



SECURING THE HEALTH OF  
THE NATION FROM EMERGING  
SPECIAL PATHOGEN EVENTS



**NETEC**

NATIONAL EMERGING SPECIAL PATHOGENS  
TRAINING AND EDUCATION CENTER

Annual Report  
**FY2023**



## Annual Report FY2023

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## A Partnership for Preparedness

The National Emerging Special Pathogens Training and Education Center's mission is to set the gold standard for special pathogen preparedness and response across health systems in the U.S. with the goals of driving best practices, closing knowledge gaps, and developing innovative resources. Our vision is a sustainable infrastructure and culture of readiness for managing suspected and confirmed special pathogen incidents across the United States public health and health care delivery systems.

### IMAGE CREDITS

Images used in this report were provided by the following RESPTCs: NYC Health + Hospitals / Bellevue, Medstar Washington Hospital Center / Children's National, Emory University / Children's Healthcare of Atlanta, University of Texas Medical Branch, Nebraska Medicine / University of Nebraska Medical Center, Denver Health & Hospital Authority, and Providence Sacred Heart Medical Center & Children's Hospital. This page: NIAID.

# Adapting to Challenges

## Global Health Preparedness and Collaboration for Emerging Special Pathogens

Reflecting on the past year, the National Emerging Special Pathogens Training & Education Center (NETEC) is proud to present this annual report, highlighting NETEC's commitment to supporting safe and equitable patient care delivery, enhancing special pathogen preparedness, and expanding its international presence. In the face of serious potential threats to global health, NETEC rose to the occasion, demonstrating adaptability and providing proactive approaches to address emerging threats.

In September 2022, just as the global outbreak of Mpox was waning, the spotlight shifted to Uganda where an outbreak of Sudan ebolavirus disease (SUDV) was reported. While recent outbreaks of Zaire ebolavirus in Guinea and the Democratic Republic of the Congo were controlled through infection prevention and control measures, surveillance, contact tracing, and ring vaccination, there are no approved vaccines or therapeutics to prevent or treat SUDV. Consequently, the potential public health impact of this outbreak in Uganda was high, and the risk of global spread was very real.

NETEC, leveraging the expertise of the Regional Emerging Special Pathogen Treatment Centers (RESPTCs), played a pivotal role in preparing health care workers to respond to SUDV. Collaborative efforts led to the development of essential resources, including medical countermeasure readiness, novel diagnostic capabilities, the Health Care Facility Viral Hemorrhagic Fever (VHF) Preparedness Checklist, town hall sessions, and EMS Biosafety Transport protocols.

During the SUDV outbreak, NETEC facilitated international collaboration, bringing together representatives from 24 biocontainment units across 10 countries, including those with experience caring for patients with Ebola virus disease (EVD). This sharing of best practices and experiences was instrumental in fortifying domestic and global preparedness for SUDV. NETEC developed a rapid assessment tool to evaluate hospital and EMS agency readiness to manage SUDV/VHF cases.



Additionally, NETEC conducted onsite readiness assessments in priority jurisdictions adjacent to five international airports in the U.S. in collaboration with the Department of Health and Human Services Administration for Strategic Preparedness and Response (HHS ASPR) and state and jurisdictional health departments.

NETEC rapidly initiated the BioFire® Implementation Task Force to onboard testing capabilities for SUDV and several other high-consequence pathogens at 10 RESPTCs and the National Institutes of Health Clinical Center. This readiness initiative continued to demonstrate value during the Marburg virus disease (MVD) outbreak in early 2023, as the RESPTCs were able to leverage their new testing capacity for this pathogen as well. During each outbreak, NETEC, through the Special Pathogens Research Network (SPRN) and leadership from the Biocontainment Unit (BCU) Workgroup, responded by convening weekly Outbreak Readiness calls with NETEC leadership and the RESPTCs to ensure situational awareness of the latest outbreak updates, coordinate with federal partners, and enable rapid problem-solving among the national group. These weekly calls were an opportunity for RESPTCs to provide real-time reports on their readiness and local issues or readiness gaps, as well as a platform for multi-site problem solving. In addition, NETEC developed the national readiness dashboard, tied to a weekly cadence of operational updates from RESPTC medical directors, and briefings for federal partners to keep abreast of the nation's readiness and capacity to respond to special pathogen outbreaks.

In addition to operational achievements, NETEC made significant strides in the development, expansion, and maturation of the National Special Pathogen System (NSPS), with support from HHS ASPR and many partner organizations.

This year NETEC was appointed by Congress to serve as the NSPS Coordinating Body, leveraging the extensive experience and expertise within NETEC to support services and functions across the System of Care. This strategic move ensures streamlined coordination, effective decision-making, and a cohesive approach to special pathogen care. The addition of three more RESPTCs in FY23 extends the system's reach and enhances NETEC's national capacity to respond promptly to emerging threats.

While navigating the complexities of global health challenges, NETEC remains steadfast in its mission to enhance special pathogen preparedness, foster collaboration, and ensure that health care systems worldwide are equipped to respond effectively to emerging threats. This annual report details the FY23 accomplishments, challenges, and ongoing initiatives that position NETEC as a leader in the field of infectious disease preparedness and response.



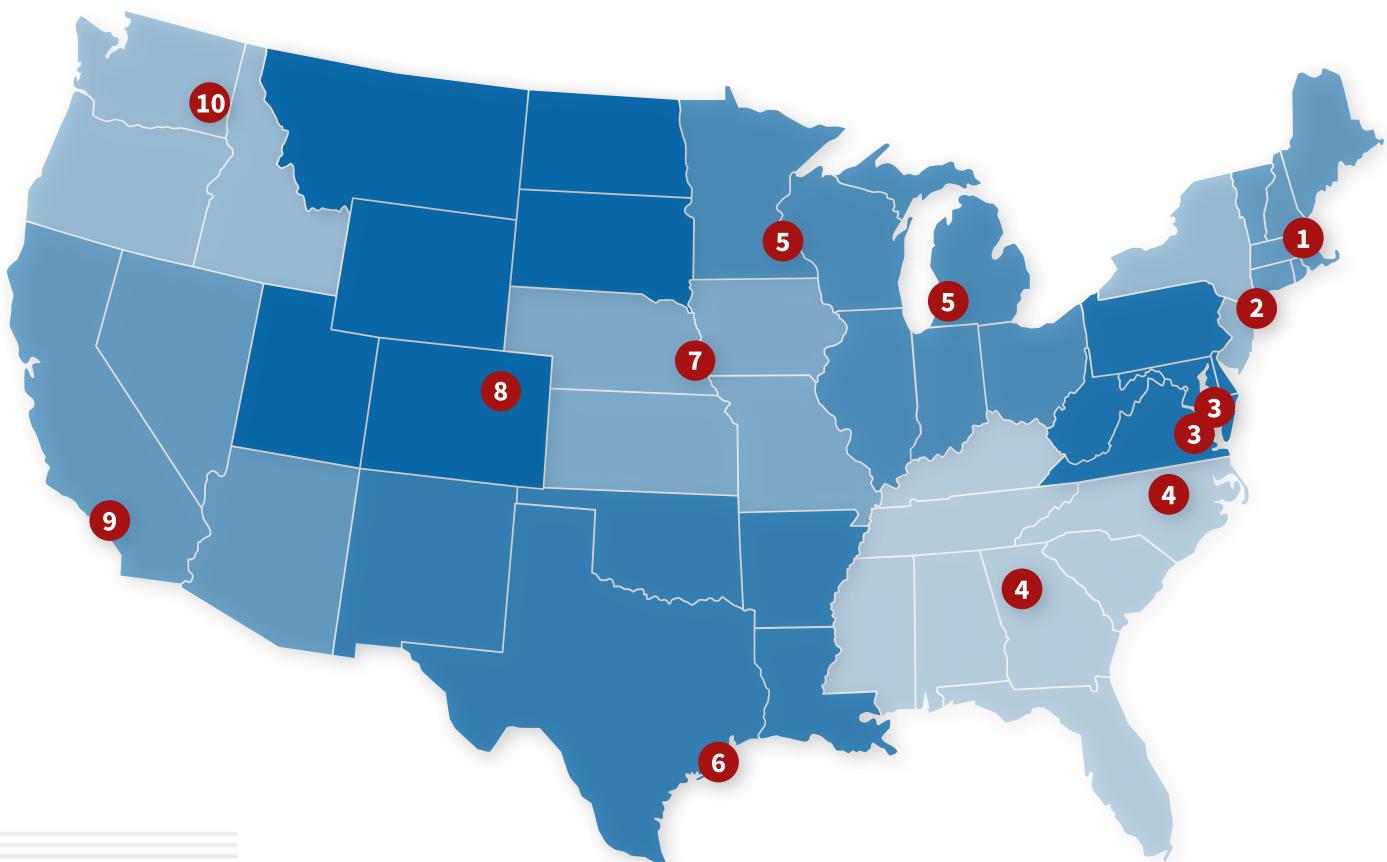
## Extending Partnerships, Advancing Preparedness

NETEC's mission is to set the gold standard for special pathogen preparedness and response across health systems in the U.S. with the goals of driving best practices, closing knowledge gaps, and developing innovative resources. Established in 2015 by HHS ASPR and the Centers for Disease Control and Prevention (CDC) following the successful treatment of patients with Ebola in 2014, NETEC works to build a sustainable infrastructure and robust culture of readiness by leveraging the expertise of regional partners and federal agencies to assess health care facility readiness, train providers, provide technical assistance, and build a rapid research infrastructure. More than 100 industry leaders representing a range of health care specialties, from infectious disease clinicians to emergency medical service leaders and public health officials, share their expertise across NETEC's 15 national workgroups and nine task forces, producing timely and innovative educational resources, providing technical consulting and assistance, convening global partners, and building a nation-wide special pathogens research infrastructure.

In FY23, recognizing the need to expand the nation's biocontainment capabilities, HHS ASPR funded three new RESPTCs: the University of North Carolina at Chapel Hill, MedStar Washington Hospital Center with their pediatric partner Childrens National Hospital, and Corewell Health System. NETEC embraced these new partners and played a crucial role in supporting them in their first year. In FY23, NETEC provided technical support, educational resources, and engaged in a series of information exchanges to contribute to the maturation of these programs.

**FIGURE 1**  
**Map of Regional Emerging Special Pathogen Treatment Centers (RESPTCs)**

- 1 CT, ME, MA, NH, RI, VT  
Massachusetts General Hospital
- 2 NJ, NY, PR, VI  
NYC Health + Hospitals / Bellevue
- 3 DC, DE, MD, PA, VA, WV  
Johns Hopkins Hospital  
Medstar Washington Hospital Center / Children's National
- 4 AL, FL, GA, KY, MS, NC, SC, TN  
Emory University / Children's Healthcare of Atlanta  
University of North Carolina at Chapel Hill
- 5 IL, IN, MI, MN, OH, WI  
University of Minnesota Medical Center  
Corewell Health System
- 6 AR, LA, NM, OK, TX  
University of Texas Medical Branch
- 7 IA, KS, MO, NE  
Nebraska Medicine / University of Nebraska Medical Center
- 8 CO, MT, ND, SD, UT, WY  
Denver Health & Hospital Authority
- 9 AZ, CA, HI, NV, AS, MP, FM, GU, MH, PW  
Cedars Sinai Medical Center
- 10 AK, ID, OR, WA  
Providence Sacred Heart Medical Center & Children's Hospital





FY2023  
JULY 1, 2022 – JUNE 30, 2023



# NETEC by the Numbers

## Education, Training, and Resource Development

### RESOURCE LIBRARY UTILIZATION

**23,135** users from all **50** U.S. States and **153** countries downloaded **9,460** reference guides, frontline checklists, exercise templates, and more

## Readiness Consultation and Assessment

### TECHNICAL ASSISTANCE REQUESTS

**351** technical assistance requests were received, and answered, from **10** HHS Regions and **3** international sites in two countries

### ONLINE LEARNING

**11,400** health care workers participated in **64** free, online courses and **9** live special pathogens training webinars

**14,787** training person hours



### PODCASTS

**1,812** listeners downloaded **27** different episodes of NETEC's podcast, *Transmission Interrupted*, **3,044** times

### VIDEO LIBRARY

**3,070** subscribers viewed NETEC's YouTube channel more than **136,448** times, logging **9,336** hours of on-demand training, skill-building, and e-learning

