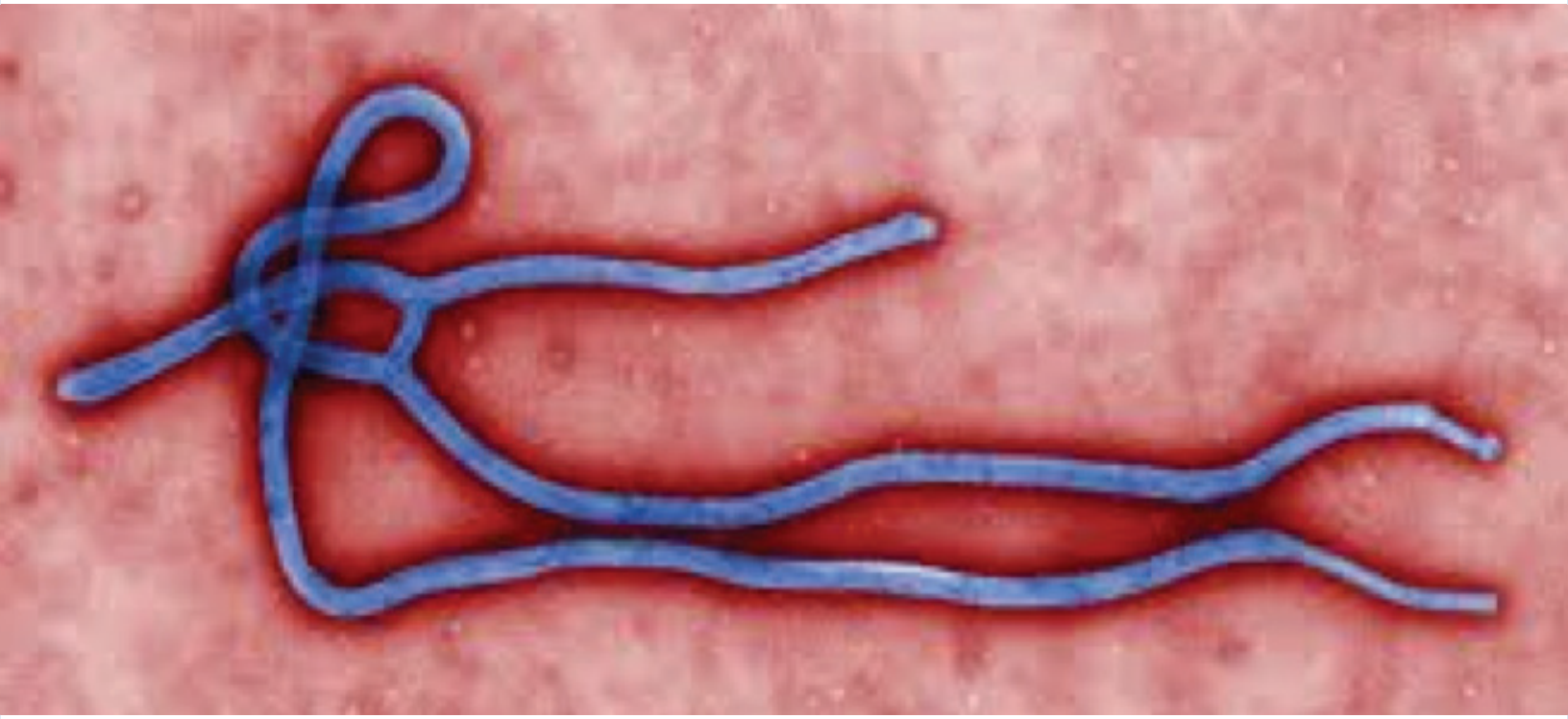
NETEC

National Ebola Training
& Education Center

Annual Report FY2016



EMORY MEDICINE

University of Nebraska Medical Center

Nebraska Medicine

NYC HEALTH+ HOSPITALS

Bellevue

Funded by the Assistant Secretary for Preparedness and Response (ASPR) and the Centers for Disease Control and Prevention (CDC)

TABLE OF CONTENTS

STATE OF PREPAREDNESS 1

ABOUT NETEC 2
- Purpose
- Role
- Collaboration
- Funding
- Activities

NETEC YEAR 1: BY THE NUMBERS 3

YEAR 1: EDUCATIONAL ACTIVITIES 4

YEAR 1: AGGREGATED HOSPITAL READINESS ASSESSMENT FINDINGS 6

REGIONAL PREPAREDNESS 8

AREAS OF FURTHER INTEREST 9

NOTABLE YEAR 1 HIGHLIGHTS 10

NOTABLE GAPS & NETEC RECOMMENDATIONS 11
- Pre-hospital
- Laboratory
- Waste Management
- Decedent Management
- Research & Clinical Trials
- Personal Protective Equipment

NEXT STEPS 12
- Strengthening National Capabilities
- Year 1 Reflections from the NETEC Primary Investigators

NETEC FACULTY 13
- Organizing Faculty
- Supporting Staff
- Faculty
- Evaluation Team

STATE OF PREPAREDNESS

The National Ebola Training and Education Center (NETEC) is an unprecedented example of what communication, coordination and collaboration across diverse stakeholders can create.

