Healthcare Quality Reporting Program

HOSPITAL-ACQUIRED INFECTIONS SUBCOMMITTEE

8-9am, June 15, 2015
Healthcentric Advisors, 235 Promenade Street, Suite 500

1. Welcome & today’s meeting objectives (8am)
   - Meeting chairs: S. Viner-Brown, L. Mermel
   - Program staff: E. Cooper, A. Messier, T. Mota
   - Others in attendance: A. Mihalakos, D. Lewis, J. Reppucci

2. Review of the previous meeting’s action items (8:05am)
   - Share hand hygiene recommendation with Steering Committee (Emily/Len) – Complete
     We shared this subcommittee’s recommendations with the Steering Committee and with Dr. Alexander-Scott. They asked that we request each of the hospitals submit information on any hand hygiene-related deficiencies they have gotten from either Joint Commission or CMS in the past three years. This information with not be publicly reported, but will be background information for the Steering Committee. We will request this information from the QI leads at the hospitals.
   - Send AMS & EC taskforce recommendation letter and CDC core elements to HAI SC (Emily) – Complete
     This information was shared after our last meeting. We will be asking for feedback for the CDC State HAI Plan once they release the template. We are assuming the template will include space for AMS work, and these documents will help inform that.
   - Provide feedback on which of the taskforce recommendations and CDC core elements should be included in state HAI plan (HAI SC) – Ongoing
     We will be requesting this feedback once we receive the template for the state plan.
   - Send summary of AMS & EC taskforce survey findings to HAI subcommittee (Emily) – Complete
   - Share HAI SC’s recommendations for One & Only campaign with Department of Health (Sam/Emily) – Ongoing

3. Ebola Preparedness Assessments (8:15am)
   - Review new assessment tool (handout)
   - Review results from most recent assessments (handout)
   Alysia Mihalakos and Joseph Reppucci from the Center for Emergency Preparedness and Response (CEPR) at the Rhode Island Department of Health (HEALTH) and Dawn Lewis from the Hospital Association of Rhode Island (HARI) discussed the tool developed by the CDC for hospital Ebola-readiness assessments and the findings from the most recent Ebola Stress Test. They explained that there is not a designated Ebola treatment center in RI, but that Mass General Hospital has been designated to serve as the regional Ebola treatment center, so any
confirmed cases from RI would be transported there for treatment. There will be two designated assessment hospitals in RI, Rhode Island Hospital and Memorial Hospital. The rest of the acute-care hospitals will be designated as frontline hospitals. All of the acute-care hospitals in RI will be subject to future readiness assessments, but they will be tailored to each hospital’s designation. There will be funding available to hospitals to offset the cost of the assessment process.

HEALTH has also received funding to develop relationships with two private EMS companies who will be the designated inter-facility transport teams for patients with suspected or confirmed Ebola. These EMS companies will also be available assets for municipal EMS through mutual aid.

Len asked if questions related to other pandemic-potential infectious diseases can be added to the assessment tool. Alysia responded that the funding is currently focused on Ebola, but they assume within the hospital-based grant timeline (five years) this will be expanded.

There was a brief discussion about how to question patients coming through the ED about their health risk related to travel outside of the country – Len suggested that the questionnaire at the triage desk should ask the patient about any recent travel outside of the US, rather than travel to specific countries, since the countries with epidemics will change from time to time and this would simplify the triage process, which is time-sensitive. Then, if someone has traveled, details can be obtained once the individual is removed from the general waiting triage area to a separate area.

Alysia and Dawn asked for recommendations regarding improving the training and testing of hospital staff. Julie recommended a slower and more methodical assessment process. Len suggested keeping the assessment very basic, noting that HEALTH is tracking travelers to countries with ongoing Ebola cases so if patients become ill, they will be referred to an assessment hospital with initial onset symptoms when they are least infectious and in a more controlled setting. Marlene said that the approach used for the health centers/clinics was more appropriate – the process included a walk-through with discussions and skills assessments. Dawn explained that they had tried to get all of the necessary information in a short amount of time in the first round of exercises because the hospital personnel were so busy, but that they could make it a longer scenario in the future if hospital leadership agrees.

Len said that sustaining PPE training is an ongoing challenge for most facilities and should be a focus area along with competency. Alysia and Dawn responded that as a state we need to better define competency for PPE use when assessing a patient who is an Ebola PUI.

Dawn also asked the group what they felt should be included in future training and testing for Ebola readiness. Suggestions included:

- Donning/doffing
- Basic patient care, e.g., – starting IVs
- Lab testing (drawing/measuring)
- Waste removal/management of human waste
- Taking items in and out of isolation rooms
- Dealing with patient social isolation
- Staff fear
Nancy asked who will be responsible for decontamination of the EMS vehicles and equipment. Dawn responded that this will need to be based on a conversation and agreement between hospitals and EMS. Len said that it must be clear to the hospitals how to transport Ebola PUI patients. Alysia noted that there will be an MOU between states for transportation of RI patients to Mass General Hospital when necessary and that HEALTH will coordinate transfers/transport.

The group discussed concerns related to fear on the part of the patient/family, and fear on the part of healthcare workers. Nancy said that when Ebola training was initiated, healthcare workers stated they would not go home after treating a patient with Ebola – they questioned if the hospital would provide a place to stay or would pay for a hotel room. Len said that with increased PPE training and hospital readiness, the fear of transmitting a disease to family members will decrease. Hospitals in the state will only be dealing with patients who have zero to very low viral loads and will more likely than not be transported prior to becoming contagious. Risk of contracting Ebola will be very low to nil.

The CEPR team asked about additional questions or recommendations. Julie said that she would like to bring this information back to her team and send her response to the group. Emily will include contact information for the response in the minutes.

4. Open forum & next steps (8:55am)
   - **HAI State Plan**
     As part of our ELC/Ebola Supplemental funds the CDC has asked that we update our HAI State Plan. They will be sending a template. This subcommittee and the AMS Task Force will be asked to provide feedback.
   - **Joint Commission Survey**
     Len mentioned that a survey that he helped to develop with Joint Commission will soon be distributed to 800 randomly selected US hospitals (urban, rural, etc.) to ask about expenses and resource allocation for Ebola preparedness. Hospitals will receive a notification if they have been selected.

5. Action items
   - Send any additional feedback on the Ebola Assessment Tool, first round of stress tests and upcoming assessments to Alysia Mihalakos (Alysia.Mihalakos@health.ri.gov) (All)

   Next Meeting: August 17, 2015
Assessment Tool for Ebola Treatment Centers and Assessment Hospitals

This tool is current as of May 18, 2015

Who this is for: Facilities that have been designated as or that are under consideration for designation as Ebola assessment hospitals or Ebola treatment centers as well as state and local health departments.

What this is for: Tool to assess whether a hospital has appropriate infection prevention policies, procedures, and supplies in place to allow healthcare personnel (HCP) to provide safe care during the assessment and treatment of patients with suspected or confirmed Ebola virus disease (Ebola). The content included in the tool applies to both Ebola assessment hospitals and Ebola treatment centers, except where otherwise noted.

All U.S. acute healthcare facilities have an important role in preparing to identify, isolate, and evaluate patients with possible Ebola and promptly informing public health authorities. However, the roles and the preparations required to perform these tasks will differ by facility. Ebola assessment hospitals are facilities prepared to receive and isolate a patient with possible Ebola and care for the patient until a diagnosis of Ebola can be confirmed or ruled out and until discharge or transfer is completed. Ebola treatment centers are facilities that are prepared to care for and manage a patient with confirmed Ebola for the duration of the patient’s illness. In some cases, hospitals may serve simultaneously as an Ebola assessment hospital and an Ebola treatment center.

See [http://www.cdc.gov/vhf/ebola/hcp/us-hospital-preparedness.html](http://www.cdc.gov/vhf/ebola/hcp/us-hospital-preparedness.html) for more information including an outline of minimum recommended capabilities for assessment hospitals and treatment centers.

Summary of key differences between assessment hospitals and treatment centers:

- Protocol for Inter-facility Transfer (Section A, Item 1)
- Staffing of Patient Care Team (Section B, Item 6)
- Personal Protective Equipment (PPE) Supply (Section E, Item 11)
- Management of Waste (Section I, Item 2)

This tool is designed to be used both by hospitals as a self-assessment tool for Ebola preparedness and by a Health Department or CDC Ebola Readiness Assessment (ERA) Teams to assist and support hospitals in their preparedness efforts.

How this is related to other guidance documents/purpose: This document is based on existing infection prevention guidance for U.S. Healthcare Settings in the evaluation and management of patients with suspected or confirmed Ebola. Because this guidance continues to evolve, hospitals and health departments are urged to consult the full guidance documents referenced within the tool to ensure they are following the most up-to-date recommendations. The ERA team and hospital are encouraged, following completion of an assessment, to place the findings back into the context of the minimum capabilities and develop plans to mitigate gaps and optimize facility/system readiness.

Updates from prior versions of this tool: This version of the tool contains updated guidance on Personal Protective Equipment and Procedures for Donning and Doffing (Section E), Monitoring Healthcare Personnel and Managing Exposures (Section F), Laboratory Safety and Capacity (Section G), and Management of the Deceased (Section K).
Domains for Preparedness

A. Pre-Hospital Transport Plans, Emergency Medical Services (EMS), Emergency Department (ED) Preparedness

B. Staffing of Patient Care Team

C. Patient Transport from Point(s) of Entry to Designated Ebola Treatment Area

D. Patient Placement

E. Personal Protective Equipment and Procedures for Donning and Doffing

F. Monitoring Healthcare Personnel and Managing Exposures

G. Laboratory Safety

H. Environmental Infection Control and Equipment Reprocessing

I. Management of Waste

J. Communications

K. Management of the Deceased

L. Special Populations
A. Pre-Hospital Transport Plans, Emergency Medical Services (EMS), Emergency Department (ED) Preparedness

Refer to:

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EMS provider(s) that will transport person under investigation (PUI) or patient with confirmed Ebola to the facility for further evaluation have been identified.</td>
<td>For Assessment hospitals, a protocol, developed in consultation with local and state EMS and public health officials is in place to address patient transfer to a designated Ebola treatment center.</td>
</tr>
<tr>
<td>2. EMS providers have protocols for:</td>
<td></td>
</tr>
<tr>
<td>• Safe transport of PUI or patient with confirmed Ebola, including PPE used by EMS personnel</td>
<td></td>
</tr>
<tr>
<td>• Training of EMS providers in correct use of PPE and documentation of competency</td>
<td></td>
</tr>
<tr>
<td>• Advance notification of the hospital and public health authorities</td>
<td></td>
</tr>
<tr>
<td>• Cleaning and disinfection of the ambulance and potentially contaminated equipment</td>
<td></td>
</tr>
<tr>
<td>• Disposal of used PPE and waste generated during transport</td>
<td></td>
</tr>
<tr>
<td>3. The hospital has designated:</td>
<td></td>
</tr>
<tr>
<td>• Hospital personnel to meet the EMS provider on arrival to the hospital to:</td>
<td></td>
</tr>
<tr>
<td>o Assume care of the patient</td>
<td></td>
</tr>
<tr>
<td>o Assist EMS personnel with donning PPE, if needed</td>
<td></td>
</tr>
<tr>
<td>• Area where EMS personnel can don their PPE</td>
<td></td>
</tr>
<tr>
<td>• Area where EMS personnel can park their ambulance to perform decontamination</td>
<td></td>
</tr>
<tr>
<td>4. Entry point(s) for EMS are:</td>
<td></td>
</tr>
<tr>
<td>• Identified and have been communicated with EMS</td>
<td></td>
</tr>
<tr>
<td>• Secured and free of any other patient or personnel traffic (e.g., using security escort) during patient entry and transport</td>
<td></td>
</tr>
<tr>
<td>ED Guidance for triage and isolation/initial management of patients under investigation</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Elements to be assessed</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>5. <strong>ED triage personnel are trained in screening patients for Ebola by asking:</strong></td>
<td></td>
</tr>
<tr>
<td>• Whether the patient has resided in or traveled to a country with widespread Ebola virus transmission or with cases in urban settings with uncertain control measures or had contact with an individual with confirmed Ebola within the previous 21 days</td>
<td></td>
</tr>
<tr>
<td>• Whether patients with this history have experienced signs or symptoms compatible with Ebola</td>
<td></td>
</tr>
<tr>
<td>6. <strong>ED personnel are trained in questioning EMS providers about possible risk factors for Ebola in patients being transported via ambulance to the hospital.</strong></td>
<td></td>
</tr>
<tr>
<td>7. <strong>Protocols are in place to immediately isolate patients who report a relevant exposure history and signs or symptoms consistent with Ebola:</strong></td>
<td></td>
</tr>
<tr>
<td>• Patients are placed in a private room or separate enclosed area with private bathroom (or covered, bedside commode).</td>
<td></td>
</tr>
<tr>
<td>• Separate areas for donning and doffing of PPE are designated in proximity to the patient room.</td>
<td></td>
</tr>
<tr>
<td>• Hospital infection control program (and other appropriate staff) and health department are immediately notified.</td>
<td></td>
</tr>
<tr>
<td>8. <strong>Only essential HCP who have had appropriate training and documented competency in infection control, including PPE for Ebola, and have a designated role provide patient care in the ED.</strong></td>
<td></td>
</tr>
<tr>
<td>9. <strong>A log is maintained of all personnel who enter any potentially contaminated space in the Ebola treatment/assessment area and/or handle potentially infectious materials and includes sufficient information to assign exposure categories (e.g., high-risk, some risk, low-risk)(^1) in order to apply movement and monitoring guidance to HCP (See <strong>Section F</strong>).</strong></td>
<td></td>
</tr>
</tbody>
</table>
10. All HCP who have contact with a patient while the patient is under investigation for Ebola use appropriate PPE based on the patient's clinical status.  
   - If the patient is exhibiting bleeding, vomiting, diarrhea or a clinical condition that warrants invasive or aerosol-generating procedures (e.g., intubation, suctioning, active resuscitation), HCP wear PPE designated for the care of hospitalized patients with confirmed Ebola as outlined in *Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)*.  
   - If signs and symptoms such as bleeding, vomiting, diarrhea or conditions warranting invasive or aerosol-generating procedures are *not* present and the patient is clinically stable, HCP at a minimum wear PPE as outlined in *Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients under Investigation (PUIs) for Ebola Virus Disease (EVD)*.

11. All equipment used in the care of PUIs is not used for the care of other patients until appropriate decontamination is performed.

12. The hospital has protocols addressing:  
   - Collection and testing of laboratory specimens drawn in the ED for both Ebola and alternative diagnoses to support timely evaluation and medical care of the patient  
   - Environmental infection control of the treatment area in the ED  
   - Management of waste generated in the ED
### B. Staffing of Patient Care Team

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A trained Patient Care Team has been pre-identified for management of the PUI/patient. Consider cross-training registered nurses or physicians to minimize number of staff with direct patient contact (e.g., phlebotomy, cleaning).</td>
<td></td>
</tr>
<tr>
<td>2. Team members receive job-specific training and demonstrate competency on infection control practices, policies, and procedures for caring for a PUI or Ebola patient (see <a href="#">Section E</a>).</td>
<td></td>
</tr>
<tr>
<td>3. Qualified, trained staff members are identified for obtaining, handling, processing and testing of specimens from the PUI or Ebola patient.</td>
<td></td>
</tr>
<tr>
<td>4. Hospital has identified additional team members involved in consultation but who do not enter the PUI/patient room (e.g., audio/video conferencing may be used to communicate with patients or team members in room).</td>
<td></td>
</tr>
<tr>
<td>Note: If consulting team members must enter the PUI/patient room, they receive job-specific training and demonstrate competency on infection control practices, policies and procedures, including appropriate use of PPE, prior to entering the patient room.</td>
<td></td>
</tr>
<tr>
<td>5. A schedule of staffing for patient care is created in advance of a PUI/patient’s arrival so that individuals on call are trained and have demonstrated competency, and can be quickly assembled when needed.</td>
<td></td>
</tr>
</tbody>
</table>
6. Staffing schedules address the following considerations:
   - For **Ebola assessment hospitals**, staffing plans include a roster to manage up to 96 consecutive hours of clinical care.
   - For **Ebola treatment hospitals**, staffing plans include a roster to manage at least several weeks of clinical care.
   - Plans to minimize number of personnel in room
   - Adequate time to rest between shifts
   - On-call schedule for consultants to the patient care team 24 hrs/7 days/week
   - Maximum duration HCP can provide direct patient care (e.g., 2–4 hours continuously) and maximum duration of an Ebola patient care unit shift (e.g., 8–12 hours)

7. Policies are in place for HCP movement, monitoring, and non-Ebola patient care responsibilities while serving on an Ebola patient care unit (see Section F).

8. Worker safety programs and policies are in place.
   - The hospital is in compliance with all federal and state occupational safety and health regulations applicable to reducing employee exposure to Ebola.
   - Hospital has designated individuals as site managers responsible for overseeing the implementation of precautions for healthcare workers and patient safety.
   - At least one site manager is on-site at all times in the Ebola treatment unit when a patient is present. Site managers are responsible for overseeing the implementation of routine and additional precautions for HCP and patient safety.

9. A plan for ongoing support and evaluation of team members is in place, including process for HCP to provide feedback to leadership.

10. Protocols are in place so that only direct patient care staff, wearing appropriate PPE, deliver meals to patients.
C. Patient Transport from Point(s) of Entry to Designated Ebola Treatment or Assessment Area

Interim Guidance for Environmental Infection control in Hospitals for Ebola Virus:

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Protocols are in place to transport the PUI or confirmed Ebola patient safely from the hospital point of entry or Emergency Department, via a pre-identified route that is secured and free of any other patient or personnel traffic (e.g., using security escort) during patient transport to pre-identified room / care area.</td>
<td></td>
</tr>
<tr>
<td>2. Protocols are in place for transport personnel to wear appropriate personal protective equipment (PPE) during transport of PUI or Ebola patients. Such personnel must receive training and demonstrate competency on proper procedures for donning and doffing of PPE.</td>
<td></td>
</tr>
<tr>
<td>3. Protocols are in place for patient to be transported in appropriate protective equipment to prevent leakage or spillage of body fluids, if needed.</td>
<td></td>
</tr>
<tr>
<td>4. Protocols are in place to manage blood or body fluid spills during transport.</td>
<td></td>
</tr>
<tr>
<td>5. Protocols are in place to manage cleaning and disinfection of reusable transportation equipment and potentially contaminated areas of the transportation route.</td>
<td></td>
</tr>
<tr>
<td>6. Once patient is in the designated patient room/care area further movement of the patient within the hospital is limited.</td>
<td></td>
</tr>
<tr>
<td>7. Protocols are in place for safe emergency evacuation of patient and staff members designated to work with patient, minimizing any possible exposures.</td>
<td></td>
</tr>
</tbody>
</table>
## D. Patient Placement

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A private room with private bathroom (or covered bedside commode) and critical care capacity has been identified to accommodate a PUI or confirmed Ebola patient. If feasible: • Negative pressure airborne infection isolation room (AIIR)².</td>
<td></td>
</tr>
<tr>
<td>2. PUI or Ebola patient room is physically separated from other patient care areas. Ideally, the room or unit is sealed or closed off to personnel not engaged as part of Ebola patient management team.</td>
<td></td>
</tr>
<tr>
<td>3. A log is maintained of all personnel who enter any potentially contaminated space in the Ebola treatment/assessment area and/or handle potentially infectious materials and includes sufficient information to assign exposure categories (e.g., high-risk, some risk, low-risk)³ in order to apply movement and monitoring guidance (See Section F)</td>
<td></td>
</tr>
<tr>
<td>4. PUI or Ebola patient room incorporates a method of remote communication (e.g., intercom, video system, telemedicine equipment) for patient-staff communication, patient-family communication, and interdisciplinary rounds so that only essential personnel enter the room.</td>
<td></td>
</tr>
<tr>
<td>5. Puncture-proof sealed sharps containers are located in room in close proximity to patient bed.</td>
<td></td>
</tr>
<tr>
<td>6. PUI or Ebola patient room has dedicated and/or disposable patient care equipment⁴ that is not used for any other patients. Protocols are in place for reusable equipment (e.g., portable x-ray, dialysis machine⁵) to be cleaned and disinfected according to manufacturers’ instructions by trained personnel wearing correct PPE.</td>
<td></td>
</tr>
<tr>
<td>7. In close proximity to the patient room, these separate areas are designated: • HCP changing area⁶ • Clean area (PPE donning area)⁷ • PPE doffing area⁸</td>
<td></td>
</tr>
</tbody>
</table>
8. PPE doffing area is in proximity to patient room (e.g., anteroom or adjacent vacant patient room separate from clean area) and includes:
   - Supplies for disinfection of PPE and washable footwear
   - Supplies for performing hand hygiene
   - Space to doff PPE
   - Place(s) for sitting
   - Leak-proof waste container to discard PPE and area or containers designated to collect PPE for reprocessing (e.g., PAPRs) if applicable
   - Signs
   - Full-length mirror (optional)

9. Showers are available and in close proximity to PPE removal area for HCP to use following PPE removal protocol.

   Note: HCP can leave PPE removal area wearing dedicated washable footwear that has been disinfected using an EPA-registered disinfectant wipe (wiping down complete external surface of the washable footwear) and scrubs.

10. A designated area for waste storage has been identified that meets all applicable fire codes and principles of maintaining a clutter-free, secure environment.

11. A protocol has been developed to address a plan of care for the patient that incorporates family involvement:
   - Maintain communication between patient and family
   - Identify an area for the family outside the Ebola unit, if appropriate based on movement and monitoring guidance and in consultation with local health department.
### E. Personal Protective Equipment and Procedures for Donning and Doffing

Refer to: Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing) at: [http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html](http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html)


<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hospital has selected the PPE to be used by HCP to manage PUI and Ebola patients and has a protocol outlining procedures for use of the PPE. <em>(If hospital elects to use additional/different PPE from CDC recommendations, HCP are trained to ensure donning and doffing procedures are adjusted and practiced accordingly.)</em></td>
<td></td>
</tr>
<tr>
<td>2. Hospital is compliant with all elements of OSHA Respiratory Protection Standards, including respirator fit-testing, medical evaluation, and training of HCP.</td>
<td></td>
</tr>
<tr>
<td>3. HCP caring for PUI or Ebola patients change into hospital scrubs or disposable garments and dedicated, washable footwear, if using.</td>
<td></td>
</tr>
<tr>
<td>4. HCP on the Ebola Patient Care Team receive repeated training and are required to demonstrate competency through testing and assessment on proper procedures for donning and doffing of PPE.</td>
<td></td>
</tr>
</tbody>
</table>
5. **Assessment of Person Under Investigation.**
   All HCP who have contact with a patient while the patient is under investigation for Ebola use appropriate PPE based on the patient's clinical status:
   - If the patient is exhibiting bleeding, vomiting, diarrhea or a clinical condition that warrants invasive or aerosol-generating procedures (e.g., intubation, suctioning, active resuscitation), HCP wear PPE designated for the care of hospitalized patients with confirmed Ebola as outlined in *Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing).*
   - If signs and symptoms such as bleeding, vomiting, diarrhea or conditions warranting invasive or aerosol-generating procedures are **not** present and the patient is clinically stable, HCP at a minimum wear PPE as outlined in *Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients under Investigation (PUIs) for Ebola Virus Disease (EVD).*

6. **Treatment of Confirmed Patient.**
   Recommended PPE during management of hospitalized patients with **confirmed Ebola** is described in *Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing).*

List PPE selected by the hospital for care of a patient with suspected or confirmed Ebola, including the specific make and model numbers for all components.
7. A policy is in place for trained observers to monitor for correct PPE use and adherence to donning/doffing protocols prior to entering and after leaving patient’s room.
   • Trained observer is a designated individual with the sole responsibility, during donning/doffing process, of ensuring quality control in all steps of the procedure.
   • Trained observer reads aloud each step of the procedure to HCP using a checklist, then visibly confirms and documents that each step has been completed correctly.
   • HCP must engage/wait for a trained observer prior to PPE donning and doffing.
   • Donning and doffing of PPE proceeds slowly and deliberately to ensure full-coverage and prevent self-contamination.
   • Trained observer should NOT provide physical assistance during the doffing.
   • A designated-doffing assistant (“buddy”) might be helpful in doffing process, especially with PAPR options.

8. Recommended PPE for trained observers (and doffing assistant) during observations of PPE doffing is described in Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing).

9. Hand hygiene is performed before donning and after doffing and disposing of gloves and at any time during doffing procedure when contamination of hands is suspected.

10. Doffing procedure includes steps for disinfection of visibly contaminated PPE with EPA-registered disinfectant wipes or spray prior to removal and steps for disinfection of gloved hands with ABHR (ideally with touch-free dispensing system) or EPA-registered disinfectant wipe between each step in the doffing process.
11. **Hospital maintains updated inventory of PPE supplies**, including details on specific make and models of selected PPE. Given current PPE shortages, hospitals may not be able to procure in advance the amount of PPE needed for the entire time period to care for a PUI or confirmed Ebola patient. CDC, in collaboration with state and local health departments, may facilitate the procurement of or provide additional PPE supplies.

- **For assessment hospitals**, at least a 4–5 day supply of PPE in stock
- **For treatment hospitals**, at least a 7 day supply of PPE in stock

12. **Hospital has plans in place for re-supplying PPE and alternative procedures if supply chain is interrupted.** If barriers exist to procuring adequate supply of PPE, state health departments should be contacted to facilitate additional assistance.


