National Special Pathogen System (NSPS) Strategy Summary

Initially Developed: June 2021

Last Updated: January 31, 2024
Background

The Challenge

The COVID-19 pandemic caused an unprecedented global crisis, taking millions of lives worldwide, overrunning the world’s health care systems, and upending the business world. In the United States, every community and industry felt the impact of COVID-19. Health care has been at the epicenter, as frontline clinicians and health care workers in the U.S. operated in crisis mode, managed an overwhelming surge in cases, and witnessed this national tragedy firsthand. Although COVID-19 impacted everyone, it became clear that COVID-19 hit at-risk populations harder than others. The pandemic exposed gaps and injustices in our health care and public health arenas that cannot be ignored.

We must invest now to solve these challenges and ensure the U.S. has a more effective, equitable, and sustainable response to the next special pathogen. We must break from temporary, unsustainable solutions and build a stronger national response capability for special pathogens to protect the health and security of all Americans. The Strategy and Implementation Plan were developed to accomplish this.

Summary of Gaps

The following gaps were identified in how special pathogen care is delivered in the U.S. today. These gaps were informed by research as well as interviews and working sessions with key health care and special pathogen leaders.

Figure 1. Summary of Gaps

Below is a summary of gaps sourced from the development of the NSPS Strategy.

<table>
<thead>
<tr>
<th>CARE DELIVERY</th>
<th>DATA AND TECHNOLOGY</th>
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<tbody>
<tr>
<td>Limited access to specialized special pathogen care</td>
<td>Unstandardized clinical research and health systems data collection and reporting</td>
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<td>Insufficient and unequal surge capacity at facilities across the U.S.</td>
<td>Inadequate and heterogeneous surveillance infrastructure</td>
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<td>Uncoordinated, inconsistent, and unscalable clinical guidance for various special pathogen scenarios</td>
<td>Inconsistent and duplicative requests for data and reporting at the local, state, and federal levels</td>
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<td>Disjointed development and distribution of therapeutics</td>
<td>Non-timely and inconsistent sharing of data between institutions and public health agencies</td>
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<td>Inequitable care to minority groups</td>
<td>Limited visibility of health care readiness at the local level</td>
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</table>

"We need our people involved in the decisionmaking process - clinicians know what's happening because we're boots on the ground."

COMMUNICATION AND COORDINATION

| Inconsistent partnership between health care and public health | Limited visibility of health care readiness at the local level |
| Unclear roles of various stakeholders in the special pathogen ecosystem across readiness, response, and recovery | "We need consistency across what data are important to collect and SOPs around timely data reporting to be able to use data to accurately make decisions."

"We need to do better than having nice people agree to work well together."

WORKFORCE

| Limited quantity of health care workers trained in special pathogen diagnosis and care | Limited financial preparedness of care delivery facilities |
| Limited special pathogen education, training, and regular drills | Lack of incentives for special pathogen health care beyond grants or cooperative agreements, which are not a reliable source of funds to maintain readiness |
| Limited health workforce capacity | "This is the same problem throughout emergency preparedness more broadly-funding. Our planning horizon is nonexistent without external pressures."

"We need to retain the generational knowledge and expertise from this pandemic."

RESEARCH AND KNOWLEDGE GENERATION

| Operational networks and research networks are not appropriately connected | Unclear and inconsistent recommendations for PPE, ventilators, vaccines, and other equipment recommendations |
| Early-clinical findings are disseminated informally and nonsystematically | Limited quantity and inconsistent quality control of PPE, ventilators, vaccines, and other equipment |
| Limited timely, easily accessible, and transparent clinical and health systems research | Inequitable distribution of PPE and other supplies, equipment, and resources |

"Rapid surges of need strain the supply chain and lead to poor quality products and PPE."

MONITORING AND EVALUATION

| Limited coordination between health care leaders and policymakers in response and recovery (e.g., licensure, emergency funding) | Limited visibility of health care readiness at the local level |
| "We need to do better than having nice people agree to work well together."