Like any threat that our nation faces, Ebola gave us the chance to communicate, coordinate and collaborate better; better than we had ever before in preparation for and response to a highly infectious disease to ensure safe and effective patient care.

This opportunity led to a unique partnership amongst three leading healthcare delivery institutions, which had each safely and effectively treated confirmed patients with Ebola virus disease (Ebola), and a myriad of persons under investigation (PUIs) for Ebola. The partnership included key federal partners at the Office of the Assistant Secretary for Preparedness and Response (ASPR) and the Centers for Disease Control and Prevention (CDC) and demonstrated what is possible when an emerging threat occurs.

For the organizations and institutions that have benefited from NETEC during its inaugural year, the results are impressive. NETEC is a national resource, a consortium of experts, whose education and experiences in the clinical and operational aspects of healthcare delivery, individually and collectively, are countless and immeasurable. NETEC's ability to work with all stakeholders via its non-punitive, non-regulatory, non-accreditation approach has led to long-standing, grassroots relationship-building across the country, which in turn has fostered ongoing best practice sharing.

This report summarizes NETEC work in its inaugural year, highlights our nation's state of readiness to manage Ebola and other special pathogens, and gives insights into our way forward.

NETEC is a national resource, a consortium of experts, whose education and experiences in the clinical and operational aspects of healthcare delivery, individually and collectively, are countless and immeasurable.

YEAR 1 GOALS	YEAR 1 ACCOMPLISHMENTS
Develop metrics to measure facility and healthcare worker readiness to care for patients with Ebola and other special pathogens.	NETEC developed metrics within the 10 CDC defined domains to measure facility and healthcare worker readiness.
Conduct peer review and readiness assessments of Regional and State Ebola Treatment Centers.	NETEC conducted 20 peer review and readiness assessments of Regional and State Ebola Treatment Centers, and various Assessment Centers.
Create and maintain a comprehensive suite of educational materials (e.g., curricula, just-in-time training, templates, train-the-trainer modules, tools, simulations, online resources, webinars) for policies and procedures related to care of patients with Ebola and other special pathogens.	NETEC created over 34 educational documents including educational modules and exercise design templates.
Launch NETEC.org to create a repository of resources for healthcare facilities.	NETEC launched NETEC.org November 2015.
Support public health departments and healthcare facilities through the provision of training and technical assistance.	NETEC offered training and technical assistance to multiple public health departments and healthcare facilities throughout the nation.
Host and conduct Ebola Preparedness Courses.	NETEC conducted five didactic and clinical Ebola Preparedness Courses.

ABOUT NETEC



Purpose

The Office of the Assistant Secretary for Preparedness and Response and the Centers for Disease Control and Prevention have established the National Ebola Training and Education Center to increase the competency of healthcare and public health workers and the capability of healthcare facilities to deliver safe, efficient, and effective care to patients with Ebola and other special pathogens.

Role

NETEC experts work with ASPR and CDC to provide direct training, peer review and assessment, and technical consultation with healthcare facilities to assist them in Ebola and special pathogen preparedness and response efforts.

Collaboration

NETEC comprises experts from:

- Emory University Hospital in Atlanta, Georgia
- University of Nebraska Medical Center/ Nebraska Medicine in Omaha, Nebraska
- NYC Health + Hospitals / Bellevue in New York, New York

Each of these healthcare institutions have direct experience with safely and successfully caring for confirmed and suspected Ebola patients.

Funding

ASPR and CDC fund NETEC through a five-year collaborative grant that began in 2015.

Activities

- Develop metrics to measure facility and healthcare worker readiness to care for patients with Ebola and other special pathogens
- Conduct peer review and readiness assessments of Regional and State Ebola Treatment Centers
- Create and maintain a comprehensive suite of educational materials (e.g., curricula, just-in-time training, templates, train-the-trainer modules, tools, simulations, online resources, webinars) for policies and procedures related to care of patients with Ebola and other special pathogens
- Launch NETEC.org to create a repository of resources for healthcare facilities
- Support public health departments and healthcare facilities through the provision of training and technical assistance
- Host and conduct Ebola Preparedness Courses



NETEC YEAR 1: NETEC BY THE NUMBERS

From June 2015 to June 2016, NETEC accomplished the following activities, reflected in numbers:

42
NETEC faculty and staff from the three healthcare institutions worked diligently to share their knowledge with other healthcare facilities and public health jurisdictions around the nation.