### EXPERT SPECIAL PATHOGENS READINESS CONSULTATIONS

**100** subject matter experts provided more than **160** hours of readiness consultation and assessment activities across **13** domains of special pathogens preparedness, completing **22** combined in-person, virtual, and hybrid readiness consultations



### NETEC SPECIALIZED WORKGROUPS

**100+** subject matter experts, clinicians, and public health representatives participated in **15** national NETEC workgroups



## Coordination, Outreach, and Thought Leadership

### GLOBAL LEADERSHIP

**31** high-level isolation units (HLIU) from **15** countries took the HLIU survey to identify future networking and collaboration priorities

**185** global experts representing over **40** special pathogens programs from **19** different countries participated across four closed-session Global Rounds events

**27** countries were represented in a Global Rounds webinar open to the public on H5N1

**14** organizations representing six countries participated in an international transportation tabletop exercise



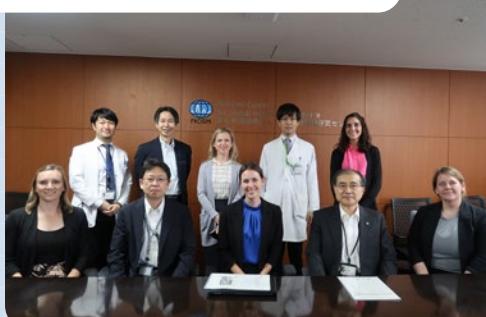
### RESEARCH CAPABILITY AND CAPACITY BUILDING

**10** RESPTCs and the National Institutes of Health Clinical Center (NIH CC) participated in **11** tabletop exercises and two functional shipping exercises to prepare for the implementation of a protocol for Sudan ebolavirus experimental study drug, MBP-134



### OUTREACH AND COMMUNICATIONS

**70,695** users visited the NETEC.org website, resulting in **151,099** pageviews



# The National Special Pathogen System

In 2020, as the COVID-19 pandemic surge revealed gaps in the nation's special pathogens infrastructure, HHS ASPR directed NETEC to develop a National Special Pathogen System (NSPS) strategy. The NSPS was designed to leverage public-private partnerships in order to strengthen health care response capabilities at the local, regional, and national levels for managing patients suspected or confirmed to be infected with a special pathogen and/or for large-scale outbreaks.

Currently in implementation, the NSPS's mission is to provide a coordinated and standardized health care network of high-quality, patient- and community-centered care locations in the United States for patients suspected of or known to be infected by a special pathogen, while protecting the community and health care workforce.

In 2022, the U.S. Congress further designated NETEC to serve as the Coordinating Body of the NSPS, responsible for "establishing a robust NSPS and integrating NSPS with other health care delivery systems," providing \$21 million in funding to NETEC and the RESPTCs and increasing the number of designated regional facilities from 10 to 13.<sup>1</sup> The NSPS operating model leverages the significant experience, expertise, and leadership within NETEC to support NSPS functions across the System of Care, a tiered system of health care facilities equipped to provide care for patients infected by, or suspected to be infected by, a special pathogen at increasing levels of specialization and capabilities.



**FIGURE 2**  
**NSPS Operating Model**



## NETEC

As the Coordinating Body of NSPS, NETEC supports and operationalizes the NSPS System of Care and maintains connectivity with the broader NSPS in a decision making and advisory capacity.

## NSPS FUNCTIONS

To serve patients and communities

- Standards & Guidance
- Monitoring & Evaluation
- Research & Data
- Patient Medical Transport & Care Delivery
- Communication & Coordination
- Workforce & Training
- Funding & Equity

## NSPS SYSTEM OF CARE

- LEVEL 4
- LEVEL 3
- LEVEL 2
- LEVEL 1

Provides care via a tiered health care system, ranging from highly specialized care facilities to those focused on identification of suspect cases and coordination and movement within the network.

Over the past year, NETEC has made significant progress in advancing the objectives of the NSPS: defining the structure and governance, strengthening the NETEC Coordinating Body as the convener in response, engaging key partners across the health care ecosystem to identify essential capabilities within the System of Care, testing those capabilities through pilot workshops, and further developing the capacity of the network to sustain an infrastructure for coordinated and standardized special pathogen response.



NETEC's role as the NSPS Coordinating Body is to support special pathogen preparedness across regions, establish consistent standards, provide guidance, and continue advocacy initiatives.

<sup>1</sup> Text - H.R.2617 - 117th Congress (2021-2022): Consolidated Appropriations Act, 2023. (2022, December 29). <https://www.congress.gov/bill/117th-congress/house-bill/2617/text>

**FIGURE 3**  
**NSPS Core Advisory Group**



#### NETEC Takes the Lead as the NSPS Coordinating Body

As the Coordinating Body of the NSPS, NETEC unifies public and private entities in protecting national health security and leading with a commitment to equity, supporting the RESPTCs and other health care entities in providing high-quality, timely patient- and community-centered care by coordinating across the U.S. with health care and public health partners in response and readiness for current or novel special pathogens of concern.

In the past year, NETEC engaged key partners in regional and national leadership to serve on the NSPS Core Advisory Group (CAG) in order to develop alignment around the structure and governance of the NSPS, and to begin the process of

prioritizing services and functions. These activities included the execution of a “strategy lab” attended by NETEC Principal Investigators and staff, the development of specific recommendations by the Core Advisory Group, the gathering of targeted input from expert partners in special pathogens and related fields, and the development of a focus group to analyze the recent response to the Mpox outbreak through the lens of the NSPS.

Through these efforts, NETEC finalized the Coordinating Body operating model; developed a plan for engaging System of Care facilities; established targets and a timeline for external partnership development; identified gaps and requirements in special pathogen response data and analytics; and developed preliminary guidance and standards for future evaluation.

**FIGURE 4**  
**System of Care Levels Overview**

#### LEVEL 4 — All Other Healthcare Facilities

Level 4 facilities can **identify, isolate, inform, & initiate stabilizing medical care; protect staff; and arrange timely patient transport** to minimize impact to normal facility operations.

**LEVEL 4**

#### LEVEL 3 — Assessment Centers

Level 3 facilities are widely accessible care delivery facilities, able to **conduct limited basic laboratory testing and stabilize and coordinate rapid patient transfer** to minimize impact to normal facility operations.

**LEVEL 3**

#### LEVEL 2 — Special Pathogen Treatment Centers or SPTCs

Level 2 facilities have the capacity to **deliver specialized care to clusters of patients** suspected of or infected by a special pathogen and serve as the primary patient care delivery center.

**LEVEL 2**

#### LEVEL 1 — Regional Emerging Special Pathogen Treatment Centers

Level 1 facilities will serve as **resource hubs for regions**, providing **highly specialized care delivery** to patients suspected of or infected by a special pathogen.

**LEVEL 1**

#### Defining Capabilities Within The System Of Care

The System of Care is comprised of four tiers of health care facilities equipped to provide care, at increasing levels of specialization, for a patient with a confirmed or suspected special pathogen infection.

In order to further define and operationalize the minimum capabilities of facilities at each level of

the System of Care, NETEC convened the System of Care Committee, consisting of experienced leaders from the previous tiered system and hailing from all 10 HHS Regions, to guide the creation of Minimum Viable Capabilities for Levels of the NSPS System of Care. Led by core NETEC subject matter experts Paul Biddinger (R1-Massachusetts General Hospital) and Shelly Schwedhelm (R7-Nebraska Medicine), the System of Care Committee affirmed the hub-and-spoke model of the System of Care,



**FIGURE 5**  
**System of Care Committee**



wherein each “hub” has coordination authority and provides services and support to the “spokes” within their domains, and began to enumerate specific minimum capabilities for Level 2 and 3 facilities.

In the past year, the System of Care Committee finalized “working” definitions for Level 3 Minimum Capabilities, expanded upon the partnership with the Laboratory Resource Network (LRN), addressed challenges related to Category A waste with the goal of minimizing financial impact to all tiered facilities—including publishing commentary on Category A Waste Challenges in the *American Journal of Infection Control*—and began developing Level 2 Minimum Capabilities.

#### Enhancing the Depth and Breadth of the NSPS Network

NETEC has prioritized the development and maintenance of NSPS partnerships to strengthen the communication and coordination among RESPTCs, regional readiness systems, and other health care entities that are essential to advancing special pathogen readiness and response capability throughout the country.

Over the past year, NETEC has continued to bring a robust group of partners from across the public and private sectors to provide their expertise as NETEC continues to define, operationalize, and implement the NSPS strategy.

In order to broaden the base of support for the mission and vision of the NSPS, NETEC has engaged over a dozen professional organizations and government agencies as formal partners in the NSPS process, as well as more than 100 leading experts representing professional societies, EMS agencies, frontline health care workers, and beyond. NETEC created a strategic NSPS communications plan; developed briefings and trade publications for policymakers, journalists, and the medical community; piloted bi-directional communication tools for effective communication between the Coordinating Body and System of Care facilities; and presented on the NSPS at five professional conferences throughout the country.

Further, NETEC has leveraged its position as a convener to strengthen buy-in, knowledge of, and commitment to the NSPS among Level 1 RESPTC leaders by engaging them in workgroups; creating forums to discuss the NSPS; and socializing the NSPS’s mission, vision, and accomplishments.

#### THE SYSTEM OF CARE COMMITTEE



#### THE SYSTEM OF CARE COMMITTEE SUPPORT

Share meeting materials, collect and compile feedback from relevant committee members and outside experts

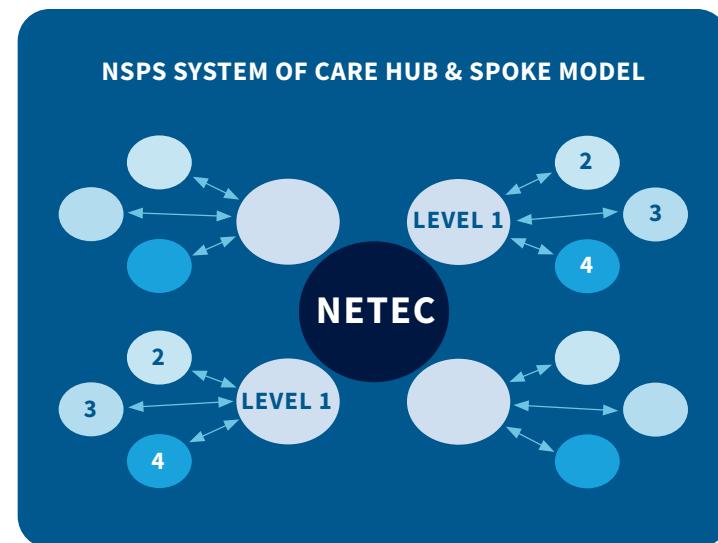
**Deloitte Team**

**FIGURE 6**  
**System of Care Hub and Spoke Model**

**LEVEL 1 FACILITIES** will operate as hubs within their regions: increasing autonomy and support for facilities at the regional and local level, and acting as force amplifiers for NETEC. The 13 Health and Human Services-designated Regional Emerging Special Pathogen Treatment Centers (RESPTCs) are referred to as Level 1 facilities in the System of Care.

**LEVELS 2, 3, AND 4 FACILITIES** will operate as the spokes within each region, connected to each other and the national network through their **LEVEL 1 FACILITY**. Level 2 facilities in the System of Care are also known as Special Pathogen Treatment Centers (SPTCs).

**NETEC** will collaborate with **LEVEL 1 FACILITIES** on overall readiness, issues from the field, and national outbreak response.



#### The NSPS Pilot Workshops

In an effort to further define the NETEC Coordinating Body’s response posture, and ability to convene, coordinate, and communicate with the System of Care, NETEC launched a pilot workshop to explore, observe, and discuss the role of the Coordinating Body in a special pathogen event. In partnership with HHS Region 10, their partners, and with the inclusion of the Concept of Operations (CONOPS), the pilot workshop explored a scenario designed to identify possible stressors at key “moments that matter” in a special pathogen response.

Pilot workshop participants included over 30 representatives from across the R10 states; local, state, and federal government agencies; Level 1, 2, and 3 System of Care facilities; EMS agencies; and NETEC leadership. In the pilot scenario, participants explored regional pain points in the response journey, defined potential roles for NETEC in regional response, documented opportunities to further explore and test the roles identified in the workshop, and provided valuable feedback regarding implementation of the NSPS strategy across the system.

