

## SPECIAL CONTRIBUTION

## Infectious Disease

# The indispensable role of emergency medicine in national preparedness for high consequence infectious diseases (HCIDs)

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Facing the epidemic of 2019 Novel Coronavirus (COVID-19), emergency departments (EDs) across the United States are once again reviewing their plans and abilities to detect and treat potential cases of an emerging infectious disease while ensuring the safety of patients and staff and to accommodate potential surges in visit volumes. As the most common first destination for individuals seeking urgent or emergent care, EDs have long played a critical role in the nation's ability to respond to outbreaks of high consequence infectious diseases (HCIDs), with responses to Ebola Virus Disease (EVD), Middle East Respiratory Syndrome (MERS), and pandemic influenza in just the past decade. However, because of the panic-neglect pattern of funding and attention,<sup>1</sup> many EDs have not been given sustained access to the tools, resources, and interdisciplinary partnerships they need in between outbreaks of national attention, and we are now facing the consequences.

EDs must be able to fully implement a wide variety of activities within the "Identify-Isolate-Inform" framework (developed within emergency medicine and advocated by the Centers for Disease Control and Prevention) (CDC) to limit HCID spread and to provide safe patient care.<sup>2</sup> This is true both when outbreaks are known, as with current COVID-19 outbreak, and also when they are not. While the case of 2 nurses infected at work with EVD in Dallas in 2014 is familiar to many, less well-publicized was a nosocomial outbreak of 82 confirmed MERS cases in South Korea that was attributed to a single unrecognized patient exposure in an ED.<sup>3</sup> Too many EDs do not consistently use the Identify-Isolate-Inform framework, as demonstrated by a recent

study performed in 49 New York City EDs that found that appropriate masking of patients, adherence to personal protective equipment (PPE) by staff, and isolation occurred in <80% of encounters.<sup>4</sup> Moreover, many EDs do not routinely retrain their clinicians in the fundamental skills needed for HCID incidents, such as the donning and doffing of the PPE, even though such practice has been shown to reduce episodes of self-contamination.<sup>5</sup>

While there has not been sustained transmission of COVID-19 within the US to date, many EDs have already experienced adverse effects on their clinical operations. Public health authorities and ambulatory medical practices usually direct suspect cases to the ED, though there is often little coordinated community planning in place for this function. Because of the PPE and isolation needs for evaluating suspect cases, even a small increase in the number of patient evaluations can result in major disruptions to ED patient flow, and these disruptions can often be frustrating for emergency medicine providers, especially when some patients present (or are referred) to the ED despite lower medical acuity. A recent report of patients with the COVID-19 in Munich indicated that there were patients who had been hospitalized "primarily for public health purposes" despite having only mild illness.<sup>6</sup> To address these challenges, ED and hospital leadership should be routinely included in community HCID evaluation plans and in HCID public messaging efforts. This will help mitigate against these stressors on hospital operations and ensure EDs are able to properly fulfill their mission for HCID care when truly needed.

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With the potential for sustained COVID-19 transmission in the US and a larger surge in patient visits to EDs perhaps on the horizon, the idea of “surging” care capabilities within already crowded EDs highlights yet another problem with crowded EDs. The adverse consequences of ED crowding on patient outcomes are very well documented,<sup>7</sup> but ED crowding can be further exacerbated in the midst of an outbreak with media coverage prompting substantial fear of infection and a heightened demand for medical attention. Delayed care and recognition of HCIDs can often result in delayed implementation of infection control measures, all of which can increase the risk of transmission of HCIDs among patients and health care workers. These concerns are especially relevant to the current COVID-19 outbreak, with case numbers and fatalities already far-surpassing the extent of the 2003 SARS outbreak.

Could technology enhance our ability to respond to HCIDs? Electronic health record (EHR) systems have transformed medical care, providing real-time decision support for acute conditions such as stroke and sepsis. Could we better leverage EHRs to automatically alert clinicians about patients who meet the current CDC criteria for COVID-19 or other HCIDs based on their travel history, clinical symptoms, and other exposures? EHR alerts should be engineered to present the clinician with readily available contact information for infection control leadership and public health authorities to best guide infection control and care management decisions, as well as order sets to facilitate the correct implementation of transmission-based precautions and diagnostic testing. However, too many EHR solutions are designed for a specific outbreak, lacking the flexibility to immediately accommodate newly emerging diseases and their changing public health case definitions. Hospital and IT leaders must work with their ED leaders and infectious disease specialists to prioritize the development of ED EHR tools that substantially and permanently improve how ED clinicians identify HCIDs such as COVID-19 both now and in the future.

With the current COVID-19 outbreak, the time has come for emergency medicine to emerge at the forefront of public health planning, and along with infectious disease specialists, infection prevention and control specialists, hospital leadership, IT specialists, and public health officials to embrace novel EHR technologies and advocate for the administrative and financial support truly needed if our nation is to be ready for HCIDs. We must address the gaps that impede our ability to safely care for patients in the event of ongoing transmission of COVID-19, while ensuring the safety of all patients, visitors and staff, and the communities in which we practice.

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