100%
Participation: All ten U.S. Regions were represented at the Regional Ebola Treatment Center Summit May 2016 hosted by NETEC to increase regional and national collaboration efforts.

10
Domains were developed by NETEC to measure facility and healthcare worker readiness to care for patients with Ebola and other special pathogens.

6
Readiness Assessment State visits were conducted by NETEC in Hawaii, Idaho, Illinois, New Jersey, Texas, and at the Chicago Ebola Response Network (CERN).

10
NETEC visited all ten HHS Designated Regional Ebola and Other Special Pathogen Treatment Centers in the nation for Readiness Assessments.

1,058
Page hits since the launch of NETEC.org, an online repository of resources for healthcare facilities.

5
NETEC faculty members took part in five symposia and exercises in Hawaii, Louisiana, Maryland, Minnesota, and New Jersey.

34
Exercise Design Templates were developed by NETEC for use in an Ebola exercise.

4
Didactic Ebola Preparedness Courses were conducted by NETEC faculty, providing information on the many aspects of managing a facility responsible for assessing and/or treating Ebola patients.

32
Clinicians were offered hands-on practice of several skills needed to care for an Ebola patient at NETEC's one clinical Ebola preparedness simulation course.

380
Attendees participated in the Clinical Course and the four Didactic Ebola Preparedness Courses conducted.

YEAR 1: EDUCATIONAL ACTIVITIES

The Ebola Preparedness Training Courses and Simulation Course offered 380 participants from Regional Ebola and other Special Pathogen Treatment Centers, State Designated Ebola Treatment Centers, Assessment Hospitals and Frontline Hospitals throughout the nation the opportunity to collaborate and discuss a broad range of topics as it relates to assessing, treating and managing Ebola virus disease patients.

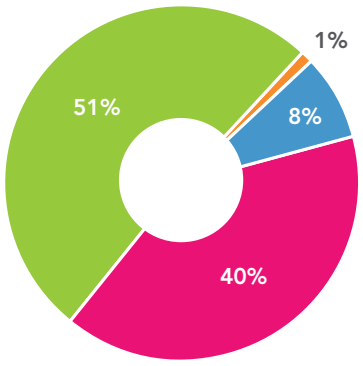
DIDACTIC EBOLA PREPAREDNESS TRAINING COURSES

INSTITUTION	DATE	NUMBER OF COURSES
EMORY MEDICINE	November 2015 & February 2016	2
Nebraska Medicine University of Nebraska Medical Center	January 2016 & March 2016	2

