

ASPR TRACIE Technical Assistance

On June 12, 2018 ASPR TRACIE and the National Ebola Training and Education Center (NETEC) co-hosted the *Healthcare System Readiness for Highly Pathogenic Infectious Diseases* webinar. The PowerPoint presentation and webinar recording are now available on ASPR TRACIE at: <https://asprtracie.s3.amazonaws.com/documents/netec-aspr-tracie-highly-infectious-disease-webinar-12june2018-508.pdf>.

The title page of the PowerPoint presentation also links to the webinar recording. You will be asked to enter your name and email address prior to accessing the recording.

This document provides an excerpt of the questions posed and answers provided (Q&A) during or after the webinar. Please note that this is not an exhaustive list of all the questions asked, but rather a sample of questions that may be beneficial to our stakeholders. Please review the webinar recording to hear the entire Q&A portion.

Questions Related to Special Pathogen Response System:

1. **Question:** How do we obtain a list of assessment and treatment hospitals?

Answer: The state health department within your jurisdiction can provide you with a list of names of hospitals that serve as an Ebola treatment center and/or an assessment hospital. HHS/ASPR does not release a list of the facilities, other than the 10 regional Ebola and other special pathogen treatment centers, because many state- or jurisdiction-based Ebola treatment centers and assessment hospitals do not want to have public designation; however, they have committed to serving in this role, should a patient need their services.

2. **Question:** The overall specialized bed space, nationwide, seems quite limited. What backup plans exist if a large-scale HID outbreak occurs and significantly more bed space is required?

Answer: Each of the 10 regional Ebola and other special pathogen treatment centers has at least two biocontainment beds and 10 negative pressure isolation beds. Each of the 69 state- or jurisdiction-based Ebola treatment centers has at least one biocontainment bed. This system was not established for all types of infectious diseases; ASPR recognizes that all hospitals will likely need to care for patients during an infectious disease outbreak that is transmitted through an airborne or respiratory route. That said, we view the regional centers as a “hub” that can lend expertise through training and telemedicine to other hospitals within its region.

3. **Question:** What do you think the causes are for the increased times in isolation and hospital admissions?

Answer: While it is difficult to determine the exact causes, one possible reason may be a decrease in vigilance as time elapses from the 2014-2015 outbreak. Health care facilities should institute rapid triage, including signs and symptoms and travel history screening questions, to rapidly identify potentially infectious patients.

4. **Question:** How are the DoD and VHA healthcare systems being integrated into the overall response?

Answer: HHS, DoD, and VHA have agreed to permit access to the 10 regional Ebola and other special pathogen treatment centers that are funded by HHS for service members and veterans.

5. **Question:** What resources are available to guide hospital health systems in the area of creating, incentivizing, and sustaining “deployment” teams – primarily focused on assessment functions only?

Answer: If “deployment teams” are referring to the care teams managing patients with highly infectious diseases, the National Ebola Training and Education Center (NETEC) has several resources for hospital and public health leaders. The “Leadership Toolbox” in the online repository includes tools to prepare, mitigate, respond, and recover from an Ebola or other special pathogen activation. Resources within the “Preparedness” section may be especially helpful. Please visit the NETEC website at <https://repository.netecweb.org/exhibits/show/leadership> for additional tools and resources.

Questions Related to Vaccine/Vaccination:

6. **Question:** How well does the vaccine work? [alternate question] How effective is the vaccine please?

Answer: Studies in non-human primates (NHPs) have demonstrated that a single intramuscular injection of rVSV-ZEBOV elicits protective immune responses against lethal EBOV challenge when the vaccine is given at least 7 days before the challenge. Complete protection has been observed when NHPs are challenged out to 42 days post-vaccination but the duration of protective immunity beyond that is currently unclear. Single intramuscular injection of rVSV-ZEBOV provided complete protection against a lethal aerosol EBOV challenge. Vaccination provided incomplete protection against a lethal EBOV challenge in immunocompromised NHPs, with 2/6 vaccinated animals succumbing to EVD. Finally, rVSV-ZEBOV protected 50% of NHPs from a lethal intramuscular ZEBOV challenge when administered 20-30 minutes after the challenge.