The pilot workshop revealed consensus around NETEC’s role as Coordinating Body in supporting national coordination among regions, sharing and providing tools for medical countermeasures and just-in-time resources, and providing guidance, and coordinating access, to air and ground assets for patient transport.

**TABLE 1**  
**Key NSPS Partners Engaged**

Centers for Disease Control and Prevention (CDC)
Healthcare Leadership Council (HLC)
Pediatric Pandemic Network (PPN)
National Association of County and City Health Officials (NACCHO)
American Society for Clinical Laboratory Science (ASCLS)
Association of Public Health Laboratories (APHL)
Association for Professionals in Infection Control and Epidemiology (APIC)
Laboratory Response Network (LRN)
American Hospital Association (AHA)
Environmental Protection Agency (EPA) and National Biopreparedness Workgroup
American Association of Healthcare Emergency Preparedness Professionals (AHEPP)
Task Force for Mass Critical Care (TFMCC)
The Joint Commission - New IPC Standards for Frontline Hospitals

# Assessing Special Pathogen Readiness

NETEC's innovative Special Pathogen Operational Readiness Self-Assessment (SPORSA) provides hospitals, EMS agencies, and other health care facilities with a free, comprehensive, electronic tool to evaluate their operational readiness for special pathogen preparedness and response. NETEC's self-assessment tools serve as the foundation for all subject matter expert consultations.



The SPORSA framework covers multiple domains, spanning physical infrastructure, care management, personnel management, and waste management, providing organizations with a comprehensive evaluation of their level of special pathogens operational preparedness.

In FY23, three RESPTCs were enrolled in the annual NETEC readiness consultation. A total of 10 hospitals and seven EMS agencies from all 10 HHS Regions were served through readiness assessment and follow-up consultation by NETEC.

## Readiness Assessment Domains and Capabilities

NETEC provides individualized self-assessment tools for both hospitals and EMS agencies, focusing on critical areas (domains) that special pathogen preparedness programs should address when preparing for special pathogen response. Within each domain, critical operational elements necessary for preparedness and response are organized into supporting capabilities.

**TABLE 2**  
**Hospital SPORSA Domains**

<b>Physical Infrastructure</b>	<ul style="list-style-type: none"><li>• Facility Clinical Care</li><li>• Isolation Rooms</li></ul>	<b>Treatment and Care</b>	<ul style="list-style-type: none"><li>• Adult Care</li><li>• Labor and Delivery Care</li><li>• Neonatal Care</li><li>• Pediatric Care</li></ul>
<b>Environment and Infection Control</b>	<ul style="list-style-type: none"><li>• Critical Operating Systems</li><li>• Cleaning and Disinfection</li></ul>		
<b>Personal Protective Equipment</b>	<ul style="list-style-type: none"><li>• Acquisition and Inventory Management</li><li>• PPE Utilization</li><li>• Donning and Doffing Space</li><li>• VHF: Trained Observer</li></ul>	<b>Personnel Management</b>	<ul style="list-style-type: none"><li>• Staffing</li><li>• Occupational Health</li></ul>
<b>Training and Exercises</b>	<ul style="list-style-type: none"><li>• Orientation and Onboarding</li><li>• Special Pathogen Response Team Training and Education</li><li>• Just-In-Time Training</li><li>• Exercises</li></ul>	<b>Laboratory</b>	<ul style="list-style-type: none"><li>• Testing and Biosafety</li><li>• Specimen Collection, Handling, Storage, and Transport</li></ul>
<b>Emergency Management</b>	<ul style="list-style-type: none"><li>• Emergency Management</li></ul>	<b>Waste Management</b>	<ul style="list-style-type: none"><li>• Identification and Management of Special Pathogen Waste</li><li>• Storage of Special Pathogen Waste</li><li>• Transport of Special Pathogen Waste</li><li>• Onsite Inactivation of Category A Infectious Substance</li></ul>
<b>Prehospital</b>	<ul style="list-style-type: none"><li>• Internal Processes</li><li>• External Processes</li></ul>	<b>Decedent Management</b>	<ul style="list-style-type: none"><li>• Internal Processes</li><li>• External Processes</li></ul>
<b>Intake and Internal Transport</b>	<ul style="list-style-type: none"><li>• Identify</li><li>• Isolate</li><li>• Inform</li><li>• Internal Transport</li></ul>	<b>Research</b>	<ul style="list-style-type: none"><li>• Investigational Therapeutics</li></ul>



## RESPTC Programs: Maintaining Readiness Across the Nation

The RESPTCs serve as designated Level 1 care facilities for patients suspected or confirmed to have a high-consequence infectious disease (HCID). As Level 1 treatment centers, RESPTCs are assessed annually and provide subject matter experts to participate in assessment of peer Level 1 RESPTCs. Over the last two years, RESPTCs have consistently demonstrated high levels of operational maturity and displayed increased performance in preparedness of:

 **laboratory capacity**

 **regional planning and coordination**

 **training for special pathogen response team members**

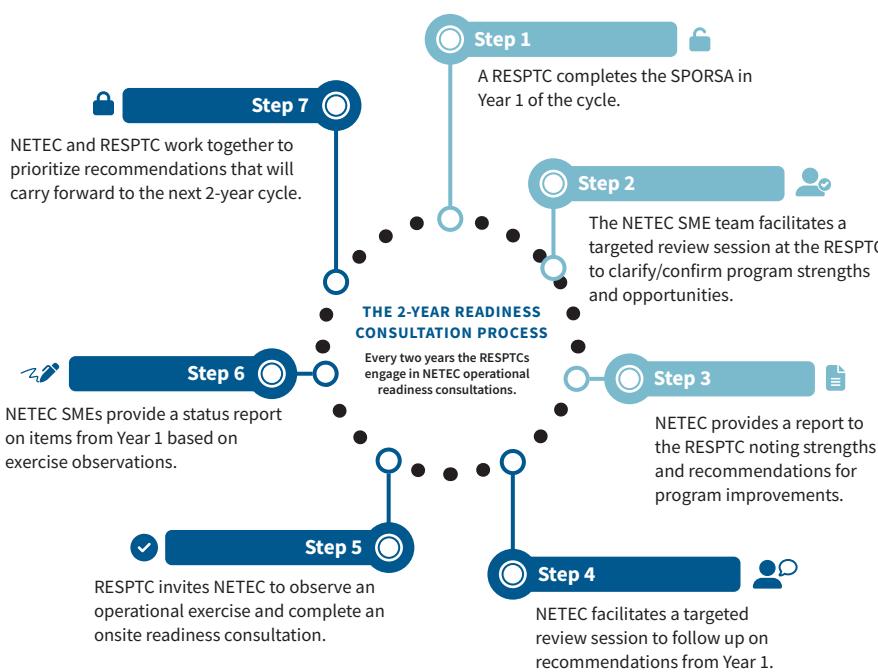
# RESPTC Readiness Assessment: Approach and Results

NETEC conducts annual operational readiness assessments of the Level 1 RESPTCs across the U.S. as part of a two-year cycle of continuous program improvement. In year one, the RESPTC completes the SPORSA and NETEC provides a comprehensive review of all responses as well as a summary report with suggestions to advance program maturity. In year two, NETEC follows up with the RESPTC on the status of recommendations from the previous year, coordinates an onsite program review inclusive of an operations-based exercise, and together NETEC and the RESPTC prioritize recommendations that will carry forward to the next cycle.

In FY22, the 10 previously established RESPTCs completed a self-assessment and received follow-up recommendations and support from NETEC subject matter experts around areas identified as opportunities for improvement (Figure 8).

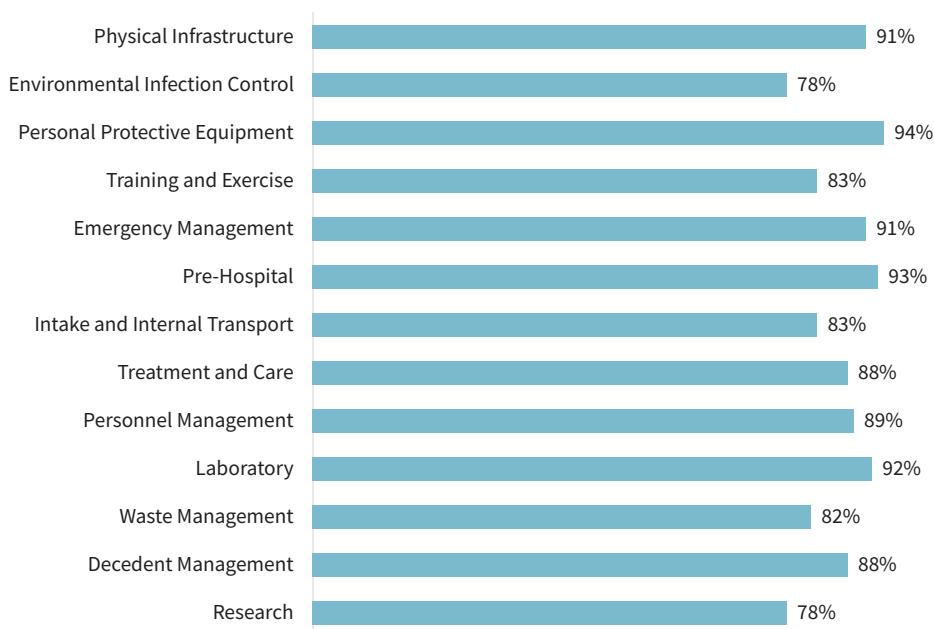
In FY23, Level 1 RESPTC's assessment domains with documented opportunities for advancement were reviewed during follow-up virtual and onsite consultations. Domains with the lowest operational maturity score in FY22 were Environmental Infection Control (78%), Research (78%), Waste Management (82%), Training and Exercise (83%), and Intake and Internal Transport (83%). It should be noted that recommendations for the 10 RESPTCs focused on process optimization as no critical programmatic gaps were identified.

**FIGURE 7**  
**NETEC Cycle of Continuous Program Improvement**



**FIGURE 8**  
**FY22 Domains Assessed for Readiness**

## Aggregate Operational Readiness for SPORSA Domains



## Readiness Findings By Domain

The RESPTCs engaged with, responded to, and implemented NETEC readiness consultation recommendations at a high rate with over 90 percent of recommendations already implemented or in the process of being implemented.

### → PHYSICAL INFRASTRUCTURE

Following the COVID-19 pandemic, RESPTCs recognized the need to adjust training, unit preparedness, and inventory management due to increased utilization of biocontainment unit spaces for routine patient care. RESPTCs were found to have improved communication systems for patient care and staff safety. Future assessments will explore strategies to optimize the utilization and maintenance of special pathogens laboratory spaces.

### → ENVIRONMENTAL INFECTION CONTROL

Environmental infection control recommendations provided to RESPTCs largely addressed opportunities to optimize utilization of zones within the Emergency Department and Biocontainment Unit isolation areas to maximize containment and worker safety. RESPTCs noted higher rates of staff turnover with considerations focused on how to improve the performance of new staff. During onsite FY23 consultations it was observed that training to reduce the risk for cross contamination improved operational readiness was needed. Strategies to incorporate environmental infection control skills into training were included in follow-up discussions and reports.

### → PERSONAL PROTECTIVE EQUIPMENT (PPE)

RESPTCs were noted to have mature processes established for selection and utilization of PPE. Recommendations focused on refinement of donning and doffing practices and identifying opportunities to implement uniform PPE across groups of staff.

### → TRAINING AND EXERCISE

RESPTCs' ability to maintain training throughout the pandemic response was

challenging due to staffing shortages, turnover, and limited access to biocontainment spaces. NETEC and the RESPTCs implemented creative strategies to overcome these challenges, including the development of extended reality (XR) education, just-in-time (JIT) training materials, and creation of training spaces that simulated the biocontainment unit care environment.

Recommendations to re-establish regularly scheduled exercises were implemented or noted to be in progress with many RESPTCs conducting no-notice communications drills, mystery patient point of entry exercises, and expansion of skills drills for rostered staff.

The majority of RESPTCs reported challenges in maintaining training for Emergency Department personnel due to staff turnover and high patient volumes. NETEC workgroups developed just-in-time training and explored successful models for training Emergency Department personnel.