<table>
<thead>
<tr>
<th>11. Hospital maintains updated inventory of PPE supplies, including details on specific make and models of selected PPE. Given current PPE shortages, hospitals may not be able to procure in advance the amount of PPE needed for the entire time period to care for a PUI or confirmed Ebola patient. CDC, in collaboration with state and local health departments, may facilitate the procurement of or provide additional PPE supplies.</th>
<th>Document the number of days the hospitals can safely care for a patient with suspected or confirmed Ebola, based on current PPE inventory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>For assessment hospitals</strong>, at least a 4–5 day supply of PPE in stock</td>
<td></td>
</tr>
<tr>
<td>- <strong>For treatment hospitals</strong>, at least a 7 day supply of PPE in stock</td>
<td></td>
</tr>
<tr>
<td>12. Hospital has plans in place for re-supplying PPE and alternative procedures if supply chain is interrupted. If barriers exist to procuring adequate supply of PPE, state health departments should be contacted to facilitate additional assistance.</td>
<td></td>
</tr>
</tbody>
</table>
## F. Monitoring Healthcare Personnel and Managing Exposures


<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hospital has well-defined policies including:</td>
<td></td>
</tr>
<tr>
<td>• Work-exclusion policies that encourage reporting of illnesses and do not penalize with loss of wages, benefits, or job status</td>
<td></td>
</tr>
<tr>
<td>• Education of personnel on prompt reporting of illness to supervisor and occupational health</td>
<td></td>
</tr>
<tr>
<td>2. A log is maintained of all personnel who enter any potentially contaminated space in the Ebola treatment/assessment area and/or handle potentially infectious materials and includes sufficient information to assign exposure categories (e.g., high-risk, some risk, low-risk) in order to apply movement and monitoring guidance.</td>
<td></td>
</tr>
<tr>
<td>3. Protocols for monitoring and restrictions of asymptomatic HCP are in place, according to the exposure category of the HCP. HCP are monitored during patient care or period of time handling potentially infectious materials and during the 21 days after the last potential exposure.</td>
<td></td>
</tr>
<tr>
<td>• Direct, active monitoring is performed for HCP providing direct care to Ebola patients and meet “high risk” exposure category</td>
<td></td>
</tr>
<tr>
<td>• Direct, active monitoring, with controlled movement, patient care restrictions, and potential public health orders, is performed for HCP providing direct care to Ebola patients in a healthcare facility where another HCP has been diagnosed with confirmed Ebola without an identified infection control breach, or where a breach is identified retrospectively (“high-risk” exposure category)</td>
<td></td>
</tr>
<tr>
<td>• Active monitoring is performed for HCP providing direct care to Ebola patients and DO NOT meet “high risk” exposure category</td>
<td></td>
</tr>
<tr>
<td>4. Following a recognized Ebola exposure incident, protocols for post-exposure management, evaluation, and follow-up are in place.</td>
<td></td>
</tr>
</tbody>
</table>
### G. Laboratory Safety and Capacity

Refer to: Guidance for U.S. Clinical Laboratories for Managing and Testing Routine Clinical Specimens When There is a Concern About Ebola Virus Disease at:

Guidance for Collection, Transport and Submission of Specimens for Ebola Virus Testing at:
http://www.cdc.gov/vhf/ebola/healthcare-us/laboratories/specimens.html

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Protocols are in place for Ebola testing at the nearest Laboratory Response Network (LRN) laboratory capable of testing for Ebola.</td>
<td></td>
</tr>
<tr>
<td>Note: If the hospital chooses to use a commercial Ebola virus test, paired specimens are submitted to an LRN facility or CDC for definitive Ebola virus testing.</td>
<td></td>
</tr>
<tr>
<td>2. The hospital is prepared to provide a timely and minimum menu of testing to ensure patient care is not compromised while patients undergo assessment and prior to availability of Ebola laboratory testing results. In the US, most PLUs for Ebola have had another etiology for their illness. Timely identification of these other etiologies is essential to appropriate patient care. At a minimum this testing should include CBC, glucose, potassium, malaria exam, influenza test and tests for liver function.</td>
<td></td>
</tr>
<tr>
<td>3. A site-specific risk assessment has been performed to identify potential exposure risks and to mitigate these risks by implementing engineering controls, administrative and work practice controls, and use of appropriate PPE. The risk assessment considers the path of the sample throughout the laboratory and all work processes, procedures, and tasks performed.</td>
<td></td>
</tr>
<tr>
<td>4. Protocols are in place for handoff and placement of specimen tubes into appropriate container for transport to laboratory. Specimens are placed in a durable, leak-proof secondary container for transport within the hospital. The outside of specimen containers are disinfected with EPA-registered hospital disinfectant prior to removal from room. Note: Pneumatic tube system is NOT used for Ebola specimens.</td>
<td></td>
</tr>
<tr>
<td>5. Personnel who collect or process primary patient specimens when Ebola is a concern have demonstrated competency in donning and doffing PPE, and collecting and processing specimens while wearing PPE.</td>
<td></td>
</tr>
</tbody>
</table>
6. **PPE to be used during specimen collection**

Healthcare personnel including laboratory staff that collect patient specimens from a PUI confirmed Ebola patient or a exhibiting bleeding, vomiting or diarrhea or who is clinically unstable and/or will require invasive or aerosol-generating procedures should wear the PPE described in [Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)](https://www.cdc.gov/vhf/ebola/hcp/guidance-for-care-providers.html).

Healthcare personnel caring for a PUI who is clinically stable and does not have bleeding, vomiting or diarrhea can wear the alternate ensemble described in [Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients under Investigation (PUIs) for Ebola Virus Disease (EVD)](https://www.cdc.gov/vhf/ebola/hcp/cases-investigation-infection-control-hcp.html).

7. **PPE and engineering controls to be used when performing laboratory testing**

When manipulating clinical specimens and EVD is a concern, staff should use a combination of engineering controls, work practices and PPE to protect their mouth, nose, eyes and bare skin from coming into contact with patient specimens, including:

- Disposable gloves
- Solid-front wrap around gowns that are fluid-resistant or impermeable
- Surgical mask to cover all of nose and mouth
- Eye protection such as a full face shield or goggles/safety glasses with side shields

- Use a certified Class I or certified Class II biosafety cabinet or other physical containment device. When a BSC is not available or possible, then additional safety equipment should be used to contain any splashes or potential aerosols generated.\(^\text{22}\)
- Use manufacturer-installed safety features for instruments that reduce the likelihood of exposure
8. It is recommended to place point of care (POC) instruments within an enclosure or behind a barrier to contain any splashes or potential aerosols that may be generated.  
   a. If placed inside a BSC, ensure that appropriate airflow is not compromised by overloading the inside of the BSC, or by blocking the front or back air intake grilles. Consideration should be given to verifying inward airflow at the front opening of the BSC while instruments are operating.  
   b. When a BSC is not available or possible, then additional safety equipment should be used to contain any splashes or potential aerosols generated. This could be a small benchtop BSC, a PCR workstation (e.g., “dead air box”), a plexiglass splash shield, or other physical containment device.

9. There is a designated area for laboratory personnel to safely doff PPE.

10. Protocols are in place for cleaning and disinfection of laboratory surfaces and equipment, management of blood and body fluid spills, and exposure of staff.

11. A tracking system is in place for patient specimens that are transported to the laboratory.

12. A policy is in place for safe short-term storage and disposal of Ebola patient specimens.
### H. Environmental Infection Control and Equipment Reprocessing


<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Facility selects EPA-registered hospital disinfectants and uses all cleaning and disinfecting products, including disposable wipes, in accordance with manufacturers’ instructions (e.g., dilution, storage, shelf life, contact time).</td>
<td></td>
</tr>
<tr>
<td>2. Trained Ebola patient care team members have been designated to perform routine cleaning and disinfection of Ebola patient room surfaces.</td>
<td></td>
</tr>
</tbody>
</table>
| 3. Protocols are in place for staff, including Environmental Services (EVS) personnel, to wear appropriate PPE to prevent exposure to Ebola virus during cleaning of the Ebola patient room and equipment.  
  • Staff, including EVS personnel, must have received job-specific training and demonstrated competency prior to performing duties. | |
| 4. Protocols are in place for monitoring of cleaning and disinfection procedures to ensure they are consistently and correctly performed. | |
| 5. Materials to be used for cleaning and disinfection of Ebola patient room and equipment are disposable, for single-use only. | |
| 6. Protocols are in place for environmental surfaces in Ebola patient care areas to be cleaned with a detergent and disinfected on a regular basis (e.g., at least daily), when spills occur, and when surfaces are visibly contaminated. Hospital promptly removes bulk spill matter, cleans and decontaminates spills of blood or other potentially infectious materials using EPA-registered hospital disinfectants. | |
| 7. Protocols are in place for post-discharge cleaning and disinfection of the Ebola patient care areas, including visibly soiled areas, frequently touched surfaces, and floors in the Ebola patient care area. | |
8. Ebola patient room has dedicated and/or disposable patient care equipment that is not used for any other patients. Protocols are in place for reusable equipment (e.g., portable x-ray, dialysis machine) to be cleaned and disinfected according to manufacturers’ instructions by trained personnel wearing appropriate PPE.

9. Protocols are in place clearly delineating responsibility for cleaning and disinfection of reusable patient care equipment (how equipment should be cleaned and by whom).
   - Protocols include documentation of cleaning on a log (who/when/how)

10. HCP are trained to handle soiled textiles/linens with minimum agitation to avoid contamination of surfaces and persons.

11. All linens used in the Ebola patient room are discarded into the waste stream and disposed of appropriately. These items are not reused.

12. Food trays, dishes, and cutlery provided to the Ebola patient with meals are disposable, and are placed into the waste stream along with leftover food items for appropriate disposal.
I. Management of Waste


- Medical waste generated in the care of patients with known or suspected Ebola is subject to procedures set forth by local, state and federal regulations.
- Medical waste contaminated with Ebola virus is a Category A infectious substance regulated as a hazardous material under the U.S. Department of Transportation’s (DOT’s) Hazardous Materials Regulations (HMR; 49 CFR, Parts 171-180). For off-site commercial transport of Ebola-associated medical waste, strict compliance with the HMR is required. For more information on the HMR requirements see http://phmsa.dot.gov/hazmat/transporting-infectious-substances.

Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling and in-hospital management of waste generated through the care of patients with Ebola includes:</td>
<td></td>
</tr>
<tr>
<td>- Safe containment and packaging of waste should be performed as close as possible to the point of generation.</td>
<td></td>
</tr>
<tr>
<td>- Limiting the number of personnel handling generated waste before and after primary containment.</td>
<td></td>
</tr>
<tr>
<td>- Always using appropriate PPE and procedures for handling waste until onsite inactivation or transport away from the hospital for offsite inactivation.</td>
<td></td>
</tr>
<tr>
<td>- Protocols to transport the waste via a direct, pre-identified route to the point of final storage within the hospital.</td>
<td></td>
</tr>
</tbody>
</table>
2. The hospital has waste management plan and protocols in place
   - To package and transport waste contaminated or suspected to be contaminated with Ebola virus in accordance with U.S. DOT Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180), state, and local regulations.
   - For waste contractor to inactivate potentially contaminated and contaminated waste onsite at the hospital or transport it offsite for inactivation.

   **During initial assessment**, hospitals may consider sequestering medical waste until the patient’s Ebola test result becomes known. At that time, if the patient is confirmed to have Ebola, the hospital follows its pre-arranged protocol with a vendor capable of managing the waste as a Category A infectious substance; if Ebola is ruled out, waste can be handled according to procedures in compliance with local waste management ordinances.

3. A designated waste management team has been identified with job-specific training and documented competency on wearing appropriate PPE and on standardized procedures for waste handling.

4. All necessary supplies for hand hygiene, cleaning and disinfection and packaging waste have been obtained. Supply list is referenced in *Procedures of safe handling and management of Ebola-Associated Waste*.

5. Protocols are in place for the disposal of solid waste (e.g., medical equipment, sharps, linens, privacy curtains, used healthcare products and used PPE). All placement of receptacles and primary packaging by double-bagging of waste occurs in the patient’s room and is performed by the primary healthcare workers (i.e., doctors and nurses) wearing appropriate PPE.
6. Protocols are in place for disposal of liquid waste (e.g., urine, diarrhea, vomit) that incorporate state and local regulations regarding pretreatment of liquid waste. While CDC does not recommend pretreatment, if this is required by state or local regulations, a chemical that does not pose a respiratory risk to the patient or staff is selected.

7. If waste is to be autoclaved, a protocol is in place to ensure appropriate waste autoclave procedures are followed that will inactivate all infectious material, and a large capacity, dedicated autoclave is available within the Ebola patient care unit or within close proximity to the Ebola patient care unit. If waste is not to be autoclaved, protocols are in place for disposal of non-autoclaved, non-sharps waste.

8. Protocols are in place for disposal of sharps waste.

9. Protocols are in place for the designated storage of packed, sealed Category A waste containers in an area separated from other waste, while awaiting transport by the facility waste contractor.

10. The facility’s waste contractor has been contacted and a plan is in place for the facility’s waste contractor to request a special permit from the U.S. DOT.
### J. Communications

<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The hospital has a plan in place to inform and educate staff and patients of plans to care for PUI and Ebola patients.</td>
<td></td>
</tr>
<tr>
<td>2. The hospital has a process in place for dissemination of every new or changed plan, procedure, and protocol to appropriate groups within hospital to ensure understanding, proficiency, comfort among HCP.</td>
<td></td>
</tr>
<tr>
<td>3. The hospital has a plan in place to handle media inquiries related to PUI and Ebola patient care.</td>
<td></td>
</tr>
<tr>
<td>4. The hospital has a plan in place for protecting the privacy of the PUI and Ebola patient and controlling and monitoring access of HCP to the PUI and Ebola patient record so that unauthorized access does not occur.</td>
<td></td>
</tr>
<tr>
<td>5. A single staff member is designated as primary point of contact for communicating information to the designated public health department contact on a daily basis.</td>
<td></td>
</tr>
</tbody>
</table>
K. Management of the Deceased


<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Protocols are in place for post-mortem care of deceased Ebola patients.</td>
<td></td>
</tr>
<tr>
<td>• Only designated, trained HCP or mortuary workers wearing PPE (same PPE used for direct patient care as described in Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing) participate in post-mortem preparation of the body.</td>
<td></td>
</tr>
<tr>
<td>• Handling of Ebola patient remains is kept to a minimum, with no washing, cleaning, or embalming of the body.</td>
<td></td>
</tr>
<tr>
<td>• Autopsies are not performed on deceased Ebola patients.</td>
<td></td>
</tr>
<tr>
<td>• Inserted medical equipment, such as intravenous lines, endotracheal or other tubing, or implanted medical devices are not removed; they are left in place.</td>
<td></td>
</tr>
<tr>
<td>• Human remains are cremated. If cremation cannot be done, the body is buried in a standard metal casket or comparable burial method.</td>
<td></td>
</tr>
</tbody>
</table>
2. Ensure that the following equipment is available or can be procured:

Supplies used in the hot zone (i.e., contaminated area that includes the patient treatment room):

- First bag: vinyl or other chlorine-free material, minimum of 6 mil thickness (152 micrometers).
- Second bag: chlorine-free material impervious to fluids that can be heat-sealed around the body to form a leak-proof body bag.
- Third bag: laminated vinyl or other chlorine-free material, minimum of 18 mil thickness (457 micrometers) with handles that are not sewn on, such as riveted handled reinforced with handle straps that run under the pouch.
- Thermal sealer for sealing the second bag
- Scissors for cutting excess material
- Camera or mobile phone capable of securely transferring photographs electronically via Wi-Fi, e-mail, or text message in order to provide necessary identification of the body to mortuary staff
- Zip tie for locking the third bag shut at the zipper
- EPA-registered disinfectant wipes
- Alcohol-based hand rub
- Red biohazard bag for medical waste
- Enlarged copy of the Mortuary Guidance Job Aid

Supplies used in the cold zone (i.e., non-contaminated area used for planning and staging):

- Hospital gurney or mortuary stretcher
- Adhesive-backed pouch that is applied to the decontaminated body bag
- Single-use (disposable) gloves with extended cuffs and a long-sleeved disposable gown
- Biohazard spill kit
- Infectious substance labels that are applied to the decontaminated body bag including:
  - Black and white “infectious substance” label
  - United Nations (UN) 2814 label
  - “Do not open” label
  - Name and phone number of the hospital administrator
3. Protocols are in place to prepare the decedent for transport. Detailed steps available in *Guidance for Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries*.

4. Protocols are in place for transport of the disinfected body bag from the hospital to the place of final disposition. Detailed steps are available in *Guidance for Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries*.

5. Arrangements are in place with designated mortuaries prepared to handle and cremate or bury Ebola patient remains according to all applicable local, state, and federal (e.g., EPA) regulations. Local and state public health authorities are contacted prior to transport of the Ebola patient remains to the designated mortuary. CDC should also be consulted if interstate transport is planned. Transport of non-cremated remains via aircraft is avoided.
### L. Special Populations


<table>
<thead>
<tr>
<th>Elements to be assessed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Protocols are in place to address needs of special populations (e.g., pregnant women, infants, children, dialysis patients). Pregnant women considerations described in <a href="http://www.cdc.gov/vhf/ebola/hcp/guidance-maternal-health.html">Guidance for Screening and Caring for Pregnant Women with Ebola Virus Disease for Healthcare Providers in U.S. Hospitals</a>. Dialysis patient considerations described in <a href="http://www.cdc.gov/vhf/ebola/hcp/guidance-dialysis.html">Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease (EVD) in U.S. Hospitals</a></td>
<td></td>
</tr>
</tbody>
</table>
| 2. The hospital has a plan for patient arrival at all entry points (e.g., labor and delivery, Emergency department, outpatient clinic, dialysis unit) and safe transport to the designated treatment area.  
  - Patients can be adequately screened for risk factors, and signs and symptoms at all entry points |                                                                      |
| 3. The hospital has a plan for delivery of care (e.g., staffing, equipment), including labor and delivery, dialysis, surgical intervention, as needed. |                                                                      |
4. Protocols are in place to address family involvement in pediatric and obstetric care:

- Maintain communication between patient and parents/guardian
- Identify an area for the family outside the Ebola unit if appropriate based on movement and monitoring guidance and in consultation with local health department
- Develop protocol specific for parent/child interaction

Endnotes

1 For healthcare workers under direct active monitoring, public health authorities can delegate the responsibility for direct active monitoring to the healthcare facility’s occupational health program or the hospital epidemiologist. Facilities may conduct direct active monitoring by performing fever checks on entry or exit from the Ebola treatment unit and facilitate reporting during days when potentially exposed healthcare workers are not working. The occupational health program or hospital epidemiologist would report daily to the public health authority. For the full list of exposures under each risk category, refer to the Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure

High risk exposure includes any of the following:

- Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or body fluids of a person with Ebola while the person was symptomatic
- Exposure to the blood or body fluids (including but not limited to feces, saliva, sweat, urine, vomit, and semen) of a person with Ebola while the person was symptomatic without appropriate personal protective equipment (PPE) (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html)
- Processing blood or body fluids of a person with Ebola while the person was symptomatic without appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) or standard biosafety precautions
- Having lived in the immediate household and provided direct care to a person with Ebola while the person was symptomatic
- Healthcare workers taking care of Ebola patients in a U.S. facility where another healthcare worker has been diagnosed with confirmed Ebola without an identified breach in infection control. A similar determination would be made if an infection control breach is identified retrospectively during investigation of a confirmed case of Ebola in a healthcare worker
**Some risk** includes:
- Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic
  - Close contact is defined as being for a prolonged period of time while not wearing appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) within approximately 3 feet (1 meter) of a person with Ebola while the person was symptomatic

**Low (but not zero) risk** exposure includes the following:
- Having brief direct contact (e.g., shaking hands), while not wearing appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html), with a person with Ebola while the person was in the early stage of disease
- Brief proximity, such as being in the same room for a brief period of time, with a person with Ebola while the person was symptomatic
- In countries without widespread Ebola transmission, direct contact while using appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) with a person with Ebola while the person was symptomatic
- Traveled on an aircraft with a person with Ebola while the person was symptomatic
- Clinical laboratory workers who use appropriate PPE and follow biosafety precautions

**No identifiable risk**

- Laboratory workers in Biosafety Level 4 facilities are considered to have no identifiable risk.

---

2 Examples of team members involved in direct patient care of Ebola patient as needed (not intended to be all-inclusive). Where possible, consider cross-training physician and/or nursing personnel on the Ebola treatment team to perform activities normally performed by other staff (e.g., respiratory therapist(s), transporters, X-ray technicians, environmental services) to minimize the number of personnel in contact with the patient:

- Critical care nurses (nurses with ED, OR, or pediatric expertise may be considered, depending on hospital and specific patient care needs)
- Critical care physicians (hospitalists with critical care experience may be considered)
- Anesthesiologist or other airway management specialist
- Obstetrician
- Neonatologist
- Respiratory therapist(s)
- Dialysis technician
- Transporters
- X-ray tech (avoid radiologic procedures as much as possible)

NOTE: Trainees (e.g., medical and nursing students) should not be permitted to participate in direct patient care or handling of potentially infected materials.

3 Examples of additional team members involved in consultation
- Infectious Diseases physician
- Nephrologist
- Nutritionist(s)
• Physical/occupational therapist(s)
• Laboratory technologist(s)
• Pharmacist
• Mental health specialist (to provide support to team members on an ongoing basis)
• Clinical studies specialist or research pharmacist (to oversee and manage documentation and communication with federal agencies re: experimental treatments)
• Infection preventionist(s)
• Palliative care
• Interpretive services
• Chaplain
• Ethics expert

NOTE: Trainees (e.g., medical and nursing students) could be included in consultation not involving direct patient care or handling of potentially infected materials as deemed appropriate by the hospital.

4 A site manager’s sole responsibility is to ensure the safe and effective delivery of Ebola treatment. These individuals are responsible for all aspects of Ebola infection control including supply monitoring and evaluation with direct observation of care before, during, and after staff enter an isolation and treatment area.

5 Although Ebola virus is not airborne, placement of Ebola patient in AIIR room will provide additional protection in the event that an aerosol-generating procedure (AGP) is required.

6 Examples of dedicated or disposable patient care equipment: blood pressure monitoring devices, pulse oximeters, portable ultrasound device, or glucometer. Stethoscopes should not be used due to the nature of the PPE in use and the risk of HCP exposure from a contaminated stethoscope. Alternatives might include electronic or telephonic stethoscopes.

7 For more information on acute hemodialysis: [http://www.cdc.gov/vhf/ebola/hcp/guidance-dialysis.html](http://www.cdc.gov/vhf/ebola/hcp/guidance-dialysis.html). A hemodialysis/CRRT machine should be dedicated for use on the patient and kept in the isolation room until terminal disinfection procedures are undertaken. All other dialysis-related supplies, including the dialyzer, should be disposed of after use in accordance with local, state, and federal regulations. Under no circumstances should a used dialyzer be reprocessed or reused. Read more on Ebola-Associated Waste Management: [http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html](http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html)

8 HCP changing area is a designated area of HCP caring for Ebola patients to change from street clothes into hospital scrubs or disposable garments and dedicated, washable footwear, if using.

9 Clean area is a designated staging area outside Ebola patient room where clean PPE is stored and where HCP can don PPE prior to entering patient room. Examples of clean area space: nearby vacant room, demarcated area in hallway outside patient room.

10 PPE removal area is a designated area in proximity to patient’s room which is separate from the clean area. Examples of PPE removal area space: anteroom or adjacent vacant patient room. If hallway outside patient room must be used as PPE removal area, physical barriers should be constructed to close the hallway to through traffic. Facility should make sure this complies with fire codes and restrict access to this hallway to essential personnel who are properly trained. Some PPE may be removed in a clearly designated area of patient room near the door, provided steps can be supervised by the trained observer (e.g., through window such that the HCP doffing PPE can still hear the instructions of the trained observer). This clearly designated area should not be used for any other purpose and the clean section of the PPE removal area should have gloves accessible.
In PPE removal area, place for sitting should be easily cleaned/disinfected.

Signs in PPE removal area should instruct HCP to wait for trained observer, support doffing of PPE and remind HCP of slow and deliberate PPE removal.

Facilities should consider making showers available for use by healthcare workers after doffing of PPE. Showers are recommended at each shift’s end for healthcare workers performing high-risk patient care (e.g., exposed to large quantities of blood, body fluids, or excreta). Showers are also suggested for healthcare workers spending extended periods of time in the Ebola patient room.

U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus). For disinfectant wipes use a disposable wipe impregnated with an EPA-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus). List of EPA-registered disinfectants meeting the CDC criteria for use against Ebola virus on hard, non-porous surfaces is available at: [http://www.epa.gov/oppad001/list-l-ebola-virus.html](http://www.epa.gov/oppad001/list-l-ebola-virus.html).

Healthcare personnel are to be trained on all PPE recommended in the facility’s protocols and repeatedly practice donning/doffing procedures before engaging in Ebola patient care. HCP are required to demonstrate competency in the use of PPE, including donning and doffing, through testing and assessment before engaging in Ebola patient care.