FINANCIAL SUSTAINABILITY

| Limited financial preparedness of care delivery facilities | Limited visibility of health care readiness at the local level |
| Lack of incentives for special pathogen health care beyond grants or cooperative agreements, which are not a reliable source of funds to maintain readiness |

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SUPPLY CHAIN

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The Case for Change
More special pathogens will emerge in the future. The timing of outbreaks will continue to be difficult to predict, but their imminent occurrence is a certainty. People are living in higher density areas, which increases the likelihood of special pathogen outbreaks when transmission is person-to-person. In addition, intercontinental travel is faster and more frequent than ever before, allowing for rapid global spread of transmissible infectious diseases. As humans continue to stress natural ecosystems, human-animal interfaces will increase, furthering the spread of emerging infections from animal reservoirs. Extreme weather events and globalization have exacerbated this threat in the 21st century, with experts expecting special pathogen outbreaks to increase in frequency. Emerging infectious diseases, irrespective of site of origin, will continue to require attention and capacity to protect life and longevity in the U.S.

Through funding from the HHS Administration for Strategic Preparedness and Response (ASPR), the National Emerging Special Pathogens Training and Education Center (NETEC) spearheaded the development of a NSPS Strategy and Implementation Plan to address the gaps in special pathogen preparedness and response in the U.S. NETEC gathered input from over 70 people, including federal and state governmental representatives, healthcare system leaders, and national specialty organization representatives. Three domain-based sub-teams and advisors created the NSPS strategy that follow.

The National Special Pathogen System (NSPS) Strategy

Mission
To provide a coordinated and standardized health care network of high-quality, patient- and community-centered care for patients suspected of or infected by a special pathogen in the United States, while protecting the health workforce

Vision
To save lives through a sustained, standardized special pathogen system of care that enables health care personnel and administrators to provide agile and high-quality care across the care delivery continuum

The vision can be illustrated through aspirational success measures, which include:

- Zero preventable deaths after special pathogen infection
- A mobilized network within two hours of special pathogen suspected
- Access to high-quality special pathogen care for 100% of the U.S. population

Components of the NSPS

The National Special Pathogen System (NSPS) is composed of a System of Care (built on the existing delivery system), a Coordinating Body, and other relevant partners with capabilities and roles in readiness, response, and recovery for special pathogen events to support the care continuum administrators and health care personnel. To operate a well-functioning and coordinated system of a care, the NSPS must implement an operating model.

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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. The Coordinating Body will enable coordination and standardization across the NSPS System of Care and the broader NSPS. There is a need for a Coordinating Body to coordinate and unify public and private entities in protecting national health security and leading with a commitment to equity. The Coordinating Body will support tiered facilities in providing high-quality, patient- and community-centered care by coordinating across the System of Care and with partners with roles in response, readiness, and recovery.

Note: NETEC has been designated by Congress as the Coordinating Body of the NSPS: H.R.2617 - Consolidated Appropriations Act, 2023 “directs NETEC to serve as the NSPS coordinating body... [responsible for] establishing a robust NSPS and integrating NSPS with other health care delivery systems of care for emergencies, such as the trauma system.”

The System of Care is the tiered structure organizing care facilities to ensure access to and equity in special pathogen care delivery. The purpose of the NSPS System of Care is aligned directly to the mission of the NSPS – it supports an ongoing focus on patient- and community-centered special pathogen care while protecting the health workforce and provides the coordination needed to save lives. The System of Care is designed to provide coordinated, standardized, and equitable care to patients infected by (or suspected to have been infected by) a special pathogen, such as COVID-19, in the U.S. The challenge is to prepare the System of Care for a wide range of special pathogen scenarios, including localized outbreaks of highly unusual pathogens, regional epidemics with local surges in case volumes, and a pandemic. System of Care facilities (e.g., hospitals, urgent care centers, skilled nursing facilities and long-term care centers) are stratified by tiers to organize the NSPS by capability level. Facilities in the System of Care make operational decisions about resourcing and load balancing and receive support from NETEC as the Coordinating Body with coordination and capacity building across the care continuum.
Table 1. System of Care Levels
The table lists the System of Care levels, including their value propositions.

<table>
<thead>
<tr>
<th>Level</th>
<th>Value Propositions</th>
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<tr>
<td><strong>Level 4 (Most health care entities in the U.S., including outpatient care facilities)</strong></td>
<td>Level 4 facilities can identify, isolate, inform, &amp; initiate stabilizing medical care; protect staff; and arrange timely patient transport to minimize impact to normal facility operations.</td>
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<td><strong>Level 3 (Approx. 200-300 facilities across the U.S.)</strong></td>
<td>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.</td>
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<tr>
<td><strong>Level 2 (Approx. 100 facilities across the U.S.)</strong></td>
<td>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.</td>
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<td><strong>Level 1 (Approx. 10-20 facilities across the U.S.)</strong></td>
<td>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.</td>
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Goals, Objectives, and Sub-Objectives
The NSPS Strategy is designed to accomplish the following goals and objectives to fill the gaps in today’s special pathogen system of care.

