Joint external evaluation of the International Health Regulations (2005) core capacities of the United States of America

Mission report

18–25 September 2024

World Health Organization

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Abbreviations

ACIP	Advisory Committee on Immunization Practices
APH	Animal-Plant Health
APHIS	Animal and Plant Health Inspection Service
ASPR	Administration for Strategic Preparedness and Response
ASTHO	Association of State and Territorial Health Officials
BARDA	Biomedical Advanced Research and Development Authority
CARB	Combating Antibiotic-Resistant Bacteria
CDC	Centers for Disease Control and Prevention
CLIA	Clinical Laboratory Improvement Amendments of 1988
CMS	Centers for Medicare and Medicaid Services
COVID-19	coronavirus disease
Crim-Epi	Joint Criminal-Epidemiologic Investigation Model
DHS	Department of Homeland Security
DOD	United States Department of Defense
DOT	United States Department of Transportation
EMT	emergency medical team
EOC	emergency operations centre
EPA	United States Environmental Protection Agency
FDA	United States Food and Drug Administration
FEMA	Federal Emergency Management Agency
FIOP	Federal Interagency Operational Plan
HCAI	healthcare-acquired infection
HHS	Department of Health and Human Services
IHR	International Health Regulations
JEE	Joint External Evaluation
LRN	Laboratory Response Network
MCM	medical countermeasures
MDRO	multidrug-resistant organisms
NACCHO	National Association of County and City Health Officials
NFP	national focal point
NHSN	National Healthcare Safety Network
NIH	National Institutes of Health
NRF	National Response Framework

NRIA	National Radiological Incident Annex
PHEMCE	Public Health Emergency Medical Countermeasures Enterprise
PHL	public health laboratory
R&D	research and development
SLTT	state, local, tribal and territorial jurisdictions
SNS	Strategic National Stockpile
SOP	standard operating procedure
SPAR	States Parties self-assessment annual reporting
SSCC	ship sanitation control certificate
SSCEC	ship sanitation control exemption certificate
UN	United Nations
USDA	United States Department of Agriculture
VFC	Vaccines for Children programme
WGS	whole genome sequencing
WHO	World Health Organization
WOAH	World Organisation for Animal Health

Executive summary

The Joint External Evaluation (JEE) team would like to express its appreciation to the United States of America for volunteering to undertake a second JEE using the third edition of the JEE tool. This revised edition of the tool incorporates relevant lessons of the COVID-19 pandemic and other public health emergencies.

The JEE team sincerely appreciates the United States' efforts to meet the requirements of the JEE process, and the warm hospitality that was offered to the JEE team. All countries that make the effort to undergo the JEE process should be commended for the transparency they have shown in service of strengthening global health security.

Findings from the Joint External Evaluation

During the JEE mission, which took place in Washington, DC and Atlanta, Georgia from 18 to 25 September 2024, the United States' capacities in 19 technical areas were evaluated through a peer-to-peer, consultative process. This process brought together a multisectoral group of national subject matter experts and the multinational, multidisciplinary expert JEE team for a week of discussion, interaction and selected site visits.

After a week of collaborative talks this process led to consensus on scores, as well as JEE recommendations for priority actions across the 19 technical areas.

The evaluation also generated eight wider, overarching recommendations that, if implemented, will consolidate the United States' progress and remove bottlenecks that might impede implementation of the agreed priority actions. These recommendations, outlined below, address cross-cutting challenges affecting the capacities of the United States across many of the different technical areas that were explored in greater depth in the JEE process.

Overarching recommendations of the JEE

1. Structures: continue to improve alignment and harmonization of political, legal, and technical frameworks across all regions and territories.

2. Extend preparedness to the level of state, local, tribal and territorial (SLTT) jurisdictions, ensuring that any capacity gaps in SLTTs are addressed so that preparedness, prevention, detection and response are rooted at local level.

3. Workforce: ensure close monitoring of the US$ 7 billion American Rescue Plan workforce investments and other initiatives to strengthen the future public health workforce, addressing declining trends in workforce numbers and the high proportion of staff considering leaving the public sector.

4. Funding: maintain investment in preparedness through existing agencies and programmes and consider reviewing the cost effectiveness of how funds are currently used, with particular focus on addressing fragmentation and duplication.

5. Trust: strengthen community engagement to improve the impact of emergency responses, with focus on building trust – ensuring the inclusion of communities that are harder to reach, or which have diverse needs.

6. Strengthen trust in data, services, and systems.

7. Equity: continue measures to ensure health security for all the population of the United States, addressing existing inequities and working to expand coverage of essential health care through federal initiatives, more and better partnerships, and improved health literacy and research.

8. Solidarity: continue the United States' admirable contributions to global health security and solidarity, maintaining the willingness to share the benefits of its high capacity through deployment of staff to other parts of the world, training, capacity building, and sharing of knowledge and best practices.

The United States of America: scores and priority actions

Scores: 1=No capacity; 2=Limited capacity; 3=Developed capacity; 4=Demonstrated capacity; 5=Sustainable capacity.

Technical areas	Indicator number	Indicator	Score	Priority Actions
Prevent				
P1. Legal instruments	**P1.1.**	Legal instruments	**4**	• Develop and implement a strategy to institutionalize national and subnational legal preparedness priorities and workforce development activities across the United States Government. • Integrate legal preparedness into agency funding mechanisms and partnership agreements to enhance legal preparedness capabilities across the subnational public health system. • Enable comprehensive national and subnational legal mapping, both by minimizing barriers to accessing legal instruments and by establishing comprehensive data platforms conducive to regular qualitative analysis and quantitative measurement of legal instruments. • Develop and deploy interpretive guidance on the States Parties self-assessment annual reporting (SPAR) gender equality/equity indicator across federal agencies, utilize the guidance to complete the SPAR mandate and to ensure an agreed interagency understanding of gender equity policies and programmes across the federal government.
	P1.2.	Gender equity and equality in health emergencies	**3**	
P2. Financing	**P2.1.**	Financing for IHR implementation	**3**	• Continue to work with state, local, tribal and territorial (SLTT) jurisdictions to enhance availability and timeliness of financing for IHR implementation and public health emergency response capacities, which may vary by jurisdiction. • Address gaps, within federal control, by strengthening federal and local level partnership; leveraging state and local national organizations such as Association of State and Territorial Health Officials (ASTHO) and National Association of County and City Health Officials (NACCHO) that track subnational financing data to identify challenges faced by local jurisdictions and the impact of federal investments.

Technical areas	Indicator number	Indicator	Score	Priority Actions
	P2.2.	Financing for public health emergency response	3	• Focus on improvements to enhance data sharing, coordination, and mobilization of resources at the local level. • Strengthen partnerships with state and local national organizations (e.g., ASTHO, NACCHO) to identify how funds are allocated and spent at subnational level and better understand state and local level resources for emergency response. • Continue multi-agency coordination work on framework and strategic documents that help promote and coordinate funding focused on IHR implementation and public health emergency response capabilities. • Leverage after-action assessments to identify and promote implementation of best practices particularly when coordinating on complex challenges that can involve coordination across federal, state and local levels. • Continue prioritizing funding requests to address programme areas with potential gaps. • Continue to consider current gaps or emerging challenges in the national preparedness framework in developing the annual budget to Congress. • Consider additional flexibilities that could be proposed to support future response needs. Specific examples of previous proposals that could help shape future requests include building up reserve funds to address a broad range of threats, enhanced transfer authorities, proposing more flexibility within an agency programme funding, and other legislative proposals to expand or revise our current authorities.
P3. IHR coordination, national IHR focal point functions and advocacy	P3.1.	National IHR focal point functions	5	• Work within HHS to find ways for HHS Office of Global Affairs, HHS Administration for Strategic Preparedness and Response (ASPR), and the ASPR-managed HHS Secretary's Operation Centre to increase dedicated funding for the IHR National Focal Point (NFP). • Update national action plans for IHR preparedness or health security at least annually, based on risk assessments, simulation exercises and after-action reviews; and engage and sensitize decision-makers at national and subnational levels on outstanding issues and progress. • Engage with interagency offices, and encourage agencies to engage with subnational partners, when compiling the annual SPAR tool and developing or updating action plans to address gaps identified by the SPAR. • Conduct an analysis of pathways to codifying the IHR NFP's authority in federal law. • Train state, local and related interagency offices in reporting and receiving notifications, and follow-up actions in support of the IHR NFP.
	P3.2.	Multisectoral coordination mechanisms	5	
	P3.3.	Strategic planning for IHR, preparedness or health security	4	

Technical areas	Indicator number	Indicator	Score	Priority Actions
P4. Antimicrobial resistance (AMR)	P4.1.	Multisectoral coordination on AMR	5	• Develop the next National Action Plan for AMR for implementation between 2025 and 2030, with the goal of reducing rates of AMR in humans in the United States to pre-COVID levels or below, including by: • convening the United States Government subject matter experts to propose and finalize key actions that build on current capacity; • addressing priority needs identified by the United States Government and stakeholders from a One Health perspective; and • fulfilling commitments identified in the 2024 Political Declaration of the United Nations (UN) General Assembly High-Level Meeting on AMR. • Continue efforts to increase interoperability of surveillance systems across all sectors by expanding collaboration in joint analyses and interpretation of data and increasing the overlap of pathogen drug combinations or species sequences tested across all sectors. • Improve the development of innovative methods and products to prevent, test and treat AMR in the United States and globally by: • providing financial and non-financial support to product developers and sponsors at all pipeline stages; • expanding research and development (R&D) of pathogen reduction products, vaccines, diagnostics and other therapeutics; and • facilitating access to and optimizing use of products under antibiotic stewardship principles. • Further improve antimicrobial use surveillance in the human health sector through expanding systematic feedback to individual prescribers and improving coverage of antimicrobial use surveillance. • Establish and expand more coordinated systems to collect and analyse antimicrobial use data in animals, in order to improve and expand antimicrobial stewardship recommendations for animal health and agriculture.
	P4.2.	Surveillance of AMR	4	
	P4.3.	Prevention of multidrug-resistant organisms (MDRO)	5	
	P4.4.	Optimal use of antimicrobial medicines in human health	4	
	P4.5.	Optimal use of antimicrobial medicines in animal health and agriculture	4	
P5. Zoonotic disease	P5.1.	Surveillance of zoonotic diseases	3	• Develop mechanisms that ensure interoperability between public health and animal health surveillance systems for priority zoonotic diseases and which provide common platforms for data management, mapping and visualization. • Develop interoperable computer information and communications systems that work across the interagency space to enhance intersectoral collaboration and coordination • Develop, validate and support the use of models and risk prediction tools, including joint and coordinated risk assessments, that include data from human, wildlife and domestic animal surveillance.