EPA-registered disinfectant spray can be used if facility conditions permit and regulations are followed, particularly on contaminated areas.

Protocols for monitoring HCP may include:

- Web-based or other system for HCP being monitored to report measured temperatures and symptoms consistent with Ebola, per hospital protocols.
- Specific individual(s) responsible for reviewing HCP monitoring data and actions to be taken if HCP does not comply with monitoring requirements.
- Protocol for HCP to follow for abnormal temperature and/or symptoms (with specific criteria to trigger the protocol: e.g., temperature ≥100.4°F or 38°C; symptoms including: severe headache, fatigue, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage)

For the purposes of risk exposure to Ebola, regardless of country, **direct patient contact** includes doctors, nurses, physician assistants and other healthcare staff, as well as ambulance personnel, burial team members, and morticians. In addition, others (such as nonclinical staff or observers) who enter into an Ebola patient room or treatment area before completion of terminal cleaning and disinfection of the room would be considered to be potentially at risk of exposure to body fluids.

Protocols for post-exposure management, evaluation, and follow-up include:

- Safe exit from the patient care area and removal of PPE
- Decontamination of the exposed skin and/or mucous membranes
- Immediate contact of occupational health/supervisor for assessment and access to post-exposure management services for all appropriate pathogens (e.g., Human Immunodeficiency Virus, Hepatitis C, etc.).
- Appropriate monitoring and furlough of exposed HCP from direct patient care procedures for the 21 days following the exposure.
- Procedures for immediate notification and safe transport if fever or symptoms develop.
The clinician should determine specific testing according to the patient presentation and travel history. Although laboratory testing for patients for which there is a clinical suspicion of EVD, or a patient with confirmed EVD will likely vary, assessment and treatment facilities should consider how they might safely perform the following laboratory tests (if indicated) or, if unable to safely perform specific tests, identify alternative approaches to patient management (e.g., empiric treatments, alternative diagnostic strategies):

- A complete blood count (CBC), including differential, and platelet count
- Sodium, potassium, chloride, bicarbonate, calcium, blood urea nitrogen, creatinine, and glucose concentrations
- Aspartate aminotransferase (AST), alanine aminotransferase (ALT), and total bilirubin
- Coagulation testing, specifically prothrombin time (PT), expressed as international normalized ratio (INR)
- Blood culture for bacterial pathogens (for information on automated or manual blood cultures, see “Laboratory Equipment” section of this document)
- Malaria testing (smear or rapid tests)

Note: While not all facilities may have the capacity to definitively diagnose malaria, any facility capable of performing a complete blood count should be able to review the blood smear to provide an initial presumptive diagnosis regarding the presence or absence of malaria parasites. Facilities that do not have the capacity to perform definitive malaria testing on site should contact their state health department to facilitate the definitive diagnosis; CDC and the state health departments can assist with providing a diagnosis of malaria in a timely fashion. More information can be found at CDC’s malaria website.

- Influenza virus testing*
- Respiratory Syncytial Virus (RSV) and other respiratory virus testing*+
- Rapid group A strep testing on throat swabs
- Urinalysis

Ebola treatment hospitals should be able to provide the above tests, as well as additional testing required to manage a patient with EVD.

* Negative results when using point of care rapid diagnostics on respiratory specimens from older children and adults do not exclude infection because of their lower sensitivity compared with molecular assays. However, rapid RSV antigen testing in smaller children has been shown to be effective.
+ Molecular assays for numerous respiratory viruses are often available as multiplex assays and may aid in diagnosis of common respiratory infections

Some items for clinical laboratories to focus on during their site-specific risk assessment should include:

- Specimen management and transport, including the path of the sample through the laboratory particularly avoiding transport through high-traffic areas or pneumatic tube systems
- Equipment hazards (e.g., the potential for creating aerosols, sprays, splashes of the specimen when performing testing and using equipment)
- Biological Safety Cabinet certification, operation and safe work practices
• Decontamination procedures, including spill response, and methods for decontamination of equipment
• Infectious waste management
• Laboratory design
  o Laboratories that have open room designs should also consider the risk of exposure to workers present in the area but that are not directly involved with testing of a particular sample
  o Some recommended measures to minimize the risk of laboratory transmission when testing patient specimens include: limiting the number of staff engaged in testing, evaluating and segregating equipment used for testing, and performing testing in a dedicated space
• Engineering controls and safety equipment
• Laboratory communication protocols
• Laboratory entry and exit procedures
• PPE selection and use
• Facility ventilation and filtration
• Employee medical surveillance and exposure response
• Safe sharps handling
• Personnel safety training and competencies

Additional information on conducting a risk assessment can be found in the CLSI Document M29-A4 “Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline-Fourth Edition”

22 It is strongly recommended to work inside a certified Class I or certified Class II biosafety cabinet (BSC) when handling or manipulating patient specimens. When all proper procedures are strictly followed, a Class I BSC will protect the worker, and a Class II BSC will protect the worker and the sample from contamination.

When a BSC is not available or possible, then additional safety equipment should be used to contain any splashes or potential aerosols generated.

23 PPE and required training for personnel performing cleaning and disinfection is the same as for providers performing direct patient care.


25 Staff responsibilities for bagging and packaging waste, autoclaving waste (where appropriate), storing waste, and transporting packaged waste for removal from facility are clearly delineated. To limit the number of personnel entering the patient care area, consider using the patient care team to perform waste-associated responsibilities that occur within the patient care room (e.g., bagging waste, handling liquid waste).

26 Supplies for Hand Hygiene, Cleaning and Disinfection, and Packaging Waste
• Leak-proof labeled biohazard bags: The film bags must have a minimum film thickness of 1.5 mils (0.0015 inch) and be 175 liters or smaller (46 gallons). Reference U.S. Department of Transportation (DOT) HMR requirements
• Approved sharps waste container
• Waste container in patient’s room
• Transport cart
• Absorbent disposable towels
• EPA-registered hospital disinfectant for use against the Ebola virus
  Select a hospital grade disinfectant available as wipe, spray, pull-top, or refill bottles (depending on application) with a label claim for one of the non-enveloped viruses (e.g., norovirus, rotavirus, adenovirus, poliovirus) to disinfect hospital environmental surfaces.
• Disposable cleaning cloths
• Alcohol-based hand rub (ABHR) that is at least 60% alcohol
- Rigid outer receptacle that conforms to U.S. DOT HMR requirements for transport of Category A DOT waste provided by approved waste vendor
  - Note: Outer package must be either a rigid United Nations Standard- or DOT-approved non-bulk packaging. If the outer packaging is fabricated from fiberboard, it must be a minimum of triple wall and contain a 6 mil polyethylene liner. Reference DOT Guidance for Preparing Packages of Ebola Contaminated Waste for Transportation and Disposal.
  - Waste should be packaged with an installed liner provided by the waste vendor.
  - Absorbent material sufficient to absorb potential free liquid (if any) should be placed in the bottom of the rigid outer packaging or the liner of the fiberboard outer packaging.

27 Primary handling of liquid waste should occur in the patient’s room and be performed by the primary healthcare workers (i.e., doctors and nurses) wearing recommended PPE as designated in the guidance for hospitals (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html).

- Pour waste, avoiding splashing by pouring from a low level, into the toilet.
- Close the lid first, and then flush toilet.
- Clean and disinfect flush handles, toilet seat, and lid surfaces with EPA-registered hospital disinfectant/cleaner.
- Discard cleaning cloths in biohazard bags.
- Discard emesis and portable toileting containers as solid waste.

28 Bags should not be filled beyond two-thirds full to allow safe closure. Prior to closure of primary waste bags, add a sufficient volume of water to primary bag (according to validated procedures). Waste autoclave protocol requires that biological indicator, intended specifically for the type and cycle parameters of the sterilizer, is used. Autoclave parameters, including autoclave pressure, time, and liquid cycle are specified. Inactivation can be achieved by submitting materials to treatment in an autoclave under a “validated waste cycle” to 121°C (250°F) for at least 30 minutes. Logs are maintained with documentation from each cycle.

29 A 40+ or 70+ cu ft autoclave can hold large, trash sized autoclavable biohazard bags. Bags must be special autoclavable bags to avoid plastic melting in autoclave.

30 For autoclave within close proximity to the Ebola patient care unit, identify safe means of waste transport to the autoclave.

31 Non-autoclaved, non-sharps solid waste is:

- Placed into primary medical waste bags (1.5 mil—ASTM tested), no more than two thirds full
- EPA-registered hospital disinfectant is added to sufficiently cover the surface of the materials in the bag.
- The bag is securely tied.
- The outside of the bag is disinfected with an EPA-registered hospital disinfectant.
- The disinfected primary bag is placed into a second medical waste bag that is also securely tied and disinfected.

Double-bagged waste is placed into appropriate Category A waste packaging according to manufacturer’s instructions and in a manner that prevents external contamination of the final container.

32 Disposal of sharps:

- Placed in appropriate disposable sharps containers and close container.
- Containers should not be filled beyond two-thirds full to allow safe closure.
- For onsite inactivation, add sufficient volume of water (according to validated procedures) prior to closure.
- For offsite inactivation, add EPA-registered hospital disinfectant is added to the sharps container prior to disposal.
Sharps containers ready for disposal are sealed and placed into primary medical waste bags (1.5 mil—ASTM tested).
- The bag is securely tied.
- The outside of the bag is disinfected with an EPA-registered hospital disinfectant.
- The disinfected primary bag is placed into a second medical waste bag that is also securely tied and disinfected.

Double-bagged waste is placed into appropriate Category A waste packaging according to manufacturer’s instructions and in a manner that prevents external contamination of the final container.
“EBOLA STRESS TEST”
After Action Report Summary

HOSPITALS of RHODE ISLAND
JUNE 2015
This page is intentionally blank.
For Official Use Only
Homeland Security Exercise and Evaluation Program (HSEEP)

After Action Report Summary
Ebola 2014-2015
(Infection Control)
Hospital Stress Test Full-Scale Exercise

ADMINISTRATIVE HANDLING INSTRUCTIONS

1. The title of this document is *Ebola Stress Test After Action Report Summary*.

2. The information gathered in this AAR summary is classified as For Official Use Only (FOUO) and should be handled as sensitive information not to be disclosed. This document should be safeguarded, handled, transmitted, and stored in accordance with appropriate security directives. Reproduction of this document, in whole or in part, without prior approval from the Rhode Island Department of Health (HEALTH) is prohibited.

3. At a minimum, the attached materials will be disseminated only on a need-to-know basis and when unattended, will be stored in a locked container or area offering sufficient protection against theft, compromise, inadvertent access, and unauthorized disclosure.

4. Points of Contact/Exercise Planning Team Leadership:

   **Exercise Facilitators:**
   
   Joseph Reppucci, EMT-C, MSEM  
   Hospital Preparedness Program (HPP) Coordinator  
   Center for Emergency Preparedness and Response (CEPR)  
   Rhode Island Department of Health  
   Providence, Rhode Island  
   401-222-4787 (office)  
   [Joseph.Reppucci@health.ri.gov](mailto:Joseph.Reppucci@health.ri.gov)

   Dawn Lewis, EMT, RN, MBA, PhD-C  
   Hospital Emergency Preparedness Coordinator  
   Hospital Association of Rhode Island  
   Cranston, RI  
   401-946-7887 x110 (office)  
   [DawnL@hari.org](mailto:DawnL@hari.org)

   **Exercise Lead Evaluator:**
   
   David A. Balbi, MS, MEP  
   Exercise Coordinator  
   Center for Emergency Preparedness and Response (CEPR)  
   Rhode Island Department of Health  
   Providence, Rhode Island  
   401-222-1373 (office)  
   [David.Balbi@health.ri.gov](mailto:David.Balbi@health.ri.gov)
This page is intentionally blank.
EXECUTIVE SUMMARY

In October 2014, the Medical Care Branch of the Rhode Island Department of Health’s (HEALTH’s) Incident Command System was tasked to design, conduct, and evaluate an Ebola Stress Test Exercise for each acute-care hospital in the State. The purpose of the Ebola Stress Test Exercises was to provide a real-time opportunity for hospitals to test in-house preparedness, skills (triage, treatment, and transport), and responses to a patient presenting with Ebola. The initial review of the Ebola Stress Test results indicated the greatest potential for system-wide improvement is related to knowledge/processes that govern the management of a person under investigation (PUI) for Ebola. Ultimate lessons learned for the Rhode Island healthcare system are that management and care of a potential or actual Ebola patient is costly, resource intensive, politically charged, detrimental to continuity of operations, and fear-inducing, but efforts to prepare for this event are necessary.

This report provides recommendations for the further improvement of hospital infection control capabilities in Rhode Island. Presented to Rhode Island's Healthcare-Associated Infections (HAI) Subcommittee, the report reflects the capabilities present within hospitals at the time of the Ebola Stress Tests, gaps that were identified during the stress tests, corrective actions that were taken by hospitals after the stress tests to remediate those gaps, and any recommendations related to further corrective actions.

Recommendations, when provided, align with the requirements set forth in the Rapid Ebola Preparedness (REP) Tool for Ebola Treatment Centers and Assessment Hospitals (version 17) and the Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogens Standard (29 CFR 1910.1030). Consideration was given to guidance and philosophies of both the Society for Healthcare Epidemiology of America (SHEA) and the Association for Professionals in Infection Control and Epidemiology (APIC).

For the purposes of the Ebola Hospital Stress Tests, the concept of "infection control" included: the use of trained observers; disinfection of contaminated items or surfaces during patient care; adherence to hot, warm, and cold zones; procedures for the remediation of spills; procedures to prevent or respond to needle sticks; and the safe donning, use, and doffing of appropriate personal protective equipment. It should be noted, therefore, that the following report reflects observations and recommendations within this particular context.

At the time of the Ebola Stress Tests, all hospitals were operating under the assumption of performing as Assessment Hospitals. Since the release of the CDC’s hospital tiers and the regional approach to providing care to individuals with confirmed Ebola, two hospitals in Rhode Island will operate in this capacity while all others will operate as Frontline Hospitals. Therefore, this committee should take into consideration the need to separate recommendations specific to one tier or the other.

I appreciate your continued commitment and collaboration on this important topic.

Sincerely,

Nicole Alexander-Scott, M.D.
Director of Health
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>6</td>
</tr>
<tr>
<td>How To Read This Report</td>
<td>7</td>
</tr>
<tr>
<td>Domain A: Pre-Hospital Transport Plans, Emergency Medical Services (EMS), Emergency Department (ED) Preparedness</td>
<td>8</td>
</tr>
<tr>
<td>Domain B: Staffing of Patient Care Team</td>
<td>14</td>
</tr>
<tr>
<td>Domain C: Patient Transport from Point(s) of Entry to Designated Ebola Treatment Area</td>
<td>19</td>
</tr>
<tr>
<td>Domain D: Patient Placement</td>
<td>22</td>
</tr>
<tr>
<td>Domain E: Personal Protective Equipment and Procedures for Donning and Doffing</td>
<td>27</td>
</tr>
<tr>
<td>Domain F: Monitoring Healthcare Personnel and Managing Exposures</td>
<td>32</td>
</tr>
<tr>
<td>Domain G: Laboratory Safety</td>
<td>34</td>
</tr>
<tr>
<td>Domain H: Environmental Infection Control and Equipment Reprocessing</td>
<td>39</td>
</tr>
<tr>
<td>Domain I: Management of Waste</td>
<td>43</td>
</tr>
<tr>
<td>Domain J: Communications</td>
<td>47</td>
</tr>
<tr>
<td>Domain K: Management of the Deceased</td>
<td>50</td>
</tr>
<tr>
<td>Domain L: Special Populations</td>
<td>52</td>
</tr>
<tr>
<td>Appendix A. Hospital Assessment Summary</td>
<td>55</td>
</tr>
<tr>
<td>Appendix B. Notes</td>
<td>61</td>
</tr>
<tr>
<td>Appendix C. IC Recommendations by Domain</td>
<td>69</td>
</tr>
</tbody>
</table>
How to Read This Report

**Domain**: The name of the domain as it appears on the Ebola Preparedness (REP) Tool for Ebola Treatment Centers and Assessment Hospitals (version 17).

**Domain A References**:
- A list of references that apply to the entire domain.

**Element A1**: A specific CDC Element of Performance within the domain. The Element may be further broken down into specific activities. If present, activities are enumerated.

**Results and Corrective Actions**: A generalized narrative of the acute care hospitals’ performance results (R) and any corrective action (CA) already completed.

**Gaps**: Gaps that were identified during the Ebola Stress Test that have yet to be resolved.

**Recommendations**: Recommendations for resolution of gaps listed above.

**References**:
1. A list of references that apply specifically to Element being presented.

*Superscripted¹ information is located in Appendix B – Notes.*
Domain A: Pre-Hospital Transport Plans, Emergency Medical Services (EMS), Emergency Department (ED) Preparedness

Domain A References:


Element A1: EMS provider(s) that will transport person under investigation (PUI) or patient with confirmed Ebola to the facility for further evaluation have been identified. For assessment hospitals, a protocol, developed in consultation with local and state EMS and public health officials is in place to address patient transfer to a designated Ebola treatment center.

Results and Corrective Actions: (R) All EMS providers in the state are responsible for transporting a PUI to the closest hospital. (CA) At the urging of municipal EMS, HEALTH initiated conversations with several municipal EMS providers and put in place emergency regulations for the use of a reserve ambulance for the transport of a PUI with an ALS backup.

Gaps: Designated, trained, and appropriately supplied EMS provider(s) that will transport person under investigation (PUI) or patient with confirmed Ebola appropriate healthcare facility.

Recommendations: In line with the latest recommendations, HEALTH shall enter into a contract with two commercial EMS provider(s) to transport a person under investigation (PUI) or patient with confirmed Ebola from a frontline hospital to an assessment hospital and/or from an assessment hospital to a regional Ebola and other special pathogens treatment center. The contract will require 24/7/365 availability, adequate quantity of trained staff, and appropriately supplied vehicle. This EMS capability will also become part of the Southern New England Fire Emergency Assistance Plan (Mutual Aid Plan) and will be available, by request to municipal EMS for transport to an assessment hospital from a non-healthcare setting.

References:

1. None

Element A2: EMS providers have protocols for: (1) Safe transport of PUI or patient with confirmed Ebola, including PPE used by EMS personnel, (2) Training of EMS providers in correct use of PPE and documentation of competency, (3) Advance notification of the hospital and public health authorities, (4) Cleaning and disinfection of the ambulance and potentially contaminated equipment, (5) Disposal of used PPE and waste generated during transport.

Results and Corrective Actions: (R) The exercise did include an EMS section, but this section was somewhat limited in scope of play as the EMS providers were staged in the hospital parking lots at the start of the exercise. However, even with limited scope of play, it was apparent that there was variability in EMS protocols. This was determined to be due to the decentralized organization of EMS providers in Rhode Island. (CA) Activities (3) and (5) were easily resolved. HEALTH with hospital input developed an “Ebola specific Hospital-to-EMS Arrival Instructions Chart” that hospitals and EMS would follow during the notification
process. This script included information such as where to park inbound rescue, which door EMS should enter, how the hand-off would occur, and where the used PPE and waste generated should be placed. In January 2015, the Rhode Island Emergency Management Agency held a statewide training titled “Personal Protective Equipment Training” that would advance activity (2). For activity (1) and (4), EMS chiefs received a written request from HEALTH’s EMS chief directing all EMS providers to utilize the CDC’s guidance in Reference 1, specifically the sections titled “Safety and PPE” and “Cleaning EMS Transport Vehicles after Transporting a PUI for EVD”.

**Gaps:** Maintaining competency with all EMS staff in the state for safe transport, PPE, notification procedures, cleaning and disinfection, and waste management is time consuming and ineffective in this high-risk low volume scenario.

**Recommendations:** The recommendation to mitigate this gap is to have HEALTH enter into a contract with select EMS provider(s) that can provide the needed services and focus on training to maintain competency. Caveats in the contract would include 24/7/365 availability, adequate quantity of trained staff, and appropriately supplied vehicle.

**References:**

2. Ebola specific Hospital-to-EMS Arrival Instructions Chart (available from HEALTH).

**Element A3:** The hospital has designated: (1) Hospital personnel to meet the EMS provider on arrival to the hospital to: (a) Assume care of the patient, (b) Assist EMS personnel with doffing PPE, if needed, (2) Area where EMS personnel can doff their PPE, and (3) Area where EMS personnel can park their ambulance to perform decontamination.

**Results and Corrective Actions:** (R) This was an announced exercise, therefore hospital personnel were pre-selected and standing by to participate. It was clear who would assume care of the patient, but the initial communication was stilted and slow. None of the hospitals provided staff to assist EMS with doffing PPE, nor was this an expectation of EMS. Most hospitals were hyper focused on internal issues and only had a loose designation of where EMS personnel could doff their PPE, and where EMS personnel could park their ambulance to perform decontamination. (CA) Some of the initial gaps in these activities were resolved with the development of an “Ebola specific Hospital-to-EMS Arrival Instructions Chart” mentioned in Element A2. Several hospitals have assigned the ED charge nurse as the only authorized person to provide instructions to EMS.

**Gaps:** Hospital staff and space are limited. Therefore a gap still exists in expectation that hospital will supply staff for EMS doffing and space or supplies for ambulance decontamination.

**Recommendations:** Continued conversation between EMS, hospitals and HEALTH to define and disseminate expectations related to hospital supply of staff and space dedicated to EMS. These once defined can be added to the current “Ebola specific Hospital-to-EMS Arrival Instructions Chart”. In addition, this chart should be reviewed and revised based on the application of tiers within the hospitals of Rhode Island as either an Assessment or Frontline Hospital.
Element A4: Entry point(s) for EMS are: (1) Identified and have been communicated with EMS, and (2) Secured and free of any other patient or personnel traffic (e.g., using security escort) during patient entry and transport.

Results and Corrective Actions: (R) Any hospital that utilized its routine EMS entry point had secured the area and ensured it was free of any other patient or personnel traffic. This may have been an artificiality of an announced exercise. Any hospital that utilized a non-routine EMS entry point also had secured and was ensured it free of any other patient or personnel traffic. However, there may have been a lack of communication or general confusion regarding the new EMS entry point for PUIs as some EMS providers went to the incorrect entry point. (CA) Activity (1) was easily resolved with the development of an “Ebola specific Hospital-to-EMS Arrival Instructions Chart” mentioned in Element A1 and A2.

Gaps: None.

Recommendations: None.

References:

1. Ebola specific Hospital-to-EMS Arrival Instructions Chart (available from HEALTH).

Element A5: ED triage personnel are trained in screening patients for Ebola by asking: (1) Whether the patient has resided in or traveled to a country with widespread Ebola virus transmission or with cases in urban settings with uncertain control measures or had contact with an individual with confirmed Ebola within the previous 21 days, and (2) Whether patients with this history have experienced signs or symptoms compatible with Ebola.

Results and Corrective Actions: (R) During the exercise it was noted that all hospital ED triage personnel were trained in screening patients for travel and symptom history. However, the approach was different at each hospital. (CA) HEALTH, in collaboration with the hospitals, developed three standardized triage screening signs for ED triage personnel. These were made available in English and Spanish and provided via email to all hospitals.

Gaps: None.

Recommendations: Though no specific gap is identified. It is recommended that these triage screening signs are updated as the countries with widespread Ebola virus change (additions or deletions). The responsibility for this process has not been identified and is challenging to keep up with in real time.

References:

1. Signage headlines included: “Stop Strict Isolation”, “Attention All Patient”, and “Patient Triage for Healthcare Staff” (available from HEALTH).

Element A6: ED personnel are trained in questioning EMS providers about possible risk factors for Ebola in patients being transported via ambulance to the hospital.
Results and Corrective Actions: (R) This behavior was not witnessed at any hospital during the exercise. Therefore, determination of training on this behavior is unknown. (CA) None.

Gaps: ED personnel trained in questioning EMS providers about possible risk factors for Ebola in patients being transported via ambulance to the hospital.

Recommendations: Train and exercise ED personnel to ask salient questions of EMS providers about possible risk factors for Ebola in patients being transported via ambulance to the hospital.

References:

1. Verbiage from signage “Patient Triage for Healthcare Staff” (available from HEALTH) or similar CDC guidance language.

Element A7: Protocols are in place to immediately isolate patients who report a relevant exposure history and signs or symptoms consistent with Ebola: (1) Patients are placed in a private room or separate enclosed area with private bathroom (or covered, bedside commode), (2) Separate areas for donning and doffing of PPE are designated in proximity to the patient room, and (3) Hospital infection control program (and other appropriate staff) and health department are immediately notified.

Results and Corrective Actions: (R) All hospitals had a private room or separate enclosed area with private bathroom (or covered, bedside commode) immediately available to the exercise PUI. All hospitals have a designated area for a PUI. However, the immediate availability may have been an artificiality of an announced exercise as some of the designated rooms are utilized in daily operations. This availability issue is less an issue for hospitals that had selected the internal decontamination room as the designated PUI room. All hospitals had a designated area for donning and doffing of PPE, but it may have not been a separate area from the patient room, but a space within the room. Lastly, all hospitals had developed a specialized code to alert hospital infection control program (and other appropriate staff) of an incoming PUI. HEALTH is not part of that notification, but is called directly by the hospital to a pre-determined number assigned to the department, Infectious Disease and Epidemiology. (CA) Some hospitals post exercise redesigned or relocated the doffing area to increase safety of the HCP/EMS. HEALTH initiated conversation with healthcare sector to entertain adding a new infectious disease code to the existing “Statewide Hospital Emergency Codes”.