Table 2. Goals, Objectives, and Sub-objectives
The table lists the goals, objectives, and sub-objectives of the NSPS.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objective</th>
<th>Sub-objective</th>
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<tr>
<td><strong>Goal 1: Establish and operationalize NETEC as the Coordinating Body and the System of Care</strong></td>
<td><strong>Objective 1.1- Operating Model:</strong> Design and operationalize the operating model of NETEC as the Coordinating Body and the System of Care</td>
<td><strong>Sub-objective 1.1.1</strong> - Determine the organization (e.g., existing organization, new organization) accountable for the activities of NETEC as the Coordinating Body <strong>Sub-objective 1.1.2</strong> - Design the operating model of NETEC as the Coordinating Body and System of Care <strong>Sub-objective 1.1.3</strong> - Implement the operating model of NETEC as the Coordinating Body and System of Care</td>
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<td><strong>Objective 1.2- Financial Foundation:</strong> Initiate additional financial mechanisms and revenue streams to support NETEC activities of the Coordinating Body and the System of Care</td>
<td><strong>Sub-objective 1.2.1</strong> - Identify financial mechanisms and revenue streams to support NETEC as the Coordinating Body and supplement System of Care funding <strong>Sub-objective 1.2.2</strong> - Establish processes to obtain funding for the NSPS</td>
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<td><strong>Objective 1.3- Communications Foundation:</strong> Establish communications channels and educate relevant partners to gain buy-in and commitment for the NSPS</td>
<td><strong>Sub-objective 1.3.1</strong> - Educate special pathogen leaders, including Congress, on the need for the formalization of the NSPS <strong>Sub-objective 1.3.2</strong> - Gain buy-in and commitment from key partners to participate in the NSPS, particularly via the System of Care and NETEC as the Coordinating Body</td>
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<td><strong>Goal 2: Unify and strengthen patient- and community-centered</strong></td>
<td><strong>Objective 2.1- Care Delivery:</strong> Enable access to high-quality, equitable care for patients infected by a special pathogen via a tiered, national System of Care with defined capabilities relating to special pathogen care</td>
<td><strong>Sub-objective 2.1.1</strong> - Coordinate a tiered, national System of Care with defined capabilities relating to special pathogen care <strong>Sub-objective 2.1.2</strong> - Provide standards, guidance, and support services across the incident</td>
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<tr>
<td>Goal</td>
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<tr>
<td><strong>Goal 1:</strong> Special pathogen care across the care delivery continuum and the incident lifecycle</td>
<td>National System of Care with defined capabilities to provide special pathogen care</td>
<td>Lifecycle for all types of special pathogen outbreak scenarios to the System of Care facilities and providers. <strong>Sub-objective 2.1.3:</strong> Maintain pre-determined capabilities (e.g., surge plans, waste management, load balancing) that align to readiness expectations for the tiers. <strong>Sub-objective 2.1.4:</strong> Develop and maintain national, state, and local partnerships (e.g., government health agencies, professional associations) to support care delivery.</td>
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<tr>
<td><strong>Objective 2.2:</strong> Communication &amp; Coordination: Strengthen communication and coordination within the System of Care, the broader NSPS, and the public</td>
<td><strong>Sub-objective 2.2.1:</strong> Gather inputs from and promote collaboration with relevant partner organizations (e.g., government, national expert organizations) to inform operations and development of national standards and resources. <strong>Sub-objective 2.2.2:</strong> Share educational, science-based special pathogen information with the public and policymakers. <strong>Sub-objective 2.2.3:</strong> Stand up and leverage communication channels to disseminate guidance and standards within the Network, the broader NSPS partners, and the public.</td>
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<td><strong>Objective 2.3:</strong> Workforce: Maintain a trained, diverse, and specialized workforce to equip the System of Care and prepare for a surge</td>
<td><strong>Sub-objective 2.3.1:</strong> Support and train clinicians and health care workers across the System of Care on special pathogen care delivery. <strong>Sub-objective 2.3.2:</strong> Explore models to enable flexible workforce solutions to respond in special pathogen events.</td>
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<td><strong>Objective 2.4:</strong> Research &amp; Knowledge Generation: Accelerate sharing of special pathogen treatment and research efforts in partnership with industry and government</td>
<td><strong>Sub-objective 2.4.1:</strong> Serve as a central research hub to facilitate effective clinical and health systems research, data collection and analysis, delivering timely information to improve clinical care, workforce and health system management, and quality control within the NSPS. <strong>Sub-objective 2.4.2:</strong> Promote the collection of data and exchange of best practices across the System of Care and NSPS partners; these system-wide data will inform the efforts of designated NSPS researchers.</td>
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<td><strong>Goal 3:</strong> Sustain infrastructure for a coordinated and standardized special pathogen health care system</td>
<td><strong>Objective 3.1:</strong> Data &amp; Technology: Facilitate the collection, integration, analysis, and dissemination of data, and maintain connectivity to existing surveillance to support evidence-based decision making</td>
<td><strong>Sub-objective 3.1.1:</strong> Design solutions, agreements, and protocols to support the sharing of and access to data to empower special pathogen preparedness and response. <strong>Sub-objective 3.1.2:</strong> Identify and provide reliable data and clinical and operational guidance to System of Care facilities and partners based on data analysis and connectivity to existing surveillance.</td>
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<tr>
<td><strong>Objective 3.2:</strong> Monitoring &amp; Evaluation: Designate System of Care facilities by level based on capability and financial and operational readiness during response, recovery</td>
<td><strong>Sub-objective 3.2.1:</strong> Designate and set standards for System of Care facilities across tiers. <strong>Sub-objective 3.2.2:</strong> Evaluate and monitor financial and operational readiness during response, recovery.</td>
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</table>
Goal | Objective | Sub-objective
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continuously monitor readiness | **Objective 3.3- Financial Sustainability:** Sustain the System of Care and NETEC as the Coordinating Body through continuous diverse funding sources | **Sub-objective 3.3.1-** Coordinate additional funding for System of Care facilities through partnerships with relevant organizations, including private donors  
**Sub-objective 3.3.2-** Coordinate incentives for System of Care facilities to maintain capabilities and partners in planning and response  
**Sub-objective 3.3.3-** Support resource requests for emergency funding during extraordinary events