While progress has been demonstrated on improving frequency and attendance at trainings, future consultations will continue to focus on strategies to advance staff preparedness.

### → EMERGENCY MANAGEMENT

The emergency management domain is well established, and plans are mature across the RESPTCs. Internal facility plans to leverage incident command structures have been assessed and refined through exercises and real-world events.

Opportunities to update and refine state and regional plans for coordinating special pathogen response efforts were noted by many of the RESPTCs. Collaboration with local, state, and federal public health partners is ongoing to optimize these plans across all HHS regions.

### → PREHOSPITAL

RESPTCs were noted to have long standing established relationships with primary EMS agencies that would provide special pathogen transport.

Recommendations to expand the number of EMS agencies engaged in regional planning and training were implemented in the

majority of regions. RESPTCs noted future plans to conduct exercises to test state and regional special pathogen transport plans.

### → INTAKE AND INTERNAL TRANSPORT

The ability to rapidly identify and isolate an individual who may have a high consequence infectious disease at all points of entry is a key component of infectious disease preparedness. The majority of RESPTCs are leveraging electronic health record systems to screen all patients presenting for care. RESPTCs were noted to have opportunities to enhance internal transport procedures including the use of containment devices and simplifying routes from points of entry to the biocontainment units. RESPTCs who received these recommendations demonstrated implementation of corrections and improved processes during their onsite readiness consultations.

### → TREATMENT AND CARE

Discussions in FY23 readiness consultations focused on strategies to enhance care delivery and provide advanced levels of care and interventions safely, including neurological monitoring and imaging, maternal/fetal care during emergent labor scenarios and pediatric critical care interventions.

Recommendations most frequently noted recruitment of specialty care team members and creating plans to provide conventional standards of care to patients admitted to their biocontainment units.

### → PERSONNEL MANAGEMENT

Staffing shortages and turnover rates represent the most common and prominent challenge to special pathogens readiness amongst the RESPTCs, impacting several domains and capabilities. Strategies to optimize staffing plans to address staff shortage, turnover, stress, and exhaustion are in progress across all RESPTCs.

# RESPTC Operational Readiness Scorecard: Approach and Results

NETEC implemented the RESPTC Operational Readiness Scorecard in August 2022. The scorecard was developed by a NETEC-led task force comprised of RESPTC program leaders. It includes critical readiness factors across a subset of SPORSA domains designed to capture data to inform HHS ASPR's patient placement decisions.

The RESPTCs submit separate scorecards detailing their status to activate for both adult and pediatric patients. Responses to each item are categorized as "Ready: all factors associated with the item can be completed in eight hours or less;" "Ready with Conditions: all factors associated with the item cannot be completed in eight hours but can be achieved in 12 hours;" or "Not Ready: all factors associated with the item will take longer than 12 hours to be complete."

The RESPTCs submit scorecards to NETEC monthly using an automated data capture process. Additionally, RESPTCs may submit an on-demand scorecard to capture any critical readiness changes during the month. Responses are reviewed and analyzed by NETEC leadership and aggregated into dashboards within a secure system.

## Scorecard Readiness Domains

Physical Infrastructure	Personal Protective Equipment
Waste Management	Treatment and Care
Personnel Management	Laboratory Management
Prehospital/EMS	

## Scorecard Highlights OCTOBER 2022–SEPTEMBER 2023

### → PHYSICAL INFRASTRUCTURE

Over a 12-month period, the 10 established RESPTCs reported on accessibility and availability of their designated biocontainment units to activate for patient admissions.

- Ten out of 12 months, all 10 RESPTCs reported being able to admit one pediatric patient and one adult patient to their biocontainment unit in 12 hours or less.
- All RESPTCs reported that their designated laboratory space for supporting special pathogen clinical tests were set up and able to be utilized within eight hours across the 12-month period.

### → WASTE MANAGEMENT

All RESPTCs reported having a waste management plan in place to manage Category A hazardous substances over the 12 months; either through onsite inactivation using steam sterilization or through an approved vendor to package and transport the waste for final disposition.

### → PERSONNEL MANAGEMENT

The ability to maintain adequate staffing for both adult and pediatric admissions varied throughout the year. Most fluctuations were seen within the critical care capabilities for pediatric admissions.

- Over the 12 months, 60 percent of RESPTCs reported "Ready" conditions for pediatric staffing with critical care nurses, and 80 percent of RESPTCs reported "Ready" conditions for critical care physicians.
- Over the 12 months, 80 percent or more of the RESPTCs reported "Ready" for adult staffing with critical care nurses, and 100 percent of RESPTCs reported "Ready" for critical care physicians.

For the majority of the year, the RESPTCs maintained their capacity to provide care for one adult or one pediatric patient. Conditions reported by RESPTCs noted that the age and acuity of the patient would determine the number of admissions that could be safely cared for in their facilities.

### → PREHOSPITAL/EMS SUPPORT

Every RESPTC reported that their primary EMS agency for ground transport of a directed admission at the request of HHS ASPR was ready to transport adult and pediatric patients within eight hours for seven out of 12 months and within 12 hours for five out of 12 months.

## Scorecard Highlights *cont.* OCTOBER 2022–SEPTEMBER 2023

### → PERSONAL PROTECTIVE EQUIPMENT

RESPTCs reported adequate inventory of PAPR-level PPE and N95-level PPE 100 percent of the time over the 12 months. However, there were a few months when RESPTCs reported "Ready with Conditions" when determining if the number of staff trained or competent in PPE utilization was sufficient to provide comprehensive care for one patient.

### → TREATMENT AND CARE

RESPTCs reported on their current capabilities to provide critical care interventions. Interventions were specified by pathogen type and patient population. RESPTCs were noted to have the highest degree of variability for interventions available for both adult and pediatric VHF patients; specifically related to surgical interventions, extracorporeal membrane oxygenation (ECMO), and advanced neurological monitoring.

### → LABORATORY MANAGEMENT

RESPTCs were asked to report on their capabilities within their facility laboratories to obtain presumptive positive test results for select special pathogens. The special pathogens reported by RESPTCs varied with the majority being able to identify Ebola virus disease, Marburg, Mpox, and novel influenza.

**TABLE 3**  
**Operational Readiness Scorecard: Critical Care Interventions**

Intervention	% RESPTCs Reporting "Yes"			
	Adults		Pediatrics	
	VHF	novel respiratory pathogens	VHF	novel respiratory pathogens
Mechanical ventilation	100%	100%	100%	100%
Renal replacement therapy	100%	90%	90%	90%
Invasive hemodynamic monitoring	100%	100%	100%	100%
Central venous access	100%	100%	100%	100%
Radiological imaging	90%	100%	90%	100%
Ultrasound	100%	100%	100%	100%
Obstetric procedures	100%	80%	80%	90%
ECMO	40%	80%	20%	60%
Minor surgical procedures (In situ BCU)	90%	100%	90%	100%
Major surgical procedures (Operating suite)	20%	70%	10%	70%
Bronchoscopy	100%	100%	100%	90%
Neurodiagnostics (EEG)	80%	90%	70%	90%
Invasive neuro monitoring (e.g., ICP)	40%	90%	40%	90%

as of September 2023

Data on this page represents the original 10 RESPTCs and does not include the 3 RESPTCs established in FY23.

\*ECMO availability dependent on the age of the patient and staffing capacity.

## Assessing the Status of Level 2 Facilities: Special Pathogen Treatment Centers

To verify and assess the status of Level 2 Special Pathogen Treatment Centers (SPTCs) to provide care for patients suspected or confirmed to have viral hemorrhagic fevers (VHF) NETEC developed an electronic survey addressing organizational capacity and capabilities to manage VHF cases including: Treatment and Care, Intake and Internal Transport, Laboratory, Waste Management, Physical Infrastructure, Personal Protective Equipment, Personnel, and Training and Education.

### Survey Results

In May 2023, 74 facilities were identified as eligible to receive the survey across the 10 HHS regions. NETEC disseminated the survey in June 2023 and received responses from 41 individual facilities with

representation from all 10 HHS regions. Of those facilities that responded, the majority reported that capabilities for VHF patient care delivery had been maintained since initial designation, even with disruption to dedicated federal funding.

The primary operational barriers to maintaining VHF preparedness for those facilities that reported decommissioning their special pathogen programs were funding constraints, the ability to maintain an adequate number of personnel with a proficient level of training, and a lack of support from the unit's institution, state, or local government.

#### → MAINTAINING PREPAREDNESS FOR VHF

Of the 41 Level 2 facilities that responded to the survey, 88 percent (36) indicated that they currently maintain capabilities to care for VHF patients as a treatment center, including the necessary physical infrastructure, standard operating procedures, and adequate numbers of personnel. Of those facilities that currently maintain VHF patient care capacity, 89 percent (32) reported that their organizations continuously maintained their treatment center capabilities since the time of their original designation as an SPTC.

### Results by Domain

#### → TREATMENT AND CARE

Of the 36 facilities that reported that they have maintained capabilities for VHF patient care 29 provided further responses:

- 76 percent (22) of facilities are prepared to care for adult patient(s) with confirmed or suspected VHF. Four units are not prepared for adult patients, and three units are unsure on their specific level of preparedness for adult patients.
- 52 percent (15) of facilities are prepared to care for pediatric patient(s) with confirmed or suspected VHF. Eight units are not prepared for pediatric patients, and six facilities do not specify if they are capable of caring for pediatric patients.
- All 29 of the responding facilities (100%) reported being prepared to care for a patient with suspected VHF for at least 72 hours.

All 29 facilities reported that they have clinical care support and can provide appropriate clinical interventions to safely provide care

for patients suspected or confirmed to have a VHF. However, only 42 percent (12) reported that the clinicians who would provide care and perform clinical interventions have completed special pathogen training in the last six months.

#### → INTAKE AND INTERNAL TRANSPORT

Only one institution of the 29 who responded reported not asking symptom and travel history questionnaires during active infectious disease outbreaks (or otherwise).

All 29 responding institutions reported that staff were trained on screening procedures (including steps to take if a patient screens positive), along with a dedicated patient care space for rapid isolation and care of patients with suspected or confirmed VHF.

Of the 29 responders, 86 percent (25) specified that they have an adequate number of trained health care professionals to immediately isolate and care for patients with suspected or confirmed VHF. Seventeen

of the 29 (59%) who responded to the survey have tested plans to alert and inform internal and external personnel of a patient with suspected or confirmed VHF in the last 12 months.

#### → LABORATORY

Of respondents with VHF treatment center capabilities, 100 percent (29) have the equipment and staff necessary for performing clinical laboratory tests. However, only 11 of these facilities have staff who have completed training in phlebotomy procedures in the last six months.

#### → WASTE MANAGEMENT

Of facilities that currently have VHF treatment center capabilities, 100 percent (29) have a plan for VHF-related Category A waste management, and 90 percent (26) reported having a current agreement with a vendor licensed to transport Category A infectious substances.

### Opportunities for Progress and Future Direction

Respondents were asked to identify domains where their organization would benefit from targeted assistance to maintain or advance readiness for special pathogen events. Of those facilities that responded the majority noted at least two unique domains with some facilities identifying up to 13 areas of need. The most cited domains were:

☒ Personal Protective Equipment

☒ Training and Exercise

☒ Personnel Management

☒ Physical Infrastructure

Upon closure of this survey NETEC, in collaboration with the RESPTCs, followed up with each participating site to offer individualized targeted support and consultation. As a result, follow up engagements with three sites were scheduled and work is ongoing to establish stronger relationships and coordinate additional support services. As the development of NSPS continues, this cohort of facilities will play a critical role in establishing the designated facilities for Level 2.

Simulation events contribute to the evaluation and improvement of systems, protocols, and partnerships critical for achieving a unified and well-coordinated response to special pathogen events.



# Emergency Medical Services: Advancing Readiness for Transportation and Management of Special Pathogens

The NETEC EMS workgroup developed and deployed operational readiness assessment tools, education and training, resources for the EMS community, and real-time technical consultation to support the further evolution of teams that support local, regional, and national patient transportation and management plans. Leveraging these activities, NETEC has begun to identify the strengths and opportunities for advancement in the EMS community. This data is being used to better define the role of EMS partners and inform priorities and strategies to support the development and implementation of the NSPS.