Gaps: Essentially, there are no gaps, but challenges exist and improvements could be made on all three activities. Availability of the designated room could be an issue for hospitals that are allowing for day-to-day usage of those rooms. Hospitals continue to struggle with space, so adequate size and proximity of donning and doffing areas is an issue. Lastly, the lack of standardization of the notification of an incoming PUI could be an opportunity for confusion in a state where many HCP work at multiple hospitals.

Recommendations: Hospitals must have a procedure that would allow for the fast turnover of an occupied room for the use by an incoming PUI. It should be noted that a PUI via EMS will have a lead time as HEALTH coordinates all parties, whereas as self-presenter that is determined in the triage process to be a PUI will provide no lead-time. The space issue is not singularly related to PUI therefore hospitals must remain vigilant in identifying opportunities to leverage existing space or in new construction to make space. Lastly, HEALTH should work with hospitals and other healthcare sector partners to complete the development and dissemination of a standardized Statewide Hospital Emergency Code (i.e. Code Purple).

References:
1. Statewide Hospital Emergency Codes (available from HEALTH).

**Element A8:** Only essential HCP who have had appropriate training and documented competency in infection control, including PPE for Ebola, and have a designated role provide patient care in the ED.

**Results and Corrective Actions:** (R) During the exercise it was obvious that individuals providing patient care in the ED had received training. However, competency levels were not only variable among individuals at the same hospital, but levels were variable among all hospitals. (CA) Each hospital maintains record of staff that has received hospital-based training.

**Gaps:** A standard definition of competency to provide patient care and a schedule of training and exercising to assess maintenance of competency.

**Recommendations:** Hospitals adopt a standard definition of competent care. Identified staff members that will be providing patient care receive standardized training and exercise opportunities. These definitions, trainings, and exercise are documented. The training and exercise opportunities must occur within a set time table that ensures a minimum level of competency.

**References:**
1. None

**Element A9:** A log is maintained of all personnel who enter any potentially contaminated space in the Ebola treatment/assessment area and/or handle potentially infectious materials and includes sufficient information to assign exposure categories (e.g., high-risk, some risk, low-risk) in order to apply movement and monitoring guidance to HCP (See Domain F). (Cross Reference D3 and F2).

**Results and Corrective Actions:** (R) All hospitals were aware of the need for a log. Not all hospitals maintained a log. Some hospitals were flawless in the use of a log, while others simply forgot to implement the log, others chose not to use it, and still others started a log, but the logger was pulled away or distracted thus the record kept was incorrect. (CA) Some hospitals provided additional training on the use of the log.

**Gaps:** Lack of understanding relative to the purpose of maintaining a log book, pre-defined assignment and scope of work for the logger, and consistent use of a log book.

**Recommendations:** Hospital trainers review purpose of log with staff to instill responsibility (individuals receive an assignment of exposure categories (e.g., high-risk, some risk, low-risk) in order to apply movement and monitoring guidance to HCP. Revision of hospital plans to include a pre-assigned role, scope of work, and procedure for the logger.

**References:**
1. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing), specifically “Recommended Administrative and Environmental Controls for Healthcare Facilities”.

**Element A10:** All HCP who have contact with a patient while the patient is under investigation for Ebola use appropriate PPE based on the patient’s clinical status. If the patient is exhibiting bleeding, vomiting, diarrhea or a clinical condition that warrants invasive or aerosol-generating procedures (e.g., intubation, suctioning, active
resuscitation), HCP wear PPE designated for the care of hospitalized patients with confirmed Ebola as outlined in Reference 1. If signs and symptoms such as bleeding, vomiting, diarrhea or conditions warranting invasive or aerosol-generating procedures are not present and the patient is clinically stable, HCP at a minimum wear PPE as outlined in Reference 2. (Cross Reference E5 and G6).

**Results and Corrective Actions:** (R) All hospitals had HCP don PPE while having contact with a patient under investigation for Ebola. The assessment of a wet versus dry Ebola patient was noted by the HCP, but levels of PPE selected were always the maximum protection that would be utilized for wet Ebola. (CA) None.

**Gaps:** Quick assessment and selection of appropriate PPE based on the patient’s clinical status.

**Recommendations:** Hospital trainers review with staff the differences in presentation of a PUI with dry versus wet Ebola and the CDC recommended PPE for each scenario.

**References:**

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)
2. Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients under Investigation (PUIs) for Ebola Virus Disease (EVD)

**Element A11:** All equipment used in the care of PUIs is not used for the care of other patients until appropriate decontamination is performed. (Cross Reference C5)

**Results and Corrective Actions:** (R) The exercise design included a section, post clinical care of a patient, for the witnessing of environmental decontamination. However, this design was limited to the decontamination of surface areas and did not address equipment. (CA) None.

**Gaps:** Exercise design did not extend far enough into environmental decontamination to witness the decontamination of equipment used by a PUI and recycling procedures of same equipment for use in the care of other patients.

**Recommendations:** Hospitals should review environmental decontamination plan to ensure procedures and policies are clear in the decontamination of equipment used by a PUI and re-use of equipment with another patient. HEALTH should plan to further develop this portion of the exercise so as to witness the full extent of the environmental decontamination plan.

**References:**

1. Ebola Stress Test” Situational Manual section “Practice Exercise Checklist” (available from HEALTH)
2. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus
3. Disinfectants for Use Against the Ebola Virus

**Element A12:** The hospital has protocols addressing: (1) Collection and testing of laboratory specimens drawn in the ED for both Ebola and alternative diagnoses to support timely evaluation and medical care of the patient, (2) Environmental infection control of the treatment area in the ED, and (3) Management of waste generated in the ED.
Results and Corrective Actions: (R) All hospitals had a protocol for addressing (1) Collection and testing of laboratory specimens drawn in the ED for both Ebola and alternative diagnoses to support timely evaluation and medical care of the patient, (2) Environmental infection control of the treatment area in the ED, and (3) Management of waste generated in the ED. (CA) None.

Gaps: The quality and depth of these protocols varied.

Recommendations: HEALTH, in collaboration with hospitals, shall identify minimal data points for inclusion in protocols related to laboratory specimens, infection control, and waste management.

References:
1. None

Domain B: Staffing of Patient Care Team
Domain B References: None.

Element B1: A trained Patient Care Team has been pre-identified for management of the PUI/patient. Consider cross-training registered nurses or physicians to minimize number of staff with direct patient contact (e.g., phlebotomy, cleaning).

Results and Corrective Actions: (R) Some hospitals had pre-identified patient care team, while other hospitals trained all ED or ICU staff to respond. Cross-training of registered nurses or physicians to complete non-traditional tasks such as phlebotomy and cleaning was a common practice. (CA) None.

Gaps: Continued maintenance 24/7/365 of a competent team in a high-risk, low volume scenario was an identified challenge for all hospitals.

Recommendations: None.

References:
1. None.

Element B2: Team members receive job-specific training and demonstrate competency on infection control practices, policies, and procedures for caring for a PUI or Ebola patient (see Domain E). (Cross Reference B5) (Cross Reference E4).

Results and Corrective Actions: (R) All hospital identified select staff members to receive training in the care of a PUI. (CA) HEALTH collected that data pre and post-exercise. Additional staff that were identified for potential training included lab tech and float nurses.
Staff Trained to Care for a PUI

**Gaps:** The smaller community hospitals may not have employees to manage a full Ebola patient care team.

**Recommendations:** Hospitals shall develop a staffing plan that ensures 24/7 trained staff are available to provide up to 96 hours of care to a PUI.

**References:**

1. [Emory Healthcare Ebola Preparedness Protocols](#)

**Element B3:** Qualified, trained staff members are identified for obtaining, handling, processing and testing of specimens from the PUI or Ebola patient.

**Results and Corrective Actions:** (R) All hospitals except two had planned to obtain specimens. Of those hospitals that had planned to obtain specimens all utilized a direct patient care team member to obtain specimens and a laboratorian to handle, process and test specimens. (CA) Post exercise several hospitals re-designed the process for collection, but the identified staff members remained the same.

**Gaps:** None.

**Recommendations:** None.

**References:**

1. [Guidance for Collection, Transport and Submission of Specimens for Ebola Virus Testing](#)

**Element B4:** Hospital has identified additional team members involved in consultation but who do not enter the PUI/patient room (e.g., audio/video conferencing may be used to communicate with patients or team members in room). Note: If consulting team members must enter the PUI/patient room, they receive job-specific training and demonstrate competency on infection control practices, policies and procedures, including appropriate use of PPE, prior to entering the patient room.
Results and Corrective Actions: (R) During the exercise there were many observers that would have made it difficult to discern this element. Hospital liaisons to the exercise team acted as observers and hospital subject matter experts (SME) acted as observers in order to assess the application of previous training and identify gaps. (CA) HEALTH applied an observer limit to hospitals that appeared in the latter half of the statewide exercise schedule.

Gaps: Crowd control during an exercise that allows for a more realistic environment.

Recommendations: Future exercises should limit the number of players and observers. More specific recommendations to this Element include: Hospitals shall provide a mechanism of communication between patients or team members if consultation can be completed from outside the room. If consulting team members must enter the PUI/patient room, they shall receive job-specific training and demonstrate competency on infection control practices, policies and procedures, including appropriate use of PPE, prior to entering the patient room.

References:
1. None.

Element B5: A schedule of staffing for patient care is created in advance of a PUI/patient’s arrival so that individuals on call are trained and have demonstrated competency, and can be quickly assembled when needed. (Cross Reference B2).

Results and Corrective Actions: (R) This was an announced exercise so many hospitals staffed up to ensure there were enough staff on duty to be exercise players and for maintenance of normal operations. It was voiced at every hospital that care of a PUI is labor intensive. Scheduling of trained staff in all the required disciplines ensuring adequate coverage for a primary care team, with extra staff stand-by staff to cover needed rehabilitation breaks, or change-outs for breaches would severely impact most hospital’s ability to maintain normal operations. In some cases a single PUI would utilize all staff resources. (CA) Post exercise a meeting was held with hospital CEO’s to hear concerns regarding the hospitals ability to care for a PUI and to groupthink solutions.

Gaps: Rhode Island has a very limited number of hospitals that could staff appropriately to adequately provide care for a PUI.

Recommendations: HEALTH shall make inquiry with hospital as to their interest level in self-designating as a Frontline or Assessment Hospital. HEALTH shall work, in collaboration with hospitals, to develop a safe and effective Ebola plan for each hospital type.

References:
1. None.

Element B6: Staffing schedules address the following considerations: (1) For Ebola Assessment Hospitals, staffing plans include a roster to manage up to 96 consecutive hours of clinical care, (2) For Ebola Treatment Hospitals, staffing plans include a roster to manage at least several weeks of clinical care, (3) Plans to minimize number of personnel in room, (4) Adequate time to rest between shifts, (5) On-call schedule for consultants to the patient care team 24 hrs/7 days/week, and (6) Maximum duration HCP can provide direct
Results and Corrective Actions:

Gaps: Rhode Island has a very limited number of hospitals that could staff appropriately to adequately provide care for a PUI.

Recommendations: Hospitals seeking to receive Ebola Assessment Hospital designation will submit to HEALTH a staffing schedule that addresses the following considerations: (1) For Ebola Assessment Hospitals, staffing plans include a roster to manage up to 96 consecutive hours of clinical care, (2) For Ebola Treatment Hospitals, staffing plans include a roster to manage at least several weeks of clinical care, (3) Plans to minimize number of personnel in room, (4) Adequate time to rest between shifts, (5) On-call schedule for consultants to the patient care team 24 hrs/7 days/week, and (6) Maximum duration HCP can provide direct patient care (e.g., 2–4 hours continuously) and maximum duration of an Ebola patient care unit shift (e.g., 8–12 hours).

References:

1. Appendix A. Hospital Assessment Summary

Element B7: Policies are in place for HCP movement, monitoring, and non-Ebola patient care responsibilities while serving on an Ebola patient care unit (see Domain F). (Cross Reference F3).

Results and Corrective Actions: (R) Several hospitals had policies in place that outlined eligibility to work based on exposure category. All of the policies required official hospital clearance prior to returning to work, but many policies did not address; Direct, active monitoring; direct, active monitoring, with controlled movement, patient care restrictions; or active monitoring. (CA) None.

Gaps: Clear role and responsibility delineation of HEALTH and hospitals in the task of monitoring and restrictions of asymptomatic HCP.

Recommendations: HEALTH, in collaboration with hospitals, shall develop and disseminate a protocol outlining the roles and responsibilities of HEALTH and hospitals in the task of monitoring and restrictions of asymptomatic HCP.

References:

1. Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure
2. State of Rhode Island Ebola Response Plan

Element B8: Worker safety programs and policies are in place: (1) The hospital is in compliance with all federal and state occupational safety and health regulations applicable to reducing employee exposure to Ebola, (2) Hospital has designated individuals as site managers responsible for overseeing the implementation of precautions for healthcare workers and patient safety, (3) At least one site manager is on-site at all times in the Ebola treatment unit when a patient is present and site managers are responsible for overseeing the implementation of routine and additional precautions for HCP and patient safety.
Results and Corrective Actions: (R) All hospitals comply with OSHA blood-borne pathogens guidelines to reduce employee exposure to any infectious agent. Examples of compliance include the use of Engineering Controls such as sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems); and PPE. (CA) Several hospitals indicated that the infection control professional (ICP) would take the role of site manager.

Gaps: Two gaps were identified. The first is the lack of availability of well-trained site managers for long-term hospital stays. The second is the lack of specific guidance to perform in the role of a Site manager.

Recommendations: Hospitals planning on using the ICP as a site manager must make alternative arrangement to train additional personnel as site managers, as the ICP cannot be available 24/7 if a PUI is hospitalized long-term. General guidance on the overarching role of a Site manager is available, but a specific job action sheet is not available, which may lead to inconsistent practices within a hospital.

References:
1. Occupational Safety & Health Administration Blood-Borne Pathogens
2. CDC Director: Establishing site managers at Ebola stations (video)
3. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing) specifically “Recommended Administrative and Environmental Controls for Healthcare Facilities”

Element B9: A plan for ongoing support and evaluation of team members is in place, including process for HCP to provide feedback to leadership.

Results and Corrective Actions: (R) A support and evaluation program was not within the scope of the exercise. (CA) None.

Gaps: Lack of evidence that a plan for ongoing support and evaluation of team members is in place, including process for HCP to provide feedback to leadership.

Recommendations: Hospitals shall develop or revise a plan for ongoing support and evaluation of team members, including process for HCP to provide feedback to leadership.

References:
1. None.

Element B10: Protocols are in place so that only direct patient care staff, wearing appropriate PPE, deliver meals to patients.

Results and Corrective Actions: (R) Meal delivery was not within the scope of the exercise. However, all items needed by the PUI or staff were handed to the direct patient care staff already in the room wearing appropriate PPE. (CA) None.

Gaps: None.

Recommendations: None.
After Action Report Summary

Domain C: Patient Transport from Point(s) of Entry to Designated Ebola Treatment Area

Domain C References:


Element C1: Protocols are in place to transport the PUI or confirmed Ebola patient safely from the hospital point of entry or Emergency Department, via a pre-identified route that is secured and free of any other patient or personnel traffic (e.g., using security escort) during patient transport to pre-identified room/care area.

Results and Corrective Actions: (R) All hospitals had a pre-designated room for the PUI and a pre-designated EMS entry point. Therefore the route between these two points was well defined. Most hospitals utilized a lead security officer to clear the hallways during the movement between EMS ambulance and ED room. One hospital had selected to use a direct admit to the floor and this path was also cleared without incident. Movement challenges occurred when the PUI was a self-presenter patient that entered through ED triage. This path was less defined and less contained. At times individuals without knowledge of the exercise crossed paths with the PUI. (CA) Hospitals streamlined the communication process to expedite the arrival of security for site containment once a PUI was identified utilizing the triage questions (“Patient Triage for Healthcare Staff”) mentioned in A5 and L2.

Gaps: Hospital timeliness in contacting a security response team to quickly set up a secure containment area around the PUI.

Recommendations: Hospitals shall institute an internal notification process that will bring a rapid and appropriate response to the PUI location. All hospitals shall use the Statewide Hospital Emergency Code for Infectious Event as recommended in A7(3), if this code is officially added to the current list of state codes.

References:

1. Signage headlines included: “Patient Triage for Healthcare Staff” (available from HEALTH).

Element C2: Protocols are in place for transport personnel to wear appropriate personal protective equipment (PPE) during transport of PUI or Ebola patients. Such personnel must receive training and demonstrate competency on proper procedures for donning and doffing of PPE.

Results and Corrective Actions: (R) All hospitals have identified appropriate personal protective equipment (PPE) that is required for each role involved in the transport of PUI. The HCP had received training and according to hospital POC HCP had demonstrated competency on proper procedures for donning and doffing of PPE. Security or environmental services personnel that accompanied the transfer were less certain of which PPE was needed and how to don and doff. (CA) Hospitals have reviewed donning and doffing procedures with security and environmental services personnel.
Gaps: Not all staff involved in the transport of PUI was competent in PPE selection, donning, and doffing.

Recommendations: Remedial training should be provided during or immediately after all exercises where PPE selection, donning, and doffing were not performed well. Refresher training should be provided at regular intervals that ensure maintenance of competency.

References:
1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

Element C3: Protocols are in place for patient to be transported in appropriate protective equipment to prevent leakage or spillage of body fluids, if needed.

Results and Corrective Actions: (R) PUIs transported by EMS directly to ED or a unit were transported via a stretcher adorned with a standard sheet. Most often this sheet was wrapped around the patient in a full body swaddle. One patient transported by EMS had a Tyvek suit on. PUIs that self-presented to ED were either placed on a stretcher, but not swaddled or were allowed to walk, escorted to the designated room. All PUIs that were transported from the ED to an inpatient room were swaddled in either a cloth sheet or a sheet with a plastic barrier. (CA) None.

Gaps: Self-presenting PUIs are less likely to have appropriate protective equipment utilized to prevent leakage or spillage of body fluids than a PUI that is transported via EMS.

Recommendations: None.

References:
1. None.

Element C4: Protocols are in place to manage blood or body fluid spills during transport.

Results and Corrective Actions: (R) All hospitals had a plan to manage blood or body fluid spills during transport. On the whole hospitals managed spills appropriately. However, there were minor gaps in the execution, as was demonstrated with the use of an exercise tool called “GloGerm”, and visible lack of available containment materials such as chucks or solidifier during transport. (CA) None.

Gaps: All blood or bodily fluid spills were not contained and the surface areas were not properly decontaminated.

Recommendations: Two environmental management staff members shall accompany any PUI during transport. Environmental management staff shall have a dedicated cart stocked with appropriate supplies for proper management of blood or bodily fluid spills.

References:
1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus
2. Disinfectants for Use Against the Ebola Virus
Element C5: Protocols are in place to manage cleaning and disinfection of reusable transportation equipment and potentially contaminated areas of the transportation route. (Cross Reference A11).

**Results and Corrective Actions:** (R) As stated in A11, the exercise design included a section, post clinical care of a patient, for the witnessing of environmental decontamination. However, this design was limited to the decontamination of surface areas and did not fully address the cleaning and disinfection of reusable transportation equipment. (CA) None.

**Gaps:** Exercise design did not extend far enough into environmental decontamination to witness the decontamination of equipment used by a PUI and recycling procedures of same equipment for use in the care of other patients.

**Recommendations:** Hospitals shall review environmental decontamination plan to ensure procedures and policies are clear in the decontamination of equipment used by a PUI and re-use of equipment with another patient. HEALTH shall plan to further develop this portion of the exercise so as to witness the full extent of the environmental decontamination plan.

**References:**
1. Ebola Stress Test” Situational Manual section “Practice Exercise Checklist” (available from HEALTH)
2. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus
3. Disinfectants for Use Against the Ebola Virus

Element C6: Once patient is in the designated patient room/care area further movement of the patient within the hospital is limited. (Cross Reference K3)

**Results and Corrective Actions:** (R) Each hospital-based exercise took place in a single day, but the exercise scenario offered activities related to both a day 1 presentation and day 3 ICU stay. At no time during the exercise was the patient moved to any other area of the hospital nor was the option of movement outside the made available. During all discussions it was determined that the patient would only receive care, treatment, or diagnostics that could be provided in the designated patient room. A noted exception to this self-imposed rule was movement of PUI decedent to morgue. However, even that exception was not in place at all hospitals as some hospitals wanted the deceased retrieved by the funeral home directly from the room. (CA) None.

**Gaps:** The hospital decision that the patient would only receive any care, treatment, or diagnostics that could be provided in the designated patient room may not be realistic in long term-care of a PUI.

**Recommendations:** Hospitals shall host discussions related to the identification of potential areas a patient may need to be moved (CT Scan, dialysis) and update the movement and decontamination plan for those areas.

**References:**

Element C7: Protocols are in place for safe emergency evacuation of patient and staff members designated to work with patient, minimizing any possible exposures.

**Results and Corrective Actions:** (R) Emergency evacuation of patient and staff members was not addressed in the exercise. (CA) None.
Gaps: There are no protocols in place for safe emergency evacuation of patient and staff members designated to work with patient, minimizing any possible exposures.

**Recommendations:** Hospitals shall develop protocols for safe emergency evacuation of patient and staff members designated to work with patient, minimizing any possible exposures.

**References:**
1. None.

## Domain D: Patient Placement

**Domain D References:** None

**Element D1:** A private room with private bathroom (or covered bedside commode) and critical care capacity has been identified to accommodate a PUI or confirmed Ebola patient. If feasible: Negative pressure airborne infection isolation room (AIIR).

**Results and Corrective Actions:** (R) All hospitals had a private room or separate enclosed area with private bathroom (or covered, bedside commode) immediately available to the exercise PUI. All hospitals have a designated area for a PUI. Some hospitals had these accommodations in both the ED and on inpatient unit. All hospitals that had selected an inpatient bed utilized an ICU bed. One hospital would utilize a currently closed medical unit. Several other hospitals opted to keep patient in the ED and bring the critical care to the patient, if needed. (CA) None.

**Gaps:** Not an actual gap, but many of the selected rooms were not negative pressure airborne infection isolation rooms.

**Recommendations:** Hospital shall consider converting the currently selected PUI room to include negative pressure airborne infection isolation or selecting another room where negative pressure airborne infection isolation already exists.

**References:**
1. None.

**Element D2:** PUI or Ebola patient room is physically separated from other patient care areas. Ideally, the room or unit is sealed or closed off to personnel not engaged as part of Ebola patient management team.

**Results and Corrective Actions:** (R) There was variability in the approach and distance in maintaining physical separation of a PUI from other patients. Examples ranged from using an entire isolation unit, to make shift walls of plastic films, to installed dust barrier systems (i.e. Zipwall), to rooms that are physically next door to other patients. These artificial barriers were part of the challenge in maintaining hot/warm/cold zones. (CA) Some hospitals made modifications to space such as adding windows in doors or augmenting space with adding another patient room to the Ebola suite.

**Gaps:** Spaces selected for proximity to services or availability may not be suited for the required tasks.
**Recommendations:** Hospitals shall ensure the selected spaces are adequate for the tasks that need to be completed within them. The tasks shall be practiced within the space with the associated equipment and staff. If there are breaches occurring across zones then consideration must be given to finding an alternative space or modifying current space.

**References:**

1. None.

**Element D3:** A log is maintained of all personnel who enter any potentially contaminated space in the Ebola treatment/assessment area and/or handle potentially infectious materials and includes sufficient information to assign exposure categories (e.g., high-risk, some risk, low-risk) in order to apply movement and monitoring guidance (See Domain F) (Cross Reference A9 and D3).

**Results and Corrective Actions:** (R) All hospitals were aware of the need for a log. Not all hospitals maintained a log. Some hospitals were flawless in the use of a log, while others simply forgot to implement the log, others chose not to use it, and still others started a log, but the logger was pulled away or distracted thus the record kept was incorrect. (CA) Some hospitals provided additional training on the use of the log book.

**Gaps:** Lack of understanding relative to the purpose of maintaining a log book, pre-defined assignment and scope of work for the logger, and consistent use of a log book.

**Recommendations:** Hospital trainers shall review purpose of log book with staff to instill responsibility (individuals receive an assignment of exposure categories (e.g., high-risk, some risk, low-risk) in order to apply movement and monitoring guidance to HCP. Revision of hospital plans to include a pre-assigned role, scope of work, and procedure for the logger.

**References:**

1. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing), specifically section “Recommended Administrative and Environmental Controls for Healthcare Facilities”.

**Element D4:** PUI or Ebola patient room incorporates a method of remote communication (e.g., intercom, video system, telemedicine equipment) for patient-staff communication, patient-family communication, and interdisciplinary rounds so that only essential personnel enter the room.

**Results and Corrective Actions:** (R) All hospitals had made arrangement for remote communication within the PUI room. Success in the use of those communication tools varied. Tools utilized include speaker phones, cell phones, two-way radios, intercoms, video access, and pencil and paper held to a glass door. Challenges witnessed included open intercoms where the patient could hear information that was disturbing to patient, speaker phones that were not able to pick up voice volume through a Stryker hood, lack of competency in the use of a two-way radio, and illegible printing on the paper. (CA) Hospitals have provided training on the radios and appropriate radio/intercom etiquette. Speaker phones have been replaced with hands free options, and forms for organization of information have been pre-printed.