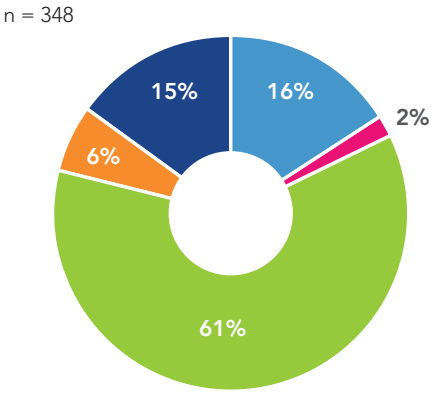
CLINICAL EBOLA PREPAREDNESS SIMULATION COURSE

INSTITUTION	DATE	NUMBER OF COURSES
NYC HEALTH+ HOSPITALS Bellevue	June 2016	1

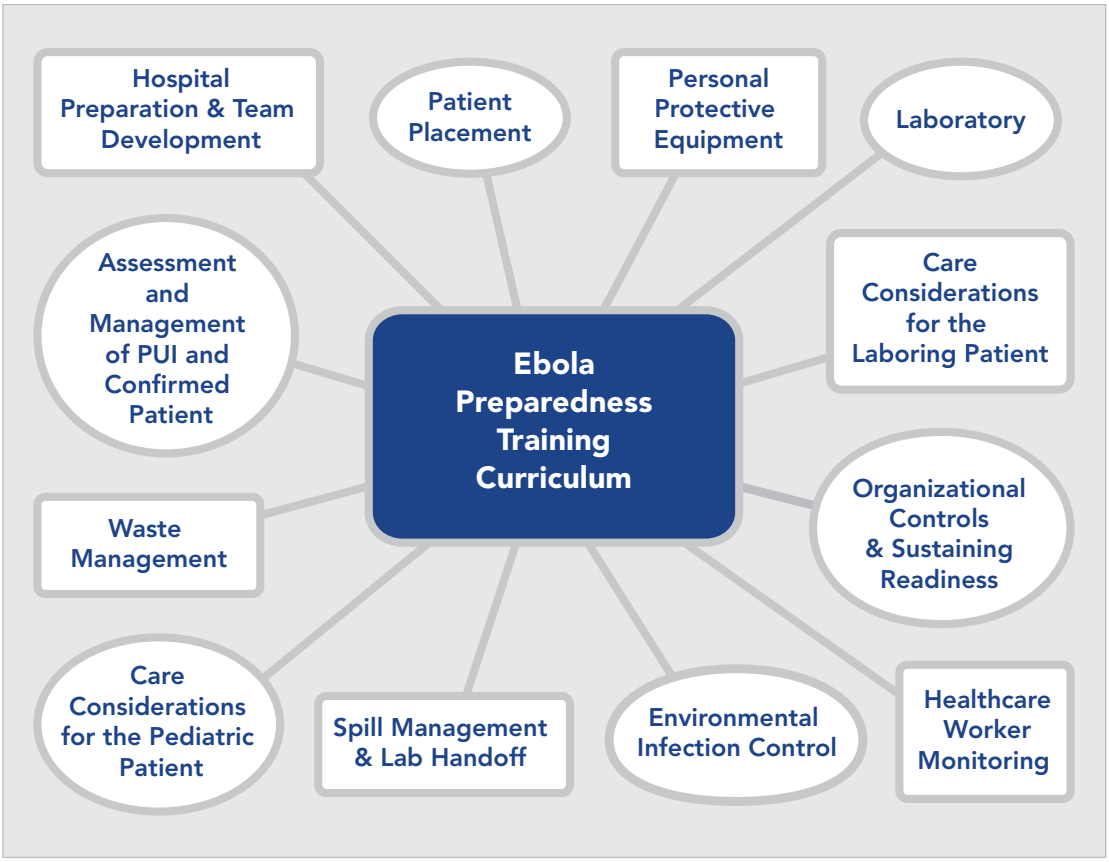
DISTRIBUTION OF PARTICIPANTS BY FACILITY TYPE



DISTRIBUTION OF PARTICIPANTS BY LEARNER ROLE



YEAR 1: EDUCATIONAL ACTIVITIES (continued)

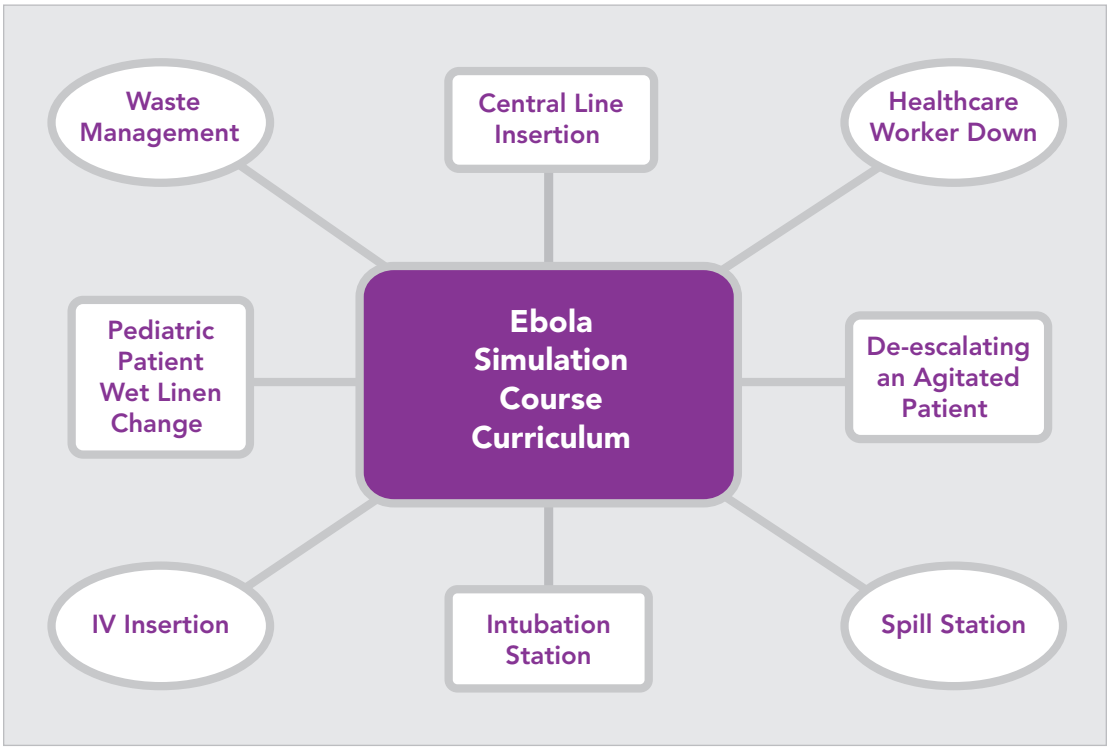


This multi-faceted didactic curricula gave attendees the opportunity to learn about the many aspects of managing the process and facility responsible for assessing and/or treating Ebola virus disease patients.