References:

- Marzi A, Robertson SJ, Haddock E, et al. EBOLA VACCINE. VSV-EBOV rapidly protects macaques against infection with the 2014/15 Ebola virus outbreak strain. *Science* 2015;349:739-42
- Geisbert TW, Daddario-Dicaprio KM, Geisbert JB, et al. Vesicular stomatitis virus-based vaccines protect nonhuman primates against aerosol challenge with Ebola and Marburg viruses. *Vaccine* 2008;26:6894-900.
- Geisbert TW, Daddario-Dicaprio KM, Lewis MG, et al. Vesicular stomatitis virus-based ebola vaccine is well-tolerated and protects immunocompromised nonhuman primates. *PLoS Pathog* 2008;4:e1000225.
- Feldmann H, Jones SM, Daddario-DiCaprio KM, et al. Effective post-exposure treatment of Ebola infection. *PLoS Pathog* 2007;3:e2.

7. Question: Any side effects/complications from the Ebola vaccination?

Answer: No serious vaccine-related adverse events were reported in published Phase 1 and Phase 2 clinical trials. However, mild to moderate, transient reactogenicity was reported. One Phase 1, multi-center, dose-escalation clinical trial of the rVSV-ZEBOV vaccine in 158 healthy adults in Africa and Europe reported mild to moderate early-onset reactogenicity including fever in 30% of vaccinees and vaccine viremia in 95% of vaccinees. Arthritis affecting one to four joints was reported in 22% of vaccinees at one study site 2 weeks after vaccination. Pain lasted a median of 8 days and virus was identified in the synovial fluid aspirate and in skin vesicles of two other vaccinees. There was no association between the presence of arthritis and vaccine dose, age, sex, earlier arthralgia, or peak viremia. At six months, 10 of 11 participants with arthritis were symptom-free. Three vaccinees with arthritis also developed a mild maculopapular rash with rare vesicles on fingers and toes. Analysis of one papule identified rVSV by reverse transcriptase polymerase chain reaction. Other phase 1 and 2 studies (total number vaccinated=601) have also described similar vaccine reactogenicity, although rates of arthritis were lower in other studies.

References:

- Agnandji ST, Huttner A, Zinser ME, et al. Phase 1 Trials of rVSV Ebola Vaccine in Africa and Europe. *The New England journal of medicine* 2016;374:1647-60.
- Heppner DG, Jr., Kemp TL, Martin BK, et al. Safety and immunogenicity of the rVSVG-ZEBOV-GP Ebola virus vaccine candidate in healthy adults: a phase 1b randomised, multicentre, double-blind, placebo-controlled, dose-response study. *Lancet Infect Dis* 2017;17:854-66.
- Huttner A, Dayer JA, Yerly S, et al. The effect of dose on the safety and immunogenicity of the VSV Ebola candidate vaccine: a randomised double-blind, placebo-controlled phase 1/2 trial. *Lancet Infect Dis* 2015;15:1156-66.
- ElSherif MS, Brown C, MacKinnon-Cameron D, et al. Assessing the safety and immunogenicity of recombinant vesicular stomatitis virus Ebola vaccine in healthy adults: a randomized clinical trial. *CMAJ* 2017;189:E819-E27

8. Question: When will a universal flu vaccine be available?

Answer: None of the presenters are experts on this topic. However, in general, it is difficult to predict when a universal influenza vaccine will be available due to the lengthy safety and efficacy studies that must be completed prior to approval and marketing. Earlier this year, the National Institute of Allergy and Infectious Diseases (NIAID) released a Universal Influenza Vaccine Strategic Plan, which identifies three specific focus areas for future research. NIAID also provided information on current leading vaccine strategies and candidates, including Phase 1/2 studies of an investigational DNA-based vaccine followed by a licensed seasonal influenza vaccine booster and a Phase 2 clinical trial of a universal influenza vaccine. Additional details may be found at <https://www.niaid.nih.gov/diseases-conditions/universal-influenza-vaccine-research>.

Questions Related to Identify, Isolate, and Inform:

9. Question: Please clarify if airborne [precautions] is needed for Ebola.

Answer from Kate Boulter (NETEC): There is no firm evidence to show that Ebola virus is transmitted by the airborne route. The CDC recommendation for patient placement is a single patient room with a private bathroom <https://www.cdc.gov/vhf/ebola/clinicians/evd/infection-control.html>, but they also recommend using an Airborne Infection Isolation Room (AIIR) if performing aerosolizing generating procedures, and suggest taking additional measures if other conditions are present that would warrant increased infection control, such as tuberculosis.

A dry patient with no vomiting, bleeding, diarrhea, or any other symptom(s) that can result in potential body fluid exposure such as coughing can be cared for in a standard isolation room. However, it's impossible to predict the condition in which a patient will arrive at your facility, how their condition will progress, and what therapies will be required. So, I would recommend mitigating the potential for an airborne exposure by placing them in an AIIR as soon as you identify them as a PUI.