**Gaps:** As communication technology evolves or HCP work equipment changes, current communication procedures may no longer work.
Recommendations: Hospitals shall continue to exercise communication tools to ensure patient-staff communication, patient-family communication, and interdisciplinary rounds are relevant, efficient, private, and clearly received.

References:
1. None.

Element D5: Puncture-proof sealed sharps containers are located in room in close proximity to patient bed. (Cross Reference I8).

Results and Corrective Actions: (R) All hospitals had OSHA approved sharps containers in the PUI room. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. Occupational Safety & Health Administration Blood-Borne Pathogens, specifically 1910.1030(d)(2)(viii)

Element D6: PUI or Ebola patient room has dedicated and/or disposable patient care equipment that is not used for any other patients. Protocols are in place for reusable equipment (e.g., portable x-ray, dialysis machine) to be cleaned and disinfected according to manufacturers’ instructions by trained personnel wearing correct PPE. (Cross Reference H8).

Results and Corrective Actions: (R) Most hospitals had pre-determined and dedicated equipment that would be brought into the room and would latter simply be disposed of in the medical waste stream. Larger equipment deemed not suitable for disposable (e.g., portable x-ray, dialysis machine) was not utilized during this exercise. Most hospitals simply stated they would follow the manufacturer’s guidelines on decontamination. (CA) It was later learned that many manufacturers would void the warranty and not provide repairs to any device utilized on a PUI.

Gaps: Manufacturers of large non-disposable equipment do not provide clear decontamination instructions for Cat A agents.

Recommendations: Hospitals shall clean non-disposable equipment based on the manufacturer’s guidelines and with the knowledge of potential impacts for further usage of the equipment. Hospitals can utilize the basic principles outlined in Reference 1.

References:
- Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease in U.S. Hospitals specifically “External machine surfaces”.

Element D7: In close proximity to the patient room, these separate areas are designated: (1) HCP changing area, (2) Clean area (PPE donning area), and (3) PPE doffing area.
Results and Corrective Actions:  (R) All hospitals had designated rooms or space with appropriately labeled signage posted for both donning and doffing. Because this was an announced exercise most participants had already changed into scrubs or utilized the donning area as the HCP changing area to prepare for the exercise.  (CA) None.

Gaps:  HCP changing area was not clearly marked.

Recommendations: Hospitals shall post signage to mark three separate areas (HCP changing area, Clean area (PPE donning area), and PPE doffing area.

References:

1. None.

Element D8: PPE doffing area is in proximity to patient room (e.g., anteroom or adjacent vacant patient room separate from clean area) and includes: (1) Supplies for disinfection of PPE and washable footwear, (2) Supplies for performing hand hygiene, (3) Space to doff PPE, (4) Place(s) for sitting\textsuperscript{11}, (5) Leak-proof waste container to discard PPE and area or containers designated to collect PPE for reprocessing (e.g., PAPRs) if applicable, (6) Signs\textsuperscript{12}, (7) Full-length mirror (optional).

Results and Corrective Actions: (R) All hospitals had pre-designated a PPE doffing area relative to the ED and inpatient rooms. All hospitals had items 1-6 available. It is worthy of mentioning that space for doffing (3) varied in size among hospitals. Some hospitals had dedicated an entire adjacent room while others utilized a taped off space in or outside the room. Smaller doffing spaces resulted in increased number of breaches or cross contamination. Two hospitals had the full-length mirror available (7). (CA) Several hospitals redefined the doffing area after the exercise and several installed a full length mirror.

Gaps: Some hospitals have allocated a limited space for doffing. That limited space put the HCP at a higher risk of self-contamination.

Recommendations: Hospitals shall look for an adequate space to dedicate to doffing. This should be based on the number people doffing at one time with the required medical waste containers, chairs, disinfecting supplies, and trained observer. All hospitals should install a full length mirror in the doffing space.

References:

1. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing)

Element D9: Showers\textsuperscript{13} are available and in close proximity to PPE removal area for HCP to use following PPE removal protocol. Note: HCP can leave PPE removal area wearing dedicated washable footwear that has been disinfected using an EPA-registered disinfectant wipe\textsuperscript{14} (wiping down complete external surface of the washable footwear) and scrubs.

Results and Corrective Actions: (R) Preparing a staff member to move to a shower after doffing was not addressed in the exercise design. However, most hospitals had identified which showers within the hospital would be utilized. (CA) None.
Gaps: Post doffing activities such as medical screening, showering, and debriefing were not addressed in the exercise.

Recommendations: Hospitals HCP shall receive training and be exercised post doffing activities such as medical screening, showering, and debriefing.

References:

1. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing), specifically “Designating Areas for PPE Donning and Doffing”.

Element D10: A designated area for waste storage has been identified that meets all applicable fire codes and principles of maintaining a clutter-free, secure environment. (Cross Reference I9).

Results and Corrective Actions: (R) All hospital have designated leak-proof infectious waste container within the PUI room. In addition, all hospitals had a designated area for long-term storage between medical waste pick-ups (i.e. biohazard room, adjacent to patient, PODs placed in parking lot). (CA) None.

Gaps: None.

Recommendations: None.

References:

1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

Element D11: A protocol has been developed to address a plan of care for the patient that incorporates family involvement: (1) Maintain communication between patient and family, (2) Identify an area for the family outside the Ebola unit, if appropriate based on movement and monitoring guidance and in consultation with local health department.

Results and Corrective Actions: (R) All hospitals indicated they would not allow visitors inside the PUI room. All hospitals had telephones available in the room for patient use. All hospitals have designated waiting rooms or family rooms associated with each unit. However, designation of waiting rooms or family rooms specifically assigned to families of PUI was not seen during this exercise. (CA) One or two hospitals have considered providing a video link via commercial options available on an iPad such as Skype or Facetime.

Gaps: Hospitals have not identified specific waiting rooms or family rooms outside the Ebola unit for families of PUI.

Recommendations: Hospitals shall identify specific waiting rooms or family rooms outside the Ebola unit for families of PUI.

References:

1. None.
Domain E: Personal Protective Equipment and Procedures for Donning and Doffing

Domain E References:

- Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing) at: http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html

Element E1: Hospital has selected the PPE to be used by HCP to manage PUI and Ebola patients and has a protocol outlining procedures for use of the PPE. (If hospital elects to use additional/different PPE from CDC recommendations, HCP are trained to ensure donning and doffing procedures are adjusted and practiced accordingly.) (Cross Reference E11).

Results and Corrective Actions: (R) All hospitals have selected specific PPE for staff to wear when caring for a PUI. The makes and models of the equipment varies from hospital to hospital. However, all equipment is within the CDC recommended guidelines. One or two hospitals had single pieces of equipment on backorder (surgical hoods, booties), and had to perform without it. To accommodate for the absent equipment, a temporary but effective alternative was utilized. (CA) Hospitals worked with manufacturers or wholesalers to fill back orders as quickly as possible and trained staff on the alternative equipment.

Gaps: A national backlog of PPE exists.

Recommendations: Hospitals shall report supply backorder issues to HEALTH and HEALTH shall work with Federal partners to mitigate barriers in the commercial market.

References:
1. Considerations for U.S. Healthcare Facilities to Ensure Adequate Supplies of Personal Protective (PPE) for Ebola Preparedness

Element E2: Hospital is compliant with all elements of OSHA Respiratory Protection Standards, including respirator fit-testing, medical evaluation, and training of HCP.

Results and Corrective Actions: (R) All hospitals were compliant with all elements of OSHA Respiratory Protection Standards, including respirator fit-testing, medical evaluation, and training of HCP, although breaches were noted at some point at every hospital. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. Occupational Safety and Health Administration Personal Protective Equipment, 1910.134
2. Hospital Respiratory Protection Program Toolkit
3. Implementing Hospital Respiratory Protection Programs: Strategies from the Field
Element E3: HCP caring for PUI or Ebola patients change into hospital scrubs or disposable garments and dedicated, washable footwear, if using.

Results and Corrective Actions: All hospitals reinforced the use of disposable scrubs and washable footwear. Some hospitals had HCP change into the disposable scrubs and the footwear as part of the exercise.

Gaps: None.

Recommendations: None.

References:
1. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing), specifically “Selection of PPE for Healthcare Workers During Management of Patients with EVD”

Element E4: HCP on the Ebola Patient Care Team receive repeated training and are required to demonstrate competency through testing and assessment on proper procedures for donning and doffing of PPE. (Cross Reference B2).

Results and Corrective Actions: (R) Testing and training occurred prior to the exercise. It is unknown if the staff training data represented in B2 includes repeated training. (CA) None.

Gaps: Maintenance of competency in all trained HCP.

Recommendations: Hospitals shall develop a training and exercise schedule that ensures training or exercises are occurring at intervals appropriate for staff to maintain competency on proper procedures for donning and doffing of PPE.

Element E5: Assessment of Person under Investigation. All HCP who have contact with a patient while the patient is under investigation for Ebola use appropriate PPE based on the patient’s clinical status. If the patient is exhibiting bleeding, vomiting, diarrhea or a clinical condition that warrants invasive or aerosol-generating procedures (e.g., intubation, suctioning, active resuscitation), HCP wear PPE designated for the care of hospitalized patients with confirmed Ebola as outlined in Reference 1. If signs and symptoms such as bleeding, vomiting, diarrhea or conditions warranting invasive or aerosol-generating procedures are not present and the patient is clinically stable, HCP at a minimum wear PPE as outlined in Reference 2. (Cross Reference G6 and A10).

Results and Corrective Actions: (R) All hospitals had HCP don PPE while having contact with a patient under investigation for Ebola. The assessment of a wet versus dry Ebola patient was noted by the HCP, but levels of PPE selected were always the maximum protection that would be utilized for wet Ebola. (CA) Many hospitals have designed PPE “go kits” to ensure all required pieces of PPE are sized and available.

Gaps: Quick assessment and selection of appropriate PPE based on the patient’s clinical status.

Recommendations: Hospital trainers shall review with staff the differences between dry and wet Ebola and the CDC’s recommendation appropriate PPE for either scenario.
References:

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)
2. Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients under Investigation (PUIs) for Ebola Virus Disease (EVD).

Element E6: Treatment of Confirmed Patient. Recommended PPE during management of hospitalized patients with confirmed Ebola is described in Reference 1. List PPE selected by the hospital for care of a patient with suspected or confirmed Ebola, including the specific make and model numbers for all components.

Results and Corrective Actions: (R) Hospitals have selected specific PPE for HCP. A list of quantity and make and models was provided to HEALTH. (CA) HEALTH developed a matrix of major PPE equipment by make and model to facilitate borrowing between hospitals, if needed.

Gaps: List of hospital specific PPE.

Recommendations: Hospital shall develop, and provide to HEALTH, a list of PPE selected for use by the HCP in the care of a patient with suspected or confirmed Ebola, including the specific make and model numbers for all components.

References:

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

Element E7: A policy is in place for trained observers to monitor for correct PPE use and adherence to donning/doffing protocols prior to entering and after leaving patient’s room: (1) Trained observer is a designated individual with the sole responsibility, during donning/doffing process, of ensuring quality control in all steps of the procedure, (2) Trained observer reads aloud each step of the procedure to HCP using a checklist, then visibly confirms and documents that each step has been completed correctly, (3) HCP must engage/wait for a trained observer prior to PPE donning and doffing, (4) Donning and doffing of PPE proceeds slowly and deliberately to ensure full-coverage and prevent self-contamination, (5) Trained observer should NOT provide physical assistance during the doffing, and (6) A designated-doffing assistant (“buddy”) might be helpful in doffing process, especially with PAPR options.

Results and Corrective Actions: (R) All hospitals utilized a trained observer. At the time of the exercise there was some confusion on the difference in roles of the buddy versus the trained observer regarding the reading of checklist and assistance in donning. The checklists were used inconsistently. Once in place, the trained observer was not to be assigned other tasks. However, at times this did occur. (CA) Some hospitals completed additional drills that included the role of the trained observer. To ensure slow, deliberate, and consistent donning and doffing, several hospitals have laminated the checklist and provided a grease pencil while others have provided a wall poster of the checklist.

Gaps: HCP clarity in expectations and roles of the trained observer versus the buddy.
**After Action Report Summary**  
(Infection Control)  
**Ebola 2014-2015**  
**Hospital Stress Test Full-Scale Exercise**

**Recommendations:** Hospital shall practice donning and doffing in teams of trained observer, buddy, and HCP in order to reinforce role expectations and limitations.

**References:**

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

**Element E8:** Recommended PPE for trained observers (and doffing assistant) during observations of PPE doffing is described in Reference 1.

**Results and Corrective Actions:** (R) Not all trained observers wore PPE during the doffing process. (CA) None.

**Gaps:** Trained observers must wear PPE in compliance with CDC guidelines.

**Recommendations:** Hospitals shall utilize develop a chart of appropriate PPE for each HCP role and within the context of the clinical presentation of the PUI using the list provided in Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

**References:**

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

**Element E9:** Hand hygiene is performed before donning and after doffing and disposing of gloves and at any time during doffing procedure when contamination of hands is suspected.

**Results and Corrective Actions:** (R) HCP washed hands before donning and after doffing and disposing of gloves and at any time during doffing procedure when contamination of hands is suspected. The use of a trained observer providing verbal prompts was highly effective in ensuring compliance. (CA) None.

**Gaps:** None.

**Recommendations:** None.

**References:**

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

2. Infection Prevention and Control Recommendations for Hospitalized Patients Under Investigation (PUIs) for Ebola Virus Disease (EVD) in U.S. Hospitals

**Element E10:** Doffing procedure includes steps for disinfection of visibly contaminated PPE with EPA-registered disinfectant14 wipes or spray16 prior to removal and steps for disinfection of gloved hands with ABHR (ideally with
touch-free dispensing system) or EPA-registered disinfectant wipe between each step in the doffing process. (Cross Reference H1).

**Results and Corrective Actions**: (R) Doffing steps included steps for disinfection. Wherever in the doffing sequence disinfection was required EPA-registered hospital disinfectants was utilized. (CA) None.

**Gaps**: None.

**Recommendations**: None.

**References**:
1. Disinfectants for Use Against the Ebola Virus
2. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing) specifically “Preparing for Doffing”.

**Element E11**: Hospital maintains updated inventory of PPE supplies, including details on specific make and models of selected PPE. Given current PPE shortages, hospitals may not be able to procure in advance the amount of PPE needed for the entire time period to care for a PUI or confirmed Ebola patient. CDC, in collaboration with state and local health departments, may facilitate the procurement of or provide additional PPE supplies. (1) For Assessment Hospitals, at least a 4–5 day supply of PPE in stock, and (2) For Treatment Hospitals, at least a 7 day supply of PPE in stock. (Cross Reference E1).

**Results and Corrective Actions**: (R) All hospitals have selected specific PPE for staff to wear when caring for a PUI. Hospitals utilize a manual or automated inventory management system to maintain updated inventory of PPE. All hospitals have 4–5 day supply of PPE in stock, with exceptions made for the single pieces of equipment on backorder. (CA) Hospitals worked with manufacturers or wholesalers to fill back orders as quickly as possible and trained staff on the alternative equipment.

**Gaps**: A standard recurrent timeline set forth for all hospitals to complete inventory management of all PPE equipment.

**Recommendations**: Hospitals shall routinely take inventory of PPE in order to ensure maintenance of a 4-5 day supply. Should equipment be on back order hospital should report pertinent information to HEALTH and HEALTH works with Federal partners to mitigate barriers in the commercial market.

**References**:
1. Considerations for U.S. Healthcare Facilities to Ensure Adequate Supplies of Personal Protective (PPE) for Ebola Preparedness

**Element E12**: Hospital has plans in place for re-supplying PPE and alternative procedures if supply chain is interrupted. If barriers exist to procuring adequate supply of PPE, state health departments should be contacted to facilitate additional assistance. (Cross Reference E1 and E11).

**Results and Corrective Actions**: (R) All hospitals have contracts with supply vendors. Some have multiple vendors for similar products to reduce impact of interruptions in supply chain. One or two hospitals had single pieces of equipment on backorder and had to perform without it. To accommodate for the absent equipment, a
temporary but effective alternative was utilized. (CA) Hospitals worked with manufacturers or wholesalers to fill back orders as quickly as possible and trained staff on the alternative equipment.

**Gaps:** Re-supply of a scarce resource.

**Recommendations:** Hospitals shall report backorder issues to HEALTH and HEALTH shall work with Federal partners to mitigate barriers in the commercial market.

**References:**


### Domain F: Monitoring Healthcare Personnel and Managing Exposures

**Domain F References:**


**Element F1:** Hospital has well-defined policies including: (1) Work-exclusion policies that encourage reporting of illnesses and do not penalize with loss of wages, benefits, or job status, and (2) Education of personnel on prompt reporting of illness to supervisor and occupational health.

**Results and Corrective Actions:** (R) Several hospitals had well-defined policies that outline work-exclusion policies. Most policies indicate that hospital staff must alert the Employee Health department of travel to any Ebola affected country and upon return must be cleared by Employee Health prior to returning to work. A few of these policies specifically stated that employees categorized as “High” and “Some” risk could not return to work for 21 days. Compensation plans available to employees for the 21 day leave varied from no pay, sick-time, full pay, and worker’s compensation. (CA) Hospitals that did not have well-defined policies engaged in further conversations with Administration and Human Resource in order to revise policies.

**Gaps:** Most hospitals have work-exclusion and compensation policies on paper, but have not exercised the policies.

**Recommendations:** In order to identify obstacles and gaps, hospitals shall exercise work-exclusion and compensation policies in place for the management of an exposed HCP.

**References:**

1. None.

**Element F2:** A log is maintained of all personnel who enter any potentially contaminated space in the Ebola treatment/assessment area and/or handle potentially infectious materials and includes sufficient information to assign exposure categories (e.g., high-risk, some risk, low-risk)\(^1\) in order to apply movement and monitoring guidance to HCP. (Cross Reference A9 and D3).

**Results and Corrective Actions:** (R) All hospitals were aware of the need for a log. Not all hospitals maintained a log. Some hospitals were flawless in the use of a log, while others simply forgot to implement the
log, others chose not to use it, and still others started a log, but the logger was pulled away or distracted Thus the record kept was incorrect. (CA) Some hospitals provided additional training on the use of the log book. In addition, all hospitals have adopted the practice of placing time of donning on the tape applied to the PPE and remains visible to the trained observer. Awareness of the amount time a HCP is in PPE minimizes other health risks to HCP (i.e. dehydration and fatigue).

**Gaps:** Lack of understanding relative to the purpose of maintaining a log book, pre-defined assignment and scope of work for the logger, and consistent use of a log book.

**Recommendations:** Hospital trainers shall review purpose of log with staff to instill responsibility (individuals receive an assignment of exposure categories (e.g., high-risk, some risk, low-risk) in order to apply movement and monitoring guidance to HCP. Revision of hospital plans to include a pre-assigned role, scope of work, and procedure for the logger.

**References:**

1. Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing), specifically “Recommended Administrative and Environmental Controls for Healthcare Facilities”.

**Element F3:** Protocols for monitoring and restrictions of asymptomatic HCP are in place, according to the exposure category of the HCP. HCP are monitored during patient care or period of time handling potentially infectious materials and during the 21 days after the last potential exposure: (1) Direct, active monitoring is performed for HCP providing direct care to Ebola patients and meet “high risk” exposure category, (2) Direct, active monitoring, with controlled movement, patient care restrictions, and potential public health orders, is performed for HCP providing direct care to Ebola patients in a healthcare facility where another HCP has been diagnosed with confirmed Ebola without an identified infection control breach, or where a breach is identified retrospectively (“high-risk” exposure category), and (3) Active monitoring is performed for HCP providing direct care to Ebola patients and DO NOT meet “high risk” exposure category. (Cross Reference B7).

**Results and Corrective Actions:** (R) Several hospitals had policies in place that outlined eligibility to work based on exposure category. All of the policies required official hospital clearance prior to returning to work, but the policies did not address: Direct, active monitoring; direct, active monitoring, with controlled movement, patient care restrictions; or active monitoring. (CA) This terminology was introduced nationally approximately 1 month after the exercise and has been the responsibility of HEALTH.

**Gaps:** Clear role and responsibility delineation of HEALTH and hospitals in the task of monitoring and restrictions of asymptomatic HCP.

**Recommendations:** HEALTH shall, in collaboration with hospitals, develop and disseminate a protocol outlining the roles and responsibilities of HEALTH and hospitals in the task of monitoring and restrictions of asymptomatic HCP.

**References:**

1. Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure
2. State of Rhode Island Ebola Response Plan
Element F4: Following a recognized Ebola exposure incident, protocols for post-exposure management, evaluation, and follow-up are in place\(^{19}\).

**Results and Corrective Actions:** (R) During the exercise EMS was obviously exposed, but the pre-hospital exposure form was not used. HCP that were exposed, were immediately removed from the area, doffed, washed exposed skin or showered, and reported to their supervisor and Employee Health. The exercise did not delve into the post exposure procedures after the point of reporting exposure. (CA) None.

**Gaps:** Unknown.

**Recommendations:** Hospitals shall revise or develop a protocol for an Ebola exposure that includes post-exposure management, evaluation, and follow-up.

**References:**
1. Rhode Island Pre-Hospital Exposure Form
2. Occupational Safety & Health Administration Blood-Borne Pathogens, specifically 1910.1030(f)(4)

**Domain G: Laboratory Safety**

**Domain G References:**

**Element G1:** Protocols are in place for Ebola testing at the nearest Laboratory Response Network (LRN) laboratory capable of testing for Ebola. Note: If the hospital chooses to use a commercial Ebola virus test, paired specimens are submitted to an LRN facility or CDC for definitive Ebola virus testing.

**Results and Corrective Actions:** (R) Rhode Island does have LRN labs, but there are none capable of testing for Ebola. Any specimen requiring testing for Ebola were first sent to HEALTH and then sent onward to the Massachusetts’s Department of Health Laboratory. (CA) HEALTH initiated a request with the CDC to obtain Ebola testing capability.

**Gaps:** Currently, there are no labs in Rhode Island that can test for Ebola.

**Recommendations:** HEALTH shall work with the CDC to obtain Ebola testing capabilities.

**References:**
1. The Laboratory Response Network Partners in Preparedness

**Element G2:** The hospital is prepared to provide a timely and minimum menu of testing to ensure patient care is not compromised while patients undergo assessment and prior to availability of Ebola laboratory testing results. In the US, most PUIs for Ebola have had another etiology for their illness. Timely identification of
these other etiologies is essential to appropriate patient care. At a minimum this testing should include CBC, glucose, potassium, malaria exam, influenza test and tests for liver function.  

**Results and Corrective Actions:** (R) All hospitals except two had planned to obtain specimens. Of those hospitals that had planned to obtain specimens all could run CBC, glucose, potassium, malaria exam, influenza test and tests for liver function. (CA) Most hospital began to research augmenting current testing capabilities with point of care testing, specifically the iSTAT.

**Gaps:** None.

**Recommendations:** None.

**References:**
1. Guidance for Collection, Transport and Submission of Specimens for Ebola Virus Testing
2. i-STAT® Handheld

**Element G3:** A site-specific risk assessment has been performed to identify potential exposure risks and to mitigate these risks by implementing engineering controls, administrative and work practice controls, and use of appropriate PPE. The risk assessment considers the path of the sample throughout the laboratory and all work processes, procedures, and tasks performed.

**Results and Corrective Actions:** (R) Almost all the hospitals stated they had completed a site-specific risk assessment. However, only half could produce it in writing. (CA) None.

**Gaps:** Not all hospitals have performed a site-specific risk assessment.

**Recommendations:** All hospitals shall perform and document a site-specific risk assessment to identify potential exposure risks and to mitigate these risks by implementing engineering controls, administrative and work practice controls, and use of appropriate PPE. The risk assessment considers the path of the sample throughout the laboratory and all work processes, procedures, and tasks performed.

**References:**
1. APHIL Public Health Laboratory Risk Assessment for Ebola Virus Disease (EVD) Testing
2. Guidance for Collection, Transport and Submission of Specimens for Ebola Virus Testing

**Element G4:** Protocols are in place for handoff and placement of specimen tubes into appropriate container for transport to laboratory. Specimens are placed in a durable, leak-proof secondary container for transport within the hospital. The outside of specimen containers are disinfected with EPA-registered hospital disinfectant prior to removal from room. Note: Pneumatic tube system is NOT used for Ebola specimens.

**Results and Corrective Actions:** (R) All hospitals had a step-by-step procedure available to staff to follow for the handoff, placement, and cleaning of the specimens prior to departure from the PUI room. This procedure ran flawlessly at a few hospitals while other hospitals either reversed the order of some of the steps or skipped a step. (CA) None.

**Gaps:** All staff involved in the handoff, placement, and cleaning of the specimens are not completely familiar with the required steps in the process.
**Recommendations:** Hospitals shall provide designated staff with routine training and exercise opportunities to practice handoffs, placements, and cleaning of the specimens prior to departure from the PUI room.

**References:**
1. Guidance for Collection, Transport and Submission of Specimens for Ebola Virus Testing

**Element G5:** Personnel who collect or process primary patient specimens when Ebola is a concern have demonstrated competency in donning and doffing PPE, and collecting and processing specimens while wearing PPE.