Technical areas	Indicator number	Indicator	Score	Priority Actions
	P5.2.	Response to zoonotic diseases	4	• Expand zoonotic disease surveillance to cover animal populations currently not included in public health or animal health surveillance systems, with a focus on companion animals. • Develop a flexible One Health framework for coordinated zoonotic disease outbreak investigations and responses that involve all relevant departments and agencies, and which include real-time coordination of research nee
	P5.3.	Sanitary animal production practices	4	
P6. Food safety	P6.1.	Surveillance of foodborne diseases and contamination	5	• Finalize industry guidance for the Food Traceability Rule and engage with the United States and international regulators and industry on HHS Food and Drug Administration's implementation plan and enforcement strategy. • Increase infrastructure and capacity of the PulseNet network to expand the use of whole genome sequencing and increase the range of pathogens included in PulseNet surveillance. • Expand data sharing and collaboration to support outbreak identification and prevention of foodborne outbreaks. • Prioritize research to fill data gaps and inform science-based policy- and decision-making. • Collaborate with federal, state, industry, consumer and academic stakeholders to advance, standardize, and promote the use of root cause analysis protocols for food safety.
	P6.2.	Response and management of food safety emergencies	5	
P7. Biosafety and bios-ecurity	P7.1.	Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	4	• Investigate the feasibility of developing a national registry system for high and maximum containment laboratories, giving the Government visibility of all biological laboratories across the United States. • Support the development of national biosafety and biosecurity core competency requirements by establishing minimum standards for professionals working across all laboratory containment levels, including high and maximum containment laboratories. • Support the development of additional national level biosafety and biosecurity training programmes to expand the capacity of biosafety and biosecurity professionals in the nation. • Investigate the feasibility of a mechanism for life sciences research at non-federally funded institutions to be compliant with the United States Government Oversight Policy to ensure research that may pose a threat to public health, safety, or national security has undergone appropriate risk-based review including mitigation methods
	P7.2.	Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	4	

Technical areas	Indicator number	Indicator	Score	Priority Actions
P8. Immuniza-tion	P8.1.	Vaccine coverage (measles) as part of national programme	5	• Support adult immunization through various means, including communicating the importance of vaccinations through the "Risk Less, Do More" campaign, funding states to provide no-cost COVID-19 vaccines to uninsured or underinsured adults, and exploring other ways to strengthen adult immunization in the United States. • Support states with adopting and implementing established guidance and functional standards for immunization information systems, and meeting data quality goals and targets. • Carry out periodic integrated impact assessments and revision of campaigns promoting uptake and confidence in vaccines and immunization services (such as "Let's RISE" and "Risk Less, Do More"), guided by evidence from social and behavioural surveys and related operational research. • Empower communities of focus by providing learning opportunities, sharing resources, engaging with experts, and partnering with other agencies and organizations to increase reach and impact.
	P8.2.	National vaccine access and delivery	5	
	P8.3.	Mass vaccination for epidemics of vaccine-preventable diseases (VPDs)	5	
Detect				
D1. National laboratory systems	D1.1.	Specimen referral and transport system	4	• Leverage existing partnerships to ensure sample and data sharing. • Strengthen bioinformatics to inform future metagenomic technologies by reinforcing training and strengthening capacity to detect emerging infectious pathogens. • Improve information sharing and integrate laboratory capacities across the human and animal health sectors. • Ensure funding to create sustainable capacity and capability in public health and veterinary laboratories. • Improve existing systems for electronic reporting of laboratory data and ensure their use.
	D1.2.	Laboratory quality system	5	
	D1.3.	Laboratory testing capacity modalities	5	
	D1.4.	Effective national diagnostic network	5	
D2. Surveil-lance	D2.1.	Early warning surveillance function	5	• Expand surveillance coverage at all levels from federal to SLTT, including by: • expanding syndromic surveillance beyond large metro areas to rural areas and small healthcare facilities like primary care and critical access hospitals; • increasing the number of targets detected by wastewater surveillance (with appropriate validations); and • sustaining investments in event-based surveillance for early warning, focusing on domestic detection and prompt reporting to WHO. • Implement a common data operating platform and increase the number of programmes being integrated. This should be accompanied by specifications of the minimal dataset, data standards and interoperability for electronic case reporting.

Technical areas	Indicator number	Indicator	Score	Priority Actions
	D2.2.	Event verification and investigation	5	• Advance the timeliness of acquisition, analysis and dissemination of key healthcare data for public health action during an emergency, measured through initial reports of suspect cases generated from electronic case reporting protocols.
	D2.3.	Analysis and information sharing	4	
D3. Human resources	D3.1.	Multisectoral workforce strategy	4	• Ensure that workforce monitoring is able to identify professional groups and geographic locations that may be underserved, tracking inflows and outflows of public health specialists in the local, state, and federal workforce. • Sustain funding to maintain IHR-relevant capabilities and the expanded workforce created during the COVID-19 pandemic, recognizing the current importance of federal funding in maintaining key capacities at state and local levels. • Ensure that training and availability of surge staffing encompasses not only technical specialists, but also professionals who provide enabling functions such as programme administration and legal advice.
	D3.2.	Human resources for implementation of IHR	4	
	D3.3.	Workforce training	5	
	D3.4.	Workforce surge during a public health event	5	
Respond				
R1. Health emergency management	R1.1.	Emergency risk assessment and readiness	5	• Ensure joint testing that involves federal agencies and a broader range of SLTTs in emergency response – particularly through exercise scenarios requiring the sending and receiving of surge personnel. • Identify, prioritize and close gaps in access to resources, assets and technical assistance for SLTT partners in public health responses, with particular focus on tribal and territorial communities and resources for seldom-encountered and/or emerging threats. • Establish adequate and consistent funding for medical countermeasures (MCM), especially those that are necessary for an immediate response to future outbreaks and pandemics.
	R1.2.	Public health emergency operations centre (PHEOC)	4	
	R1.3.	Management of health emergency response	5	
	R1.4.	Activation and coordination of health personnel in a public health emergency	4	
	R1.5.	Emergency logistic and supply chain management	5	
	R1.6.	Research, development and innovation	5	

Technical areas	Indicator number	Indicator	Score	Priority Actions
R2. Linking public health and security authorities	**R2.1.**	Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological, chemical or radiological event	**5**	• Conduct comprehensive subnational and local level training on the Crim-Epi (public health) and APH Crim-Epi (animal and crop health) models. • Develop training programmes and simulation exercises on collaboration, coordination and communication between public health and security authorities at national, subnational, and local levels; and ensure the involvement of representatives of other technical areas, including but not limited to zoonotic diseases, biosafety and biosecurity, surveillance and the national laboratory system. • Identify potential national and health security threats in the context of border health and import vigilance, working in coordination with other United States law enforcement authorities and subnational and local partners.
R3. Health services provision	**R3.1.**	Case management	**3**	• Advocate with relevant authorities to ensure national clinical case management guidelines for priority health events are implemented at state and local level. • Review and regularly update national clinical case management guidelines for high priority health events. • Develop/update hospital emergency/disaster plans, incorporating provisions for managing children and other vulnerable populations during emergencies. • Review and regularly update information on service utilization, and use the updated information to improve service utilization.
	R3.2.	Utilization of health services	**4**	
	R3.3.	Continuity of essential health services (EHS)	**4**	
R4. Infection prevention and control (IPC)	**R4.1.**	IPC programmes	**5**	• Develop and implement novel infection control strategies and support their evaluation (e.g. by working to improve understanding of decolonization/pathogen reduction strategies). • Continue strengthening national capacity for surveillance of healthcare-associated infections by investing in building and expanding automated surveillance methodologies (e.g. for non-ventilator pneumonia and hospital-onset bacteremia) in additional settings (e.g. long-term care settings). • Promote the expansion of the healthcare infection control workforce by developing training and tools to increase expertise and address challenges such as burnout.
	R4.2.	HCAI surveillance	**5**	
	R4.3.	Safe environment in health facilities	**5**	
R5. Risk communication and community engagement (RCCE)	**R5.1.**	RCCE systems for emergencies	**3**	• Prioritize consistent investment in RCCE across all phases of emergency management at all jurisdictional levels, incorporating RCCE specialists with dedicated resources to ensure that technical experts are able not only to disseminate information but also to listen to, learn from, and incorporate input from communities.

Technical areas	Indicator number	Indicator	Score	Priority Actions
	R5.2.	Risk communication	3	• Establish and maintain sustainable RCCE infrastructures at all jurisdictional levels, engaging communities throughout the process, and ensuring that systems, tools and methods are continuously working rather than only activated during emergencies. These infrastructures should reflect the diversity of American settings, and be able to adapt approaches and strategies that are culturally appropriate and inclusive of various values, beliefs and priorities. • Support and enhance community-led emergency readiness and response by fostering ongoing bi-directional communication between federal, state and local interest holders, with open channels for community feedback so that ground truth can inform technical recommendations and responses. • Facilitate ongoing education for policymakers so that emergency planning and response efforts are informed by scientific expertise, community input, and real-time data, ensuring that diverse American realities are reflected in policy decisions. • Enhance online and offline systems for monitoring community concerns and managing mis- and disinformation, including: • providing equitable opportunities for communities to voice needs and solutions; • providing training and tools to enable communities and national/subnational partners to discern credible sources and counter inaccurate information; and • developing partnerships with trusted local influencers to combat mis- and disinformation.
	R5.3.	Community engagement	2	
IHR related hazards and points of entry and border health				
POE. Points of entry and border health	POE.1	Core capacity requirements at all times for POE (airports, ports and ground crossings)	5	• Complete the development and approval of the National Aviation Public Health Emergency Preparedness Plan, to ensure readiness to respond to public health emergencies within the aviation sector. • Expand the frequency and scope of simulation exercises at points of entry, ensuring collaboration with all relevant stakeholders, to enhance preparedness and response capabilities. • Develop targeted guidelines for consistent data collection and reporting practices, and support their implementation with technical assistance and onsite visits. • Per the IHR Annex 5, coordinate with and support state and local health departments and other agencies with responsibilities for environmental health which may develop, implement, and validate vector control programmes that may be up to a minimum radius of 400 metres from areas involving travellers, conveyances, containers, cargo, and postal parcels at points of entry.
	POE.2	Public health response at POE	4	
	POE.3	Risk-based approach to international travel-related measures	5	

Technical areas	Indicator number	Indicator	Score	Priority Actions
CE. Chemical events	CE.1	Mechanisms established and functioning for detecting and responding to chemical events or emergencies	4	• Strengthen community planning and preparedness at local level by leveraging federal tools and resources to improve capabilities and reduce variabilities in incident response capacities between different localities. • Support large-scale field testing and experiments with chemical threat agents to fill data gaps, validate and improve modelling, and guide emergency response. • Enhance federal multiagency emergency response capabilities through training and exercises on chemical incidents that involve state, local, tribal and territorial partners. • Improve data management during chemical responses by integrating purpose-built tools and systems to provide a common operating picture for response to large-scale chemical incidents. • Improve chemical event response plans and guidance by incorporating stakeholder feedback from all levels – territorial, tribal, local, state and federal – and lessons and best practices from simulated exercises or real events. • Ensure that multiagency recovery plans and resilience strategies for large-scale chemical incidents incorporate enhancement of long-term care facility medical and environmental monitoring capacities.
	CE.2	Enabling environment in place for management of chemical event	4	
RE. Radiation emergencies	RE.1	Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	4	• Sustain national capacity for effective response to nuclear or radiological emergencies by amplifying recruitment and retention plans for subject matter experts. • Increase interoperability between federal agencies in emergency responses, including through common operating procedures for detecting and monitoring radiation in the environment and a common framework for data sharing, integration and interpretation. • Increase national laboratory capabilities and capacity for emergency human monitoring and assessment, focusing on biological dosimetry and radionuclide bioassay. • Increase national exercise capacity for responding to nuclear and radiological emergencies by involving stakeholders from all relevant agencies and levels of government and securing sufficient resources.
	RE.2	Enabling environment in place for management of radiological and nuclear emergencies	4	

Prevent

P1. Legal instruments

Introduction

The International Health Regulations (2005) (IHR) provide obligations and rights for States Parties. In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even if new or revised legislation may not be specifically required, States may still choose to revise some regulations or other legal instruments in order to facilitate IHR implementation and maintenance. Implementing legislation could serve to institutionalize and strengthen the role of IHR (2005) and operations within the State Party. It can also facilitate coordination among the different entities involved in their implementation. See detailed guidance on IHR (2005) implementation in national legislation. In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.

Target

Adequate legal instruments for States Parties to support and enable the implementation of all their obligations and rights created by the IHR. The development of new or modified legal instruments in some States Parties for the implementation of the Regulations. Where new or revised legal instruments may not be specifically required under a State Party's legal system, the State may revise some laws, regulations or other legal instruments in order to facilitate their implementation in a more efficient, effective or beneficial manner.

Level of capabilities

Legal instruments

The United States has a federal system of government. Responsibility for health is primarily vested in the states and other subnational jurisdictions (referred to as state, local, tribal and territorial jurisdictions, or SLTT). Within this context, the federal government is empowered by a comprehensive legislative framework which is fit for purpose, regularly reviewed and updated as required.