## EMS Readiness Assessments

The EMS SPORSA is a comprehensive electronic tool that covers 11 domains and 52 capabilities. It is designed to provide EMS agencies with a better understanding of their agency's preparedness to provide transportation services for patients suspected or confirmed to have a special pathogen. This tool was developed through the NETEC EMS workgroup leveraging 11 EMS subject matter experts and NETEC staff from HHS Regions 1, 2, 3, 4, and 7. Subject matter experts from all 10 HHS regions and the Biosafety Transport Consortium were given an opportunity to provide feedback on the tool.

In connection with the completion of the SPORSA, EMS agencies are able to receive individualized support from NETEC to validate their self-reported strengths and provide expert guidance on areas with operational gaps. NETEC provided follow-up targeted support, consultation, and education for nine unique agencies and delivered Biosafety Transport Operator courses in three HHS regions.

Special pathogen exercises are an effective method of teaching and reinforcing best practices in screening, isolation, and infection control in EMS settings.

**TABLE 4**  
**EMS SPORSA Domains**

<b>Education, Training, and Exercises</b>	<ul style="list-style-type: none"> <li>Initial Education and Competency Assessment</li> <li>Recurrent Education and Competency Assessment</li> <li>Agency-Wide Hazard Recognition Education (Identify, Isolate, Inform)</li> <li>Just-In-Time Training</li> <li>Exercises and Drills</li> </ul>
<b>PUI and Confirmed Case Management</b>	<ul style="list-style-type: none"> <li>Identify Capability</li> <li>Isolate Capability</li> <li>Inform Capability</li> </ul>
<b>Communications and Coordination</b>	<ul style="list-style-type: none"> <li>Hospital</li> <li>Transport Team</li> <li>Patient</li> <li>Partner Agencies (public health, emergency management, law enforcement, airport/fixed based operator)</li> <li>Media Relations</li> </ul>



**TABLE 4**  
**EMS SPORSA Domains *cont.***

<b>Infection Prevention and Control</b>	<ul style="list-style-type: none"> <li>Ambulance</li> <li>Durable Equipment</li> <li>Personal Protective Equipment</li> <li>PPE Donning and Doffing</li> <li>Portable Patient Isolation Unit</li> <li>Waste Management</li> </ul>	<b>Patient Movement</b>	<ul style="list-style-type: none"> <li>Destination Guidelines</li> <li>Fleet/Vehicle Resources</li> <li>Long Distance Ground</li> <li>Air Ambulance Interface</li> </ul>
<b>Hospital/Clinic Interface</b>	<ul style="list-style-type: none"> <li>Patient Preparation</li> <li>Patient Hand-Off</li> </ul>	<b>Emergency Operating Procedures</b>	<ul style="list-style-type: none"> <li>Biohazard Spill</li> <li>PPE Breach</li> <li>Provider Down</li> <li>Vehicle Failure</li> </ul>
<b>Treatment and Care</b>	<ul style="list-style-type: none"> <li>Clinical Care Guidelines</li> <li>Charting</li> <li>Medical Control/Medical Oversight</li> <li>Quality Improvement</li> <li>Patient Deterioration/Death</li> </ul>	<b>Special Considerations</b>	<ul style="list-style-type: none"> <li>Pediatric Transport</li> <li>Neonate Transport</li> <li>Special Needs Patient Transport</li> <li>Interstate Transport</li> <li>Inclement Weather</li> <li>Finance</li> <li>Language Barriers</li> </ul>
<b>Personnel Management</b>	<ul style="list-style-type: none"> <li>Team Configuration</li> <li>Fitness for Duty</li> <li>Occupational Health</li> <li>Employee Assistance Program</li> <li>Post-Mission Medical Surveillance</li> <li>Post-Mission After-Action Review</li> <li>Regulatory Compliance</li> </ul>	<b>Pandemic</b>	<ul style="list-style-type: none"> <li>Supply Chain Integrity</li> <li>Workforce Integrity</li> <li>Crisis Standards of Care</li> <li>Modified Operations</li> </ul>

## → EMS CONSULTATION AND TARGETED SUPPORT SERVICES

**TABLE 5**  
**EMS SPORSA and TSS by Region**

Region	# SPORSA	# TSS	Case Type/Sub-type
2	1		
3	2	2	1 - in person staff training, 1 - ask an expert - Isopod
4	2	2	2 - in person staff training
5	2	4	1 - in person staff training, 2 - ask an expert – Transport and Seatbelt, 1 - speaker request
7	1		
9		1	1 - ask an expert - Mpox

## Advancing the Breadth and Depth of National Special Pathogens Preparedness Through Targeted Support Services (TSS)

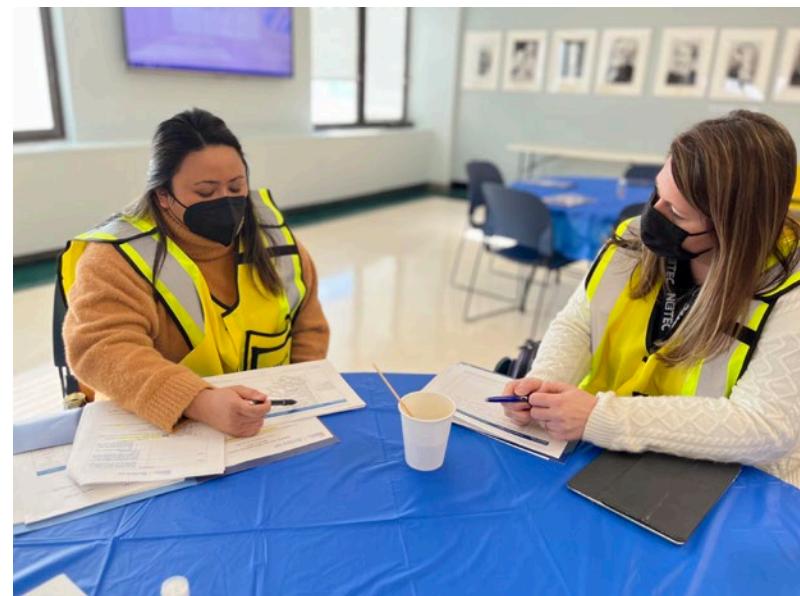
NETEC provides individualized technical support to hospitals, public health, partners, and EMS agencies that are interested in establishing or advancing special pathogen preparedness. These services provide on-demand access to subject matter experts that can address all domains of readiness for special pathogen response. Service types can include simple requests such as protocol or document review as well as complex support including exercise development and evaluation, training resources, and review of inter-regional coordination and planning efforts.

In FY23, NETEC provided TSS services to every HHS

Region and delivered support in every state except New Mexico and Vermont. Additionally, in support of NETEC's international partnerships and programs, NETEC provided services to partners from Japan, Australia, and Canada.

NUMBER OF TSS CASES

351



### Ask Our Experts

NETEC received 67 cases through the Ask Our Experts portal and categorized them according to type of request and topics of interest. These requests were triaged across NETEC workgroups for response. Most of the cases were requests for expert guidance addressing specific pathogens of concern, namely Ebola and Mpox (52%), and were further categorized into subtypes including PPE selection and utilization (36%), development and review of policies and procedures (24%), waste management and infection control practices (16%), and laboratory management (12%).

### Consultative Services

NETEC received 46 requests for consultation and expert guidance. These requests were all reviewed by a team of coordinators and triaged across NETEC workgroups for response. Requests were diverse in nature and included onsite or virtual consultation for special pathogen program review (57%), delivery of staff training and education (33%), EMS and transport protocols (17%), and services related to exercise development and evaluation (11%).

### Long-Term Care Workbook Requests

In FY22, NETEC published the Long-Term Care Special Pathogens Preparedness Workbook, and in FY23 the workbook continued to be a sought-after resource. Public health departments, long-term care administrators, and government agencies, among others, requested the workbook 165 times. Requests came in from all 10 HHS Regions and the greatest number of downloads were in regions 5, 7, and 10.

“

This is a phenomenal resource for people in my field who are working on emergency preparedness at their hospitals; I have told all my infection prevention colleagues about NETEC and encouraged them to use the resource available for developing their protocols and educating our lab partners.”

—Targeted Support Services, Hospital, Region 9

### RESPTCs Regional Outreach Activities

In addition to supporting requests from NETEC to provide technical assistance, outreach, and education across the U.S. the majority of RESPTCs reported activities independent of their work with NETEC in 27 states plus the District of Columbia. Of the RESPTCs that provided data to NETEC, the service most often provided was directed outreach to raise awareness of NSPS and the role of the RESPTC for public health departments, hospitals, and health care coalitions, followed closely by consultation, education, and training for health care personnel in hospitals and EMS agencies.

Entities Contacted for Outreach:	Results of Outreach:
<ul style="list-style-type: none"><li>Hospitals</li><li>EMS agencies</li><li>Health care coalitions</li><li>Public health agencies</li><li>State health departments</li><li>County health departments</li><li>HHS ASPR representatives</li></ul>	<ul style="list-style-type: none"><li>Relationship and partnership building</li><li>Established region-wide workgroups</li><li>Plan development and updates to CONOPs</li><li>Resource sharing</li><li>Content development and delivery</li><li>Quarterly newsletters</li><li>Exercise development and execution</li><li>Workshops and in-person education</li></ul>

#### → READINESS CONSULTATION AND OUTREACH

Types of facilities	Key topics addressed
<ul style="list-style-type: none"><li>RESPTCs</li><li>Special Pathogens Units</li><li>Public health departments (local and state)</li><li>EMS organizations and transport service agencies</li><li>Health care facilities</li></ul>	<ul style="list-style-type: none"><li>Transport</li><li>Laboratory</li><li>Waste management</li><li>PPE/Donning and doffing, requirements and stockpiling</li><li>BCU infrastructure</li><li>Staffing</li><li>Special pathogen preparedness</li><li>Patient surveillance</li><li>Patient care and support</li><li>EMS and transport processes</li></ul>

#### → TECHNICAL ASSISTANCE

Topics addressed	Roles/Professions who participated in RESPTC consultation events
<ul style="list-style-type: none"><li>Donning and doffing</li><li>Personal Protective Equipment (needs, selection, utilization, stockpiling, types, etc.)</li><li>EMS/Transport</li><li>IPC principals (Identify, Isolate, Inform)</li><li>Staffing</li><li>Medical countermeasures</li><li>Waste management</li><li>Environmental health</li><li>Biosafety best practices</li><li>Laboratory protocols</li><li>Patient care</li></ul>	<ul style="list-style-type: none"><li>Nursing</li><li>Physicians (pediatrics, professors, public health, epidemiology, MPH and MD students)</li><li>Paramedics</li><li>Laboratory</li><li>Administration/management</li><li>Public health</li><li>Environmental Health and Safety</li><li>Biosafety</li><li>Infection prevention and control</li><li>Emergency Medical Services</li><li>Homeland security</li><li>Emergency and disaster management</li></ul>

# COORDINATING NATIONAL SPECIAL PATHOGENS RESPONSE

JULY 1, 2022 – JUNE 30, 2023

NETEC leveraged the substantial expertise and shared experiences of special pathogens and infectious disease clinicians among the RESPTCs, within the NETEC workgroups, and among partners across the spectrum of health care provision to create a range of critical resources for clinicians, coordinate national readiness calls, provide critical information regarding the state of special pathogens readiness to national policymakers, and respond to request for support in response to the outbreaks of **Mpox**, **Marburg virus disease (MVD)**, and **Sudan Ebolavirus disease (SUDV)**.

**SEPTEMBER 1, 2022:** NETEC held a Global Rounds forum for international high-level isolation units (HLIUs) to discuss the multi-country Mpox outbreak and share clinical experiences.

**AUGUST 2022:** Mpox cases peaked in the U.S.

**AUGUST 2022:** NETEC implemented a scorecard to verify operational readiness at the RESPTCs across key domains.

**AUGUST 4, 2022:** The Secretary of the Department of Health and Human Services (HHS) declared Mpox a public health emergency. NETEC released a Situation Report on Mpox.

**AUGUST 5, 2022:** NETEC released a Situation Report on the MVD outbreak in Ghana.

**AUGUST 12, 2022:** NETEC released a Situation Report on the Mpox outbreak.

**OCTOBER 6, 2022:** The CDC issued a Health Advisory recommending that public health departments and health care workers in the U.S. be alert for patients who present with symptoms consistent with EVD and have been in affected areas of Uganda. NETEC released a Situation Report on the SUDV outbreak.