Learner Insights

"Overall great training and very informative. Enjoyed having speakers from different institutions!"

– Anonymous, RN



This multi-faceted clinical curriculum offered learners hands-on practice of essential skills needed to care for an Ebola virus disease patient.

Learner Insights

"Thank you for this excellent course!"

– Anonymous, RN

"Appreciate the time. Will send other providers for practice."

– Anonymous, MD

YEAR 1: AGGREGATED HOSPITAL READINESS ASSESSMENT FINDINGS

NETEC experts worked with CDC and ASPR to conduct hospital assessment site visits in collaboration with CDC and public health department staff. These non-punitive, non-regulatory, non-accreditation visits gave U.S. healthcare facilities and their partners the opportunity to work firsthand with NETEC experts at their own facilities. The site visits provided a way for these facilities to ask questions, build relationships, and share and learn best practices. Site visits were conducted in 12 states during the first year of the project, including at least one visit within each of the 10 HHS regions. To provide an overall assessment of the state of readiness, observations from 16 site visit reports were aggregated and grouped by theme. Protocols, personnel, and infrastructure emerged as the primary focus areas, and stakeholder coordination, equipment and supplies, and training and drills as secondary focus areas. The following table presents key areas of strength and need by domain, including the primary focus area(s) for each. Secondary focus areas are described in the bulleted text.

DOMAIN / FOCUS	KEY STRENGTHS	OPPORTUNITIES FOR IMPROVEMENT
Domain 1 Emergency Management & Facility Preparedness **Primary Focus Area** Protocols	16 out of 16 (100%) reports mention strengths related to protocols. The most commonly described strengths within the protocols pertain to having: • Good organizational structure and personnel. • Proper use of the Incident Command System. • Good coordination with external organizations.	10 out of 16 (63%) reports mention limitations related to protocols. Opportunities for improvement are to: • Increase drills and simulations offered to enhance sites' ability to execute the protocols. • Fine-tune details around communication plans with emergency management and other stakeholders.
Domain 2 Pre-hospital Transport Plans, Emergency Medical Services (EMS), Emergency Department (ED) Preparedness, & Patient Transport from Points of Entry **Primary Focus Area** Protocols	10 out of 16 (63%) reports mention strengths related to protocols. The most commonly described strengths within the protocols pertain to having: • Good coordination with stakeholders, particularly around having identified transportation providers. • Designated of points of entry and routes within the facility in preparation for a person under investigation or Ebola patient.	13 out of 16 (81%) reports mention limitations related to protocols. Opportunities for improvement are to: • Develop and refine regional transportation plans. • Drill plans with stakeholders to work out specifics of EMS handoff and decontamination. • Refine protocols after drills to enhance details for specific protocol aspects.
Domain 3 Patient Placement **Primary Focus Areas** Infrastructure and Protocols	16 out of 16 (100%) reports mention strengths related to infrastructure, and 9 out of 16 (56%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Identified the placement of the unit or have modifications to the existing unit planned or in-process. • Developed protocols for activating the unit.	12 out of 16 (75%) reports mention limitations related to both infrastructure and protocols. Opportunities for improvement are to: • Adjust the layout of unit to reduce contamination risk. • Develop and refine protocols for the direction of flow through the unit, handoff practices, and identifying the personnel who would make up the care team.
Domain 4 Staffing and Training of Patient Care Team & Managing Healthcare Personnel and Managing Exposures **Primary Focus Areas** Personnel and Protocols	10 out of 16 (63%) reports mention strengths related to personnel, and 7 out of 16 (43%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Excellent identification and mobilization of teams. • Strong culture of team engagement with multidisciplinary involvement.	13 out of 16 (81%) reports mention limitations related to protocols, and 8 of 16 (50%) reports mention limitations related to personnel. Opportunities for improvement are to: • Establish staffing plans and rotation schedules, including backfilling protocols. • Improve processes for managing exposures and monitoring staff. • Increase frequency of training and drills.