Federal legislation encompasses the full range of legal instruments required for all-hazards preparation and response capability, including:

- elevated legal powers in times of human health emergency declared under appropriate legal authority;
- appropriate legal powers and delegations available in steady-state or non-emergency conditions;
- a national-level, whole-of-government coordination authority established in legislation; and
- a clear legislative authority for the lead agency for national response to health emergencies. This lies with the Department of Health and Human Services (HHS), and is operationalized several agencies, including the Administration for Strategic Preparedness and Response (ASPR), the Centers for Disease Control and Prevention (CDC), and the Food and Drug Administration (FDA).

Continuous review and revision of federal legislation – along with associated national strategies to ensure it reflects whole-of-government perspectives, remains relevant to changing circumstances and addresses lessons identified from previous experience – aligns with best practice.

Federal systems of government are more complex than systems where legislative and executive power rest primarily at national level. For the United States, this presents both strengths and challenges. For example, the overlap of federal, state, and local laws offers flexibility and redundancy when there may be more than one applicable legal response to a situation. On the other hand, with 62 state-level jurisdictions and over 4000 local and tribal jurisdictions, the United States faces significant difficulty in achieving effective response measures consistently across the overall national framework and for their understanding and implementation at SLTT levels.

Legal preparedness is a national capability gap. Legal preparedness capability in the national public health workforce is underdeveloped: many state and territorial health agencies lack sufficient legal staff, with often only a handful of advising attorneys available. At local level, only half of public health agencies have lawyers providing formal advice; almost one fifth have no legal counsel at all. More generally, the legal literacy of public health officials about their operating environment is inconsistent and insufficient at all levels, and particularly at subnational and local level.

Gender equity and equality in health emergencies

The United States has adopted a range of national policies addressing gender equity and equality in emergency preparedness and response, with room to achieve more. Efforts include a National Strategy on Gender Equity and Equality which addresses health care (but not specifically equity) in health emergency preparedness and response. There is scope for further efforts to achieve consistency across federal agencies in the policy definitions relevant to this indicator, to inform its integration and mainstreaming into health emergency planning, preparedness and response.

Indicators and scores

P1.1. Legal instruments – Score 4

Strengths

- The federal government has systematic processes in place to identify needs for modification of legal instruments. Frequent analyses of legal frameworks and assessments of improvements support preparedness and response, cross-sectoral coordination and federal level clearance of agency recommendations for legislation, regulations and guidance documents.
- The flexibility of the national legislative framework (federal and SLTT) allows targeted, robust responses to health emergencies.
- The establishment of key coordination and response agencies within federal law ensures clarity of federal legal authority.
- Relevant federal law and associated whole-of-government policy and strategy is advanced, robust and comprehensive.
- There is clear scope to expand partnerships between federal government agencies and peak bodies for SLTT agencies, including the National Association of County and City Health Officials (NACCHO) and the Association of State and Territorial Health Officials (ASTHO), to leverage the advantages of the federal system.

Challenges

- The United States experiences the same challenges faced by all countries with a federal system where responsibility for health is delegated to subnational jurisdictions, particularly in achieving a consistent and effective national response across all levels during a nationwide response. These challenges are exacerbated by the relative lack of subnational legal mapping capabilities within national and subnational agencies.
- Legal preparedness capability (both in terms of attorney staffing levels and legal preparedness staff training) and the general legal literacy of the public health workforce at the SLTT level are

inconsistent. There are specific weaknesses in many subnational public health agencies, because of a lack of prioritization and/or a lack of resources. Further, few federal agencies have devoted staff with legal preparedness expertise, particularly subnational legal preparedness expertise.

- The United States is at level 4 for this indicator because of a lack of comprehensive legal mapping and cross-referencing capability across all levels and sectors, with specific weaknesses in the legal mapping of subnational public health agencies' legal preparedness capacities, again due to lack of resources or to legal mapping having been insufficiently prioritized.

P1.2. Gender equity and equality in health emergencies – Score 3

Strengths

- A range of national policy statements on gender equality and equity provide a solid foundation for focused effort to integrate this priority into health emergency planning, preparedness and response.

Challenges

- Interagency interpretation of the gender indicator and its adaptation in associated policy responses are inconsistent.
- The United States is currently at level 3 for this indicator because the relevant guidance currently under development is yet to be supported by dedicated funding; and because there is no systematic approach to monitoring, evaluation and reporting.

Recommendations for priority actions

- Develop and implement a strategy to institutionalize national and subnational legal preparedness priorities and workforce development activities across the United States Government.
- Integrate legal preparedness into agency funding mechanisms and partnership agreements to enhance legal preparedness capabilities across the subnational public health system.
- Enable comprehensive national and subnational legal mapping, both by minimizing barriers to accessing legal instruments and by establishing comprehensive data platforms conducive to regular qualitative analysis and quantitative measurement of legal instruments.
- Develop and deploy interpretive guidance on the States Parties self-assessment annual reporting (SPAR) gender equality/equity indicator across federal agencies, utilize the guidance to complete the SPAR mandate and to ensure an agreed interagency understanding of gender equity policies and programmes across the federal government.

P2. Financing

Introduction

The implementation of the IHR, including development of the core capacities, requires adequate financing. State Parties should ensure sufficient allocation of funds for IHR implementation.

Target

States Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanisms. The country has access to financial resources for the routine implementation of IHR capacities, and financial resources that can be accessed on time and distributed for readiness and response to public health emergencies, are available.

Level of capabilities

The United States finances implementation of the IHR through a comprehensive budget process. Solid financial management systems provide predictable funding for IHR capacities and public health emergency preparedness.

Funding comes from multiple sources, including major stakeholders like the HHS and other federal agencies such as the Department of Homeland Security (DHS), the Environmental Protection Agency (EPA), the Department of Energy (DOE) and the United States Department of Agriculture (USDA).

Over time, the United States has prepared mechanisms that are able to provide rapid supplemental funding in response to unexpected crises during public health emergencies.

Financial resources are linked to performance management, risk communication and strategic planning focused on efficient use of funds. Based on programme monitoring data, funding can be evaluated for impact, and resources can be directed to the most pressing public health needs when building overall response capacity.

Indicators and scores

P2.1. Financing for IHR implementation – Score 3

Strengths

- The United States has established financial management systems that provide predictable funding for IHR implementation and public health emergency preparedness.
- Multiple federal agencies contribute to funding, ensuring a broad base of financial support.
- Specific mechanisms for supplemental appropriations permit the rapid availability of additional resources during crises.
- Collaboration across agencies is strong: implementing IHR capacities involves multiple federal and state agencies, promoting coordinated approaches to public health.
- Financial resources are aligned to deliver on national health priorities and align with the national health priorities and strategic frameworks.

Challenges

- Although there is some monitoring, more accountability and oversight are needed of how funds are utilized at various levels.
- Variability in state and local funding can lead to disparities in IHR implementation across jurisdictions.

- Current funding mechanisms may need more flexibility to adapt to rapidly changing public health needs.
- There is insufficient public awareness of available funding opportunities and mechanisms.

P2.2. Financing for public health emergency response – Score 3

Strengths

- The Government supports various public health emergency response activities through multiple programmes.
- HHS uses performance data to inform budget requests and resource allocation.
- The existence of reserve funds allows for immediate responses to emerging public health threats.
- Engagement with state and local partners ensures that funding aligns with community needs.
- Annual threat-based reviews help prioritize funding based on current public health risks.

Challenges

- Delays in resource allocation can impact response times during emergencies.
- Reliance on federal funding may limit the ability to mobilize additional external resources.
- There is inadequate training for resource management, and local health departments may lack training to manage funds effectively.
- There is a need for enhanced coordination among federal, state and local agencies to streamline funding processes.

Recommendations for priority actions

- Continue to work with SLTT jurisdictions to enhance availability and timeliness of financing for IHR implementation and public health emergency response capacities, which may vary by jurisdiction.
- Address gaps, within federal control, by strengthening federal and local level partnership; leveraging state and local national organizations such as ASTHO and NACCHO that track subnational financing data to identify challenges faced by local jurisdictions and the impact of federal investments.
- Focus on improvements to enhance data sharing, coordination, and mobilization of resources at the local level.
- Strengthen partnerships with state and local national organizations (e.g., ASTHO, NACCHO) to identify how funds are allocated and spent at subnational level and better understand state and local level resources for emergency response.
- Continue multi-agency coordination work on framework and strategic documents that help promote and coordinate funding focused on IHR implementation and public health emergency response capabilities.
- Leverage after-action assessments to identify and promote implementation of best practices particularly when coordinating on complex challenges that can involve coordination across federal, state and local levels.
- Continue prioritizing funding requests to address programme areas with potential gaps.
- Continue to consider current gaps or emerging challenges in the national preparedness framework in developing the annual budget to Congress.
- Consider additional flexibilities that could be proposed to support future response needs. Specific examples of previous proposals that could help shape future requests include building up reserve funds to address a broad range of threats, enhanced transfer authorities, proposing more flexibility within an agency programme funding, and other legislative proposals to expand or revise our current authorities.

P3. IHR coordination, national IHR focal point functions and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for efficient alert and response systems. Coordination of nationwide resources, including the designation of a national IHR focal point, and adequate resources for IHR implementation and communication, is a key requisite for a functioning IHR mechanism at country level.

Target

Multisectoral/multidisciplinary approaches through national partnerships that allow efficient alert and response systems for effective implementation of the IHR. Coordinate nation-wide resources, including sustainable functioning of a National IHR Focal Point – a national centre for IHR communications which is a key obligation of the IHR – that is accessible at all times. States Parties provide WHO with contact details of National IHR Focal Points, continuously update and annually confirm them. Timely and accurate reporting of notifiable diseases, including the reporting of any events of potential public health significance according to WHO requirements and consistent relay of information to FAO and OIE. Planning and capacity development are undertaken and supported through advocacy measures to ensure high-level support for implementation of IHR.

Level of capabilities

The United States' National IHR Focal Point (NFP) is an integral component of the national public health system, tasked with meeting the country's obligations under the IHR. Policies and directives including presidential policy directives and laws such as the Pandemic and All-Hazards Preparedness and Advancing Innovation Act, facilitate the NFP's efforts to advance national health security; enhance the authorities' ability to prepare and respond to public health emergencies; authorize public health and medical preparedness programmes for regional healthcare preparedness; facilitate military and civilian partnerships; and improve national capacities to implement the IHR.

The structure of the NFP consists of the HHS Assistant Secretary for Preparedness and Response, who is the approving authority for official governmental IHR communications to WHO; the NFP Program managed by the HHS Office of Global Affairs; the Office of Pandemics and Emerging Threats (PET), which works across the Government and with relevant senior government officials to provide policy and procedural oversight for all IHR obligations; and the Secretary's Operation Center, managed by the HHS ASPR, which – in close coordination with other federal emergency operations centres (EOCs), maintains non-stop situational awareness and communication channels and ensures the NFP is always accessible for urgent communication with WHO, the Pan American Health Organization (PAHO) and/or other NFPs.

The NFP provides day-to-day coordination of IHR-related assessment and notification activities in consultation with other IHR stakeholders across the Government and according to interagency policy agreements. Individual departments and agencies maintain internal structures and policies for interagency coordination related to public health surveillance, detection and assessment of potential events, and for communication of those events to the NFP. The NFP also maintains and regularly updates a list of contacts for all government departments to facilitate information exchange.

The United States has multiple mechanisms, plans and strategies – including overarching strategies like the National Security Strategy and the National Defense Strategy – that support operational mechanisms to coordinate emergency preparedness and response in areas including, but not limited to, surge capacity, continuity planning, training and exercising. A comprehensive National Preparedness System helps identify and assess risks; estimate, build and sustain capabilities; and plan, review and validate capabilities.

Building on progress since 2019 and incorporating lessons from the COVID-19 pandemic, the 2022 National Biodefense Strategy (NBS) and the 2024 United States Government Global Health Security Strategy are strategic commitments to working with countries worldwide to strengthen global preparedness to prevent, detect and respond to biological threats. Specific commitments include working in partnership with at least 50 countries to support actions to improve capacities, and engaging with countries, other donors, and external funders to catalyse progress in IHR implementation across all technical areas.