**Objective 3.4- Supply Chain:** Improve equitable distribution and allocation of resources, and provide support for utilization and management of resources | **Sub-objective 3.4.1-** Provide standards and guidance for special pathogen care delivery resource utilization and management to the System of Care facilities, clinicians, and health care workers  
**Sub-objective 3.4.2-** Support development, procurement, and distribution of resources to System of Care facilities  
**Sub-objective 3.4.3-** Support equity in addressing supply chain shortfalls through equitable distribution and management of resources

**How to Adopt this System**
The Implementation Plan illustrates how the strategy design can be implemented, advanced, and sustained by “owners” of key components of the strategy. The implementation plan will be agile and continuously updated based on further NSPS design and new priorities.

NETEC has convened experts across the health care ecosystem to develop the NSPS Strategy and Implementation Plan. Furthermore, the NETEC has implemented prioritized sub-objectives of the NSPS Strategy to design, establish, and operationalize the Coordinating Body and System of Care operating models. These operating models have and continue to be developed with robust involvement from public and private sectors contacts and with consideration for feasibility and impact. NETEC will continue working to establish governance and funding for the system. Funding may be obtained using mechanisms for seed funds and once seed funding is obtained, the NSPS must establish operational funding mechanisms to be used for sustaining the system (see Table 5). In addition, NETEC has begun piloting the System of Care with select groups of participants from each level.

**Acknowledgments**
This strategy was developed with over 70 individuals and organizations who have lent their expertise and time to develop the NSPS and was led and sponsored by the NETEC Steering Committee, who oversaw and managed the development of the strategy. NETEC expresses gratitude to over 30 individuals who provided their time and ideas in the early stages of the strategy development. NETEC would also like to thank the Core Advisory Group participants, Work Group participants, Greenhouse Lab participants, and NETEC staff who have provided significant time and commitment to shaping the strategy. The Core Advisory Group consisted of members that advised and provided objective strategic direction to the strategy. The Work Group leads and members designed the NSPS target operating model and brought special pathogen and health care experience and expertise to the table. Greenhouse Lab participants provided insights in focused working sessions to advise the strategy. NETEC staff provided expertise, program management support, and communications support.
These participants are presented in alphabetical order below. Please note that the viewpoints expressed in this strategy do not necessarily reflect the viewpoints of the acknowledged individuals nor their organizations.