**Results and Corrective Actions:** (R) Laboratorians were able to don and doff PPE and complete collecting and processing of specimens while wearing PPE. It was obvious that laboratorians had received less PPE training than the primary care team member. They also commented that PPE did make the processing of specimens a slower and more challenging process. (CA) None.

**Gaps:** Laboratorian confidence and competency in use of PPE.

**Recommendations:** Hospitals shall provide continuing training and exercise opportunities for laboratorians that include completing the entire testing cycle.

**References:**
1. Guidance for Collection, Transport and Submission of Specimens for Ebola Virus Testing

**Element G6:** PPE to be used during specimen collection. Healthcare personnel including laboratory staff that collect patient specimens from a PUI, confirmed Ebola patient, exhibiting bleeding, vomiting or diarrhea or who is clinically unstable and/or will require invasive or aerosol-generating procedures should wear the PPE described in Reference 1. Healthcare personnel caring for a PUI who is clinically stable and does not have bleeding, vomiting or diarrhea can wear the alternate ensemble described in Reference 2. (Cross Reference A10 and E5).

**Results and Corrective Actions:** (R) All hospitals had HCP don PPE while having contact with a patient under investigation for Ebola. The assessment of a wet versus dry Ebola patient was noted by the HCP, but levels of PPE selected were always the maximum protection that would be utilized for wet Ebola. (CA) None.

**Gaps:** Quick assessment and selection of appropriate PPE based on the patient’s clinical status.

**Recommendations:** Hospital trainers shall review with staff the differences between dry and wet Ebola and the CDC’s recommendation appropriate PPE for either scenario.

**References:**
1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)
2. Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients under Investigation (PUIs) for Ebola Virus Disease (EVD)
Element G7: PPE and engineering controls to be used when performing laboratory testing. When manipulating clinical specimens and EVD is a concern, staff should use a combination of engineering controls, work practices and PPE to protect their mouth, nose, eyes and bare skin from coming into contact with patient specimens, including: (1) Disposable gloves, (2) Solid-front wrap around gowns that are fluid-resistant or impermeable, (3) Surgical mask to cover all of nose and mouth, (4) Eye protection such as a full face shield or goggles/safety glasses with side shields.

In addition, use a certified Class I or certified Class II biosafety cabinet or other physical containment device. When a BSC is not available or possible, then additional safety equipment should be used to contain any splashes or potential aerosols generated. Use manufacturer-installed safety features for instruments that reduce the likelihood of exposure.

Results and Corrective Actions: All hospitals laboratorians used engineering controls, work practices, and PPE to protect their mouth, nose, eyes and bare skin from coming into contact with patient specimens. All hospitals used a biosafety cabinet to contain splashes or potential aerosols.

Gaps: None.

Recommendations: None.

References:
1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

Element G8: It is recommended to place point of care (POC) instruments within an enclosure or behind a barrier to contain any splashes or potential aerosols that may be generated. If placed inside a BSC, ensure that appropriate airflow is not compromised by overloading the inside of the BSC, or by blocking the front or back air intake grilles. Consideration should be given to verifying inward airflow at the front opening of the BSC while instruments are operating. When a BSC is not available or possible, then additional safety equipment should be used to contain any splashes or potential aerosols generated. This could be a small workbench BSC, a PCR workstation (e.g., “dead air box”), a plexiglass splash shield, or other physical containment device.

Results and Corrective Actions: (R) If a point of care (POC) instrument was used the hospitals placed it within an enclosure or behind a barrier to contain any splashes or potential aerosols that would have been generated. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. None.

Element G9: There is a designated area for laboratory personnel to safely doff PPE.
Results and Corrective Actions: (R) All hospitals had a designated area for laboratory personnel to safely doff PPE. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. None.

Element G10: Protocols are in place for cleaning and disinfection of laboratory surfaces and equipment, management of blood and body fluid spills, and exposure of staff.

Results and Corrective Actions: (R) All hospitals had EPA-registered hospital disinfectant available to staff for cleaning and disinfection. All hospitals comply with OSHA blood-borne pathogens guidelines to reduce employee exposure to any infectious agent with blood and body fluid. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus
2. Occupational Safety & Health Administration Blood-Borne Pathogens, specifically 1910.1030(f)(4)

Element G11: A tracking system is in place for patient specimens that are transported to the laboratory.

Results and Corrective Actions: (R) All hospitals use printed labels or wrote the patient name and medical record number on the specimen tubes. No further tracking system were witnessed during the exercise. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. None.

Element G12: A policy is in place for safe short-term storage and disposal of Ebola patient specimens.

Results and Corrective Actions: (R) A written policy was not provided during the exercise, but verbally the laboratorians were able to state the location and security measures associated with short-term storage specimens. (CA) None.

Gaps: Unknown.

Recommendations: None.
References:

1. None.

**Domain H: Environmental Infection Control and Equipment Reprocessing**

**Domain H References:**

- Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

**Element H1:** Facility selects EPA-registered hospital disinfectants and uses all cleaning and disinfecting products, including disposable wipes, in accordance with manufacturers’ instructions (e.g., dilution, storage, shelf life, contact time).

**Results and Corrective Actions:** (R) All hospitals utilized EPA-registered hospital disinfectants. (CA) None.

**Gaps:** None.

**Recommendations:** None.

**References:**

1. [Disinfectants for Use Against the Ebola Virus](http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html)

**Element H2:** Trained Ebola patient care team members have been designated to perform routine cleaning and disinfection of Ebola patient room surfaces.

**Results and Corrective Actions:** (R) All hospitals have procedures on the performance of routine cleaning and disinfection of Ebola patient room surfaces. During the exercise patient care team members performed the task of routine cleaning of surfaces within the PUI room when it was visibly soiled. (CA) None.

**Gaps:** None.

**Recommendations:** None.

**References:**

1. None.

**Element H3:** Protocols are in place for staff, including Environmental Services (EVS) personnel, to wear appropriate PPE to prevent exposure to Ebola virus during cleaning of the Ebola patient room and equipment. Staff, including EVS personnel, must have received job-specific training and demonstrated competency prior to performing duties.

**Results and Corrective Actions:** (R) All hospitals have identified and have protocols in place for the use of appropriate personal protective equipment (PPE) during the cleaning process of a PUI room or equipment. It was clear that environmental services personnel were less certain of which PPE was needed and how to don and
doff. (CA) Hospitals have reviewed donning and doffing procedures with security and environmental services personnel.

**Gaps:** Not all staff involved in the cleaning process was competent in PPE selection, donning, and doffing.

**Recommendations:** Hospitals shall provide remedial training during or immediately after all exercises where PPE selection, donning, and doffing were not performed well. Refresher training should be provided at regular intervals that ensure maintenance of competency.

**References:**
1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)

**Element H4:** Protocols are in place for monitoring of cleaning and disinfection procedures to ensure they are consistently and correctly performed.

**Results and Corrective Actions:** (R) Although cleaning and disinfection procedures were occurring at all hospitals, only one hospital had a supervisor present during the cleaning and disinfection process to ensure the task was correctly performed. (CA) None.

**Gaps:** Hospitals are not providing monitoring during the cleaning and disinfection procedures to ensure the procedures are consistently and correctly performed.

**Recommendations:** Hospitals shall revise environmental management plan to include a monitoring role during the cleaning and disinfection procedures to ensure the procedures are consistently and correctly performed.

**References:**
1. None.

**Element H5:** Materials to be used for cleaning and disinfection of Ebola patient room and equipment are disposable, for single-use only.

**Results and Corrective Actions:** (R) All materials used for cleaning and disinfection were single use only. (CA) None.

**Gaps:** None.

**Recommendations:** None.

**References:**
1. None.

**Element H6:** Protocols are in place for environmental surfaces in Ebola patient care areas to be cleaned with a detergent and disinfected on a regular basis (e.g., at least daily), when spills occur, and when surfaces are visibly...
contaminated. Hospital promptly removes bulk spill matter, cleans and decontaminates spills of blood or other potentially infectious materials using EPA-registered hospital disinfectants\textsuperscript{14}.

**Results and Corrective Actions:** (R) All hospitals had EPA-registered hospital disinfectant available to staff for cleaning and disinfection. Staff in the PUI room used solidifiers to manage blood and body fluid (props) spills and wipes to clean visibly soiled surface. (CA) None.

**Gaps:** None.

**Recommendations:** None.

**References:**
1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

**Element H7:** Protocols are in place for post-discharge cleaning and disinfection of the Ebola patient care areas, including visibly soiled areas, frequently touched surfaces, and floors in the Ebola patient care area.

**Results and Corrective Actions:** (R) All hospitals have protocols in place for post-discharge cleaning and disinfection of the Ebola patient care areas, including visibly soiled areas, frequently touched surfaces, and floors in the Ebola patient care area. (CA) None.

**Gaps:** None.

**Recommendations:** None.

**References:**
1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

**Element H8:** Ebola patient room has dedicated and/or disposable patient care equipment\textsuperscript{6} that is not used for any other patients. Protocols are in place for reusable equipment (e.g., portable x-ray, dialysis machine\textsuperscript{7}) to be cleaned and disinfected according to manufacturers’ instructions by trained personnel wearing appropriate PPE. (Cross Reference D6).

**Results and Corrective Actions:** (R) Most hospitals had pre-determined and dedicated equipment that would be brought into the room and would latter simply be disposed of in the medical waste stream. Larger equipment deemed not suitable for disposable (e.g., portable x-ray, dialysis machine\textsuperscript{7}) was not utilized during this exercise. Most hospitals simply stated they would follow the manufacturer’s guidelines on decontamination. (CA) It was later learned that many manufacturers would void the warranty and not provide any repairs to any device utilized on a PUI.

**Gaps:** Manufacturers of large non-disposable equipment do not provide clear decontamination instructions for Cat A agents.

**Recommendations:** Hospitals should clean non-disposable equipment based on the manufacturer’s guidelines and with the knowledge of potential impacts for further usage of the equipment. Hospitals can utilize the basic principles outlined in Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease in U.S. Hospitals specifically “External machine surfaces”.
Element H9: Protocols are in place clearly delineating responsibility for cleaning and disinfection of reusable patient care equipment (how equipment should be cleaned and by whom), (1) Protocols include documentation of cleaning on a log (who/when/how).

Results and Corrective Actions: **(R)** It was evident that cleaning protocols existed as the environmental service staff completed the cleaning and disinfection of reusable patient care equipment. However, the approach varied with different equipment and with different environmental service staff. There was no evidence of log to document cleaning. **(CA)** None.

Gaps: Cleaning protocols did not delineate responsibility for cleaning and disinfection of reusable patient care equipment or the use of a cleaning log.

Recommendations: Hospitals shall develop or revise cleaning protocols to include delineation of responsibility for cleaning and disinfection of reusable patient care equipment (how equipment should be cleaned and by whom) and include documentation of cleaning on a log (who/when/how).

References:
1. None.

Element H10: HCP are trained to handle soiled textiles/linens with minimum agitation to avoid contamination of surfaces and persons.

Results and Corrective Actions: **(R)** Liquid and semi-solid props were used to simulate human blood or body fluid. Use of these props required changing of soiled linens by exercise participants. Most often this task was approached with great caution, but on occasion an individual would toss the linen into the waste receptacle. **(CA)** Hospitals provided remedial training at the point of incident.

Gaps: Limited, lack of understanding of the potential aerosolization or cross contamination surfaces/person due to agitation of linens during the disposable of linens.

Recommendations: None.

References:
1. None.

Element H11: All linens used in the Ebola patient room are discarded into the waste stream and disposed of appropriately. These items are not reused.

Results and Corrective Actions: **(R)** During this one day exercise the need to dispose of linens was not needed or practiced. **(CA)** However, hospital-based plans do outline the disposal of linens in lieu of laundering and reuse.

Gaps: None.
For Official Use Only
Homeland Security Exercise and Evaluation Program (HSEEP)

(Infection Control)                   Hospital Stress Test Full-Scale Exercise

Recommendations: None.

References:
1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

Element H12: Food trays, dishes, and cutlery provided to the Ebola patient with meals are disposable, and are placed into the waste stream along with leftover food items for appropriate disposal.

Results and Corrective Actions: (R) This Element was not addressed in the exercise therefore no policies were reviewed on this topic, nor were any activities witnessed. However, during informal conversations between exercise team and hospital staff, it was revealed that only disposable food trays, dishes, and cutlery would be utilized. (CA) None.

Gaps: Evidence of hospital plans that outline the requirement to use only disposable food trays, dishes, and cutlery items, as well as the waste management of such items including left over food.

Recommendations: Hospitals shall develop or revise plans that outline the requirement to use only disposable food trays, dishes, and cutlery items, as well as the waste management of such items including left over food.

References:
1. None.

Domain I: Management of Waste

Domain I References:
  - Medical waste generated in the care of patients with known or suspected Ebola is subject to procedures set forth by local, state and federal regulations.
  - Medical waste contaminated with Ebola virus is a Category A infectious substance regulated as a hazardous material under the U.S. Department of Transportation’s (DOT’s) Hazardous Materials Regulations (HMR; 49CFR, Parts 171-180). For off-site commercial transport of Ebola-associated medical waste, strict compliance with the HMR is required. For more information on the HMR requirements see http://phmsa.dot.gov/hazmat/transporting-infectious-substances

Element I1: Handling and in-hospital management of waste generated through the care of patients with Ebola includes: (1)Safe containment and packaging of waste should be performed as close as possible to the point of generation, (2) Limiting the number of personnel handling generated waste before and after primary containment, (3) Always using appropriate PPE and procedures for handling waste until onsite inactivation or transport away from the hospital for offsite inactivation, and (4) Protocols to transport the waste via a direct, pre-identified route to the point of final storage within the hospital.
Results and Corrective Actions: (R) All hospitals had waste contained and packaged in close proximity to where it was generated with a limited number of staff members handling the waste. The staff members that did handle the waste wore appropriate PPE, though some individuals breached in the process of waste removal. All hospitals had a pre-designated route and location for the transport of waste to a storage area until it could be removed by the waste management company. (CA) Many hospitals instituted a security of leader escort for the movement of waste from PUI room to storage location.

Gaps: Breaches occurring during packaging of waste.

Recommendations: HCP in PPE shall complete a 360 rotation with a nearby colleague prior to packaging waste. A trained observer or other HCP shall observe any HCP packaging waste in order to provide verbal warnings of potential or actual breaches.

References:
1. None.

Element I2: The hospital has waste management plan and protocols24 in place, (1) To package and transport waste contaminated or suspected to be contaminated with Ebola virus in accordance with U.S. DOT Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180), state, and local regulations, (2) For waste contractor to inactivate potentially contaminated and contaminated waste onsite at the hospital or transport it offsite for inactivation. Note: During initial assessment, hospitals may consider sequestering medical waste until the patient’s Ebola test result becomes known. At that time, if the patient is confirmed to have Ebola, the hospital follows its pre-arranged protocol with a vendor capable of managing the waste as a Category A infectious substance; if Ebola is ruled out, waste can be handled according to procedures in compliance with local waste management ordinances.

Results and Corrective Actions: (R) Hospital plans cover packaging of waste, within the U.S. DOT regulations. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. DOT Guidance for Preparing Packages of Ebola Contaminated Waste for Transportation and Disposal
2. Transporting Infectious Substances

Element I3: A designated waste management team25 has been identified with job-specific training and documented competency on wearing appropriate PPE and on standardized procedures for waste handling.

Results and Corrective Actions: (R) During the exercise it was witnessed that certain individuals were responsible for specific tasks related to waste management. However, there was no specific indication that these individuals were part of an actual designated waste management team. (CA) None.

Gaps: Hospitals do not have designated waste management team25 with job-specific training and documented competency on wearing appropriate PPE and on standardized procedures for waste handling.
Recommendations: Hospitals shall have a designated waste management team with job-specific training and documented competency on wearing appropriate PPE and on standardized procedures for waste handling.

References:

1. None.

Element I4: All necessary supplies for hand hygiene, cleaning and disinfection and packaging waste have been obtained. Supply list in Reference 1.

Results and Corrective Actions: (R) All hospitals had the entire list of supplies available. Most had the supplies staged in the PUI room. (CA) Hospitals have made the decision to pre-stage all supplies that are anticipated to be utilized in the PUI room.

Gaps: It could be noted that one hand sanitizer, although available, was broken. Another hospital had a backorder on sanitizer stations.

Recommendations: All equipment should be checked for functionality prior to pre-staging of placement in PUI room.

References:


Element I5: Protocols are in place for the disposal of solid waste (e.g., medical equipment, sharps, linens, privacy curtains, used healthcare products and used PPE). All placement of receptacles and primary packaging by double-bagging of waste occurs in the patient’s room and is performed by the primary healthcare workers (i.e., doctors and nurses) wearing appropriate PPE.

Results and Corrective Actions: (R) All hospitals have procedures on the disposal of solid waste including acceptable types of receptacles, and bagging procedures. However, the primary bagging procedures were more often than not performed by an environmental service worker not the primary healthcare workers. The environmental service workers who were performing the task were witnessed to be wearing appropriate PPE. (CA) Several hospitals made adjustments to the location and size of waste containers in PUI rooms that was more conducive to the space and work flow.

Gaps: Hospitals utilize environmental service worker for the removal of solid waste when this REP guidance suggest this task should be the responsibility of the primary healthcare workers.

Recommendations: Hospitals shall consider the CDC recommendation that primary healthcare workers instead of environmental service workers be responsible for primary packaging of solid medical waste.

References:

1. None.

Element I6: Protocols are in place for disposal of liquid waste (e.g., urine, diarrhea, vomit) that incorporate state and local regulations regarding pretreatment of liquid waste. While CDC does not recommend pretreatment, if this is
required by state or local regulations, a chemical that does not pose a respiratory risk to the patient or staff is selected.

Results and Corrective Actions: (R) Hospitals had essentially two methods for the disposal of liquid waste (e.g., urine, diarrhea, vomit). The first method was the solidification of liquid waste through the use of a commercial solidifier (i.e. Isosorb or DeRoyal) and placement of the solidified agent in red bag waste. The second method was to flush liquid waste after pre-treating with bleach. (CA) The pre-treat flush method was not well-received by the local waste water management companies.

Gaps: Clear guidance on the recommended flushing procedure, as well the hospital’s rights and liabilities related to flushing liquid waste remains unclear.

Recommendations: HEALTH, in coordination with waste water providers in Rhode Island, shall provide a statement regarding acceptable flushing procedures, as well the hospital’s rights and liabilities related to flushing liquid waste.

References:

1. Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste

Element I7: If waste is to be autoclaved, a protocol is in place to ensure appropriate waste autoclave procedures are followed that will inactivate all infectious material, and a large capacity, dedicated autoclave is available within the Ebola patient care unit or within close proximity to the Ebola patient care unit. If waste is not to be autoclaved, protocols are in place for disposal of non-autoclaved, non-sharps waste.

Results and Corrective Actions: (R) Autoclave capabilities were not assessed during the exercise. (CA) After the exercise all hospitals were surveyed regarding autoclave capability. Only one hospital has a large capacity autoclave. Individual hospitals did make inquiries regarding the potential to rent a large capacity autoclave should it be needed.

Gaps: Hospitals do not have the ability to autoclave large quantities of medical waste.

Recommendations: Hospitals shall consider renting an autoclave or utilizing the standardized approach to medical waste management as recommended in Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste. Hospitals shall revise language from “autoclave” to “sterilization” unless an actual autoclave machine is utilized since sterilization can be achieved through methods other than moist heat.

References:

1. Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste
2. Ebola-Associated Waste Management
3. Multisociety Statement on Processing Biohazardous Medical Waste

Element I8: Protocols are in place for disposal of sharps waste. (Cross Reference D5)
Results and Corrective Actions: (R) All hospitals had OSHA approved sharps containers in the PUI room and will include these sharp containers in medical waste. These are locked, prior to removal the containers are sealed, and transported directly to the regulated waste disposal area. (CA) None.

Gaps: None.

Recommendations: None.

References:
1. Occupational Safety & Health Administration Blood-Borne Pathogens, specifically 1910.1030(d)(2)(vii)

Element I9: Protocols are in place for the designated storage of packed, sealed Category A waste containers in an area separated from other waste, while awaiting transport by the facility waste contractor. (Cross Reference D9).

Results and Corrective Actions: (R) All hospitals had a designated area for long-term storage between medical waste pick-ups (i.e. biohazard room, adjacent to patient, PODs placed in parking lot). (CA) None.

Gaps: None.

Recommendations: None.

References:
1. Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus
2. Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste
3. Ebola-Associated Waste Management

Element I10: The facility’s waste contractor has been contacted and a plan is in place for the facility’s waste contractor to request a special permit from the U.S. DOT26.

Results and Corrective Actions: (R) All hospitals had an issue with their waste management company refusing to take waste generated in the care of a PUI. Several hospitals have Ebola waste listed as an exclusion under their waste management contracts. (CA) Most hospitals reached out to their waste management company seeking clarification, and/or exemption. In addition, HEALTH obtained a list of all waste management companies in contract with the hospitals and made state, regional, and national inquiries for resolution. Most hospitals in the state utilize the same waste management company. This company has reached an agreement to provide services and would be responsible to request a special permit from U.S. DOT.

Gaps: None.

Recommendations: None.

References:
1. Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste

Domain J: Communications
Domain J References: None.
Element J1: The hospital has a plan in place to inform and educate staff and patients of plans to care for PUI and Ebola patients.

Results and Corrective Actions: (R) All hospitals have a procedure in place to educate staff of plan of care for a PUI. However, few have this procedure fully outlined. Most procedures do include the leveraging of existing system such as rounds, announcements, staff meetings, internal messages, and over-head announcement codes. Less detailed is the communication that would be shared with patients. (CA) None.

Gaps: Hospitals have under developed plans in place to inform and educate staff and patients of plans to care for PUI and Ebola patients.

Recommendations: The hospital shall develop or revise plan to inform and educate staff and patients of plans to care for PUI and Ebola patients.

References:
1. None.

Element J2: The hospital has a process in place for dissemination of every new or changed plan, procedure, and protocol to appropriate groups within hospital to ensure understanding, proficiency, and comfort among HCP.

Results and Corrective Actions: (R) Similar to J1, all hospitals have procedures in place to educate staff in changes of plans, procedures, and protocol. However, few have this procedure fully outlined. Most procedures include the leveraging of existing system such as rounds, announcements, staff meetings, and internal messages. (CA) In order to streamline communication one hospital had set up a direct POC from the location of the PUI to the Hospital Command Center (HCC). This allowed for quick decisions regarding required changes in plans, procedures, and protocols that could then be disseminated via the existing systems.

Gaps: Hospitals have under developed communication plans in place to educate staff in changes of plans, procedures, and protocol changes.

Recommendations: The hospital shall develop or revise communication plan to include procedures to educate staff in changes of plans, procedures, and protocol.

References:
1. None.

Element J3: The hospital has a plan in place to handle media inquiries related to PUI and Ebola patient care.

Results and Corrective Actions: (R) All hospitals in Rhode Island have a media relations staff member. Also, all hospitals utilize the Hospital Incident Command System (HICS) during an event of significance. This includes the activating the Public Information Officer (PIO). During the Ebola Stress Test only four hospitals exercised HICS and only two activated the PIO. (CA) After the Ebola Stress Test, HEALTH developed a prescribed initial announcement message regarding a PUI. This announcement verbiage was released to all hospital emergency preparedness coordinators to share with the PIO.

Gaps: Hospital plans may not accommodate the potential mass of media attention including logistic and work space, quantity of requests, and whatever plans are currently in place are not tightly coordinated with the HEALTH communication plan.
### Recommendations:
Each hospital shall develop a plan to handle media inquiries related to PUI and Ebola patient care. Hospitals and HEALTH shall work together in one voice to standardize language, timeline schedule for press releases, and media interviews.

### References:
1. None.

### Element J4:
The hospital has a plan in place for protecting the privacy of the PUI and Ebola patient and controlling and monitoring access of HCP to the PUI and Ebola patient record so that unauthorized access does not occur.

### Results and Corrective Actions:
(R) All hospitals are bound by the use of HIPAA, this guidance appeared to be followed at all hospitals during the exercise. (CA) It was evident that the news of a PUI in the hospital did spread quickly throughout most hospitals. The personal health information (PHI) related to the patient was not associated with that news.

### Gaps:
None.

### Recommendations:
None.

### References:
1. The Health Insurance Portability and Accountability Act of 1996 (HIPAA)
2. CMS - Emergency Medical Treatment and Labor Act (EMTALA) Requirements and Implications Related to Ebola Virus Disease (Ebola) (November 21, 2014)

### Element J5:
A single staff member is designated as primary point of contact for communicating information to the designated public health department contact on a daily basis.

### Results and Corrective Actions:
(R) Each hospital-based exercise took place in a single day, but the exercise scenario offered activities related to both a day 1 presentation and day 3 ICU stay. Each hospital ED contacted HEALTH Infectious Disease and Epidemiology (IDE) during day 1 scenario. During day 3, the ICU only contacted HEALTH (OSME) in the event of the death scenario. (CA) None.

### Gaps:
Of note, there are single staff member points of contact for each hospital related to emergency preparedness. However, there is no pre-designated points of contact within each hospital specifically related to the exchange of relevant PUI information to HEALTH on a daily basis.