Close coordination between the departments and agencies of the United States is critical to maintaining IHR implementation. The NFP continues to evolve, adapt and improve to manage new circumstances, challenges and lessons.

Indicators and scores

P3.1. National IHR focal point functions – Score 5

Strengths

- The NFP is well established with clearly defined roles and responsibilities.
- The NFP has standard operating procedures (SOPs) that are continuously updated with the latest policies and procedures.
- The HHS Secretary's Operation Centre operates non-stop, allowing real-time situational awareness and communication and immediate readiness for assessments and responses.

Challenges

- There is a lack of awareness of the NFP at state and local jurisdiction level, and within agencies outside of federal operations centres.
- Due to the unique nature of the national legal system, the NFP is established via interagency agreements. While this allows the NFP to remain flexible and responsive during times of change, there may be challenges around the lack of a firm foundation in policy for the location of the NFP.

P3.2. Multisectoral coordination mechanisms – Score 5

Strengths

- The NFP provides effective multisectoral coordination to assess, report and receive notifications as per the IHR requirements.
- The United States has a range of established international collaborations for IHR implementation, public health emergency reporting and capacity building.

Challenges

- While all of the United States Government at federal level receives forms for IHR SPAR, the completion of returns and quality of the responses vary.
- There is a lack of subnational engagement with the SPAR.

P3.3. Strategic planning for IHR, preparedness or health security – Score 4

Strengths

- Multiple strategies and plans are available for health emergency preparedness and response. These plans are scalable, flexible and take a whole-of-government approach for effective response.
- The NFP is able to coordinate federal policy and technical experts for whole-of-government IHR implementation.

Challenges

- A lack of dedicated funding for the NFP has affected its ability to coordinate activities.
- Lack of awareness of the NFP among some subnational stakeholders results in incomplete reporting on the implementation of IHR activities, including risk assessment exercises (e.g. simulation exercises and intra- and after-action reviews), which are required for updating the national action plan for IHR and SPAR.

Recommendations for priority actions

- Work within HHS to find ways for HHS Office of Global Affairs, HHS ASPR and ASPR-managed HHS Secretary's Operation Centre to increase dedicated funding for the NFP.
- Update national action plans for IHR preparedness or health security at least annually, based on risk assessments, simulation exercises and after-action reviews; and engage and sensitize decision-makers at national and subnational levels on outstanding issues and progress.
- Engage with interagency offices, and encourage agencies to engage with subnational partners, when compiling the annual SPAR tool and developing or updating action plans to address gaps identified by the SPAR.
- Conduct an analysis of pathways to codifying the NFP's authority in federal law.
- Train state, local and related interagency offices in reporting and receiving notifications, and follow-up actions in support of the IHR NFP.

P4. Antimicrobial resistance (AMR)

Introduction

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. Antimicrobial resistance is evolving at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.

Target

A functional system is in place for the national response to combat antimicrobial resistance (AMR) with a One-Health approach, including:

Multisectoral work spanning human, animal, crops, food safety and environmental aspects. This comprises developing and implementing a national action plan to combat AMR, consistent with the Global Action Plan (GAP) on AMR.

Surveillance capacity for AMR and antimicrobial use at the national level, following and using internationally agreed systems such as the WHO Global Antimicrobial Resistance Surveillance System (GLASS) and the OIE global database on use of antimicrobial agents in animals.

Prevention of AMR in healthcare facilities, food production and the community, through infection prevention and control measures.

Ensuring appropriate use of antimicrobials, including assuring quality of available medicines, conservation of existing treatments and access to appropriate antimicrobials when needed, while reducing inappropriate use.

Level of capabilities

AMR capacity is cross-cutting and should be viewed in the context of other related technical areas and priority actions, including national laboratory systems, infection prevention and control (IPC), zoonotic diseases, food safety and surveillance.

The Government of the United States has undertaken a range of measures to respond to the challenges of AMR.

Several federal and agency-specific strategies and plans are in place to support and monitor progress in implementing AMR detection. Government efforts to reduce the burden and spread of AMR are coordinated through the federal level, intersectoral Combating Antibiotic-Resistant Bacteria (CARB) Task Force, which develops, implements, and tracks progress on the CARB National Action Plan and the national strategy for combating antibiotic-resistant bacteria.

There are many coordinated surveillance systems in place to detect the WHO priority antimicrobial-resistant pathogens. These systems include a combination of passive and active surveillance activities using reliable, reproducible procedures.

HHS and the United States Department of Defense (DOD) function as national coordinators for clinical AMR detection, surveillance, and response, as well as for molecular characterization, international coordination, and repositories for isolates.

Active, case-based hospital surveillance programmes are widespread throughout the country and can identify infections caused by antimicrobial-resistant bacteria and fungi, including healthcare-acquired infections (HCAI), bloodstream infections and resistant Neisseria gonorrhoeae.

HHS, including the HHS CDC and HHS FDA, and USDA provide key components of the national AMR surveillance strategy including organizing and reporting the results of surveillance for AMR in humans, animals and food. Their critical roles include working with the states and with various elements of private industry to promote and monitor the appropriate use of medically-important antibiotics and antifungals in humans and animal agriculture. HHS ASPR's Biomedical Advanced Research and Development Authority (BARDA), HHS CDC, HHS FDA, HHS National Institutes of Health (NIH), USDA, DOD, DHS, the United States Department of Veterans Affairs and the EPA, are all federal partners in the HHS ASPR-led Public Health Emergency Medical Countermeasures Enterprise (PHEMCE), which works across the medical research, development and regulatory agencies to bring new antimicrobial drugs to market quickly.

All but a handful of commercial products containing antibiotics require prescription by a licensed healthcare provider. HHS CDC recommends that all healthcare facilities in the country conduct surveillance of antimicrobial use and implement stewardship programmes based on core elements of hospital antibiotic stewardship and subsequent guidance for other healthcare settings, including nursing homes, outpatient settings, small and critical access hospitals, and outpatient telemedicine.

HHS CDC's Antimicrobial Resistance Solutions Initiative supports all 50 state health departments, five local health departments, and health departments of three territories. HHS ASPR's BARDA supports the antibacterial portfolio through public-private partnerships focusing on antibiotic development by providing non-dilutive funding to offset high research and development (R&D) costs and technical assistance to reduce R&D risk.

Use of medically-important antimicrobials for growth promotion and/or increased feed efficiency in food-producing animals has been eliminated, and all uses of medically-important antimicrobials in food-producing animals are now only available subject to the oversight of veterinarians. HHS FDA also provided updated guidance for assessing the risk of AMR associated with use of antimicrobial drugs in food-producing animals as part of the animal drug approval process. In 2015, HHS FDA published a final rule to outline the requirements associated with veterinary authorization, distribution and use of certain feed-use antimicrobial drugs. HHS FDA also provides updated guidance for assessing the risk of AMR associated with use of antimicrobial drugs in food-producing animals as part of the animal drug review process.

Indicators and scores

P4.1. Multisectoral coordination on AMR – Score 5

Strengths

- Government AMR efforts are coordinated under formally approved, funded national action plans for 2015–2020 and 2020–2025.
- The CARB Task Force publishes annual reports that monitor and evaluate progress and identify barriers and challenges.
- The CARB Task Force implements a One Health approach with participation from the human, animal, plant and environmental health sectors.
- The Government engages with non-federal stakeholders through the Federal Advisory Committee Act process.

- CARB efforts align with other relevant national plans and strategies, including those for healthcare-associated infections, sexually transmitted infections, veterinary medicine, biodefence and global health security.

Challenges

- During the COVID-19 pandemic, national AMR incidence and burden both rose; efforts to understand the underlying mechanisms were ongoing at the time of the JEE.
- There is limited funding to support scientific and methodological capacity to understand and address relationships across One Health sectors to control transmission and spread of AMR.
- There is a need to strengthen strategies to support behaviour change and facilitate implementation of best practices.
- Pandemic-related shifts took resources and attention away from AMR at facility, local, state and federal levels.
- Greater collaboration on AMR is needed across multiple One Health stakeholders and at facility, local, state, federal and global levels.

P4.2. Surveillance of AMR – Score 4

Strengths

- The CARB Task Force aggregates data from multiple surveillance systems to establish a representative national AMR picture, and individual agencies regularly publish AMR surveillance reports.
- Since 1996 the National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS) has tracked antimicrobial susceptibility of certain enteric bacteria found in sick people, retail meats and food animals, to support an integrated national AMR snapshot. NARMS is also collaborating with the EPA to pilot assessments of surface waters.
- CDC's AMR Lab Network is an effort between United States healthcare facility labs and public health department labs, regional labs and the National Tuberculosis Molecular Surveillance Center and CDC. The AMR Lab Network works with laboratories nationwide to identify, track and respond to emerging and enduring antimicrobial-resistant threats. CDC's Antimicrobial Resistance Laboratory Network includes seven high-capacity testing and reference testing regional labs, the National Tuberculosis Molecular Surveillance Center, and labs in 50 states, some cities and territories.
- CDC's National Healthcare Safety Network (NHSN) is the nation's most widely used healthcare-associated infection tracking system. The NHSN provides facilities, states, regions and the nation with data needed to identify problem areas, measure progress of prevention efforts and ultimately eliminate healthcare-associated infections.
- HHS CDC shares resources and data with public health and healthcare stakeholders.
- The Government uses multiple data systems to identify drivers of AMR within and across One Health sectors, and to guide implementation of effective interventions.
- USDA's National Animal Health Laboratory Network collects data on antimicrobial susceptibility testing and whole genome sequencing (WGS) from cattle, swine, horses, poultry, cats and dogs.
- Laboratories testing for AMR must meet specified requirements and follow national and international testing standards.
- HHS NIH has established a publicly-available centralized hub to share AMR WGS data, including from NARMS.
- Some AMR data are updated in real time or near real time on publicly available government dashboards (e.g. National Animal Health Laboratory Network, NARMS).

- The DOD has a centralized global reference laboratory delivering clinical diagnostic and genomic epidemiological support, and provides remote assistance for overseas DOD laboratories. Infrastructure and expertise are easily expanded according to need and availability of resources.
- The DOD provides near-real-time data for clinical decision-making in outbreak investigations and pathogen characterization for all military hospitals and collaborators.
- The DOD maintains a growing repository of genetically and phenotypically characterized isolates for epidemiologic comparison and R&D.

Challenges

- There is a need to ensure that data from AMR surveillance systems are shared in a timely manner with target audiences/users.
- Continued modernization of the AMR surveillance systems is required across the country.
- There is a need for interoperability between disparate existing surveillance systems that track AMR in humans, animals and the environment.
- A unified information dashboard is needed that provides information for clinicians, combatant commanders and policy makers.
- Expansion of partnerships between DOD and the Department of Veterans Affairs would allow sharing of data and best practices (given the shared patient population).
- Sustainable resources are needed nationally and subnationally to ensure rapid, accurate detection of existing and emerging AMR threats.
- There is a need for AMR surveillance platforms to include data on health disparities, to inform and support efforts to improve health equity.
- There is a need to integrate diverse medical and epidemiological data for real-time analysis and predictive modelling to inform decision making.
- There is a need to enhance information technology (IT) systems and processes to enable seamless communication within the DOD and with external partners.
- Increased collaboration with bordering countries and globally would help prevent the spread of AMR and facilitate sharing of AMR data to inform rapid responses to emerging threats.

