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## Commentary

## Journal club: A pilot gap analysis survey of US emergency medical services practitioners to determine training and education needs pertaining to highly infectious disease preparedness and response



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## Key Words:

Occupational safety

The topic of this Journal Club Commentary is an article by Le et al.<sup>1</sup> The Ebola virus disease outbreak of 2014-2016 highlighted the lack of consistent outbreak-response guidelines and training for clinical workers, as well as first responders in both inpatient and outpatient settings. Emergency medical services (EMS) health care workers are the first to interact with potentially highly infectious pathogens, often without knowledge of the patient diagnosis. This study by Le et al<sup>1</sup> explored the depth of knowledge, training, education, and comfort level among frontline staff and supervisors nationwide with highly infectious pathogens to determine where improvements can be made. The findings suggest that EMS practitioners would benefit from enhanced training in infectious diseases.

## ARTICLE OVERVIEW

The gap analysis study evaluated EMS practitioners' level of training, knowledge, and education in highly infectious diseases through a nationwide survey distributed in July 2016 to frontline staff and supervisors. The survey was administered through national and local EMS organizations, resulting in distribution to 108,800 individuals with an overall response rate of 2% (N = 2,165 respondents). The survey focused on 2 specific areas: perceptions of willingness to engage with and comfort level with highly infectious disease training and agency reporting and infectious disease knowledge, resources, and training. More than 70% of survey respondents stated that they had received training on infectious diseases and knew how to screen for and treat patients potentially infected with highly infectious diseases. Fewer than 50% of respondents were aware of the relationship with the public health department or local Centers for

Disease Control and Prevention (CDC) Quarantine Station when potentially highly infective individuals enter their area through a port of entry. At least 50% of respondents indicated that they were required to demonstrate competency in responding to a potentially highly infectious disease situation before entering the field. Respondents reported a variety of resources for their up-to-date information about highly infectious pathogens. These resources ranged from the CDC and World Health Organization to their primary organization's Web site (eg, International Association of EMS Chiefs and National Association of Emergency Medical Technicians) and word of mouth from coworkers. More than 80% of respondents stated that they had to demonstrate competencies of donning personal protective equipment (PPE). Almost two-thirds of respondents reported they were required to undergo retraining on a yearly or biannual basis.

## DISCUSSION

The results of this study suggest there is a knowledge gap in the education and training of EMS practitioners in potentially highly infectious disease situations. This study contributes to the infection prevention literature because first responders are an understudied population. EMS practitioners respond to emergencies in uncontrolled conditions and the patient is typically not diagnosed until well after her or she has arrived at a hospital. Thomas et al<sup>2</sup> cite numerous studies that report EMS practitioners are more likely than the general population to contract diseases such as severe acute respiratory syndrome infections, methicillin-associated *Staphylococcus aureus*, and influenza. The results of this study suggest that not only is there a gap in knowledge of education and training for highly infectious pathogens, but also common pathogens.

The survey also highlighted that a variety of different resources exist for EMS to receive up-to-date information, including government Web sites (eg, CDC and World Health Organization), their primary national organization's Web site (eg, International Association of EMS Chiefs and National Association of Emergency

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Medical Technicians), or their coworkers, which is alarming. This leads to potential inconsistencies in regard to appropriate responses to infectious patients. Infection preventionists (IPs) typically look to both government Web sites and professional organizations (Association for Professionals in Infection Control and Epidemiology and Society of Healthcare Epidemiologists of America). The array of resources highlights the need for national organizations to align recommendations for EMS practitioners and distribute enhanced education through regular communications, national conferences, and webinars.

It is important for EMS practitioners to be effectively trained to handle situations with potentially highly infectious pathogens, even if such a situation may rarely arise. A collaborative effort that begins with 9-1-1 dispatch, EMS providers, and clinical settings can be used to enable activation of action plans that allow for immediate patient isolation and protection.<sup>3</sup> It is imperative for EMS leadership to evaluate the risk of staff exposure to a highly infectious patient and determine whether all staff should be trained or whether they should turn to the development of highly infectious pathogen trained teams. These teams would be trained regularly and available to respond to potentially infectious situations.

Although this study confirmed that EMS practitioners have struggles similar to those found in other health care settings<sup>4</sup> regarding highly infectious pathogens, there were some limitations that could affect the conclusions of the study. The study design was intended to capture a wide audience by distribution to more than 100,000 individuals, but the survey resulted in a substantially small response rate, which may reflect the temporal interest in the topic because the urgency of Ebola virus disease crisis had faded before distribution. A more targeted audience may have improved the response rate and made the overall conclusions of the study statistically significant. Additionally, the survey omitted the geographic location of the respondents, which is a detriment to the study because the training and education of EMS practitioners for highly infectious pathogens is likely correlated with geographic distribution.<sup>5</sup> Also omitted was the identification of any affiliation with an Ebola

virus disease treatment center, a factor that may have correlated with the quality of training.

## IMPLICATIONS FOR IPS

IPs could use the results of this study to help start a conversation with local EMS practitioners and allow them to offer their expertise for education, access to up-to-date information, and provide ongoing training. They could also use the survey to evaluate EMS practitioners' knowledge, training, and gaps with infectious diseases (highly infectious or common pathogens) to target education. Evidence has suggested that the exposure rates of EMS practitioners to infectious diseases have decreased due to increased education, improved PPE, and use of infection prevention strategies.<sup>2</sup> It is imperative that IPs work closely with their local EMS departments to address safe transport of infectious patients and provide valuable information to eliminate potential exposures. The safe transport of highly infectious patients can be accomplished with appropriate training, PPE use, and relationships among transport partners.<sup>3</sup>

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