Additionally, having an all hazards approach to your plans will simplify preparedness as there are other special pathogen diseases we must be alert to that do require being placed in AIIR, such as SARS, MERS, Smallpox, Monkeypox, and plague. If you would like more assistance, please reach out to NETEC at <https://netec.zendesk.com/hc/en-us/requests/new> and we will be happy to connect with you.

10. **Question:** After having obtained a travel history, where can a provider get (at any hour of the day or night) the MOST up-to-date authoritative information about known outbreak locations/areas of concern? CDC hotline? CDC website? State Department website? World Health Organization website? Other?

Answer from Jill Morgan (NETEC): In Georgia, we are fortunate to have a public health system that has a great website (<https://dph.georgia.gov/TravelClinicalAssistant>), but the WHO website is also quite consumer-friendly (<http://www.who.int/csr/don/en/>). There is also the Health Alert Network (<http://emergency.cdc.gov/han/hantable.asp>) and the CDC site (<http://www.cdc.gov/outbreaks/>). I would start there and if you still have a reasonable suspicion, it's worth a conversation with an infectious disease doctor or with your public health authority, who would likely have to help with testing for one of these pathogens as well.

11. **Question:** Considering electronic medical record systems like EPIC, if a travel screening protocol for special pathogens is not in place, identification of a walk-in/check-in patient will be compromised. Are you advocating a 21 day travel screen for DRC/Ebola at this time (many of us already have a 14-day travel screen for MERS in place, for example)?

Answer from Jill Morgan (NETEC): At Emory, we are currently asking specifically about DRC. In addition, we continue to ask travel questions as a follow up to symptoms. Headache and fever? Have you travelled outside the US in the last month? Again, have you travelled outside the US in the last month? We like the idea of obtaining a travel history as part of routine workflow to keep us proactive rather than trying to add to or change people's work habits with every threat.

12. Question: If children present with respiratory symptoms, why are those symptoms not on the screening list?

Answer from Amanda Grindle (NETEC): Yes, children are more likely to have respiratory symptoms, but that alone is not going to put them at higher risk for an Ebola diagnosis. It will be fever (which is a very high percentage, in some studies it was as high as 90% of the presenting pediatric patients) and other specific symptoms (abdominal pain, diarrhea, fatigue) that will peak the interest of an Ebola diagnosis. The CDC has not recommended screening pediatrics any different than adults at this point. It is just good to note that a child will be less likely to have CNS symptoms and more likely to have accompanying respiratory symptoms ALONG with vomiting, abdominal pain, etc.

13. Question: What suggestions do you have for emergency departments to improve their triage identification to isolation time?

Answer from Trish Tennill (NETEC): Educating and engaging all triage staff, including administrative staff, in the identification process with mask isolation will help to decrease the time to isolation. Secret shopper drills (templates are available at www.NETEC.org) are easy to implement and will give you a baseline of your door to mask time. All staff should also be aware of the room used for isolation and how to safely transfer the patient from the triage area to the isolation room. Timely transfer will also decrease your times.

Questions Related to Training and Education:

14. Question: Does NETEC have any EMS Agency Specific training available?

Answer from Sharon Vanairsdale (NETEC): The NETEC does have EMS-specific training available. Beginning in August 2018, NETEC will be hosting six in-person workshops across the country. An EMS track with experienced subject matter experts will be offered. Please visit <https://netec.org/training/> to locate a course near you.

15. Question: Is any of the available training aimed at the emergency preparedness planners in the facilities as opposed to just the clinical providers?

Answer from Sharon Vanairsdale (NETEC): The NETEC does have emergency management and preparedness-specific training geared toward leaders. Beginning in August 2018, NETEC will be hosting six in-person workshops across the county. A leadership track including a panel discussion with the emergency management perspective, group-based exercises, a review of performance measures, and discussions on public health concerns and how to prepare healthcare facilities will be available. Please visit <https://netec.org/training/> to locate a course near you.

16. Question: Is there opportunity to have emphasis on the community providers, not just the hospitals?

Answer: Please see the responses to questions 14 and 15 for specific NETEC resources available to non-hospital providers. Additionally, ASPR TRACIE released the [EMS](#)

[Infectious Disease Playbook](#) last year, which is targeted toward pre-hospital providers and planners, and plans to publish a frontline facilities playbook later this summer. Another resource of interest may be the [High Consequence Infectious Disease HCID Toolbox for Frontline Health Care Facilities](#), released earlier this month by the Minnesota Department of Health, the health care coalitions of Minnesota, and the Minnesota chapter of the Association of Professionals in Infection Control and Epidemiology.

For additional training and education resources, please visit <https://asprtracie.hhs.gov/infectious-disease> and <https://repository.netecweb.org/>.