P4.3. Prevention of multidrug-resistant organisms (MDRO) – Score 5

Strengths

- Multiple United States Government agencies support efforts to prevent MDRO in human health.
- Systems for HCAI and MDRO detection, reporting and response are established for civilian and military healthcare facilities, for both bacterial and fungal pathogens.
- Every state health department, as well as some large cities and territories, has programmes that support IPC and responses to HCAI and AMR.
- DOD policy requires real-time genomic epidemiological analysis of MDRO collected during healthcare operations at all DOD hospitals, to identify potential transmission events and enable rapid intervention by infection control staff at affected hospitals.
- Free IPC training is available for all healthcare professionals in the United States through HHS CDC's Project Firstline and other programmes.
- The Healthcare Infection Control Practices Advisory Committee, a federal advisory committee of IPC experts, develops national guidelines for IPC. These have been used or adapted by other countries.
- HHS CDC's Targeted Assessment for Prevention Strategy uses HCAI data at federal, state, local and facility levels to identify and address IPC gaps.
- The HHS Centers for Medicare and Medicaid Services (CMS) incorporates IPC and MDRO prevention into the conditions of participation that define how healthcare facilities are reimbursed for patient care.

- All acute care hospitals and long-term care facilities that receive HHS CMS funding are required to report to the NHSN.

Challenges

- Developing, gaining regulatory approval for, and using pathogen reduction approaches is challenging.
- There is a need for continuous tracking of AMR in healthcare during health emergencies.
- Sustainable resources are needed to support HCAI and AMR detection, control and response in health care, including by expanding colonization screening and IPC training.
- Stakeholder communication on revised or new IPC guidance, and the evidence used to develop it, could be more effective.
- There is a need for a new, centralized data platform for clinicians, infection control specialists, and hospital administrators; and for stronger partnerships between DOD and the Department of Veterans Affairs to track the movement of MDRO with shared patients moving between their respective healthcare systems.
- There is a need to identify and address the emergence of new antimicrobial-resistant strains.
- A mitigation strategy is required to address staff turnover in healthcare facilities (especially in long-term care).
- There is a need to ensure that IPC is recognized as the first line of defence against the spread of MDRO.
- Genomic and clinical epidemiological data could be combined more rapidly and accurately to improve infection control surveillance by identifying real transmission and excluding misidentified events.

P4.4. Optimal use of antimicrobial medicines in human health – Score 4

Strengths

- Almost all commercial products that contain antibiotics require a prescription.
- Rigorous evidence-based national guidelines for antibiotic and antifungal use are available from professional societies and, in some cases (such as for tuberculosis treatment), from the Government.
- Hospitals and healthcare systems develop and use antibiograms to guide selection of antimicrobial therapies.
- Policies and regulations are in place to preserve the safety and effectiveness of all drugs.
- The Government invests in the discovery, development and regulatory approval of novel antimicrobial products and diagnostics.
- HHS CDC publishes the Core elements of antibiotic stewardship for different healthcare settings, resource-limited settings and public health departments.
- The Government monitors adherence to the Core elements of antibiotic stewardship in acute care hospitals and long-term care facilities.
- The Government conducts surveillance of antibiotic use in multiple healthcare settings and assesses the appropriateness of antibiotic use for common conditions through analytic research studies.
- The Government recommends diagnostic stewardship be implemented in all healthcare facilities to support appropriate use of antimicrobials.
- HHS CDC provides free stewardship training for healthcare professionals.
- Healthcare systems and payers have improved prescribing practices through direct feedback to healthcare professionals on their prescribing practices.

Challenges

- Improved methods are needed for measuring and reporting appropriate use of antimicrobials at national and subnational levels.
- Systematic feedback to individual prescribers needs to be improved.
- New, innovative approaches are required to educate healthcare providers, patients and the public about the importance of appropriate antimicrobial use, and the potential consequences of inappropriate antimicrobial use.
- Integration of diagnostic stewardship and antimicrobial stewardship would help ensure optimal outcomes for all patients.
- There is a need to ensure access to antimicrobials when they are needed (e.g. to prevent shortages).
- Antimicrobial stewardship programmes need to be established and sustained in all healthcare facilities, especially in rural or low-resourced areas.
- Addressing healthcare disparities related to antimicrobial prescribing would help improve health equity.
- There is a need to develop, gain regulatory approval for, and ensure ready access to diagnostics that detect specific MDRO (e.g. tuberculosis).
- Sustainable resources are needed at all levels to support appropriate antimicrobial use and stewardship.
- Inappropriate use of antibiotics in outpatient settings should be addressed, especially during respiratory virus season.

P4.5. Optimal use of antimicrobial medicines in animal health and agriculture – Score 4

Strengths

- The APHIS National Animal Health Monitoring System unit conducts nationally-representative surveys to improve understanding of the use of antimicrobials in animal agriculture.
- The Government develops strategic plans and national policies to support antimicrobial stewardship.
- Use of medically important antimicrobials for growth promotion and feed efficiency in food animals has been eliminated.
- Use of medically-important antimicrobial drugs has been limited to uses in animals that include veterinary oversight or consultation.
- HHS FDA provides updated guidance for assessing the risk of AMR associated with the use of antimicrobial drugs in food-producing animals as part of the animal drug review process.
- HHS FDA determines the marketing status of animal drugs by classifying them as prescription, veterinary feed directive or over-the-counter drugs.
- HHS FDA helps ensure antimicrobial quality by performing inspections of drug manufacturers and enforcing federal laws against adulterated drugs.

Challenges

- Given the limitations of antimicrobial sales and distribution data, there is a need for enhanced capacity to monitor antimicrobial drug use in animals, in order to be able to:
- monitor trends;
- inform national, regional or local policies and interventions;
- evaluate the effectiveness of policy changes or stewardship efforts;
- understand drivers of resistance in veterinary and agricultural settings;
- harmonize and integrate diverse sources of animal health records;
- improve coordination of data infrastructure and database repository information;
- establish and improve standardized metrics, numerators and denominators; and
- address data confidentiality concerns, data access issues and related fees and financing.

Recommendations for priority actions

- Develop the next National Action Plan for AMR for implementation between 2025 and 2030, with the goal of reducing rates of AMR in humans in the United States to pre-COVID levels or below, including by:
- convening the United States Government subject matter experts to propose and finalize key actions that build on current capacity;
- addressing priority needs identified by the United States Government and stakeholders from a One Health perspective; and
- fulfilling commitments identified in the 2024 Political Declaration of the United Nations (UN) General Assembly High-Level Meeting on AMR.
- Continue efforts to increase interoperability of surveillance systems across all sectors by expanding collaboration in joint analyses and interpretation of data and increasing the overlap of pathogen drug combinations or species sequences tested across all sectors.
- Improve the development of innovative methods and products to prevent, test and treat AMR in the United States and globally by:
- providing financial and non-financial support to product developers and sponsors at all pipeline stages;
- expanding R&D of pathogen reduction products, vaccines, diagnostics and other therapeutics; and
- facilitating access to and optimizing use of products under antibiotic stewardship principles.
- Further improve antimicrobial use surveillance in the human health sector through expanding systematic feedback to individual prescribers and improving coverage of antimicrobial use surveillance
- Establish and expand more coordinated systems to collect and analyse antimicrobial use data in animals, in order to improve and expand antimicrobial stewardship recommendations for animal health and agriculture

P5. Zoonotic disease

Introduction

Zoonotic diseases are communicable diseases that can spread between animals and humans. These diseases are caused by viruses, bacteria, parasites and fungi carried by animals, insects or inanimate vectors that aid in its transmission. Approximately 75% of recently emerging infectious diseases affecting humans are of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Functional multi-sectoral, multidisciplinary mechanisms, policies, systems and practices are in place to minimize the transmission of zoonotic diseases from animals to human populations.

Level of capabilities

The United States has well-established, extensive capacity to prevent, detect and respond to zoonotic diseases, supported by legal frameworks that underpin the federal authorities and responsibilities required to protect animal and human health.

The One Health approach has been institutionalized within the public health, agriculture, wildlife and environmental sectors at national and subnational levels, ensuring a coordinated approach to the investigation of outbreaks of zoonotic diseases. This has been done by establishing formal coordination groups, offices and interagency liaisons across the relevant parts of HHS, USDA, the National Oceanic and Atmospheric Administration and the Department of the Interior.

Operationalization of the One Health approach has been further enabled as part of the Consolidated Appropriations Act, 2023 and the 2021 House Committee on Appropriations Report, which gave HHS CDC, USDA and Department of the Interior the mandate to create a United States One Health coordination mechanism and develop a One Health Framework to address zoonotic disease and advance emergency preparedness. This coordination mechanism was established in January 2024 and the framework was set to be published by end of 2024.

National priorities for zoonotic diseases were identified in 2017 through a multisectoral collaborative process involving 12 federal agencies plus subnational partners. This process fulfilled a key recommendation of the 2016 JEE and helped to create a shared vision for addressing zoonotic diseases. The methodology of the prioritization process has been published and used to support other countries in prioritizing their zoonotic disease programmes and national action plans.

The United States experts play important international roles in capacity building around zoonotic disease and participate actively in expert groups through the Quadripartite organizations – that is, the UN Food and Agriculture Organization (FAO), the UN Environment Programme (UNEP), WHO and the World Organisation for Animal Health (WOAH) – and other strategic partnerships.

Indicators and scores

P5.1. Surveillance of zoonotic diseases – Score 3

Strengths

- Priority endemic and emerging zoonotic diseases for surveillance have been identified through a multisectoral One Health process.
- Strong intersectoral collaboration has been cultivated at national and subnational levels through the establishment of institutionalized One Health coordination mechanisms.
- Well-established public health surveillance systems are in place for reportable zoonotic diseases, with established case definitions and publicly available data.
- The National Animal Health Reporting System integrates animal health data from local, state and federal levels, including information on potential zoonotic pathogens.
- Data on mortality and morbidity of free ranging wild animals is captured through the United States Geological Survey (USGS) Wildlife Health Information Sharing Partnership (WHISPers).
- HHS CDC, USDA, and DHS Science and Technology laboratories use advanced diagnostics and technologies to collaborate, and routinely share data and specimens during zoonotic outbreaks.
- Strong programmes are in place for the priority zoonoses (salmonellosis, influenza, West Nile virus, plague, emerging coronaviruses, rabies, Lyme disease and brucellosis).
- There is transparent reporting to WHO and WOAH, as required by international regulations and standards.

Challenges

- There is limited interoperability between different surveillance systems, so data must be integrated manually on an ad hoc basis.
- The function of joint risk assessment is not formally documented to ensure an institutionalized process is in place.
- There is a gap in surveillance system coverage and data on companion animals, meaning that human cases and/or clusters of cases are the most common triggers for investigations of zoonoses from companion animals.
- While the majority of state and territorial laboratory systems have laboratory capacity for zoonotic pathogens, in cases some cases this is not for all of the nationally notifiable zoonotic pathogens. This creates gaps in coverage in some rural areas and communities.

P5.2. Response to zoonotic diseases – Score 4

Strengths

- Robust public health and animal health infrastructure (i.e. surveillance, laboratory and response capacity) supports zoonotic disease response, and broad expertise is available.
- Response to zoonoses is included in several national doctrines, frameworks and guidance resources for priority zoonoses.
- Regulatory frameworks are in place to address zoonotic risks from animals and animal products.
- The United States is active internationally, collaborating, providing support and participating in relevant global networks.
- The linkage between climate change and zoonotic diseases has been highlighted in strategies and frameworks developed by HHS CDC, HHS NIH and USDA.

Challenges

- Responses to disease events regularly test systems for some zoonoses, but exercises for other, less frequently occurring priority zoonoses are not routinely held.
- Working to ensure interoperability of information and communications systems would help streamline coordination efforts and avoid jurisdictional conflicts.
- Data system incompatibility and data privacy and security concerns limit data sharing and integration.
- Competing priorities and budget constraints result in a lack of sustained, flexible funding.

P5.3. Sanitary animal production practices – Score 4

Strengths

- Robust animal production and regulatory frameworks are in place and follow international standards.
- Several public education campaigns have been held to educate small scale producers on risks from zoonotic and other diseases.
- Strong traceability and identification systems are in place for all livestock eligible for export.
- Emergency response and preparedness plans are in place for major animal diseases.
- The United States has advanced R&D capacity and activity.

