that they felt more confident in their ability to perform emergency procedures in full PPE after the sessions. Overall, participants had a more positive attitude regarding performing emergency pediatric procedures while wearing PPE.

WHO CONDUCTED THE STUDY?

The study was conducted by the Pediatric Trials Network (PTN), a group of more than 100 research sites around the world that are working to find the safest and most effective ways to use medicines and devices in infants and children. Children aren't just little adults. Their bodies are growing and changing, meaning that they process medicines and react to devices differently than adults do. The PTN works to make sure doctors and families have the information they need to give children the best care.

The study was made possible with support from the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

WHAT KIND OF STUDIES WERE THESE?

This document summarizes three studies that took place at multiple health care facilities or simulation centers. They were prospective studies that included prehospital providers, nurses, and medical doctors as participants. Together, the studies enrolled around 225 health care providers to examine how they performed and felt about pediatric emergency tasks while wearing PPE.

225
HEALTH CARE PROVIDERS

WHAT HAPPENS NEXT?

Further research should be performed to determine the impact of PPE on procedures performed in a clinical care context and on a human subject rather than a manikin. Researchers were able to recommend that the Pediatric Basic Life Support recommendations for health care providers to switch every two minutes during chest compressions need not be altered with PPE use. Researchers also suggest that health care providers perform pediatric preparedness and training drills in PPE; this would be especially beneficial for providers with less experience.

WHERE CAN I LEARN MORE ABOUT THIS CLINICAL TRIAL?

A summary of the results for this trial can be found at pediatrictrials.org.

** This summary was completed in April 2023. Newer information since this summary was written may now exist. This summary includes only results from three PTN studies. Other studies may find different results.*

PEDIATRIC TRIALS NETWORK
Making drugs safer & more effective for use in the youngest patients