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Update on Emerging Infections: News From the Centers for Disease Control and Prevention

Commentary

Carolyn Gates, MD; Gregory J. Moran, MD

Editor's note: This article is part of a regular series on emerging infection from the Centers for Disease Control and Prevention (CDC) and the EMERGENCY ID NET, an emergency department–based and CDC-collaborative surveillance network. Important infectious disease public health information with relevance to emergency physicians is reported. The goal of this series is to advance knowledge about communicable diseases in emergency medicine and foster cooperation between the front line of clinical medicine and public health agencies.

Update: Severe Respiratory Illness Associated With a Novel Coronavirus—Worldwide, 2012-2013

[Centers for Disease Control and Prevention. Update: severe respiratory illness associated with a novel coronavirus—worldwide, 2012-2013. *MMWR Morb Mortal Wkly Rep.* 2013;62:194-194.]

The Centers for Disease Control and Prevention (CDC) continues to work closely with the World Health Organization (WHO) and other partners to better understand the public health risk posed by a novel coronavirus that was first reported to cause human infection in September 2012.¹⁻³ Genetic sequence analyses have shown that this new virus is different from any other known human coronaviruses, including the one that caused severe acute respiratory syndrome (SARS).² As of March 7, 2013, a total of 14 confirmed cases of novel coronavirus infection have been reported to WHO, with 8 deaths.⁴ Illness onsets have occurred from April 2012 through February 2013.^{4,5} To date, no cases have been reported in the United States.

Three of the confirmed cases of novel coronavirus infection were identified in the United Kingdom as part of a cluster within 1 family.⁶ The index patient in the cluster, a man aged 60 years with a history of recent travel to Pakistan and Saudi Arabia, developed respiratory illness on January 24, 2013, before returning to the United Kingdom on January 28.^{5,7,8} He was hospitalized on January 31 with severe lower respiratory tract disease and has been receiving intensive care.^{5,7,8} Respiratory specimens from this patient taken on February 1 tested positive for influenza A (H1N1) virus and for novel coronavirus infection.⁸ The second patient was an adult male household member with an underlying medical condition who became ill on February 6, after contact with the index patient, and received intensive

treatment but died with severe respiratory disease.^{5,9} This patient's underlying illness might have made him more susceptible to severe respiratory infection. The third patient is an adult woman who developed a respiratory illness on February 5 after contact with the index patient after he was hospitalized.^{5,10} She did not require hospitalization and had recovered by February 19.^{5,6} Only the index patient had traveled recently outside the United Kingdom. In accordance with their ongoing investigation of this cluster of illnesses, the UK Health Protection Agency has concluded that person-to-person transmission likely occurred in the United Kingdom within this family.⁶

This recent cluster provides the first clear evidence of human-to-human transmission of this novel coronavirus, coinfection of this novel coronavirus with another pathogen (influenza A), and a case of mild illness associated with this novel coronavirus infection. In light of these developments, updated guidance has been posted on the CDC coronavirus Web site (<http://www.cdc.gov/coronavirus/ncv>). Persons who develop severe acute lower respiratory illness within 10 days after traveling from the Arabian Peninsula or neighboring countries should continue to be evaluated according to current guidelines. Persons whose respiratory illness remains unexplained and who meet criteria for "patient under investigation" should be reported immediately to CDC through state and local health departments. Persons who develop severe acute lower respiratory illness of known cause within 10 days after traveling from the Arabian Peninsula or neighboring countries but who do not respond to appropriate therapy may be considered for evaluation for novel coronavirus infection. In addition, persons who develop severe acute lower respiratory illness who are close contacts of a symptomatic traveler who developed fever and acute respiratory illness within 10 days of traveling from the Arabian Peninsula or neighboring countries may be considered for evaluation for novel coronavirus infection. Testing of specimens for the novel coronavirus will be conducted at CDC.

Recommendations and guidance on case definitions, infection control (including use of personal protective equipment), case investigation, and specimen collection and shipment for testing are available at the CDC coronavirus Web site. Additional information and potentially frequent updates will be posted on that site. State and local health

departments with questions should contact the CDC Emergency Operations Center (770-488-7100).

Section editors: David A. Talan, MD; Gregory J. Moran, MD; Daniel Feikin, MD

Author affiliations: From the Olive View–UCLA Medical Center, Sylmar, CA.

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COMMENTARY

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Acute respiratory tract infection is a common reason prompting an emergency department (ED) visit. Although these

illnesses are almost always caused by known respiratory pathogens, emergency physicians should recognize the risk of novel pathogens and be familiar with current recommendations for evaluating patients who may be infected with emerging pathogens from specific geographic areas. This report of a new coronavirus (now referred to as Middle East respiratory syndrome coronavirus, or MERS-CoV) identified in patients in the United Kingdom after travel to the Arabian Peninsula illustrates some important points about identifying infections with novel pathogens and implementing infection control procedures when specific transmission risk may be unknown. The 3 confirmed cases demonstrate that the virus has the capability of human-to-human transmission and coinfection with another pathogen (influenza A).¹ Subsequent clusters of disease confirm that the novel coronavirus can spread from person to person, including from patients to health care workers. Although MERS-CoV has a different genetic sequence than the virus that caused SARS, the implications for emergency medicine are similar.²

Health care providers, hospital administrators, and global health organizations learned many important lessons during the 2003 SARS outbreak. The subsequent improvement in infection control measures is especially important for the ED in the event of infectious outbreaks with new pathogens. Transmission in the health care setting to a large number of health care workers and other patients was a notable feature of the SARS coronavirus. The greatest risk of transmission was to individuals who had close contact with infected subjects and who were not properly trained in the use of protective equipment.³ Exposure of health care providers to procedures that aerosolized droplets such as nebulizers, suctioning, and intubation was another source of virus transmission.⁴ N95 respirators may offer protection to individuals involved in high-risk procedures.⁵

CDC recommendations for respiratory hygiene/cough etiquette evolved during the SARS outbreak. These concepts have since been incorporated into CDC planning documents for SARS and pandemic influenza. Although basic precautions such as hand washing are intended for health care workers associated with direct patient contact, respiratory hygiene/cough etiquette applies to everyone in the hospital setting: providers, patients, and visitors.⁶ This concept was developed in response to observations that visitors and patients without diagnoses were contributing to hospital transmission.³ Recommendations included posted signs in different languages about containment of respiratory secretions, convenient hand sanitizers and tissue receptacles, and sitting at least 3 feet apart if coughing. Screening patients with respiratory symptoms for recent travel, placing a mask, and isolation from others in the waiting room/ED are important for early detection and prevention.⁷ For pathogens that emerge in specified geographic areas, risk assessment is based on where the organism is currently circulating, ie, within the local community, limited geographic areas, or not actively circulating anywhere in the world.⁸ If