Challenges

- Biosecurity in small-scale production is often inadequate.
- Combatting misinformation is a constant challenge.
- Interagency coordination is complex.
- Surveillance gaps hamper the assessment of disease spread between wildlife and production animals.

Recommendations for priority actions

- Develop mechanisms that ensure interoperability between public health and animal health surveillance systems for priority zoonotic diseases and which provide common platforms for data management, mapping and visualization.
- Develop interoperable computer information and communications systems that work across the interagency space to enhance intersectoral collaboration and coordination.
- Develop, validate and support the use of models and risk prediction tools, including joint and coordinated risk assessments, that include data from human, wildlife and domestic animal surveillance.
- Expand zoonotic disease surveillance to cover animal populations currently not included in public health or animal health surveillance systems, with a focus on companion animals.
- Develop a flexible One Health framework for coordinated zoonotic disease outbreak investigations and responses that involve all relevant departments and agencies, and include real-time coordination of research needs.

P6. Food safety

Introduction

Food- and water-borne diarrhoeal diseases are one of the leading causes of illness and death, particularly in children and especially in developing countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. The identification of the source of an outbreak and its containment is critical for control. Risk management capacity with regard to control throughout the food chain continuum must be developed. If epidemiological analysis identifies food as the source of an event, based on a risk assessment, suitable risk management options that ensure the prevention of human cases (or further cases) need to be put in place.

Target

A functional system is in place for surveillance and response capacities of States Parties for foodborne disease and food contamination risks or events, with effective communication and collaboration among the sectors responsible for food safety.

Level of capabilities

The United States has a robust regulatory system to protect the safety of its food supply. While the United States Government has the authority to establish regulatory standards, inspect facilities, and act if there are violations, industry has the responsibility to ensure that food products are safe and that they meet applicable regulatory requirements. State and local government agencies also have their own authorities regarding food safety.

The FDA Food Safety Modernization Act (FSMA) was signed into law in 2011, augmenting numerous other existing laws. The United States' laws protect human and animal health by helping to ensure the safety and security of the food and feed supply, including through the implementation of specific prevention activities.

Federal, state and local agencies, private companies, and consumers work together to address food safety from farm to table. State public health agencies and HHS CDC are responsible for monitoring, identifying and investigating foodborne illness and outbreaks. HHS FDA works with these agencies in investigating outbreaks.

This capacity has improved dramatically in the past three decades. Since 1996, CDC has greatly improved the capacity for rapid outbreak detection and characterization through PulseNet, a national laboratory network that consists of over 80 federal, state and local laboratories working together to monitor foodborne, waterborne, and One Health–related illness cases to detect outbreaks.

To strengthen further the United States' efforts to monitor, identify, investigate and efficiently resolve foodborne illness and outbreaks, HHS, USDA and other federal agencies have formed the Interagency Collaboration for Genomics for Food and Feed Safety (Gen-FS). This group provides oversight and guidance for harmonized use of WGS technology for detection, characterization, source identification, interpretation and public data sharing. The Gen-FS has been pivotal in advancing national food safety.

Indicators and scores

P6.1. Surveillance of foodborne diseases and contamination – Score 5

Strengths

- A multistakeholder approach to identifying and managing foodborne disease incidents and outbreaks provides a strong surveillance system and a variety of expertise in investigation and response.
- An established active foodborne disease surveillance network, FoodNet, is in place, along with passive case surveillance for notifiable enteric pathogens.
- A network of laboratories provides flexibility and capacity to evaluate samples for surveillance and outbreak investigations.
- The compliance date for the FSMA Food Traceability Rule is 20 January 2026.

Challenges

- There is a need to strengthen the food industry's ability to trace outbreaks back to their origins and trace forward to identify affected products.
- There is a need to increase infrastructure and capacity to expand the use of WGS, and enhance the utility of the PulseNet network by increasing the range of pathogens on which it works.

P6.2. Response and management of food safety emergencies – Score 5

Strengths

- A well-established multistakeholder approach to identifying and managing foodborne disease incidents and outbreaks enables strong responses to surveillance alerts and identifies solutions and interventions.
- An integrated approach to food safety encompasses a variety of expertise in research, investigation and response.
- The United States Government has several methods and platforms for communicating public health information to other regulatory agencies, industry bodies and consumers.
- Learnings from outbreak investigations, including identified causal factors, are shared with regulatory authorities, industry and consumers.
- Multidisciplinary research is conducted to address gaps, identify solutions and prevent future outbreaks.

Challenges

- There is a need for more consistent adoption of root cause analysis techniques, by both industry and government, to investigate failures.
- Sharing of learning from outbreaks and near misses with other stakeholders could be improved.

Recommendations for priority actions

- Finalize industry guidance for the Food Traceability Rule and engage with the United States and international regulators and industry on HHS FDA's implementation plan and enforcement strategy.
- Increase infrastructure and capacity of the PulseNet network to expand the use of WGS and increase the range of pathogens included in PulseNet surveillance.
- Expand data sharing and collaboration to support outbreak identification and prevention of foodborne outbreaks.
- Prioritize research to fill data gaps and inform science-based policy- and decision-making.
- Collaborate with federal, state, industry, consumer and academic stakeholders to advance the use of root cause analysis protocols for food safety.

P7. Biosafety and biosecurity

Introduction

It is vital to work with pathogens in the laboratory to ensure that the global community possesses a robust set of tools – such as drugs, diagnostics and vaccines – to counter the ever-evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize and respond to outbreaks of infectious diseases of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents have raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants or the environment.

Target

A whole-of-government multisectoral national biosafety and biosecurity system with high-consequence biological agents identified, held, secured and monitored in a minimal number of facilities according to best practices, biological risk management training and educational outreach conducted to promote a shared culture of responsibility, reduce dual-use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents; and country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures in place as appropriate.

Level of capabilities

The United States has a robust national biosafety and biosecurity system in place across its laboratories, designed to protect laboratory workers, public health, agriculture, the environment and national security. Multiple complementary biosafety and biocontainment oversight requirements exist within and between federal, state and municipal governments and individual research institutions. Correspondingly, multiple government entities at each level participate in the current system of biosafety and biocontainment oversight and, in many cases, coordinate their oversight activities with those of individual institutions.

The strengths of the system lie in active federal outreach and education that promotes and improves overall biosafety and biosecurity. Federal guidelines and regulations include the Department of Labor Occupational Safety and Health Administration (OSHA) standards, the HHS CDC regulations and recommendations, the USDA Animal and Plant Health Inspection Service (APHIS) regulations and the Federal Select Agent Program (FSAP). The FSAP plays a key role by regulating possession, use and transfer of biological select agents and toxins (i.e. pathogens or toxins that pose severe threats to public, animal or plant health, and/or products derived from animals or plants). This programme provides federal oversight of laboratories handling these agents and toxins, independent of the source of funding, ensuring compliance with strict biosafety and biosecurity measures. The FSAP is managed jointly by HHS CDC's Division of Regulatory Science and Compliance and USDA APHIS Division of Agricultural Select Agents and Toxins, and regulates human, animal and plant pathogens through the Select Agent Regulations (SAR).

The SAR require entities handling these agents to implement rigorous safety and security measures to prevent unauthorized access, theft, loss, or accidental release, and include specific inventory management protocols, inspection cycles and incident reporting requirements. Additionally, laboratories must adhere to key guidelines such as the Biosafety in Microbiological and Biomedical Laboratories and HHS NIH

Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules. These guidelines, along with various federal policies like the United States Government Policy for Oversight of Dual Use Research of Concern (DURC) and Pathogens with Enhanced Pandemic Potential (PEPP) support a comprehensive oversight framework for high-risk research and establish a framework for federally funded life sciences research involving biological agents and toxins. The DURC/PEPP policy focuses specifically on research involving enhancement of agents that may pose additional risks to public, health, agriculture, food security, economic security, or national security.

The Screening Framework Guidance for Providers and Users of Synthetic Nucleic Acids outlines baseline standards for the gene and genome synthesis industry, as well as best practices for all entities involved in the provision, use and transfer of synthetic nucleic acids regarding screening orders and recipients and maintaining records. The guidance is reinforced and amplified by the Framework for Nucleic Acid Synthesis Screening, which requires procurement of synthetic nucleic acid sequences and benchtop nucleic acid synthesis equipment at institutions receiving the United States federal life sciences funding to be through providers and manufacturers that adhere to the measures in the new framework. However, no national requirements exist for screening outside federally funded institutions, and institutions that are fully privately funded are not included. This situation underlines the importance of continuous work to develop coordinated, whole-of-government oversight and proper training to establish experience and expertise in working safely with high-risk pathogens with potentially high-risk synthetic sequences.

Indicators and scores

P7.1. Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities – Score 4

Strengths

- Established regulations govern the possession, use and transfer of high-consequence pathogens and toxins and include requirements for inventory management, containment failure reporting, biosecurity and emergency response.
- Numerous federal agencies work together, linking public and agriculture health and security, to oversee various aspects of biosafety and biosecurity.
- Different levels of government (federal, state and municipal) have defined responsibilities and authority for biosafety and biosecurity.
- Multiple federal policies and guidance documents are in place for biosafety and biosecurity oversight.
- The United States Government, in collaboration with the life sciences community and other stakeholders, has conducted a comprehensive policy review of high consequence research involving recombinant or synthetic nucleic acid molecules to develop federal policies that will guide future investment in this area.

Challenges

- The federal government has limited capacity to extend policies to entities that do not receive federal funding.
- There is limited visibility into privately funded laboratories that do not handle biological select agents and toxins.
- There is a need to evaluate the impact of new or alternative legislative authorities to achieve more comprehensive oversight of biosafety and biosecurity.

P7.2. Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture) – Score 4

Strengths

- A wide range of training resources for biosafety and biosecurity is available at the federal, state and local levels.
- Federal regulations mandate training for high-consequence pathogens, toxins and bloodborne pathogens.
- The American Biological Safety Association (ABSA) offers an internationally recognized accreditation programme for biosafety professionals.

Challenges

- There is currently no national competency assessment programme for biosafety and biosecurity professionals.
- Comprehensive training programmes for handling agents outside of the Biological Select Agents and Toxins Program are lacking.
- Additional biosafety and biosecurity training programmes are needed to meet growing public demand and to address advances in emerging and converging technologies.

Recommendations for priority actions

- Investigate the feasibility of developing a national registry system for high and maximum containment laboratories within the context of existing reporting mechanisms to extend the Government's visibility to all biological laboratories across the United States.
- Support the development of national biosafety and biosecurity core competency guidance by establishing minimum standards for professionals working across all laboratory containment levels, including high and maximum containment laboratories.
- Support the development of additional national level biosafety and biosecurity training programmes to expand the capacity of biosafety and biosecurity professionals in the nation.
- Investigate the feasibility of a mechanism for life sciences research at non-federally funded institutions to comply with the United States Government Oversight policy, to ensure that research which may pose a threat to public health, safety, or national security undergoes appropriate risk-based review, including mitigation methods.

P8. Immunization

Introduction

Immunization currently prevents 3.5 million to 5 million deaths every year from diseases like diphtheria, tetanus, pertussis, influenza and measles. Immunization is typically one of the most successful and cost-effective ways to save lives and prevent disease. Measles immunization is emphasized because it is widely recognized as a proxy indicator for overall immunization against vaccine-preventable diseases (VPDs). Countries will also identify and target immunization to populations at risk of other epidemic-prone VPDs of national importance (e.g. cholera, Japanese encephalitis, meningococcal disease, typhoid and yellow fever). Diseases that are transferable from cattle to humans, such as anthrax and rabies, are also included.

Target

A national vaccine delivery system – with nationwide reach, effective distribution, easy access for marginalized populations, adequate cold chain and ongoing quality control – that is able to respond to new disease threats.

Level of capabilities

The United States sustains a comprehensive immunization system, and current immunization schedules offer protection against 20 VPDs. The HHS CDC Advisory Committee on Immunization Practices (ACIP) makes evidence-based recommendations on routine immunization schedules for children, adolescents, adults and people with select underlying health conditions, and these recommendations are widely adopted, incorporated into federally-funded immunization programmes and followed across jurisdictions. The ACIP's processes and consultations with partners and civil society are a reference for national immunization technical advisory groups worldwide.