YEAR 1: AGGREGATED HOSPITAL READINESS ASSESSMENT FINDINGS (continued)

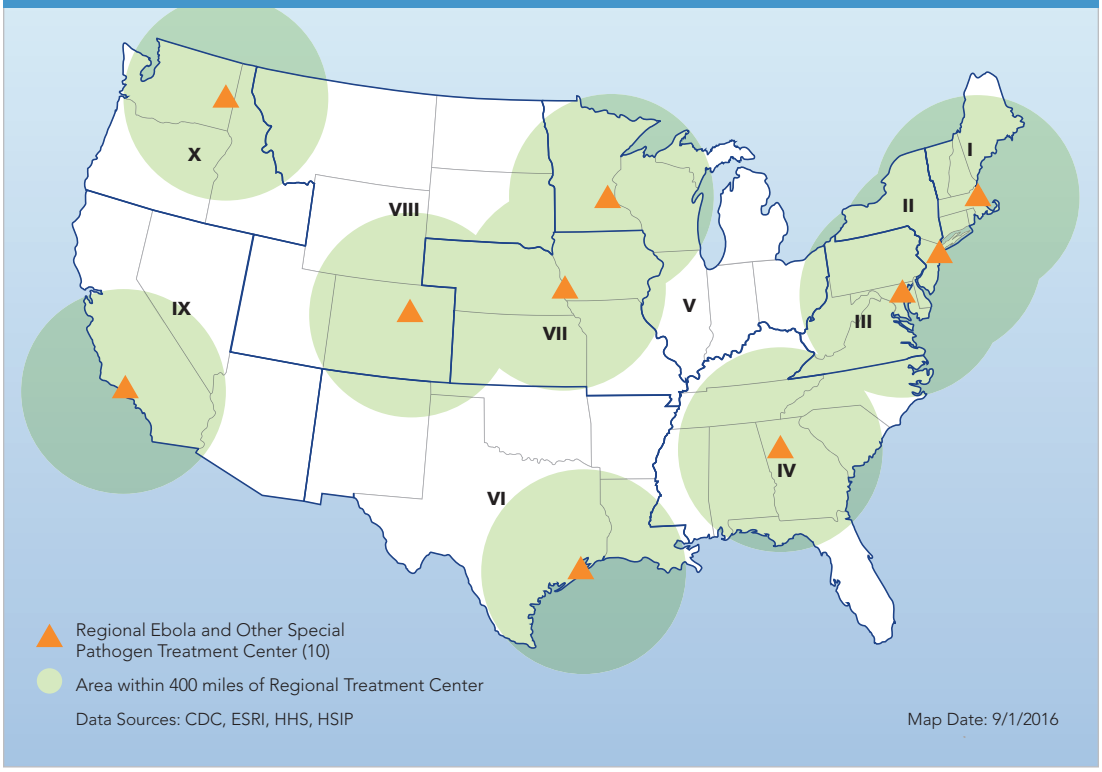
DOMAIN / FOCUS	KEY STRENGTHS	OPPORTUNITIES FOR IMPROVEMENT
Domain 5 Personal Protective Equipment (PPE) and Procedures for Donning and Doffing **Primary Focus Areas** Protocols	13 out of 16 (81%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Identified brands of PPE. • Adequate supplies, back up supplies, and storage.	9 out of 16 (56%) reports mention limitations related to protocols. Opportunities for improvement are to: • Perform additional training and drills. • Adjust donning and doffing protocols, particularly the order in which individual pieces of PPE are added or removed.
Domain 6 Clinical Care & Special Populations **Primary Focus Areas** Personnel and Protocols	9 out of 16 (56%) reports mention strengths related to personnel, and 8 out of 16 (50%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Good ability to provide care for pediatric and obstetric patients. • Advanced pediatric protocols at some sites.	8 out of 16 (50%) reports mention limitations related to protocols. Opportunities for improvement are to: • Develop advanced intervention protocols for the critical patient, e.g. central line placement, intubation, lab, imaging, and surgery. • Develop protocols for other special populations.
Domain 7 Laboratory Safety **Primary Focus Areas** Personnel and Protocols	10 out of 16 (63%) reports mention strengths related to personnel, and 6 out of 16 (38%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Well defined chain-of-custody and handoff of specimens. • Laboratory diagnostic testing menus that are adequate for confirmatory testing at most facilities.	10 out of 16 (63%) reports mention limitations related to protocols. Opportunities for improvement are to: • Strengthen onsite advanced lab capabilities to support high level critical care. • Conduct risk assessments for potential hazards. • Fine-tune protocol details for specimen transport and use of equipment and PPE when conducting tests.
Domain 8 Environmental Infection Control, Equipment Reprocessing, and General Infrastructure **Primary Focus Area** Protocols	13 out of 16 (81%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Overall strong processes, particularly for daily cleaning schedules and cleaning and reprocessing of medical devices. • Evidence of a culture that promotes safety over cost.	9 out of 16 (56%) reports mention limitations related to protocols. Opportunities for improvement are to: • Address significant gaps with protocols for terminal cleaning, especially with plans for mattress and other waste disposal.
Domain 9 Management of Waste **Primary Focus Area** Protocols	12 out of 16 (75%) reports mention strengths related to protocols. The most commonly described strengths pertain to having: • Defined strategies for management of waste. • Good utilization of autoclaves.	11 out of 16 (69%) reports mention limitations related to protocols. Opportunities for improvement are to: • Examine flow between cold, warm and hot zones. • Define roles for packing of waste. • Verify suitability of waste receptacles and disinfection agents for toilet waste.
Domain 10 Management of the Deceased **Primary Focus Area** Protocols	12 out of 16 (75%) reports mention strengths related to protocols. The most commonly described strengths pertain to having (or actively working on: • A protocol for management of the deceased.	10 out of 16 (63%) reports mention limitations related to protocols. Opportunities for improvement are to: • Increase the detail of existing protocols. • Identify crematoriums and coordinate the details for packing and transporting of the deceased. • Drill to practice these processes.