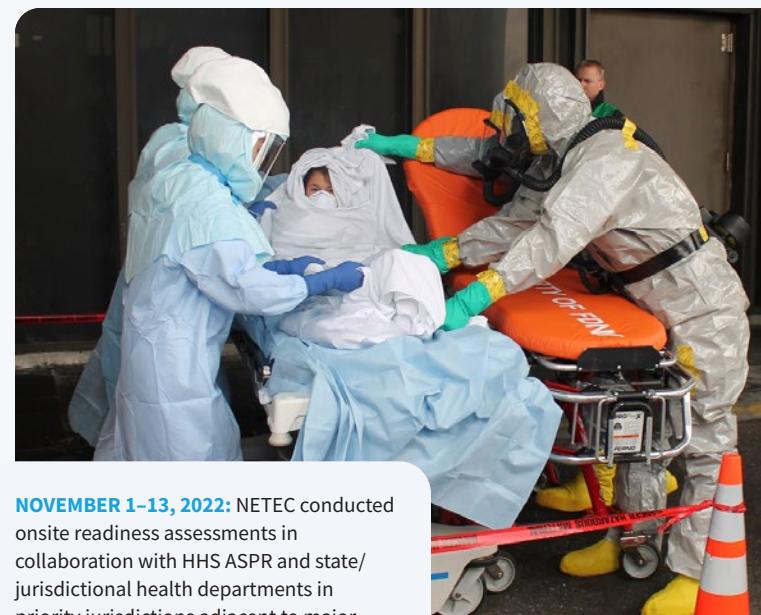
**OCTOBER 7-19, 2022:** NETEC subject matter experts produce a series of blog posts to educate health care personnel about SUDV.

**SEPTEMBER 9, 2022:** NETEC produced a just-in-time training video demonstrating the technique of intradermal medication administration of the Mpox vaccine, JYNNEOS® (Bavarian Nordic), after the FDA authorized the alternative regimen to increase the number of doses available. The YouTube video was viewed more than 50,000 times.

**OCTOBER 11, 2022:** Flights arriving from Uganda began funneling through five international airports in the U.S. — Chicago O'Hare, Hartsfield-Jackson Atlanta, John F. Kennedy, Newark Liberty, and Washington Dulles International Airport — to start screening passengers for symptoms consistent with EVD.

**SEPTEMBER 16, 2023:** NETEC released a Situation Report on the SUDV outbreak.

**OCTOBER 13, 2022:** NETEC released a Situation Report on the SUDV outbreak.



**NOVEMBER 1-13, 2022:** NETEC conducted onsite readiness assessments in collaboration with HHS ASPR and state/jurisdictional health departments in priority jurisdictions adjacent to major airports (e.g., Chicago).

**NOVEMBER 2, 2022:** NETEC released a Situation Report on the SUDV outbreak.

**NOVEMBER 10, 2022:** NETEC facilitated international collaboration, bringing together representatives from 24 biocontainment units across 10 countries, including those with experience caring for patients with EVD, to share best practices and experiences.

**THROUGHOUT FY23:** NETEC scaled up the established weekly Outbreak Readiness Calls between NETEC and RESPTC leadership, providing a forum to solve common challenges and share best practices in response to outbreaks.

**MARCH 2023:** SPRN began conducting a series of tabletop and shipping exercises to prepare for the implementation of a protocol for Sudan ebolavirus experimental monoclonal antibody cocktail, MBP-134.

**MARCH 2023:** NETEC subject matter experts produce a series of blog posts to educate health care personnel about MVD. Blog posts about MVD have been viewed more than 1,350 times.

**MARCH 21, 2023:** Tanzania reported the country's first MVD outbreak.

**APRIL 21, 2023:** NETEC developed a checklist for facilities to assess their readiness to identify, isolate, inform, and provide initial treatment for patients suspected or confirmed to have a viral hemorrhagic fever (VHF). The Health Care Facility VHF Preparedness Checklist was downloaded 1,728 times.

**APRIL 19, 2023:** NETEC released a Situation Report on the MVD outbreak.

**MARCH 22, 2023:** The WHO upgraded the public health risk posed by the MVD outbreak in Equatorial Guinea to very high at the national level.

**MARCH 24, 2023:** NETEC released a Situation Report on the MVD outbreak.

2022

JULY

AUGUST

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

2023

JANUARY

FEBRUARY

MARCH

APRIL

JUNE

**JULY 2022:** After being detected in May 2022, U.S. Mpox cases increased rapidly; by mid-July, the CDC reported more than 11,000 cases of Mpox globally, including more than 1,000 confirmed Mpox cases in the U.S. Between July and August 2022, NETEC responded to more than half a dozen requests for consultation and support on Mpox topics, including waste management and advice for EMS agencies.



**JULY 15, 2022:** NETEC released a Situation Report on Mpox.

**AUGUST 17, 2022:** NETEC released a podcast episode discussing best practices for laboratorians as they navigate the challenges of Mpox testing at their facilities. The episode was downloaded 166 times.

**JULY 22, 2022:** NETEC disseminated just-in-time training videos on how to collect specimens for Mpox virus diagnostic testing. Combined, the recordings were viewed nearly 13,000 times on YouTube.

**AUGUST 23, 2022:** NETEC released a Situation Report on the SUDV outbreak.

**AUGUST 31, 2022:** A NETEC webinar brought together health care practitioners from Massachusetts General Hospital (where the first case of Mpox was reported in the U.S.), Cedars-Sinai, and NYC Health + Hospitals to share their first-hand experiences caring for patients with Mpox. A total of 605 people registered for the webinar, and 444 people attended.

**AUGUST 31, 2022:** A NETEC podcast episode was published on the basics of viral hemorrhagic fevers and personal protective equipment (PPE). The episode was downloaded 335 times.

**SEPTEMBER 20, 2022:** The Ugandan Ministry of Health confirmed an outbreak of SUDV in Mubende District, in western Uganda.

**SEPTEMBER 22, 2022:** NETEC released a Situation Report on the SUDV outbreak.

**AUGUST 31, 2022:** A NETEC released a Situation Report on the SUDV outbreak.

**SEPTEMBER 2022:** Between September 2022 and May 2023, NETEC subject matter experts responded to 40 online requests for consultation and support related to Ebola virus disease (EVD). Experts answered questions, offered training and educational support, and provided other forms of assistance.

**OCTOBER 28, 2022:** The World Health Organization (WHO) confirmed the SUDV outbreak had spread to seven districts in Uganda.

**OCTOBER 2022:** NETEC, through the Special Pathogens Research Network (SPRN), supported the implementation of testing capabilities for SUDV as they were in the process of being onboarded at 10 RESPTCs and the National Institutes of Health Clinical Center (NIH CC).

**DECEMBER 2022:** NETEC developed a stoplight dashboard to share critical information regarding the state of special pathogens readiness at the RESPTCs with national policymakers.

**DECEMBER 1, 2022:** NETEC released a Situation Report on the SUDV outbreak.

**DECEMBER 6, 2022:** NETEC released a Situation Report on the SUDV outbreak.

**DECEMBER 20, 2022:** NETEC released a video with preliminary strategic guidance for high-level containment care of a patient infected with SUDV.

**DECEMBER 2022:** NETEC released an updated online course on EMS Biosafety Transport considerations for viral hemorrhagic fevers, including EVD.



**JANUARY 11, 2023:** Uganda's Ministry of Health declared the end of the SUDV outbreak, with 142 confirmed cases (and 22 probable) and 55 confirmed deaths.

**JANUARY 31, 2023:** HHS announced the end of the Public Health Emergency declaration for Mpox.

**FEBRUARY 13, 2023:** Equatorial Guinea reported its first outbreak of MVD.

**FEBRUARY 20, 2023:** NETEC released a Situation Report on the MVD outbreak.

**FEBRUARY 2023:** NETEC shared "Marburg Virus Disease: a Summary for Clinicians," written by NETEC faculty and published in the International Journal of Infectious Diseases. In FY23, the article was downloaded from the NETEC Resource Library more than 100 times, representing a 250 percent increase over the previous year.

**FEBRUARY 2023:** RESPTCs that had onboarded testing capabilities for SUDV confirmed readiness for MVD.

**JUNE 2, 2023:** The Ministry of Health of the United Republic of Tanzania declared the end of its first documented outbreak of MVD, with eight confirmed cases (and 1 probable) and six deaths.

**JUNE 8, 2023:** The WHO declared the end of the MVD outbreak in Equatorial Guinea. There were 17 confirmed cases, including 12 reported deaths; 23 probable cases were reported, all of whom died.

**JUNE 9, 2023:** NETEC released a Situation Report on the MVD and Mpox outbreaks.

# Education, Training, and Workforce Development

Since its inception, NETEC's innovative training, education, and resources have aided more than 40,000 health care workers in enhancing special pathogens preparedness, individually and within their health care agencies, across the nation, and around the world.



In FY23, NETEC continued to expand its digital educational offerings to meet the evolving needs of the special pathogens health care workforce, leveraged partnerships with professional organizations to provide in-service education at professional conference exhibit booths, and provided support to the RESPTCs in their regional educational outreach initiatives. The 13 RESPTCs are vital contributors to NETEC's success, providing subject matter expertise that is the foundation of NETEC's education, training, and resources.

NETEC provides special pathogens preparedness and response education through in-depth online courses, live and recorded webinars, podcasts, skills and micro e-learning videos, and a broad range of on-demand, downloadable resources. More than 11,400 individual health care workers logged more than 14,787 training person hours by utilizing NETEC's library of free online courses (most available for continuing education credits), training webinars, skill-building videos, and educational and informational podcasts.

In FY23, NETEC accelerated the development of outbreak-specific educational resources to address the urgent and ongoing needs of health care personnel during the SUDV, Mpox, and MVD outbreaks to include an Ebola town hall-style webinar, skills videos for Mpox, and more.

## Online and Digital Learning

NETEC continued to produce and share educational content across a wide range of digital platforms, strategically aligning with the accessibility preferences of health care workers. In FY23, NETEC added seven new courses to its online Learning Management System (LMS). Of these new courses, an innovative and curated *Infection Prevention and Control Learning Journey*, an updated *Biosafety Transport for Operators* course, and a course dedicated to *HICS for Special Pathogens Preparedness* were launched, bringing the total number of online courses to 64. The *Infection Prevention and Control Learning Journey* course had 870 enrollees in FY23. The refreshed *Biosafety Transport for Operators* course, in addition to providing education for EMS personnel about pathogens of concern and operational considerations for patient transport and management, also facilitates a hybrid delivery of this 8-hour course, combining online education with in-person hands-on instruction. In total, online learners earned 1,412 continuing education credits for courses added in FY23.

In addition to new online courses, NETEC hosted webinars and training videos on NETEC's YouTube channel; provided specialized educational content on NETEC's website and blog; and produced two ongoing informational series: *NETEC Situation Reports*, which provide up-to-date information on special pathogens outbreaks from NETEC subject matter experts, and *Transmission Interrupted*, the first podcast series of its kind to feature special pathogens-focused content.

Of note, FY23 webinar attendance increased by 237 percent, from 1,925 to 4,575, while online

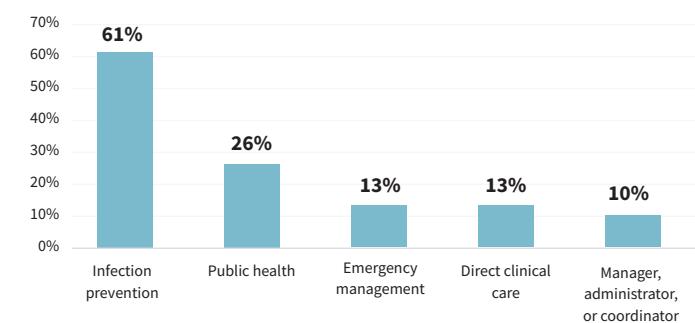


course enrollment increased by 170 percent, from 2,751 to 4,689. The webinar "Preparing Frontline Health Care Workers for Ebola" attracted over 2,100 attendees, which can be directly attributed to the collaboration and proactiveness of various workgroups within NETEC to provide expedited information to health care professionals. Moreover, 24 Situation Reports were produced in FY23 to highlight priority updates and statistics on special pathogens across the globe, which resulted in more than 42,000 views across YouTube and the NETEC blog. Net Promoter Score (NPS) is the world's leading metric for measuring customer satisfaction and loyalty, going beyond measuring how satisfied a customer is with a product, to gauging their willingness to recommend it to others. The NPS ranges from -100 to +100. In FY23, NETEC webinars received an average NPS of 70, which indicates an excellent score. This means that most webinar participants were so satisfied that they would highly recommend NETEC webinars to their colleagues.