Another key strength of the United States' immunization system is its policy framework. The Affordable Care Act mandates that most insurance plans cover ACIP-recommended vaccines without cost-sharing, and the federal Vaccines for Children (VFC) programme, established in 1994, is pivotal in ensuring no-cost access to immunization services for over 50% of children and adolescents. The VFC programme has allowed the swift introduction of newly-recommended vaccines, ensuring timely access for eligible populations.

While there is no federal immunization mandate, states make use of their authority to establish vaccination requirements for select populations, particularly students and healthcare workers. For example, all states require immunization proof for school entry, ensuring broad vaccine coverage among children. Since 1994, HHS CDC has closely surveyed vaccination coverage across vaccines, jurisdictions and demographic groups, ensuring ongoing availability of evidence to guide immunization policies and reduce disparities in vaccination coverage.

During the COVID-19 pandemic and mpox epidemic, the United States demonstrated impressive capacity for planning and implementing mass immunization campaigns. Through concerted effort across federal entities and in close collaboration with local jurisdictions, the Government sourced and distributed nearly one billion COVID-19 vaccine doses at over 100 000 sites between December 2020 and May 2023. More than 1 million JYNNEOS doses were administered to people at risk for mpox between May 2022 and January 2023, highlighting the capacity for targeted mass immunization of vulnerable populations. These achievements were built upon biomedical research capabilities and existing routine immunization services as well as infrastructure and mechanisms for ordering and deploying essential public health goods (such as HHS CDC's VFC programme); but they also underscore the relevant capacity of federal, state and local

entities to collaborate and surge for mass emergency response. Overall, these experiences highlight how the United States maintains mature immunization services and achieves strong vaccination coverage while being able to adapt to and surge for new public health challenges.

Indicators and scores

P8.1. Vaccine coverage (measles) as part of national programme – Score 5

Strengths

- The United States Vaccines National Strategic Plan 2021–2025 is a comprehensive national immunization strategy that fosters innovation, ensures high vaccine safety and increases access to and confidence in vaccines. It supports both domestic and global efforts.
- The VFC programme and the Affordable Care Act ensure cost-free access to vaccines for children and contribute to widespread vaccine coverage.
- For three decades, HHS CDC has tracked vaccination coverage via national surveys across vaccines, jurisdictions and demographic groups. While the coverage of two-dose measles-containing vaccine among kindergarteners decreased from 95.2% during the 2019–2020 school year due to COVID-19 pandemic–related disruptions to delivery of health services, it remained high (at 93.1%) in the 2022–2023 school year. Through the "Let's RISE" initiative (RISE: Routine Immunizations on Schedule for Everyone), there is a clear plan to return to over 95% coverage of measles-containing vaccines among children.

Challenges

- Geographic, economic and logistical challenges (e.g. gaps in healthcare coverage) contribute to localized vaccination disparities in rural and underserved areas.
- Social, cultural and historical factors (e.g. medical distrust, mis- and disinformation and religious beliefs) create barriers to vaccine acceptance, including among select disadvantaged racial and ethnic groups.
- Infrastructure for routine adult immunizations is less developed than that in place for children, with issues around provider education, vaccine access in pharmacies and workplaces, and reimbursement. HHS CDC's Bridge Access Program, which provided cost-free COVID-19 vaccines to uninsured adults (similar to VFC) came to an end in August 2024, removing a mechanism that could have been leveraged in times of emergencies.

P8.2. National vaccine access and delivery – Score 5

Strengths

- HHS CDC's centralized system ensures cold chain integrity and streamlined distribution, with routine vaccines shipped directly to providers, ensuring safe storage and administration.
- HHS CDC ensures rotating stockpiles of routine vaccines located with manufacturers, and HHS ASPR manages large vaccine stockpiles for public health emergencies. The United States has mechanisms to mitigate supply shortages, including contracts with manufacturers, stockpiles and interim vaccination schedules during supply issues.
- Programmes like VFC and the Bridge Access Program enhance equitable vaccine access and delivery to underserved populations. These programmes also partner with the HHS Indian Health Service (IHS) to improve distribution for vulnerable American Indian and Alaska Native communities.

Challenges

- While vaccine stockouts are rare, access issues (e.g. shortage of respiratory syncytial virus immunizations) disproportionately affect vulnerable populations, including American Indian and Alaska Native children.
- Disparities in vaccine access persist in rural and remote areas, potentially creating inequitable vaccine distribution during emergencies.

P8.3. Mass vaccination for epidemics of VPDs – Score 5

Strengths

- As demonstrated in the four years preceding the JEE, the United States has used concerted federal effort and partnership with state, tribal, local and territorial entities to create a successful track record of capacity and surge for mass vaccination campaigns.
- HHS ASPR's national pre-pandemic influenza vaccine stockpile contains pre-pandemic influenza countermeasures, supports domestic vaccine manufacturing capacity and maintains the ability to procure vaccine to mitigate the public health impact of emerging diseases.
- HHS FDA has expedited programmes and mechanisms to facilitate access to vaccines for public health emergencies.
- HHS entities employ systems like the Vaccine Adverse Event Reporting System, Vaccine Safety Datalink and Biologics Effectiveness and Safety, for comprehensive surveillance of vaccine safety across diverse populations.

Challenges

- Dependence on the global supply chain and its inherent limitations (e.g. limited drug substances, platforms and reference materials), can slow vaccine production, regulatory authorizations or approvals and deployment, particularly for novel vaccines and/or vaccines targeting vulnerable populations.
- Stockpiling of several vaccines of public health importance as well as vaccines against different strains of epidemic-prone diseases can incur substantial costs.
- National stockpiling of vaccines that may be needed in other countries also has ethical considerations.

Recommendations for priority actions

- Support adult immunization through various means, including communicating the importance of vaccinations through the "Risk Less, Do More" campaign, funding states to provide no-cost COVID-19 vaccines to uninsured or underinsured adults, and exploring other ways to strengthen adult immunization in the United States.
- Support states with adopting and implementing established guidance and functional standards for immunization information systems and meeting data quality goals and targets.
- Carry out periodic integrated impact assessments and revision of campaigns promoting uptake and confidence in vaccines and immunization services (such as "Let's RISE" and "Risk Less, Do More"), guided by evidence from social and behavioural surveys and related operational research.
- Empower communities of focus by providing learning opportunities, sharing resources, engaging with experts and partnering with other agencies and organizations to increase reach and impact.

Detect

D1. National laboratory system

Introduction

Public health laboratories provide essential services including disease and outbreak detection, emergency response, environmental monitoring and disease surveillance. State and local public health laboratories can serve as focal points for a national system, through their core functions for human, veterinary and food safety, including disease prevention, control and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.

Target

Surveillance with a national laboratory system, including all relevant sectors, particularly human and animal health, and effective modern point-of-care and laboratory-based diagnostics.

Level of capabilities

The national public health laboratory (PHL) system in the United States includes designated laboratories in all the states and territories. Public health laboratories mainly perform human clinical diagnostic testing, but they are also capable of testing environmental samples.

The National Animal Health Laboratory Network consists of 61 state and university-associated veterinary diagnostic laboratories across 42 states; two affiliate laboratories; the APHIS federal reference and confirmatory laboratory; and the National Veterinary Services Laboratories (NVSL) in Iowa and New York. Systems are in place to address challenges across the One Health spectrum.

These laboratories integrate data management, reference and specialized testing, clinical laboratory oversight, emergency response, public health research, training and education, maintenance of partnerships and public communication.

Public health laboratories communicate and interact actively with many hospital and commercial clinical laboratories in each jurisdiction. As recipients of federal funding, all PHLs are required to have a set of SOPs; a database of clinical laboratories that receive training in analysing biological threats and detecting emerging pathogens; and access to referral mechanisms.

All laboratories that perform clinical testing and report patient-specific results (i.e. testing human specimens for health assessment and disease diagnosis, prevention and/or treatment), including state and federal laboratories, must be CLIA-certified.[1] Two states (Washington and New York) operate their own laboratory regulatory programmes, which are approved by the CMS, within HHS. Any laboratory located in a state that has a CMS-approved laboratory programme is exempt from the requirements of CLIA. Similarly, the DOD and Department of Veterans Affairs also administer their own CLIA-equivalent regulations, with requirements that are equal to or more stringent than the CLIA requirements established by CMS. Other states may also have additional licensure requirements.

1 CLIA: Clinical Laboratory Improvement Amendments of 1988

States and other jurisdictions also have food and animal/veterinary microbiology laboratories that are often co-located with other public health facilities or aligned with the PHLs. States and select local PHLs receive overall direction, guidance, requirements and support from HHS CDC and other federal agencies as part of the Laboratory Response Network (LRN).

The LRN's mission is to provide rapid laboratory responses to biological and chemical threats to inform critical decisions about public health and safety. The LRN operates in a pyramid structure with thousands of private and commercial laboratories serving at base level. Domestic state and local public health, military, veterinary, agriculture, food and water testing laboratories serve as mid-level reference laboratories that perform confirmatory testing, investigations and referrals of specimens, and provide support to private laboratories in their jurisdictions. The national-level laboratories in the LRN include those operated by HHS CDC, the United States Army Medical Research Institute for Infectious Diseases, the National Biodefense Analysis and Countermeasures Center, and the Naval Medical Research Center.

Both the human and animal health laboratory networks participate in the Integrated Consortium of Laboratory Networks (ICLN), an overarching goal of which is to establish a coordinated, operational system of federally managed laboratory response networks.

Indicators and scores

D1.1. Specimen referral and transport system – Score 4

Strengths

- A national system is in place for all clinical laboratories to ship specimens directly to HHS CDC and PHLs when necessary.
- The Department of Transportation (DOT) regulations for sample shipment are aligned with international regulations.
- There is ongoing training of PHL and clinical laboratory staff in packing, labelling, and shipping potentially infectious agents.

Challenges

- There is a need for faster sample sharing in anticipation of, or during, public health emergencies.
- Policy, regulatory and logistical issues hamper the efforts of the United States laboratories to obtain samples from international partners.

D1.2. Laboratory quality system – Score 5

Strengths

- Laboratories are accredited by organizations with requirements that meet or exceed CLIA regulations.
- All state or university-associated veterinary diagnostic laboratories are accredited to ISO17025 or equivalent standards.
- Priority pathogens have mandatory proficiency testing programmes.
- Laboratories performing high-complexity tests usually undergo inspections every two years.

Challenges

- Changes to CLIA regulations often require a lengthy process of public notice-and-comment rulemaking, which slows the overall timeline for changes to become regulations.

D1.3. Laboratory testing capacity modalities – Score 5

Strengths

- Most jurisdictions are capable of screening and diagnostic tests and all have access to a regional reference laboratory for both human and animal health.
- Public health laboratories and some healthcare facilities perform modern molecular and serological techniques as part of a national system of sample referral and confirmatory diagnostics.
- Selection of pathogen tests in animal health laboratories aligns with WOAH standards.
- Government agencies provide testing services, SOPs and reagents for many specialized reference tests.
- Personal protective equipment (PPE) is readily available in adequate quantities.
- There is extensive use of rapid electronic reporting of laboratory results through clinical information systems, web portals, email, facsimile and HL7-based electronic messaging.

Challenges

- There is a need for greater capture and transmission of metadata and demographic data on laboratory-based tests, in order to strengthen the evidence base for population health decisions.
- Evaluation of test performance is limited without access to post-market real world data.
- There is a need to optimize the use of new and emerging technologies for data capture, harmonization, transmission and use.