- Shantanu Agrawal, MD, Anthem, Inc., Chief Health Officer
- Sonia Bell, MBA, Emory University and the National Emerging Special Pathogen Education and Training Center, Associate Director
- Nahid Bhadelia, MD, MALD, Boston University Center for Emerging Infectious Diseases Policy and Research (CEID), Founding Director
- Paul Biddinger, MD, FACEP, Massachusetts General Hospital, Director
- Jim Blumenstock, MHA, Association of State and Territorial Health Officials (ASTHO), Senior Vice President, Pandemic Preparedness and Response
- Eileen Bulger, MD, FACS Harborview Medical Center, Chief of Trauma
- Erika Cabato, Centers for Disease Control and Prevention, Preparedness Field Assignee
- Brendan Carr, MD, MS, Icahn School of Medicine at Mount Sinai, System Chair of Emergency Medicine
- Sreekanth Chaguturu, MD, CVS Health, Chief Medical Officer
- Jen Chambers, the National Emerging Special Pathogen Training and Education Center, Training and Education Program Coordinator
- Erika Cheung, BSN, RN, CPN, Children’s Hospital Los Angeles, Program Manager, Office of Emergency Management
- Jeff Dichter, MD, University of Minnesota Health, Critical Care Intensivist
- Monifa Drayton, MPA, Atrium Health, Assistant Vice President Quality
- William Dunne, University of California – Los Angeles Health, Emerging Infectious Disease Preparedness, Administrative Director of Emergency Preparedness, Security, and Safety
- Cole Edmonson, DNP, FAAN, AMN Healthcare, Chief Experience and Clinical Officer
- Laura Evans, MD, University of Washington Medical Center, Medical Director of Critical Care
- Joseph J. Fifer, Healthcare Financial Management Association, President and CEO
- Nancy Foster, American Hospital Association, Vice President of Quality and Patient Safety
- John Gallina, Chief Financial Officer, Anthem Inc.
- Brian Garibaldi, MD, Johns Hopkins, Director of the Johns Hopkins Biocontainment Unit, Associate Professor of Medicine
- Jennifer Garland, RN-BC, PhD, CIC, Cedars-Sinai, Special Pathogens Clinical Program Manager
- Michael Gelman, MD, Veterans Health Administration, Director of Infection Control and Antibiotic Stewardship Programs
- Tina Grande, Healthcare Leadership Council, Executive Vice President for Policy
- Janet Hamilton, Council of State and Territorial Epidemiologists, Executive Director
- Richard Hunt, MD, Assistant Secretary for Preparedness and Response, U.S. Department of Health & Human Services, Senior Medical Advisor
- Amanda Jezek, Infectious Diseases Society of America, Senior Vice President of Public Policy & Government Relations
- B. Tilman Jolly, MD, Emergency Physician at Inova Health System, Chief Medical Officer at Aveshka supporting the Office of the Assistant Secretary for Preparedness and Response
- Susan Kline, MD, MPH, University of Minnesota Medical Center, Medical Director
- Amy Li, PhD, Emory Center for Digital Scholarship and the National Emerging Special Pathogens Education and Training Center, Communications Specialist
- Kenneth Lipper, JD, LLM, Lipper & Co., Chairman
- Chris Mangal, MPH, Association of Public Health Laboratories, Director of Public Health Preparedness and Response
- Andrew Masica, MD, Texas Health Resources, Chief Medical Officer
On behalf of the NETEC Steering Committee, thank you.

John Lowe, PhD
Assistant Vice Chancellor for Health Security Training and Education
Professor of Environmental, Agricultural and Occupational Health

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Vikramjit Mukherjee, MD
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NETEC | National Special Pathogen System (NSPS) Steering Committee 2021

Following the initial publication of the NSPS Strategy and the launch of the implementation period, NETEC and ASPR have undergone significant changes that include updates to terminology and roles and responsibilities. The most recent update incorporates most of these nomenclature changes to reflect their latest priorities while maintaining the integrity of the original strategy design.

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