## On-Demand Special Pathogens Preparedness and Response Resources

NETEC has continued to expand its on-demand resource library for health care workers, offering training templates, educational videos, and quick reference guides. These resources are designed to empower health care workers to enhance special pathogens preparedness in their individual practices

**FIGURE 9**  
**Infection Prevention and Control Learning Journey: User-Identified Role(s) at Their Institution**



**TABLE 6**  
**FY23 Most Downloaded NETEC Resources**

Resource	Unique Downloads
Health Care Facility Viral Hemorrhagic Fever (VHF) Preparedness Checklist	1,728
NETEC Town Hall: Preparing Frontline Health Care Workers for Ebola	394
Viral Hemorrhagic Fevers (VHFs) Matrix	223
Viral Hemorrhagic Fever (VHF) or Orthopox Virus – Emergency Department Screening Protocol	150
Space Recommendations for Donning and Doffing Personal Protective Equipment (PPE) in Biocontainment Areas	113

and in the facilities where they work. Users from all 50 states in the U.S. and 153 nations downloaded more than 9,460 resources from the NETEC Resource Library in FY23. This represents a more than 300 percent increase in Resource Library utilization between FY22 and FY23, led in part by increased demand for guidance related to the Mpox, MVD, and SUDV outbreaks around the world. Early in the SUDV outbreak, NETEC subject matter experts took proactive steps to prepare health care workers by developing the *Health Care Facility Viral Hemorrhagic Fever (VHF) Preparedness Checklist*. This resource alone garnered over 1,700 downloads, reflecting its immediate relevance and impact.

Combined, these resources provided a variety of accessible self-paced learning opportunities for health care workers on topics ranging from fundamental infection prevention and control practices, to specialized skill development like special pathogens laboratory procedures and PPE utilization.

### Surveying Educational Needs in Pediatric and Obstetric Special Pathogens Preparedness

In response to the evolving landscape of special pathogens preparedness, NETEC designed and implemented a targeted analysis to gauge the educational and training needs of health care workers who predominantly work in pediatrics and obstetrics. This survey, led by the Pediatrics workgroup and NETEC evaluation team, was developed to elicit insights into specific topics of interest and knowledge gaps related to special pathogens and

special populations. The survey, disseminated across NETEC's diverse audience via email, social media, and NETEC website pop-up ads, aimed to identify preferences for educational resources and training modalities. Respondents were mostly registered nurses and medical doctors with infection prevention roles from academic health centers and critical access hospitals across the United States. All 10 HHS regions were represented, with Region 6 providing the greatest number of responses at 13.6 percent. Key findings from the survey highlighted a strong demand for educational content delivered via webinars and in-person training lasting 30 to 60 minutes. Additionally, respondents expressed a need for education on the selection of appropriate PPE, clinical presentation of special pathogens, outbreak response, cleaning/disinfecting protocols, patient care, and emergency response structures.

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**“Having a variety of subject matter experts from across the country that could share local anecdotes as best practices [was the most beneficial aspect of the webinar]. I appreciated that all presenters were clinicians and able to speak to the concerns of HCWs from a shared “boots on the ground” experience.”**

— Webinar attendee

### RESPTC Outreach & Conference Highlights

NETEC participated in several national conferences and provided in-service education at exhibit booths, providing outreach and awareness of NETEC's special pathogens preparedness training and resources. NETEC's in-service education showcased practical tools, newly developed educational materials, and hands-on demonstrations, offering tangible solutions to the challenges faced by health care workers. NETEC subject matter experts provided tailored education and resources for unique audiences, including in-service education for EMS at the Journal of Emergency Medical Services (JEMS)/EMS Today/ Fire Department Instructors Conference, and 13 presentations at the National Association of County and City Health Officials (NACCHO) Preparedness Summit.

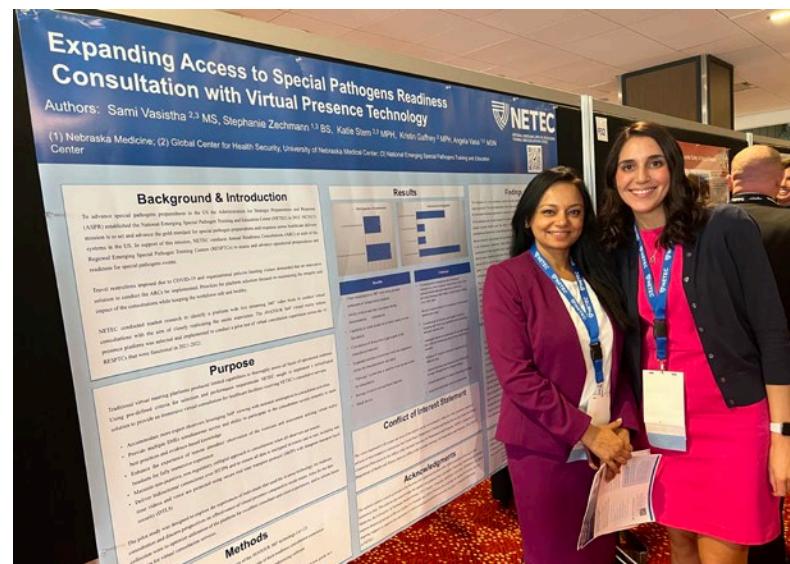
NETEC's presence at these professional conferences is vital in fostering collaboration and strengthening a network of health care workers dedicated to enhancing special pathogens preparedness. The exchange of information at these events empowers attendees



with the latest developments in the field and positions NETEC as a thought leader, reinforcing its commitment to advancing the knowledge base within the health care community.

NETEC, in collaboration with RESPTCs, fulfilled several requests for expert speakers this year spanning both

in-person and virtual formats from regions across the United States. By fulfilling these requests, NETEC played a pivotal role in disseminating crucial information and best practices on special pathogen preparedness. NETEC's subject matter experts supported speaker requests by meeting with requestors, assessing knowledge gaps, and tailoring educational content and resources for targeted audiences. Providing support for speaker requests reinforces NETEC's outreach efforts by extending valuable resources to a broad and geographically dispersed audience. Moreover, the collaboration with health care professionals and organizations from different regions further promotes partnerships, creating a robust network dedicated to collectively addressing the challenges posed by special pathogens and ensuring a comprehensive, nationwide approach to preparedness.



Above: Sami Vasistha and Stephanie Zechmann presented on the use of Avatour, a 360° video streaming platform, in virtual readiness consultations at NACCHO.

Right: Patricia Tennill trained NACCHO conference participants on hand hygiene using glo germ and a black light.



# Research Capability and Capacity

## Regulatory Infrastructure

Over the past year, the Special Pathogens Research Network (SPRN) made headway in enhancing regulatory infrastructure for special pathogens research. Typically, establishing human subjects research protocols is a lengthy approval process with many regulatory steps to review; however, during a special pathogens outbreak, the luxury of time is not available. Facilitating regulatory preparedness is a top priority to ensure human subjects research readiness should a patient need experimental therapeutics. SPRN conducted a series of tabletop and shipping exercises to improve research preparedness across the network leveraging the real-world implementation of a protocol for the investigational product MBP-134 (Mapp Biopharmaceutical). These exercises carried participants through the administrative and logistical processes needed to successfully onboard the protocol and ensure receipt of the study drug. Lessons learned from these exercises were taken into account in the beginning phases



NETEC rapidly initiated the BioFire® Implementation Task Force to onboard testing capabilities for SUDV and several other high-consequence pathogens at 10 RESPTCs and the National Institutes of Health Clinical Center.

of the protocol submission to NETEC's central Institutional Review Board (IRB) and through each site's local IRBs.

## Laboratory And Bench Research Capacity Building

This year, the SPRN protocol "Advancing Vaccine Research for High-Consequence Infectious Diseases" was submitted for approval using NETEC's central IRB. The protocol will collect biological specimens and clinical data from individuals offered a vaccine against a high-consequence pathogen (e.g., Ebola, smallpox/Mpox, anthrax). Once approved, it is intended that the protocol may be onboarded by all 13 RESPTCs. The first specimens will be from those eligible to receive the ERVEBO® (Merck & Co., Inc., Rahway, NJ) vaccine, developed to protect against Zaire ebolavirus.



This protocol will contribute to the development of a biorepository and help enhance SPRN's laboratory and bench research capacity. The biorepository utilizes OpenSpecimen (Krishagni Solutions Pvt Ltd, St Louis) for specimen management and distribution. This year, SPRN conducted a successful virtual shipping exercise in which specimens were electronically "shipped" between RESPTCs. The SPRN workgroup, State of the Science for Basic & Translational Research, will provide biorepository oversight and serve as the committee for all specimen and data requests. In addition, SPRN surveyed shipping capacity across RESPTCs. Survey results indicated that all sites are prepared to ship specimens including exempt human specimens, Category B, and Category A.

## Guidelines for Clinical Management of Special Pathogens and Use of Medical Countermeasures

In FY24, SPRN members will continue working on guidelines for clinical management of special pathogens and the use of medical countermeasures on the following topics:

- Smallpox: A Summary for Clinicians
- Nipah Virus: A Summary for Clinicians
- Crimean-Congo Hemorrhagic Fever: A Summary for Clinicians

## SPRN in Response and Federal Level Support

Several special pathogens outbreaks occurred in FY23. The ongoing Mpox outbreak began to slow down, but Sudan ebolavirus, Marburg virus, highly pathogenic avian influenza, and other threats continue to keep SPRN on high alert.

Weekly Outbreak Readiness calls, led by SPRN and the BCU workgroup, were created and organized specifically to facilitate situational awareness by providing outbreak updates, an interface with federal partners, and a platform to ask questions and solve problems among colleagues.

A task force led by SPRN leadership was created to implement pathogen identification and diagnostic capabilities for pathogens such as Sudan ebolavirus, Marburg virus, and more at each of the RESPTCs. Through navigating complex regulatory pathways and administrative requirements, ultimately all RESPTCs onboarded the diagnostic tool. As the

Sudan ebolavirus outbreak ended, a new Marburg virus outbreak began, proving the implementation of such a specific diagnostic tool a valuable effort, as each RESPTC was subsequently also prepared to test for Marburg virus.

The large number of outbreaks that occurred in this past year also identified the need to establish a weekly touchpoint with RESPTC leadership to discuss their readiness status with federal partners. The data, presented in the form of a stoplight dashboard, was shared weekly with HHS ASPR colleagues, and used to inform federal interagency partners including the National Security Council.

The SPRN protocol "Advancing Vaccine Research for High-Consequence Infectious Diseases" will collect biological specimens and clinical data from individuals offered a vaccine against a high-consequence pathogen, contributing to the development of a biorepository and enhancing SPRN's laboratory and bench research capacity.



# Global Relationship Building for Special Pathogen Preparedness

NETEC's International Partnerships and Programs (IPP) was established in FY22 to strengthen relationships with and learn from international partners working in special pathogens. Recognizing a niche space to be filled, IPP has focused on increasing networking of global high-level isolation units (HLIUs), i.e., facilities with similar capabilities and mandates as U.S. RESPTCs. In FY22, NETEC began by engaging with core partners from three countries; through the course of FY23, IPP partnerships grew to over 40 special pathogens programs in 19 countries.

## Global Rounds

Global Rounds are an opportunity for international HLIUs to virtually network, learn from each other's experiences, and discuss important topics unique to HLIUs. During FY23, they also served as a forum to rapidly share information during ongoing outbreaks, including during the Mpox and SUDV outbreaks. IPP hosted its first Global Rounds in FY22 with participants representing three countries (the United State, the United Kingdom, and Germany). In FY23, IPP held four closed-session Global Rounds that engaged 185 global experts representing over 40 special pathogens programs from 19 different countries.