REGIONAL PREPAREDNESS

NETEC experts conducted non-regulatory, non-accreditation, non-punitive site visits to the nation's 10 Regional Ebola and Other Special Pathogen Treatment Centers.

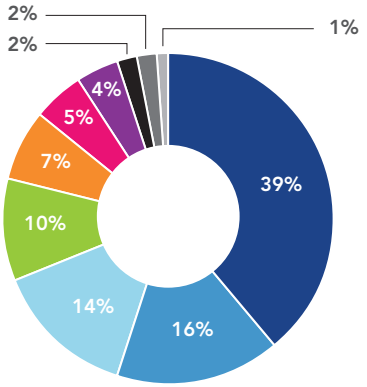
Based on NETEC experts' assessment as well as the internal assessment from the Regions, the diagrams below depict the domains where these regions are the LEAST prepared versus the MOST prepared.

REGIONAL EBOLA TREATMENT NETWORK



Where Regional Ebola & Other Special Pathogen Treatment Centers are **LEAST** Ready

n = 83

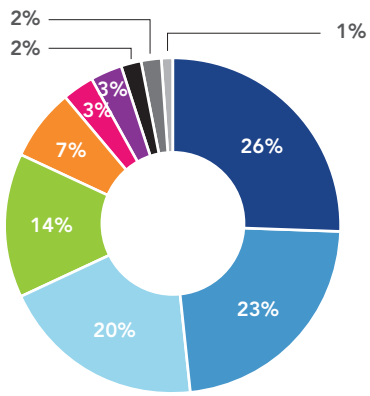


Least Ready

- Domain 6: Clinical Care & Special Populations
- Domain 2: Pre-hospital Transport Plans, EMS ED Preparedness
- Domain 10: Management of the Deceased
- Domain 4: Staffing, Training & Management of Patient Care Team
- Domain 1: Emergency Management & Facility Preparedness
- Domain 5: PPE & Procedures for Donning and Doffing
- Domain 9: Management of Waste
- Domain 3: Patient Placement
- Domain 8: Environmental Infection Control & Equipment
- Domain 7: Laboratory Safety

Where Regional Ebola & Other Special Pathogen Treatment Centers are **MOST** Ready

n = 88



Most Ready

- Domain 3: Patient Placement
- Domain 5: PPE & Procedures for Donning and Doffing
- Domain 4: Staffing, Training & Management of Patient Care Team
- Domain 2: Pre-hospital Transport Plans, EMS ED Preparedness
- Domain 7: Laboratory Safety
- Domain 1: Emergency Management & Facility Preparedness
- Domain 8: Environmental Infection Control & Equipment
- Domain 9: Management of Waste
- Domain 10: Management of the Deceased
- Domain 6: Clinical Care & Special Populations

AREAS OF FURTHER INTEREST

NETEC works closely with hospitals, public health partners, and other stakeholders to identify current barriers and areas of future needs, enabling NETEC to develop recommendations and provide appropriate support. This list is grouped by topic area and represent pertinent questions, concerns, needs, and suggestions. Based on input from course participants and site visits, areas of further interest are described below.

TOPICS	SPECIFIC AREAS OF INTEREST
Patient Transport	• Transport planning at facility, state, regional, and inter-regional levels • Specific transport aspects e.g. decontamination, use of isopods, and security
Staffing	• Recruiting and educating staff about working in biocontainment unit • Behavioral health considerations for staff
Patient Care	• Staffing workflow examples for optimal patient care and staff safety • Care of special patient populations (e.g. pediatric, labor and delivery, immunosuppressed)
Training and Learning	• Hands-on, practice-based training tailored towards specific functional roles to increase capacity and enhance clinical competency; there is particular interest in PPE donning/doffing, waste management, spill cleanup, care of the deceased, and other clinical procedures performed in biocontainment units • Exercises and drills that engage relevant community partners
Collaboration	• Platform for sharing resources and information among facilities (e.g. CONOPS plans, SOPs, promising practices, lessons learned) • Improved collaboration and planning within and between regions • NETEC as a convener and facilitator of collaboration
Overarching Needs	• Procuring necessary funding and resources • Ensuring continued support, interest, and buy-in • Preparedness for special pathogens other than Ebola





NOTABLE YEAR 1 HIGHLIGHTS



Panel of healthcare workers treated in the United States during the height of the Ebola crisis in 2014 at the Regional Summit. From left to right: Dr. Craig Spencer, Dr. Kent Brantly and Dr. Ian Crozier.

