The Potential Ebola–Infected Patient in the Ambulatory Care Setting: Preparing for the Worst Without Compromising Care

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The recent case of a traveler with Ebola virus disease in Dallas, Texas (1), underscores the potential that persons with undiagnosed infection may present to health care facilities in the United States and other countries. This possibility may increase as expanded assistance to affected countries puts more international aid workers at risk for exposure. Although the Emory University Hospital Serious Communicable Diseases Unit (SCDU) has been activated to care for patients with Ebola evacuated from West Africa (2), it is clear that preparing other parts of our health care system that might encounter patients with Ebola is critical.

The Centers for Disease Control and Prevention (CDC) provides a broad case definition for a person under investigation (PUI) for Ebola (3); therefore, some PUIs will probably present with milder illness at ambulatory clinics instead of emergency departments (EDs). Infection prevention and control recommendations from the CDC for managing Ebola in U.S. hospitals recommend the use of enhanced isolation precautions and personal protective equipment (PPE) by health care workers (4). Although hospitals and EDs often apply isolation precautions for other infections, implementation in ambulatory care settings can be challenging. Furthermore, other causes of illness—such as gastroenteritis, influenza, or malaria—are more likely among PUIs; therefore, any delay or compromise of routine care resulting from concerns about infection control could be deleterious. To address these challenges, we engaged key stakeholders and developed a protocol for PUIs presenting to our outpatient clinics by systematically considering the parts of an ambulatory encounter (**Table**).

Staff throughout Emory Healthcare's ambulatory clinic network were informed about Ebola awareness and precautions via multiple e-mails and town hall meetings. However, given the advantages of having a single referral clinic with tropical and infectious disease specialists for PUIs, our travel clinic was designated as the site for PUI evaluations for patients not requiring ED care. Our health care system has developed standardized screening algorithms (for patients calling to schedule appointments and those arriving at clinic) for use in all ambulatory clinics. Any patient who might meet PUI criteria is reported to the infection preventionist, who would facilitate referral to the travel clinic. Our travel clinic was stocked with essential PPE and disposable examination equipment, and a designated PUI examination room was prepared by removing unnecessary equipment, furniture, and décor to reduce the surface area prone to contamination. Clinic staff received formal training on the use of enhanced PPE recom-

Table. Considerations When Planning for the Management of Patients With Possible Ebola in the Ambulatory Care Setting

Engagement with stakeholders*
Equipment and examination room considerations
Maintenance of recommended PPE and disposable equipment in clinic
Preparation of a designated examination room with removal of all unnecessary equipment, furniture, and décor
Patient encounter procedures
Telephone triage procedure
Patient arrival, transportation to examination room, and registration
Patient examination, management of symptoms†, and accommodation of routine needs‡
Specimen collection for routine laboratory testing and consideration of diagnostic testing for Ebola
Patient disposition and discussion with infection control, health department, and other appropriate parties
Patient departure and transport to hospital, ED, or home
Terminal cleaning of clinic examination room and equipment
In-service training of staff and routine practice drills
Protocol updates based on lessons learned from drills and implementation

ED = emergency department; PPE = personal protective equipment.
* For example, infection control, infectious disease specialists, the local health department, the clinical laboratory, emergency medicine, hospitalists, clinic and hospital administration, environmental services, hazardous waste disposal vendor, and security.
† For example, emesis and diarrhea.
‡ For example, access to a bathroom and water.

mended for healthcare workers caring for patients with Ebola infection (4, 5). A list of essential supplies for all ambulatory clinics was also created for the isolation (pending disposition) of PUIs arriving unexpectedly.

Preemptive screening of patients is essential for clinic preparation and to avoid unnecessary protocol activations. Although travel clinic telephone staff have always screened referrals for febrile returned travelers who might require urgent evaluation, they now specifically inquire about recent travel to countries with widespread Ebola transmission (6). Any ill patients with recent travel to these countries are immediately connected to a travel clinic physician who obtains details of their itinerary and symptoms. Patients potentially meeting PUI criteria are triaged according to clinical status to the travel clinic or ED. Profuse diarrhea or frequent vomiting is considered a potential indication for ED triage given the infection control challenges that these symptoms can present in clinic.

Patients triaged to our clinic (located in an office tower attached to our hospital) are instructed to arrive at a back entrance. The clinic team meets and transports the patient—who is asked to wear a surgical mask—directly to the clinic examination room using a service elevator, avoiding unnecessary contact with others and maximizing privacy. The transport team

comprises staff wearing PPE (a nurse, physician, and security officer) and an additional member who carries clean supplies that might be needed during transport (that is, additional PPE, an emesis bag, towels, a biohazard bag, and hand sanitizer).

Upon arrival at the examination room, the escorting nurse and physician evaluate the patient as a team, assisting each other as needed and monitoring for PPE breaches. A third staff member is stationed outside the room to assist with communications and patient registration and direct away unnecessary traffic. Staff exiting the examination room doff and dispose PPE according to current recommendations (4). To minimize unnecessary movement and exposure to others that might occur if PUIs are sent to our usual outpatient laboratory, blood and urine specimens are collected in the examination room, packaged, and transported to the laboratory according to CDC guidelines (7). Because the differential diagnosis of the febrile traveler from West Africa is broad—malaria is commonly diagnosed (8), and other life-threatening infections, including typhoid fever and meningococcemia, are possible—rapid diagnostic testing for malaria and blood cultures are done in addition to measuring routine blood counts and serum chemistry levels.

After initial evaluation, the physician engages with our infection control preventionist and the state health department to discuss the differential diagnosis and patient disposition (that is, inpatient admission, the ED, or home) and determines whether maintenance of infection control precautions and Ebola diagnostic testing are indicated. For the exceptional circumstance of a PUI meeting high-risk exposure criteria (3), transfer to the SCDU would be considered. Additional staff (such as the ED physician, hospitalist, and SCDU director) are engaged as appropriate. After clinic discharge, the patient is transported by the same procedure used for arrival (if necessary). Contaminated nondisposable equipment remains in the examination room until it is disinfected with the room itself, and biohazardous waste is removed and disposed of according to guidelines (9).

Regular drills are done to maintain staff familiarity with the protocol and PPE. Previous drills and actual implementation have elucidated gaps, and we anticipate that further experience will improve our processes. This protocol is time- and staff-intensive, and we recognize that other nonurgent patient appointments might require cancellation. However, it can easily be adapted to manage patients who might have other highly pathogenic or novel infections, such as the Middle East respiratory syndrome.

Our protocol will not necessarily fit other institutions, but we believe that our systematic approach can help other clinics as they assess their levels of preparedness and develop individualized plans and procedures. Ambulatory clinics will probably see few, if any, actual Ebola cases, although a substantial number of patients may meet PUI criteria. Advance preparation will help clinics minimize staff apprehension, imple-ment timely infection control precautions, maintain care standards, and detect Ebola should it present.

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