### Recommendations:
Hospitals shall identify a point of contact for communication with HEALTH on a daily basis and this information should be written into the hospital communication plan. The plan should include a mechanism for reporting to HEALTH any changes in that point of contact. The point of contact name/position and contact information should be provided to HEALTH during the initial call.

### References:
1. None.
Domain K: Management of the Deceased

Element K1: Protocols are in place for post-mortem care of deceased Ebola patients: (1) Only designated, trained HCP or mortuary workers wearing PPE (same PPE used for direct patient care as described in Reference 1) participate in post-mortem preparation of the body, (2) Handling of Ebola patient remains is kept to a minimum, with no washing, cleaning, or embalming of the body, (3) Autopsies are not performed on deceased Ebola patients, (4) Inserted medical equipment, such as intravenous lines, endotracheal or other tubing, or implanted medical devices are not removed; they are left in place, and (5) Human remains are cremated. If cremation cannot be done, the body is buried in a standard metal casket or comparable burial method.

Results and Corrective Actions: (R) Activities (3) and (5) were outside the scope of this exercise. Most hospitals had focused on the receipt and care of the patient and were not well versed in the care of a decedent. They did have OSME’s written plan for decedent care in hand, but had not had the opportunity to provide training or drill staff on the procedures. Staff were able to verbalize the need to wear PPE. During the exercise the staff were already in PPE. Minimal handling, no washing or cleaning, and leaving in all medical equipment was stated by hospital staff and not a significant change from other types of deaths. (CA) Since exercise, hospitals have reviewed the guidelines on decedent care.

Gaps: Hospitals have not repeated drilled decedent care.

Recommendations: Hospitals shall include decedent care in all Ebola exercises.

References:

1. Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)
3. Guidance for Reporting and Certification of Suspect and Confirmed Ebola Virus Deaths (available from HEALTH)
4. State of Rhode Island Ebola Response Plan

Element K2: Ensure that the following equipment is available or can be procured: Supplies used in the hot zone (i.e., contaminated area that includes the patient room): (1) First bag: vinyl or other chlorine-free material, minimum of 6 mil thickness (152 micrometers), (2) Second bag: chlorine-free material impervious to fluids that can be heat-sealed around the body to form a leak-proof body bag, (3) Third bag: laminated vinyl or other chlorine-free material, minimum of 18 mil thickness (457 micrometers) with handles that are not sewn on, such as riveted handled reinforced with handle straps that run under the pouch (4) Thermal sealer for sealing the second bag, (5) Scissors for cutting excess material, (6) Camera or mobile phone capable of securely transferring photographs electronically via Wi-Fi, e-mail, or text message in order to provide necessary identification of the body to mortuary staff, (7) Zip tie for locking the third bag shut at the zipper, (8) EPA-registered disinfectant wipes14, (8) Alcohol-based hand rub, (9) Red biohazard bag for medical waste, (10) Enlarged copy of the Reference 1 titled Mortuary Guidance Job Aid.
Supplies used in the cold zone (i.e., non-contaminated area used for planning and staging): (1) Hospital gurney or mortuary stretcher, (2) Adhesive-backed pouch that is applied to the decontaminated body bag, (3) Single-use (disposable) gloves with extended cuffs and a long-sleeved disposable gown, (4) Biohazard spill kit, and (5) Infectious substance labels that are applied to the decontaminated body bag including: (a) Black and white “infectious substance” label, (b) United Nations (UN) 2814 label, (c) “Do not open” label, and (d) Name and phone number of the hospital administrator.

**Results and Corrective Actions:** (R) The required equipment list in this activity was released after the statewide Rhode Island exercise was completed. Therefore, the exercise team would not have evaluated for these items. All hospitals had the current (at the time) post-mortem care equipment available, but most did not have it located in the hot zone. However, it could be brought to the room. (CA) None.

**Gaps:** Hospitals may not have a complete post-mortem kit appropriately stocked. Hospitals may not have fully trained or exercised staff on the use of post-mortem kit.

**Recommendations:** Hospitals shall review, prepare, and stage post-mortem kits in accordance with Guidance for Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries (section “Equipment List”).

**References:**
2. Mortuary Guidance Job Aid

**Element K3:** Protocols are in place to prepare the decedent for transport. Detailed steps available in Reference 1. (Cross reference C6).

**Results and Corrective Actions:** (R) Most hospitals had focused on the receipt and care of the patient and were not well versed in the care of a decedent. They did have OSME’s written plan for decedent care in hand, but had not had the opportunity to provide training or drill staff on the procedures. Note: Several hospitals would not transport decedent to the morgue, but instead preferred decedent is retrieved by the funeral home directly from the room. Funeral home retrieval and transport were outside the scope of this exercise. (CA) Since the exercise, hospitals have reviewed the guidelines on decedent care.

**Gaps:** Hospitals have not repeated drilled decedent care.

**Recommendations:** Hospitals shall include decedent care in all Ebola exercises.

**References:**
2. Guidance for Reporting and Certification of Suspect and Confirmed Ebola Virus Deaths (available from HEALTH)
3. Decedent Retrieval Locations Reference Chart (available from HEALTH)

**Element K4:** Protocols are in place for transport of the disinfected body bag from the hospital to the place of final disposition. Detailed steps are available in Reference 1.

**Results and Corrective Actions:** (R) This Element was outside the scope of this exercise. Note: All hospitals would complete post mortem preparations. The location for decedent retrieval by the funeral home
vary from patient room, to the morgue, to an alternative area should the patient expire elsewhere in the hospital.

**(CA)** Many hospitals have now added a dedicated transport route between PUI room and morgue.

**Gaps:** Hospitals in collaboration with funeral homes and OSME have not fully established a protocol for transport of the disinfected body bag from the hospital to the place of final disposition.

**Recommendations:** Hospitals or designee should discuss with the OSME (the funeral home liaison) the procedure for transport of the disinfected body bag from the hospital to the place of final disposition to determine if there are any requirements beyond what is already outlined in *Guidance for Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries*, Guidance for Reporting and Certification of Suspect and Confirmed Ebola Virus Deaths (available from HEALTH), and Decedent Retrieval Locations Reference Chart (available from HEALTH).

**References:**

2. *Guidance for Reporting and Certification of Suspect and Confirmed Ebola Virus Deaths* (available from HEALTH)
3. Decedent Retrieval Locations Reference Chart (available from HEALTH)

**Element K5:** Arrangements are in place with designated mortuaries prepared to handle and cremate or bury Ebola patient remains according to all applicable local, state, and federal (e.g., EPA) regulations. Local and state public health authorities are contacted prior to transport of the Ebola patient remains to the designated mortuary. CDC should also be consulted if interstate transport is planned. Transport of non-cremated remains via aircraft is avoided.

**Results and Corrective Actions:** (R) This Element was outside the scope of this exercise with the exception of public health authorities are contacted prior to transport of the Ebola patient remains. This would be completed as outlined in Reference 1. (CA) None.

**Gaps:** Unknown if gap exists at state level.

**Recommendations:** None.

**References:**

1. *Guidance for Reporting and Certification of Suspect and Confirmed Ebola Virus Deaths* (available from HEALTH)
2. Decedent Retrieval Locations Reference Chart (available from HEALTH)

**Domain L: Special Populations**

**Domain L References:**

Element L1: Protocols are in place to address needs of special populations (e.g., pregnant women, infants, children, dialysis patients). Pregnant women considerations are described Reference 1. Dialysis patient considerations are described in Reference 2.

Results and Corrective Actions: (R) Select special populations were addressed in the exercise (PUI who were hard of hearing, pregnant woman, neonate, non-English speaking, and a minor. Caring for and communicating with these individuals were far more challenging to staff than other PUIs. A PUI that required dialysis was discussed during the exercise, but the logistics were not tested. (CA) Hospitals added language lines, and streamlined the process for requesting interpreter services.

Gaps: Availability of specialized care for pregnant woman, neonates, and minors is widely accepted to be within the domain of those hospitals in Rhode Island that specialize in these populations on a day-to-day basis. The assumption that those individuals would simply be transferred to the specialized hospital may be reasonable, but has not been fully operationalized. As for PUI that requires dialysis, few if any, hospitals can provided continuous renal replacement therapy (CRRT), but all could provide intermittent hemodialysis (IHD).

Recommendations: Hospitals shall continue to work together and with HEALTH to formulate a safe plan that is reasonable and executable to ensure special population’s needs are met. This should include population distinct categories (pregnant woman, neonates, and minors) as well as special procedures (dialysis).

References:
2. Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease (EVD) in U.S. Hospitals

Element L2: The hospital has a plan for patient arrival at all entry points (e.g., labor and delivery, emergency department, outpatient clinic, dialysis unit) and safe transport to the designated treatment area. Patients can be adequately screened for risk factors, and signs and symptoms at all entry points.

Results and Corrective Actions: (R) All hospitals have a plan for patient arrival and safe transport to the designated treatment area when patient arrives via the EMS or ED self-presenter routes. Outpatient clinics and dialysis units were not tested as part of this particular exercise. Labor and delivery as an entry point was addressed without issue at the major birthing hospital in the state. (CA) None.

Gaps: Hospital-based entry points other than the ED have received less training and exercising on the identification, isolation, and safe transport of a potential PUI.

Recommendations: HCP working at entry points other than the ED need to be trained and exercised in the ability to identify, isolate, and safely transport a potential PUI.

References:
1. None.
Element L3: The hospital has a plan for delivery of care (e.g., staffing, equipment), including labor and delivery, dialysis, and surgical intervention, as needed.

Results and Corrective Actions: (R) Hospital plans for delivery of care (e.g., staffing, equipment), including labor and delivery, dialysis, and surgical intervention were reviewed prior to the skill exercise. These plans did not fully outline the delivery of care. (CA) Hospitals have begun revising plans.

Gaps: Most hospital plans mention, but insufficiently address the delivery of care (e.g., staffing, equipment), including labor and delivery, dialysis, and surgical intervention.

Recommendations: Hospital plans shall be refined or developed to fully address the delivery of care (e.g., staffing, equipment), including labor and delivery, dialysis, and surgical intervention.

References:
1. None.

Element L4: Protocols are in place to address family involvement in pediatric and obstetric care: (1) Maintain communication between patient and parents/guardian, (2) Identify an area for the family outside the Ebola unit if appropriate based on movement and monitoring guidance and in consultation with local health department, and (3) Develop protocol specific for parent/child interaction.

Results and Corrective Actions: (R) The special population of minors and pregnant women were addressed in the exercise. Both of these were built into the specialty hospital exercise scenario. The procedures used on a day-to-day basis were extended to or modified in order to accommodate a PUI. (CA) None.

Gaps: Three specific gaps were identified. The protocol for parent/child interaction was murky at best, as the hospitals were concerned about cross contaminating/infecting the non-PUI. The second was the rights of the parents to refuse Ebola testing on behalf of a child. Lastly, availability of specialized care for pregnant woman, neonates, and minors is widely accepted to be within the domain of those hospitals in Rhode Island that specialize in these populations on a day-to-day basis. The assumption that those individuals would simply be transferred to the specialized hospital may be reasonable, but has not been fully operationalized.

Recommendations: Hospitals shall continue to work together with HEALTH to clearly define conditions of interactions between parents/child in all PUI scenarios; parental rights of refusal; and formulate a safe plan that is reasonable and executable to ensure special population’s needs are met.

References:
1. Resources for Parents, Schools, and Pediatric Healthcare Professionals
Appendix A. Hospital Assessment Summary

Who this is for: State or local health department Ebola readiness assessment teams, ELC grantees, or other health department staff who are responsible for reporting about Ebola Assessment Hospital capability to CDC

What this is: Table used to summarize a hospital’s overall Ebola readiness across 11 capability domains following an on-site assessment

Instructions: Ebola Assessment Hospitals are hospitals that have minimum capability in place to receive, isolate, and treat a patient under investigation (PUI) for Ebola virus disease (EVD). Mark “Y” for any capability element that is present (i.e., minimum capability is met) in a domain. If all elements in a domain are present, mark “Y” in the Minimum Capability in Place column. Minimum capability can be considered adequate if all elements in a domain are sufficiently met. “N” responses indicate gaps that require mitigation before designation as an Ebola Assessment Hospital. If any element in a domain is marked “N,” mark “N” in the Minimum Capability in Place column. Familiarity with CDC guidance documents for U.S. Healthcare Workers and Settings will be necessary.

Facility Name: ___________________________ State: ___ Zip code: ______

NHSN OrgID: _______ Date of assessment: ___________
<table>
<thead>
<tr>
<th>Ebola Assessment Hospital Capability Domain</th>
<th>Elements Required for Minimum Capability</th>
<th>Minimum Capability in Place? (Y/N)</th>
</tr>
</thead>
</table>
| Facility Infrastructure: Patient room(s) | Hospital has:  
- Private room with in-room dedicated bathroom with covered toilet or covered bedside commode: Y N  
- Dedicated patient-care equipment: Y N  
- Separate areas/rooms immediately adjacent to patient room for  
  - Donning PPE: Y N  
  - Doffing PPE: Y N  
- Sufficient space available to allow a trained observer to safely and effectively supervise donning and doffing of PPE: Y N | Y N |

<table>
<thead>
<tr>
<th>Ebola Assessment Hospital Capability Domain</th>
<th>Elements Required for Minimum Capability</th>
<th>Minimum Capability in Place? (Y/N)</th>
</tr>
</thead>
</table>
Patient Transportation

<table>
<thead>
<tr>
<th>Plans are in place that have been jointly determined by the state and local public health agency, emergency medical services, and hospital for inter-facility transfer/transport of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PUIs for EVD to an Ebola Assessment Hospital or Ebola Treatment Center: Y N</td>
</tr>
<tr>
<td>• Patients with confirmed EVD to a designated Ebola Treatment Center: Y N</td>
</tr>
</tbody>
</table>

Inter-facility Plans include:

| Ground transport: Y N |
| Air transport*: Y N N/A |
| Identification of transportation provider(s) with appropriate training to safely transport a patient: Y N |
| Identification of transportation provider(s) with appropriate PPE to safely transport a patient: Y N |

Intra-facility

Intra-facility plans for patient transport (e.g., from ambulance entrance to the designated ward or unit for patients under investigation) are in place: Y N

*May be required for inter-facility transport in some scenarios; health dept. should determine if air transport to assessment or treatment hospital represents a minimum capability. Indicate ‘N/A’ (not applicable).

Diagnostic laboratory procedures and protocols are in place for:

| Testing of specimens for Ebola by the nearest Laboratory Response Network (LRN) laboratory capable of testing for Ebola: Y N |
| Space for clinical diagnostic testing: Y N |
| Minimal level of diagnostic testing capability* prior to availability of Ebola test results: Y N |
| Equipment and supply selection: Y N |
| Disinfection: Y N |
| Staffing: Y N |
| Specimen handoff and transport for routine clinical diagnostic testing at the facility: Y N |

Lab personnel have been trained and have demonstrated proficiency in:

| Donning and doffing of PPE: Y N |
| Waste management: Y N |
| Processing specimens while in PPE: Y N |
| Specimen transport: Y N |

*At a minimum this testing capability should include CBC, glucose, potassium, malaria exam, influenza test, liver function tests
<table>
<thead>
<tr>
<th>Ebola Assessment Hospital Capability Domain</th>
<th>Elements Required for Minimum Capability</th>
<th>Minimum Capability in Place? (Y/N)</th>
</tr>
</thead>
</table>
| **Staffing**                               | • Readiness plans include input from a multidisciplinary team of all potentially affected hospital departments (including clinical and nonclinical staff): Y N  
• Staffing plans have been developed and scheduled to support 96 consecutive hours of clinical care; sufficient physician and nursing staff are available to handle the patient’s care needs: Y N  
• Hospital has a process for continuous staff input from those who may or may not be directly involved in Ebola patient care and for addressing employee safety questions and concerns: Y N  
• The overall safe care of Ebola patients in a facility is overseen by an onsite manager at all times: Y N | |
| **Training**                               | All staff involved in or supporting patient care are appropriately trained for their roles: Y N  
All staff involved in or supporting patient care and according to their roles have demonstrated proficiency in:  
• Donning and doffing of PPE: Y N  
• Proper waste management: Y N  
• Infection control practices: Y N  
• Specimen transport: Y N  
Retraining is provided as needed and to address observed gaps: Y N | |

58
<table>
<thead>
<tr>
<th>Waste Management</th>
<th>Hospital has in place the services of a waste-management vendor capable of managing and transporting Category A infectious substances*: Y N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>Hospital will sequester medical waste until the patient’s Ebola test result becomes known; if the patient is confirmed to have EVD, arrangements can be made with a vendor capable of managing the waste as a Category A infectious substance*: Y N</td>
</tr>
<tr>
<td></td>
<td>Hospital has appropriate containers for the safe temporary storage of Category A infectious waste: Y N</td>
</tr>
<tr>
<td></td>
<td>Staff that handle waste are trained in the correct use of PPE and the proper handling and storage of Category A infectious substances at the facility: Y N</td>
</tr>
</tbody>
</table>

*Yes to either question meets the first Ebola assessment hospital minimum capability element for waste management.
<table>
<thead>
<tr>
<th>Ebola Assessment Hospital Capability Domain</th>
<th>Elements Required for Minimum Capability</th>
<th>Minimum Capability in Place? (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker Safety</td>
<td>Worker safety programs and policies are in place: Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hospital is in compliance with all federal or state occupational safety and health regulations applicable to reducing employee exposure to the Ebola virus:  Y  N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hospital has a program for assuring direct active monitoring of all healthcare workers involved in direct patient care to assure monitoring for 21 days since the last known exposure:  Y  N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This monitoring will be done in coordination with local and state public health agencies:  Y  N</td>
<td></td>
</tr>
<tr>
<td>Environmental Services</td>
<td>Hospital has a program in place to clean and disinfect patient care areas and equipment, including use of an Environmental Protection Agency-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus (norovirus, rotavirus, adenovirus, and poliovirus):  Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Designated staff are:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trained in correct cleaning and disinfection of the patient room and equipment: Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trained in the correct use of PPE:  Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Directly supervised during all cleaning and disinfection:  Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workers engaged in environmental cleaning and disinfection of patient care areas and equipment follow safe practices including appropriate PPE:  Y   N</td>
<td></td>
</tr>
<tr>
<td>Clinical Management</td>
<td>Staff who will be involved in managing the patient know the clinical protocols for management of PUIs:  Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See Laboratory domain regarding minimum clinical diagnostic testing capability.</td>
<td></td>
</tr>
<tr>
<td>Operations Coordination</td>
<td>To ensure coordination of the response and communication regarding any PUIs for Ebola, the hospital has:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• An emergency management structure:  Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Plans and processes for routinely communicating with local and state public health agencies, emergency management authorities, and its healthcare coalition (if appropriate):  Y   N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Plans and processes for routinely communicating with hospital employees, patients, and community leadership:  Y   N</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B. Notes

1 For healthcare workers under direct active monitoring, public health authorities can delegate the responsibility for direct active monitoring to the healthcare facility’s occupational health program or the hospital epidemiologist. Facilities may conduct direct active monitoring by performing fever checks on entry or exit from the Ebola treatment unit and facilitate reporting during days when potentially exposed healthcare workers are not working. The occupational health program or hospital epidemiologist would report daily to the public health authority.

For the full list of exposures under each risk category, refer to the Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure

High risk exposure includes any of the following:

- Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or body fluids of a person with Ebola while the person was symptomatic
- Exposure to the blood or body fluids (including but not limited to feces, saliva, sweat, urine, vomit, and semen) of a person with Ebola while the person was symptomatic without appropriate personal protective equipment (PPE) (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html)
- Processing blood or body fluids of a person with Ebola while the person was symptomatic without appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) or standard biosafety precautions
- Having lived in the immediate household and provided direct care to a person with Ebola while the person was symptomatic
- Healthcare workers taking care of Ebola patients in a U.S. facility where another healthcare worker has been diagnosed with confirmed Ebola without an identified breach in infection control. A similar determination would be made if an infection control breach is identified retrospectively during investigation of a confirmed case of Ebola in a healthcare worker

Some risk includes:

- Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic
  - Close contact is defined as being for a prolonged period of time while not wearing appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) within approximately 3 feet (1 meter) of a person with Ebola while the person was symptomatic

Low (but not zero) risk exposure includes the following:

- Having brief direct contact (e.g., shaking hands), while not wearing appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) with a person with Ebola while the person was in the early stage of disease
- Brief proximity, such as being in the same room for a brief period of time, with a person with Ebola while the person was symptomatic
- In countries without widespread Ebola transmission, direct contact while using appropriate PPE (http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html) with a person with Ebola while the person was symptomatic
For Official Use Only  
Homeland Security Exercise and Evaluation Program (HSEEP)


<table>
<thead>
<tr>
<th>Infection Control</th>
<th>Hospital Stress Test Full-Scale Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Traveled on an aircraft with a person with Ebola while the person was symptomatic</td>
<td></td>
</tr>
<tr>
<td>• Clinical laboratory workers who use appropriate PPE and follow biosafety precautions</td>
<td></td>
</tr>
</tbody>
</table>

No identifiable risk

• Laboratory workers in Biosafety Level 4 facilities are considered to have no identifiable risk.

2 Examples of team members involved in direct patient care of Ebola patient as needed (not intended to be all-inclusive). Where possible, consider cross-training physician and/or nursing personnel on the Ebola treatment team to perform activities normally performed by other staff (e.g., respiratory therapist(s), transporters, X-ray technicians, environmental services) to minimize the number of personnel in contact with the patient:

• Critical care nurses (nurses with ED, OR, or pediatric expertise may be considered, depending on hospital and specific patient care needs)
• Critical care physicians (hospitalists with critical care experience may be considered)
• Anesthesiologist or other airway management specialist
• Obstetrician
• Neonatologist
• Respiratory therapist(s)
• Dialysis technician
• Transporters
• X-ray tech (avoid radiologic procedures as much as possible)

NOTE: Trainees (e.g., medical and nursing students) should not be permitted to participate in direct patient care or handling of potentially infected materials.

3 Examples of additional team members involved in consultation:

• Infectious Diseases physician
• Nephrologist
• Nutritionist(s)

• Physical/occupational therapist(s)
• Laboratory technologist(s)
• Pharmacist
• Mental health specialist (to provide support to team members on an ongoing basis)
• Clinical studies specialist or research pharmacist (to oversee and manage documentation and communication with federal agencies re: experimental treatments)
• Infection preventionist(s)
• Palliative care
• Interpretive services
• Chaplain
• Ethics expert
NOTE: Trainees (e.g., medical and nursing students) could be included in consultation not involving direct patient care or handling of potentially infected materials as deemed appropriate by the hospital.

4 A site manager’s sole responsibility is to ensure the safe and effective delivery of Ebola treatment. These individuals are responsible for all aspects of Ebola infection control including supply monitoring and evaluation with direct observation of care before, during, and after staff enter an isolation and treatment area.

5 Although Ebola virus is not airborne, placement of Ebola patient in AIIR room will provide additional protection in the event that an aerosol-generating procedure (AGP) is required.

6 Examples of dedicated or disposable patient care equipment: blood pressure monitoring devices, pulse oximeters, portable ultrasound device, or glucometer. Stethoscopes should not be used due to the nature of the PPE in use and the risk of HCP exposure from a contaminated stethoscope. Alternatives might include electronic or telephonic stethoscopes.

7 For more information on acute hemodialysis: http://www.cdc.gov/vhf/ebola/hcp/guidance-dialysis.html. A hemodialysis/CRRT machine should be dedicated for use on the patient and kept in the isolation room until terminal disinfection procedures are undertaken. All other dialysis-related supplies, including the dialyzer, should be disposed of after use in accordance with local, state, and federal regulations. Under no circumstances should a used dialyzer be reprocessed or reused. Read more on Ebola-Associated Waste Management: http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html

8 HCP changing area is a designated area of HCP caring for Ebola patients to change from street clothes into hospital scrubs or disposable garments and dedicated, washable footwear, if using.

9 Clean area is a designated staging area outside Ebola patient room where clean PPE is stored and where HCP can don PPE prior to entering patient room. Examples of clean area space: nearby vacant room, demarcated area in hallway outside patient room.

10 PPE removal area is a designated area in proximity to patient’s room which is separate from the clean area. Examples of PPE removal area space: anteroom or adjacent vacant patient room. If hallway outside patient room must be used as PPE removal area, physical barriers should be constructed to close the hallway to through traffic. Facility should make sure this complies with fire codes and restrict access to this hallway to essential personnel who are properly trained. Some PPE may be removed in a clearly designated area of patient room near the door, provided steps can be supervised by the trained observer (e.g., through window such that the HCP doffing PPE can still hear the instructions of the trained observer). This clearly designated area should not be used for any other purpose and the clean section of the PPE removal area should have gloves accessible.

11 In PPE removal area, place for sitting should be easily cleaned/disinfected.

12 Signs in PPE removal area should instruct HCP to wait for trained observer, support doffing of PPE and remind HCP of slow and deliberate PPE removal.
13 Facilities should consider making showers available for use by healthcare workers after doffing of PPE. Showers are recommended at each shift’s end for healthcare workers performing high-risk patient care (e.g., exposed to large quantities of blood, body fluids, or excreta). Showers are also suggested for healthcare workers spending extended periods of time in the Ebola patient room.