Additionally, in June 2023, IPP partnered with NETEC Education and Training to provide a webinar on Highly Pathogenic Avian Influenza A (H5N1). Invitations for this Global Rounds were widely disseminated domestically and internationally, including by colleagues from the Pan American



NETEC subject matter experts authored a report on the November 2022 Global Rounds, which was published in *Open Forum Infectious Diseases*.

Herstein, J. J., Stern, K., Flinn, J., Garland, J. A., Lowe, A. E., & Sauer, L. M. (2023, April). Challenges and approaches to high-level isolation unit staffing and just-in-time training: a meeting report. In *Open Forum Infectious Diseases* (Vol. 10, No. 4, p. ofad152). US: Oxford University Press.



John Lowe, Jocelyn Herstein, Hiromi Hibino, and Vikram Mukherjee, at the International Transport Tabletop Exercise in San Francisco.

**TABLE 7**  
IPP Global Rounds Topics, Dates, and Formats

Topic	Date	Format
Mpox	September 2022	Presentations and Q&A
Sudan Ebola Virus & HLIU Staffing	November 2022	Presentations and Small Group Discussions
Transport	February 2023	Presentations and Small Group Discussions
International HLIU Survey Results	May 2023	Presentations and Small Group Discussions

Health Organization (PAHO) to their networks. Participants represented organizations from 16 countries in the region. IPP looks forward to building a relationship with PAHO in FY24 to further partnerships in this region.

## International High-Level Isolation Unit Survey

NETEC's IPP was established to build relationships with global special pathogens programs. To better understand global HLIUs' characteristics, existing partnerships, best practices, and challenges, as well as to gauge HLIUs' interests in increased collaboration and networking of HLIUs, IPP workgroup members drafted a global HLIU survey in Fall 2022. The survey was disseminated to 36 HLIUs; 31 units responded. These 31 units represented organizations in North America (11), Europe (16), Asia (3), and Australia (1), some of which NETEC had prior engagement with and others that were new relationships at the time.

Results of the survey demonstrated similarities and differences among global units. For example, all but one of the HLIUs established before 2020 played a role during the early days of the COVID-19 pandemic, including advising national governments, providing training at the local or national level, and participating in research. Additionally, while most units reported requirements for designation, those decrees came from many different, and often multiple, sources, with 74 percent requiring designation from the federal government, 58 percent from local government, and 39 percent from local health departments.

Following survey analysis, participating HLIUs were invited to a virtual session to discuss survey results. Six priorities for future networking and collaboration were identified in survey results: staffing, training, research, international coordination,

"Global Rounds have been a great forum for our team to connect with international colleagues in a niche specialty. The sharing of information and experiences from a range of biocontainment settings has been invaluable to us as we grow our own service."

— New South Wales Biocontainment Center, Sydney, Australia

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domestic outreach and coordination, and readiness assessments/metrics. During the virtual session, breakout rooms were held for each of those six priority areas to allow for all participating organizations to brainstorm and provide input on developing specific activities to address those areas.

The results from the International HLIU survey and subsequent virtual session will provide a foundation for future IPP activities to ensure activities meet the needs of the global high-level isolation community. All 31 units said they were interested in further collaboration, with the highest levels of interest indicated for in-person networking meetings and partnering on educational training. Participating units were asked to identify areas of best practices and challenges. Best practices were identified in order to identify peers that may have the knowledge and expertise

**TABLE 8**  
Reported Best Practices & Challenges from 31 Global High-Level Isolation Units

HLIU Topic of Interest	% indicating having a best practice in the topic	% indicating a challenge with the topic
Staffing	42%	71%
Training	68%	58%
Environmental/infection, prevention, and control	61%	23%
Physical infrastructure/design	68%	32%
Coordination or outreach to other hospitals, stakeholders, or public health	39%	65%
Waste management	52%	32%
Testing	42%	19%
Transport	42%	48%
Load-balancing of patients during surge events	29%	48%
Access to medical countermeasures	39%	48%
Research	39%	55%



Five subject matter experts from NETEC visited the National Center for Global Health and Medicine (NCGM) in Tokyo, Japan, for collaboration-setting discussions. While there, NETEC members had the opportunity to tour the NCGM high-level isolation unit and observe two drills.

to lead presentations and discussions on a specific topic while challenges will be used to set a shared agenda to collectively advance those areas.

### Partnership with Japan

This fiscal year, NETEC grew its relationship with Japan's National Center for Global Health and Medicine (NCGM) and Japan's Ministry of Health, Labor, and Welfare through a special liaison, Global Rounds, site visits, and resource-sharing. Dr. Hiromi Hibino, formerly a medical officer from the Japanese Ministry of Health, Labor, and Welfare, served as a NETEC liaison and was based in the U.S. from August 2022 to July 2023. Japan is currently laying the foundation for a new health security agency which will house a coordinating body for their national system for clinical management and research for special pathogens, comparable to NETEC's role within the NSPS. The purpose of Dr. Hibino's extended stay was to learn firsthand

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“Collaborating with NETEC has been transformative for Japanese infectious disease preparedness, I think. It provided me not just with knowledge but a clear understanding of infectious disease networks and the critical role they play in safeguarding U.S. and international public health. The training and guidance received have not only enhanced my knowledge but also connected me with U.S. stakeholders who manage high-consequence infectious diseases. In parallel, it has empowered me to actively promote the exchange of technical information and knowledge between Japan's experts and NETEC researchers, fostering a collaborative environment for tackling infectious diseases. This experience has broadened my horizons in terms of understanding preparedness for high-consequence diseases and has led to exploring potential collaboration avenues with specialists in Japan, strengthening the global network against health crises.”

— Dr. Hiromi Hibino, NCGM Senior Research Fellow who served as a NETEC liaison from August 2022 to July 2023



the NETEC infrastructure and operations by spending time at Bellevue and Emory, joining SPRN workgroup meetings, participating in monthly calls with the IPP Director and Program Manager, and attending RESPTC trainings and exercises. She was also a frequent attendee of Global Rounds and a participant in the International Transport Tabletop Exercise in San Francisco.

In October 2022, a delegation from NCGM visited the University of Nebraska Medical Center (UNMC) in Omaha, Nebraska, for a series of meetings and a tour of the Nebraska Biocontainment Unit. In June 2023, a NETEC team comprised of leadership from each of NETEC's four core activities (Sharon Vanairsdale Carrasco, Dr. Jocelyn Herstein, Dr. Abbey Lowe, Angie Vasa, and Stephanie Zechman) traveled to Tokyo to reciprocate that visit and continue collaboration-setting discussions between NCGM and NETEC. While at NCGM, the NETEC team presented an overview of NETEC and information about SPRN's central Institutional Review Board (IRB) that is used for rapid clinical research. The hosts at NCGM conducted two different drills and provided insight into their role during the COVID-19 pandemic, training requirements and assessment strategies, criteria for and coordination of Japanese biocontainment units, and clinical research. Finally, the NETEC team was able to walk through NCGM's biocontainment unit while using Avatour, a 360° video streaming platform, which enabled NETEC team members who did not take the trip to participate in the tour virtually.

Facilitated by IPP, UNMC's Nebraska Biocontainment Unit (NBU) is participating in a pilot “Twinning,” a dynamic peer-to-peer collaboration that includes networking and the exchange of ideas and resources. The UNMC/NBU and NCGM's Disease Control and Prevention Center

began Twinning in April 2023 and will finish a 1-year pilot in March 2024, although the hope is for the relationship between the two organizations to continue. The NBU/NCGM Twinning has included bimonthly calls to share experiences and practices for HLIU operations and piloting the use of the Avatour 360° streaming platform to facilitate virtual tours of HLIUs. A second Twinning pilot began

this year between Providence Sacred Heart and the Surrey Biocontainment Unit in Surrey, British Columbia, Canada. IPP is evaluating the two Twinning experiences in order to build a toolkit that encourages and facilitates other biocontainment units to match with an international peer, exchange ideas and resources, and learn best practices.

### International Technical Support Services (TSS)

IPP has also been able to provide support services to international colleagues in less formal settings (e.g., email) as HLIUs have reached out to NETEC with questions. In FY23, IPP, with the assistance of NETEC subject matter experts, was able to field inquiries from peers in Australia, Canada, and South Korea. Biocontainment unit development, protocols for testing samples, and perspectives on the Ebola vaccine for health care workers were among the topics these countries asked about.

### In-Person Networking Opportunities

In fall 2022, IPP Director Dr. Jocelyn Herstein was invited to Berlin, Germany, to observe a three-day bioterrorism exercise hosted by the Robert Koch Institute and Berlin Police. Dr. Herstein participated with other international partners as an exercise observer, specifically focusing on the intake of patients into a HLIU. The exercise assisted German partners in the development and revision of standard operating procedures, which were presented and discussed at a follow-up workshop in February 2023.

In May 2023, Christa Arguinchona, the program manager for the Special Pathogens Unit (SPU) and the Rapid Response Team at Providence Sacred Heart Medical Center and Children's Hospital in Spokane, Washington, and Caroline Croyle Persson, the Program Director for the Mountain Plains Regional Disaster Health Response System and biocontainment unit at Denver Health, attended the annual meeting of German HLIUs at the Robert Koch Institute in Berlin. As co-leads for the NETEC Biocontainment Leadership workgroup, Christa and Caroline presented lessons learned from U.S. RESPTCs for

biocontainment infrastructure and operations. In addition to the seven German HLIUs, representatives from HLIUs in Spain, the Netherlands, France, and Germany also provided information about their units and recent experiences.



Christa Arguinchona and Caroline Croyle Persson in Berlin presenting on RESPTC lessons learned in constructing a bio-containment unit at a meeting of high-level isolation units.

In FY23, the IPP team established an Advisory Group of core HLIU partners to guide IPP activities and ensure relevancy and value to the international HLIU community. The Advisory Group consists of members from countries with similar national systems of HLIUs, including the United Kingdom, Germany, and Singapore. The Advisory Group was kicked off at an in-person meeting in San Francisco in June 2023. The Advisory Group meeting gave IPP and its global peers an opportunity to set an agenda for the upcoming year that emphasized priorities revealed in the International HLIU survey and took into consideration the current HCID landscape.

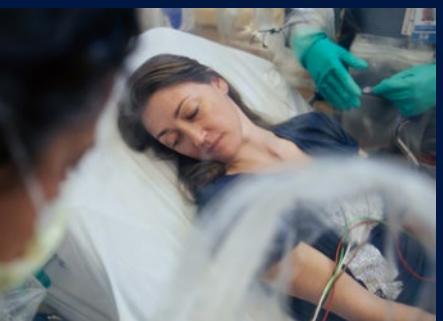
### International Transport Tabletop Exercise

The February 2023 Global Rounds on transport reinforced the relatively limited global capabilities for long-range air transport of a patient with a high-consequence infectious disease. To identify current global capacities and capabilities, and to begin to address gaps, NETEC organized an international transport tabletop exercise. Held in San Francisco, California, on June 2, 2023, representatives from 14 organizations participated in the exercise, including U.S. federal agencies, Phoenix Air Group, and key transport stakeholders from the United Kingdom, Singapore, Japan, Germany, and Norway. Major takeaways recommended the global collaboration on transport continue with further relationship building and additional exercises to build upon existing knowledge. Evaluation data also demonstrated that participants believed the tabletop allowed for agency practice and capability improvements as well as increased understanding about the current international transport landscape. Through the success and findings from this exercise, NETEC will emphasize ongoing domestic and international transport coordination activities.

## CONCLUSION



While continuing to navigate the complexities of global health challenges, NETEC remains steadfast in its mission to foster collaboration and ensure that health care systems worldwide are equipped to respond effectively to emerging threats. This annual report serves as a testament to NETEC's achievements, highlights the challenges it has faced, and outlines ongoing initiatives that position NETEC as a leader in infectious disease preparedness and response. Through collective efforts, NETEC stands ready to address the evolving landscape of special pathogens and contribute to a safer and more resilient global health community.



## ACKNOWLEDGMENTS

The accomplishments detailed in this report were made possible by the hard work and dedication of numerous individuals and organizations. It is impossible to mention them all here by name, however NETEC extends its heartfelt gratitude to the subject matter experts, clinicians, public health professionals, and other members of the 13 Regional Emerging Special Pathogens Treatment Centers, as well as to our public health partners and international partners. NETEC is funded by the U.S. Department of Health and Human Services (HHS) Administration for Strategic Preparedness and Response (ASPR).

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