"This NETEC conference is critical and one of the first sessions that put up the question about what one word comes to mind when you think of readiness and the word I put out there was 'thankful.'"

– Dr. Kent Brantly, Ebola Survivor

2016 Regional Ebola Treatment Center Summit

The 2016 Regional Ebola Treatment Center Summit engaged all 10 U.S. Regions. The summit offered regional and national collaborative efforts in the care and coordination of patients with highly infectious diseases. NETEC aims to build an infrastructure allowing regional facilities across the nation to share best practices, receive treatment and scientific updates, and define collaborative approaches and strategies in the management of patients with highly infectious diseases.

NETEC Exercise Design Toolkit

NETEC developed Exercise Design Templates that can be customized to meet each end user's requirements. The templates contain Homeland Security Exercise and Evaluation Program-compliant exercise content and material related to assessing, treating and managing Ebola virus disease patients for Assessment Hospitals, State-Designated Ebola Treatment Centers, Regional Ebola and Special Pathogen Treatment Centers & Regional Partners, and Health Care Coalitions: http://netec.org/exercise-materials/



NOTABLE GAPS & NETEC RECOMMENDATIONS

NOTABLE GAPS	NETEC RECOMMENDATIONS
Pre-hospital Long distance transport planning air vs. ground Integration of pre-hospital planning with hospital planning	• Local stakeholders, including pre-hospital, public health, and hospital clinical and operational leaders should collaborate with state and regional partners to determine the safest and most efficacious patient transport modalities.
Laboratory Lack of robust laboratory diagnostic testing menu to support high level critical care Shipping category A infectious substance or Risk Group A clinical specimens for confirmation	• Laboratory and public health entities should collaborate to identify full spectrum diagnostic testing menus for special pathogen disease patients. • Key stakeholders should identify alternate courier service agreements for shipping Category A, Risk Group 4 specimens.
Waste Management Waste management strategies addressing packaging and movement of waste within facilities Lack of defined agreements and protocols for transporting medical waste as Category A infectious substances	• Key hospital stakeholders should partner with environmental services to examine and improve packaging and movement of waste management.
Decedent Management	• Hospitals and public health partners should collaborate with local coroners/medical examiners to assess capabilities, address sensitivities and determine next steps.
Research & Clinical Trials	• Key partners should develop a national consortium to address research and clinical trial opportunities related to special pathogen diseases.
Personal Protective Equipment	• Pre-hospital and hospital partners should develop a standardized approach to procuring, training, exercising and selecting PPE.





NEXT STEPS



Strengthening National Capabilities

NETEC has demonstrated the ability to strengthen the bioresponse capability of the U.S. healthcare system to Ebola. In subsequent years, NETEC will build on this training to facilitate development of a durable and flexible response system that can rapidly and effectively deal with the inevitable varied emerging infectious diseases that will occur. An emphasis on diseases spread via the airborne route will be of importance, and will add an additional level of complexity to delivering optimal medical care in an environment that is safe for health care workers.

NETEC will continue to expand its training courses to emphasize more hands on training, with providers actually performing critical skills in appropriate personal protective equipment. NETEC will also continue to develop exercise templates to assist entities at various levels to meet their goals of preparing to manage all infectious diseases challenges. The NETEC web site, a national repository of best practices from around the world, will become an even more robust resource for entities as they develop their own programs to address management of patients with highly infectious diseases.

Year 1 Reflections from the NETEC Primary Investigators

NETEC helped develop a national infrastructure to address the next serious communicable diseases outbreak. Whether visiting medical centers or states to review and enhance their programs, or holding training sessions at our facilities, entities at all levels were guided along the path of becoming part of a national network that could act in concert to manage the next infectious diseases outbreak.

– Bruce Ribner, MD MPH; Emory University

I have been impressed by the collaboration between ASPR, the CDC and the academic medical centers (Emory, Bellevue Hospital Center and the University of Nebraska) in providing training courses and on site advice to so many facilities from coast to coast.

– Philip Smith, MD; Nebraska Medicine/UNMC

Year one NETEC made significant progress in helping US healthcare facilities prepare for patients with Ebola...in years 2 and beyond NETEC will continue these efforts to include pathogens beyond Ebola to include other emerging threats and to continue to build contacts and resiliency within designated treatment facilities.

– Laura Evans, MD, MSc; NYC Health + Hospitals/Bellevue



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NETEC

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& Education Center

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