14 U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus). For disinfectant wipes use a disposable wipe impregnated with an EPA-registered hospital disinfectant with a label claim of potency at least equivalent to that for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus). List of EPA-registered disinfectants meeting the CDC criteria for use against Ebola virus on hard, non-porous surfaces is available at: [http://www.epa.gov/oppad001/list-l-ebola-virus.html](http://www.epa.gov/oppad001/list-l-ebola-virus.html).

15 Healthcare personnel are to be trained on all PPE recommended in the facility’s protocols and repeatedly practice donning/doffing procedures before engaging in Ebola patient care. HCP are required to demonstrate competency in the use of PPE, including donning and doffing, through testing and assessment before engaging in Ebola patient care.

16 EPA-registered disinfectant spray can be used if facility conditions permit and regulations are followed, particularly on contaminated areas.

17 Protocols for monitoring HCP may include:
   - Web-based or other system for HCP being monitored to report measured temperatures and symptoms consistent with Ebola, per hospital protocols.
   - Specific individual(s) responsible for reviewing HCP monitoring data and actions to be taken if HCP does not comply with monitoring requirements.
   - Protocol for HCP to follow for abnormal temperature and/or symptoms (with specific criteria to trigger the protocol: e.g., temperature >=100.4°F or 38°C; symptoms including: severe headache, fatigue, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage).

18 For the purposes of risk exposure to Ebola, regardless of country, direct patient contact includes doctors, nurses, physician assistants and other healthcare staff, as well as ambulance personnel, burial team members, and morticians. In addition, others (such as nonclinical staff or observers) who enter into an Ebola patient room or treatment area before completion of terminal cleaning and disinfection of the room would be considered to be potentially at risk of exposure to body fluids.

19 Protocols for post-exposure management, evaluation, and follow-up include:
   - Safe exit from the patient care area and removal of PPE.
   - Decontamination of the exposed skin and/or mucous membranes.
   - Immediate contact of occupational health/supervisor for assessment and access to post-exposure management services for all appropriate pathogens (e.g., Human Immunodeficiency Virus, Hepatitis C, etc.).
   - Appropriate monitoring and furlough of exposed HCP from direct patient care procedures for the 21 days following the exposure.
   - Procedures for immediate notification and safe transport if fever or symptoms develop.
After Action Report Summary

Hospital Stress Test Full-Scale Exercise

- Testing procedures
- Early clinical management as appropriate (clarify options and procedures for accessing experimental therapies)

20 The clinician should determine specific testing according to the patient presentation and travel history. Although laboratory testing for patients for which there is a clinical suspicion of EVD, or a patient with confirmed EVD will likely vary, assessment and treatment facilities should consider how they might safely perform the following laboratory tests (if indicated) or, if unable to safely perform specific tests, identify alternative approaches to patient management (e.g., empiric treatments, alternative diagnostic strategies):

- A complete blood count (CBC), including differential, and platelet count
- Sodium, potassium, chloride, bicarbonate, calcium, blood urea nitrogen, creatinine, and glucose concentrations
- Aspartate aminotransferase (AST), alanine aminotransferase (ALT), and total bilirubin
- Coagulation testing, specifically prothrombin time (PT), expressed as international normalized ratio (INR)
- Blood culture for bacterial pathogens (for information on automated or manual blood cultures, see “Laboratory Equipment” section of this document)
- Malaria testing (smear or rapid tests)

Note: While not all facilities may have the capacity to definitively diagnose malaria, any facility capable of performing a complete blood count should be able to review the blood smear to provide an initial presumptive diagnosis regarding the presence or absence of malaria parasites. Facilities that do not have the capacity to perform definitive malaria testing on site should contact their state health department to facilitate the definitive diagnosis; CDC and the state health departments can assist with providing a diagnosis of malaria in a timely fashion. More information can be found at CDC’s malaria website.

- Influenza virus testing*
- Respiratory Syncytial Virus (RSV) and other respiratory virus testing*+
- Rapid group A strep testing on throat swabs
- Urinalysis

Ebola treatment hospitals should be able to provide the above tests, as well as additional testing required to manage a patient with EVD.

* Negative results when using point of care rapid diagnostics on respiratory specimens from older children and adults do not exclude infection because of their lower sensitivity compared with molecular assays. However, rapid RSV antigen testing in smaller children has been shown to be effective.

+ Molecular assays for numerous respiratory viruses are often available as multiplex assays and may aid in diagnosis of common respiratory infections

21 Some items for clinical laboratories to focus on during their site-specific risk assessment should include:
### Specimen Management and Transport

- Specimen management and transport, including the path of the sample through the laboratory particularly avoiding transport through high-traffic areas or pneumatic tube systems

### Equipment Hazards

- Equipment hazards (e.g., the potential for creating aerosols, sprays, splashes of the specimen when performing testing and using equipment)

### Biological Safety Cabinet Certification

- Biological Safety Cabinet certification, operation and safe work practices

### Decontamination Procedures

- Decontamination procedures, including spill response, and methods for decontamination of equipment

### Laboratories

- Laboratories that have open room designs should also consider the risk of exposure to workers present in the area but that are not directly involved with testing of a particular sample

### Recommended Measures

- Some recommended measures to minimize the risk of laboratory transmission when testing patient specimens include: limiting the number of staff engaged in testing, evaluating and segregating equipment used for testing, and performing testing in a dedicated space

### Engineering Controls

- Engineering controls and safety equipment

### Laboratory Communication Protocols

- Laboratory communication protocols

### Laboratory Entry and Exit Procedures

- Laboratory entry and exit procedures

### PPE Selection and Use

- PPE selection and use

### Facility Ventilation and Filtration

- Facility ventilation and filtration

### Employee Medical Surveillance and Exposure Response

- Employee medical surveillance and exposure response

### Safe Sharps Handling

- Safe sharps handling

### Personnel Safety Training and Competencies

- Personnel safety training and competencies

### Additional Information

Additional information on conducting a risk assessment can be found in the CLSI Document M29-A4 “Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline-Fourth Edition”

22 It is strongly recommended to work inside a certified Class I or certified Class II biosafety cabinet (BSC) when handling or manipulating patient specimens. When all proper procedures are strictly followed, a Class I BSC will protect the worker, and a Class II BSC will protect the worker and the sample from contamination.

When a BSC is not available or possible, then additional safety equipment should be used to contain any splashes or potential aerosols generated.

23 PPE and required training for personnel performing cleaning and disinfection is the same as for providers performing direct patient care.


25 Staff responsibilities for bagging and packaging waste, autoclaving waste (where appropriate), storing waste, and transporting packaged waste for removal from facility are clearly delineated. To limit the number of personnel entering the patient care area, consider using the patient care team to perform waste-associated responsibilities that occur within the patient care room (e.g., bagging waste, handling liquid waste).

26 Supplies for Hand Hygiene, Cleaning and Disinfection, and Packaging Waste
For Official Use Only
Homeland Security Exercise and Evaluation Program (HSEEP)

After Action Report Summary

Ebolan 2014-2015

(Hospital Stress Test Full-Scale Exercise

<table>
<thead>
<tr>
<th>Infection Control</th>
<th>Hospital Disinfectant for Use Against the Ebola Virus</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leak-proof labeled biohazard bags: The film bags must have a minimum film thickness of 1.5 mils (0.0015 inch) and be 175 liters or smaller (46 gallons). Reference U.S. Department of Transportation (DOT) HMR requirements.</td>
<td>Select a hospital grade disinfectant available as wipe, spray, pull-top, or refill bottles (depending on application) with a label claim for one of the non-enveloped viruses (e.g., norovirus, rotavirus, adenovirus, poliovirus) to disinfect hospital environmental surfaces.</td>
</tr>
<tr>
<td>• Approved sharps waste container</td>
<td>• EPA-registered hospital disinfectant for use against the Ebola virus</td>
</tr>
<tr>
<td>• Waste container in patient’s room</td>
<td>• Absorbent disposable towels</td>
</tr>
<tr>
<td>• Transport cart</td>
<td>• Disposable cleaning cloths</td>
</tr>
<tr>
<td>• Absorbent material sufficient to absorb potential free liquid (if any) should be placed in the bottom of the rigid outer packaging or the liner of the fiberboard outer packaging.</td>
<td></td>
</tr>
<tr>
<td>• EPA-registered hospital disinfectant for use against the Ebola virus</td>
<td>• Alcohol-based hand rub (ABHR) that is at least 60% alcohol</td>
</tr>
</tbody>
</table>

27 Primary handling of liquid waste should occur in the patient’s room and be performed by the primary healthcare workers (i.e., doctors and nurses) wearing recommended PPE as designated in the guidance for hospitals [http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html].

- Pour waste, avoiding splashing by pouring from a low level, into the toilet.
- Close the lid first, and then flush toilet.
- Clean and disinfect flush handles, toilet seat, and lid surfaces with EPA-registered hospital disinfectant/cleaner.
- Discard cleaning cloths in biohazard bags.
- Discard emesis and portable toileting containers as solid waste.

28 Bags should not be filled beyond two-thirds full to allow safe closure. Prior to closure of primary waste bags, add a sufficient volume of water to primary bag (according to validated procedures). Waste autoclave protocol requires that biological indicator, intended specifically for the type and cycle parameters of the sterilizer, is used. Autoclave parameters, including autoclave pressure, time, and liquid cycle are specified. Inactivation can be achieved by submitting materials to treatment in an autoclave under a “validated waste cycle” to 121°C (250°F) for at least 30 minutes. Logs are maintained with documentation from each cycle.

29 A 40+ or 70+ cu ft autoclave can hold large, trash sized autoclavable biohazard bags. Bags must be special autoclavable bags to avoid plastic melting in autoclave.

30 For autoclave within close proximity to the Ebola patient care unit, identify safe means of waste transport to the autoclave.
Non-autoclaved, non-sharps solid waste is:

- Placed into primary medical waste bags (1.5 mil—ASTM tested), no more than two thirds full
- EPA-registered hospital disinfectant is added to sufficiently cover the surface of the materials in the bag.
- The bag is securely tied.
- The outside of the bag is disinfected with an EPA-registered hospital disinfectant.
- The disinfected primary bag is placed into a second medical waste bag that is also securely tied and disinfected.

Double-bagged waste is placed into appropriate Category A waste packaging according to manufacturer’s instructions and in a manner that prevents external contamination of the final container.

Disposal of sharps:

- Placed in appropriate disposable sharps containers and close container.
- Containers should not be filled beyond two-thirds full to allow safe closure.
- For onsite inactivation, add sufficient volume of water (according to validated procedures) prior to closure.
- For offsite inactivation, add EPA-registered hospital disinfectant is added to the sharps container prior to disposal.

- Sharps containers ready for disposal are sealed and placed into primary medical waste bags (1.5 mil—ASTM tested).
- The bag is securely tied.
- The outside of the bag is disinfected with an EPA-registered hospital disinfectant.
- The disinfected primary bag is placed into a second medical waste bag that is also securely tied and disinfected.

Double-bagged waste is placed into appropriate Category A waste packaging according to manufacturer’s instructions and in a manner that prevents external contamination of the final container.
Appendix C. IC Recommendations by Domain

A. Pre-Hospital Transport Plans, Emergency Medical Services (EMS), Emergency Department (ED) Preparedness

- HEALTH shall enter into a contract with EMS provider(s) that will transport person under investigation (PUI) or patient with confirmed Ebola to an appropriate healthcare facility. Caveats include 24/7/365 availability, adequate quantity of trained staff, and appropriately supplied vehicle.
- HEALTH enters into a contract with select EMS provider(s) that can provide the needed services and focus on training to maintain competency. Caveats in the contract would include 24/7/365 availability, adequate quantity of trained staff, and appropriately supplied vehicle.
- Continued conversation between EMS, hospitals and HEALTH to define and disseminate expectations related to hospital supply of staff and space dedicated to EMS. These once defined can be added to the current “Ebola specific Hospital-to-EMS Arrival Instructions Chart”. In addition, this chart should be reviewed and revised based on the application of tiers within the hospitals of Rhode Island as either an Assessment or Frontline Hospital.
- Triage screening signs are updated as the countries with widespread Ebola virus change (additions or deletions). The responsibility for this process has not been identified and is challenging to keep up with in real time.
- Train and exercise ED personnel to ask salient questions of EMS providers about possible risk factors for Ebola in patients being transported via ambulance to the hospital.
- Hospitals must have a procedure that would allow for the fast turnover of an occupied room for the use by an incoming PUI. It should be noted that a PUI via EMS will have a lead time as HEALTH coordinates all parties, whereas as self-presenter that is determined in the triage process to be a PUI will provide no lead-time. The space issue is not singularly related to PUI therefore hospitals must remain vigilant in identifying opportunities to leverage existing space or in new construction to make space. Lastly, HEALTH should work with hospitals and other healthcare sector partners to complete the development and dissemination of a standardized Statewide Hospital Emergency Code (i.e. Code Purple).
- Hospitals adopt a standard definition of competent care. Identified staff members that will be providing patient care receive standardized training and exercise opportunities. These definitions, trainings, and exercise are documented. The training and exercise opportunities must occur within a set time table that ensures a minimum level of competency. Hospital trainers review purpose of log with staff to instill responsibility (individuals receive an assignment of exposure categories (e.g., high-risk, some risk, low-risk)¹ in order to apply movement and monitoring guidance to HCP. Revision of hospital plans to include a pre-assigned role, scope of work, and procedure for the logger.
Hospital trainers review with staff the differences in presentation of a PUI with dry versus wet Ebola and the CDC recommended PPE for each scenario.

Hospitals should review environmental decontamination plan to ensure procedures and policies are clear in the decontamination of equipment used by a PUI and re-use of equipment with another patient. HEALTH should plan to further develop this portion of the exercise so as to witness the full extent of the environmental decontamination plan.

HEALTH, in collaboration with hospitals, shall identify minimal data points for inclusion in protocols related to laboratory specimens, infection control, and waste management.

B. Staffing of Patient Care Team

- Hospitals shall develop a staffing plan that ensures 24/7 trained staff are available to provide up to 96 hours of care to a PUI.
- Future exercises should limit the number of players and observers. More specific recommendations to this Element include: Hospitals shall provide a mechanism of communication between patients or team members if consultation can be completed from outside the room. If consulting team members must enter the PUI/patient room, they shall receive job-specific training and demonstrate competency on infection control practices, policies and procedures, including appropriate use of PPE, prior to entering the patient room.
- HEALTH shall make inquiry with hospital as to their interest level in self-designating as a Frontline or Assessment Hospital. HEALTH shall work, in collaboration with hospitals, to develop a safe and effective Ebola plan for each hospital type.
- Hospitals seeking to receive Ebola Assessment Hospital designation will submit to HEALTH a staffing schedule that addresses the following considerations: (1) For Ebola Assessment Hospitals, staffing plans include a roster to manage up to 96 consecutive hours of clinical care, (2) For Ebola Treatment Hospitals, staffing plans include a roster to manage at least several weeks of clinical care, (3) Plans to minimize number of personnel in room, (4) Adequate time to rest between shifts, (5) On-call schedule for consultants to the patient care team 24 hrs/7 days/week, and (6) Maximum duration HCP can provide direct patient care (e.g., 2–4 hours continuously) and maximum duration of an Ebola patient care unit shift (e.g., 8–12 hours).
- HEALTH, in collaboration with hospitals, shall develop and disseminate a protocol outlining the roles and responsibilities of HEALTH and hospitals in the task of monitoring and restrictions of asymptomatic HCP.
- Hospitals planning on using the ICP as a site manager must make alternative arrangement to train additional personnel as site managers, as the ICP cannot be available 24/7 if a PUI is hospitalized long-term. General guidance on the overarching role of a Site manager is available, but a specific job action sheet is not available, which may lead to inconsistent practices within a hospital.
- Hospitals shall develop or revise a plan for ongoing support and evaluation of team members, including process for HCP to provide feedback to leadership.
C. Patient Transport from Point(s) of Entry to Designated Ebola Treatment Area

- Hospitals shall institute an internal notification process that will bring a rapid and appropriate response to the PUI location. All hospitals shall use the Statewide Hospital Emergency Code for Infectious Event as recommended in A7(3), if this code is officially added to the current list of state codes.
- Remedial training should be provided during or immediately after all exercises where PPE selection, donning, and doffing were not performed well. Refresher training should be provided at regular intervals that ensure maintenance of competency.
- Two environmental management staff members shall accompany any PUI during transport. Environmental management staff shall have a dedicated cart stocked with appropriate supplies for proper management of blood or bodily fluid spills.
- Hospitals shall review environmental decontamination plan to ensure procedures and policies are clear in the decontamination of equipment used by a PUI and re-use of equipment with another patient. HEALTH shall plan to further develop this portion of the exercise so as to witness the full extent of the environmental decontamination plan.
- Hospitals shall host discussions related to the identification of potential areas a patient may need to be moved (CT Scan, dialysis) and update the movement and decontamination plan for those areas.
- Hospitals shall develop protocols for safe emergency evacuation of patient and staff members designated to work with patient, minimizing any possible exposures.

D. Patient Placement

- Hospital shall consider converting the currently selected PUI room to include negative pressure airborne infection isolation or selecting another room where negative pressure airborne infection isolation already exists.
- Hospitals shall ensure the selected spaces are adequate for the tasks that need to be completed within them. The tasks shall be practiced within the space with the associated equipment and staff. If there are breaches occurring across zones then consideration must be given to finding an alternative space or modifying current space.
- Hospital trainers shall review purpose of log book with staff to instill responsibility (individuals receive an assignment of exposure categories (e.g., high-risk, some risk, low-risk)1 in order to apply movement and monitoring guidance to HCP. Revision of hospital plans to include a pre-assigned role, scope of work, and procedure for the logger.
- Hospitals shall continue to exercise communication tools to ensure patient-staff communication, patient-family communication, and interdisciplinary rounds are relevant, efficient, private, and clearly received.
- Hospitals shall clean non-disposable equipment based on the manufacturer’s guidelines and with the knowledge of potential impacts for further usage of the equipment. Hospitals can utilize the
basic principles outlined in Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease in U.S. Hospitals specifically “External machine surfaces”.

- Hospitals shall post signage to mark three separate areas (HCP changing area, Clean area (PPE donning area), and PPE doffing area.
- Hospitals shall look for an adequate space to dedicate to doffing. This should be based on the number people doffing at one time with the required medical waste containers, chairs, disinfecting supplies, and trained observer. All hospitals should install a full length mirror in the doffing space.
- Hospitals HCP shall receive training and be exercised post doffing activities such as medical screening, showering, and debriefing.
- Hospitals shall identify specific waiting rooms or family rooms outside the Ebola unit for families of PUI.

E. Personal Protective Equipment and Procedures for Donning and Doffing

- Hospitals shall report supply backorder issues to HEALTH and HEALTH shall work with Federal partners to mitigate barriers in the commercial market.
- Hospitals shall develop a training and exercise schedule that ensures training or exercises are occurring at intervals appropriate for staff to maintain competency on proper procedures for donning and doffing of PPE.
- Hospital trainers shall review with staff the differences between dry and wet Ebola and the CDC’s recommendation appropriate PPE for either scenario.
- Hospital shall develop, and provide to HEALTH, a list of PPE selected for use by the HCP in the care of a patient with suspected or confirmed Ebola, including the specific make and model numbers for all components.
- Hospital shall practice donning and doffing in teams of trained observer, buddy, and HCP in order to reinforce role expectations and limitations.
- Hospitals shall utilize develop a chart of appropriate PPE for each HCP role and within the context of the clinical presentation of the PUI using the list provided in Guidance on Personal Protective Equipment to be used by Healthcare Workers during Management of Patients with Ebola Virus Disease in U.S. Hospitals, including Procedures for Putting on (Donning) and Removing (Doffing)
- Hospitals shall routinely take inventory of PPE in order to ensure maintenance of a 4-5 day supply. Should equipment be on back order hospital should report pertinent information to HEALTH and HEALTH works with Federal partners to mitigate barriers in the commercial market.

F. Monitoring Healthcare Personnel and Managing Exposures

- In order to identify obstacles and gaps, hospitals shall exercise work-exclusion and compensation policies in place for the management of an exposed HCP.
Hospital trainers shall review purpose of log with staff to instill responsibility (individuals receive an assignment of exposure categories (e.g., high-risk, some risk, low-risk)\(^1\) in order to apply movement and monitoring guidance to HCP. Revision of hospital plans to include a pre-assigned role, scope of work, and procedure for the logger.

- HEALTH shall, in collaboration with hospitals, develop and disseminate a protocol outlining the roles and responsibilities of HEALTH and hospitals in the task of monitoring and restrictions of asymptomatic HCP.
- Hospitals shall revise or develop a protocol for an Ebola exposure that includes post-exposure management, evaluation, and follow-up.

G. Laboratory Safety

- HEALTH shall work with the CDC to obtain Ebola testing capabilities.
- All hospitals shall perform and document a site-specific risk assessment to identify potential exposure risks and to mitigate these risks by implementing engineering controls, administrative and work practice controls, and use of appropriate PPE. The risk assessment considers the path of the sample throughout the laboratory and all work processes, procedures, and tasks performed.
- Hospitals shall provide designated staff with routine training and exercise opportunities to practice handoffs, placements, and cleaning of the specimens prior to departure from the PUI room.
- Hospitals shall provide continuing training and exercise opportunities for laboratorians that include completing the entire testing cycle.
- Hospital trainers shall review with staff the differences between dry and wet Ebola and the CDC’s recommendation appropriate PPE for either scenario.

H. Environmental Infection Control and Equipment Reprocessing

- Hospitals shall provide remedial training during or immediately after all exercises where PPE selection, donning, and doffing were not performed well. Refresher training should be provided at regular intervals that ensure maintenance of competency.
- Hospitals shall revise environmental management plan to include a monitoring role during the cleaning and disinfection procedures to ensure the procedures are consistently and correctly performed.
- Hospitals should clean non-disposable equipment based on the manufacturer’s guidelines and with the knowledge of potential impacts for further usage of the equipment. Hospitals can utilize the basic principles outlined in Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease in U.S. Hospitals specifically “External machine surfaces”.
- Hospitals shall develop or revise cleaning protocols to include delineation of responsibility for cleaning and disinfection of reusable patient care equipment (how equipment should be cleaned and by whom) and include documentation of cleaning on a log (who/when/how).
Hospitals shall develop or revise plans that outline the requirement to use only disposable food trays, dishes, and cutlery items, as well as the waste management of such items including left over food.

I. Management of Waste

- HCP in PPE shall complete a 360 rotation with a nearby colleague prior to packaging waste. A trained observer or other HCP shall observe any HCP packaging waste in order to provide verbal warnings of potential or actual breaches.
- Hospitals shall have a designated waste management team with job-specific training and documented competency on wearing appropriate PPE and on standardized procedures for waste handling.
- All equipment should be checked for functionality prior to pre-staging of placement in PUI room.
- Hospitals shall consider the CDC recommendation that primary healthcare workers instead of environmental service workers be responsible for primary packaging of solid medical waste.
- HEALTH, in coordination with waste water providers in Rhode Island, shall provide a statement regarding acceptable flushing procedures, as well the hospital’s rights and liabilities related to flushing liquid waste.
- Hospitals shall consider renting an autoclave or utilizing the standardized approach to medical waste management as recommended in Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste. Hospitals shall revise language from “autoclave” to “sterilization” unless an actual autoclave machine is utilized since sterilization can be achieved through methods other than moist heat.

J. Communications

- The hospital shall develop or revise plan to inform and educate staff and patients of plans to care for PUI and Ebola patients.
- The hospital shall develop or revise communication plan to include procedures to educate staff in changes of plans, procedures, and protocol.
- Each hospital shall develop a plan to handle media inquiries related to PUI and Ebola patient care. Hospitals and HEALTH shall work together in one voice to standardize language, timeline schedule for press releases, and media interviews.
- Hospitals shall identify a point of contact for communication with HEALTH on a daily basis and this information should be written into the hospital communication plan. The plan should include a mechanism for reporting to HEALTH any changes in that point of contact. The point of contact name/position and contact information should be provided to HEALTH during the initial call.

K. Management of the Deceased

- Hospitals shall include decedent care in all future Ebola exercises.
Hospitals shall review, prepare, and stage post-mortem kits in accordance with Guidance for Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries (section “Equipment List”).

Hospitals shall include decedent care in all Ebola exercises.

Hospitals or designee should discuss with the OSME (the funeral home liaison) the procedure for transport of the disinfected body bag from the hospital to the place of final disposition to determine if there are any requirements beyond what is already outlined in Guidance for Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries, Guidance for Reporting and Certification of Suspect and Confirmed Ebola Virus Deaths (available from HEALTH), and Decedent Retrieval Locations Reference Chart (available from HEALTH).

L. Special Populations

Hospitals shall continue to work together and with HEALTH to formulate a safe plan that is reasonable and executable to ensure special population’s needs are met. This should include population distinct categories (pregnant woman, neonates, and minors) as well as special procedures (dialysis).

HCP working at entry points other than the ED need to be trained and exercised in the ability to identify, isolate, and safely transport a potential PUI.

Hospital plans shall be refined or developed to fully address the delivery of care (e.g., staffing, equipment), including labor and delivery, dialysis, and surgical intervention.

Hospitals shall continue to work together with HEALTH to clearly define conditions of interactions between parents/child in all PUI scenarios; parental rights of refusal; and formulate a safe plan that is reasonable and executable to ensure special population’s needs are met.