D1.4. Effective national diagnostic network – Score 5

Strengths

- Public health laboratories have the capacity to identify significant pathogens (e.g. mpox and highly pathogenic avian influenza).
- Additional specialized networks exist for environmental and food testing – for example, the Environmental Response Laboratory Network and the Food Emergency Response Network.
- The ICLN provides interagency coordination for all national federally managed laboratory networks.
- Each state has statutes for referral, reporting and case notification that are modelled on national standards for notifiable diseases.
- Several national PHLs conduct testing as a part of the WHO global network of reference laboratories.
- Jurisdictional PHLs are encouraged to work closely with clinical laboratories to respond to emerging diseases using a tiered reference and referral system.

Challenges

- There is a need for more jointly-led policies and programmes that integrate the human and veterinary reporting chains, laboratory information systems, surveillance for outbreaks and emerging trends, and analyses of the effectiveness of prevention and control programmes.
- Appropriate agreements are needed for information sharing and data confidentiality across federal animal health and public health departments/agencies.

Recommendations for priority actions

- Leverage existing partnerships to ensure sample and data sharing.
- Strengthen bioinformatics to inform future metagenomic technologies by reinforcing training and strengthening capacity to detect emerging infectious pathogens.
- Improve information sharing and integrate laboratory capacities across the human and animal health sectors.
- Ensure funding to create sustainable capacity and capability in public health and veterinary laboratories.
- Improve existing systems for electronic reporting of laboratory data and ensure their use.

D2. Surveillance

Introduction

The purpose of real-time surveillance is to advance the safety, security and resilience of the nation by leading an integrated surveillance effort that facilitates early warning and situational awareness of all IHR hazard-related events.

Target

(1) Strengthened early warning surveillance systems that are able to detect events of significance for public health and health security; (2) improved communication and collaboration across sectors and between national, intermediate and primary public health response levels of authority regarding surveillance of events of public health significance; and (3) improved national and intermediate level capacity to analyse data. This could include epidemiological, clinical, laboratory, environmental testing, product safety and quality, and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR.

Level of capabilities

The United States has a strong, interoperative public health surveillance network based on a combination of clinical, laboratory, and environmental reporting from medical providers, laboratories, and wastewater sites. Given the country's governance structure, active and sentinel surveillance programmes are founded on collaborative relationships between federal, state, local, territorial and tribal public health departments and public-private partnerships.

Some federal agencies detect and monitor emergent public health threats, including by conducting surveillance among specific populations or for specific hazards. Syndromic surveillance based on diverse data sources is being pioneered and gaining functionality as data quality and systems improve.

Several agencies collaborate through the National Biosurveillance Integration Center (NBIC) to enable large-scale, all-hazards biosurveillance using disparate data sources, novel methods and advanced technology.

The federal government defines surveillance standards to support comprehensive national surveillance. A large, highly-trained, skilled public health workforce across agencies and jurisdictions reports disease according to these standards. Individual SLTTs are responsible for acquiring data sources within their respective jurisdictions and, as owners of that data, have a responsibility to protect it across jurisdictional boundaries. Key partners, including the Council for State and Territorial Epidemiologists (CSTE), ASTHO, and federal agencies such as the CDC and Assistant Secretary of Technology Policy/Office of the National Coordinator for Health Information Technology, coordinate the implementation of data standards and promote data sharing across jurisdictions.

Surveillance sources generate and send records to all levels of public health, where systems continually run event-detection algorithms to flag unusual increases, triggering investigative processes by epidemiologists and public health scientists.

There are international disease detection and surveillance capabilities in place through extensive epidemic intelligence networks and HHS CDC country and regional offices, as well as monitoring of open-source information. The animal health system is guided by reporting from SLTT and federal entities through a collaborative network.

When a suspected public or animal health event is detected, various components of the system support the acquisition and integration of additional data to verify and investigate suspect cases and signals. State and local health departments, state animal health officials and federally accredited veterinarians use standard case investigation practices to document details, assess the extent of the threat, and determine where it may be spreading. These systems use standard data definition and transmission protocols to exchange data across all levels. Data sharing agreements define authorities for data exchange, ensuring and protecting patient confidentiality while allowing appropriate authorities to track the extent and/or the spread or contraction of validated events.

To different degrees, each public health jurisdiction implements data analysis and integration processes to monitor and provide public awareness of threats. At national level, the HHS CDC integrates data submitted by jurisdictional systems into a common operating platform that links laboratory, health care, environmental and resource utilization data to provide comprehensive pictures of events at local, state or national levels, depending on the level of analysis and visualization necessary. These operate in secure environments, allowing data sharing and access only to authorized persons; but they also generate data sets and visualizations that protect patient confidentiality and sensitive commercial interests while allowing independent access to and analysis of data.

Indicators and scores

D2.1. Early warning surveillance function – Score 5

Strengths

- Strengths of the system include advanced surveillance modalities such as genomic surveillance at points of entry, wastewater surveillance, syndromic surveillance utilizing emergency department visit data, event-based surveillance in accordance with globally recognized standard, automated electronic laboratory reporting for nationally notifiable diseases and event-detection algorithms to flag concerning developments for prompt action.
- Data sharing agreements between federal and state partners support detection of outbreaks as they emerge, with standards for consistent analysis across jurisdictions.
- Strong partnerships support sharing surveillance data between healthcare and public and animal health stakeholders.

Challenges

- Completeness of information on notifiable diseases and conditions is influenced by factors such as the resources and priorities of state and local officials.
- Federal and SLTT entities have different systems that do not always have automated interoperable data sharing, and federal authorities for requiring public health data reporting to federal systems are limited.
- There is a need for tighter integration of animal disease monitoring with human surveillance efforts (e.g. through use of a common platform).
- Small healthcare facilities and rural areas may not have the resources required to implement the necessary surveillance efforts.
- There is a need to expand electronic laboratory reporting and emergency department surveillance, especially to cover vulnerable populations.
- Sustained funding is needed for event-based surveillance and data modernization at federal and SLTT levels.

D2.2. Event verification and investigation – Score 5

Strengths

- Partner organizations promote consistency in defining and reporting notifiable diseases across geographic boundaries, and national health information technology standards support data interoperability for data exchange.
- Rapid electronic notification enables case investigations to begin quickly.
- An events-based management system aggregates surveillance data for prospective tracking and monitoring of public health threats.
- Electronic medical record data is exchanged with local public health authorities promoting timely, thorough and accurate case investigation and documentation.
- Real-time event verification is done in collaboration with subject matter experts and in-country staff and partners.

Challenges

- Processes for deploying case definition algorithms in electronic medical records systems can be slow due to different levels of adoption and implementation of standards and practices used in those systems.
- There is a need to ensure sustained resources for field investigation teams at federal and SLTT levels.

D2.3. Analysis and information sharing – Score 4

Strengths

- Partner organizations support and promote cross-jurisdictional data sharing for more comprehensive disease detection and monitoring.
- A daily epidemic intelligence report (on event-based surveillance) is generated and disseminated across government.
- The Event-Based Surveillance (EBS) Daily Report, CDC Daily Report, and weekly Situation and Threat Awareness Report (STAR) are generated by the CDC EBS Team and distributed across the Government.
- Development of event-specific data visualization dashboards and public use datasets allows private sector and university researchers to carry out independent investigation of local public health concerns.
- Trained staff, enterprise systems, and data, analytics, and visualization capabilities support situational awareness during public health emergencies.

Challenges

- Federal and state privacy laws preclude linking patient-specific data across laboratory, healthcare and public health sources at federal level.
- Better linkages are needed between disparate data sets (e.g. on cases, laboratory data and vaccine administration) to support advanced analytics and visualizations to inform public health action.
- Sustained resources are needed to support data sharing agreements and pipelines to an interagency common operating platform; and such arrangements should be put in place before, rather than during, an emergency.
- Capacity for advanced analytics at SLTT level is insufficient and may require support and collaboration from across the country.

Recommendations for priority actions

- Expand surveillance coverage at all levels from federal to SLTT, including by:
- expanding syndromic surveillance beyond large metro areas to rural areas and small healthcare facilities like primary care and critical access hospitals;
- increasing the number of targets detected by wastewater surveillance (with appropriate validations); and
- sustaining investments in event-based surveillance for early warning, focusing on domestic detection and prompt reporting to WHO.
- Implement a common data operating platform and increase the number of programmes being integrated. This should be accompanied by specifications of the minimal dataset, data standards and interoperability for electronic case reporting.
- Advance the timeliness of acquisition, analysis and dissemination of key healthcare data for public health action during an emergency, measured through initial reports of suspect cases generated from electronic case reporting protocols

D3. Human resources

Introduction

Human resources are important in order to develop a sustainable public health system over time by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills and subject-matter expertise. Human resources includes nurses and midwives, physicians, public health and environmental specialists, social scientists, communication professionals, occupational health professionals, laboratory scientists/technicians, biostatisticians, IT specialists and biomedical technicians, and a corresponding workforce in the animal sector, such as veterinarians, animal health professionals, para-veterinarians, epidemiologists and IT specialists.

The recommended density of doctors, nurses and midwives per 1000 population for operational routine services is 4.45 plus 30% surge capacity. The optimal target for surveillance is one trained (field) epidemiologist (or equivalent) per 200 000 population who can systematically cooperate to meet relevant IHR and PVS core competencies. One trained epidemiologist is needed per rapid response team.

Target

States Parties with skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005).

Level of capabilities

The United States has a robust public health workforce, particularly in terms of surveillance, response and emergency preparedness. An extensive network of specialized health professionals at federal level is capable of substantial surge during major public health responses (as demonstrated during the COVID-19 pandemic); but there are challenges, including a declining pipeline for public health professionals, retention issues due to low wages and limited career advancement, and significant shortages in rural areas.

Numerous relevant training programmes are available at various educational levels, but many graduates prefer private sector jobs over public health roles due to better wages and opportunities. Programmes like the National Disaster Medical System, the Medical Reserve Corps and the Disaster Emergency Medical Personnel System provide emergency staffing, drawing from a pool of trained professionals and volunteers.

Federal initiatives to support the workforce include financial support for training and retention (for example, through the American Rescue Plan, which has provided over seven billion dollars to bolster the public health workforce). Efforts to monitor and conduct research on workforce capacity include the establishment of the Public Health Workforce Research Center and various surveys to assess and address workforce needs.

The United States may wish to consider including public health lawyers and legal counsel – as set out under P1 – as an integral part of health workforce enhancement programmes; this would help tie together the legal preparedness and health workforce strategies.

Indicators and scores

D3.1. Multisectoral workforce strategy – Score 4

Strengths

- The United States has an extensive, globally recognized network of specialized professionals and an excellent education pipeline to train future professionals.
- Retention efforts for the public health workforce include focusing on career satisfaction and professional development opportunities.
- Federal surge workforces for public health events include the United States Public Health Service Commissioned Corps, the National Disaster Medical System, the Federal Emergency Management Agency (FEMA) Surge Capacity Force, the National Guard and the Medical Reserve Corps.

Challenges

- Reports indicate that 45–50% of public health employees will become eligible to retire in the next five years.
- There is a need to ensure a next generation of public health workers is there to take their place and to address the loss of expertise and experience.
- There is a shortage of public health workers in rural areas of the country, leading to underserved populations in these areas.

D3.2. Human resources for implementation of IHR – Score 4

Strengths

- HHS CDC and the HHS Health Resources and Services Administration (HRSA) help build the future public health workforce by managing and delivering fellowships with specific target audiences, including epidemiology, public health informatics, laboratory sciences, economics and decision sciences, public health policy and management, programme evaluation and other public health disciplines.
- There is a focus on training future public health professionals to ensure these capacities.
- State-level public health departments have epidemiology, laboratory and case management capacity.
- The federal government, through HHS CDC, provides technical assistance, training and funding to state and local laboratories.
- There is regular, multilevel sharing of public health information with public health professionals.
- HHS CDC publishes the Morbidity and mortality weekly report, which is the agency's vehicle for scientific publication of timely, reliable, authoritative, accurate, objective and useful public health information and recommendations.
- HHS CDC's Clinician Outreach and Communication Activity system prepares clinicians to respond to emerging health threats and public health emergencies.
- HHS CDC's Epidemic Information Exchange (Epi-X) secure communications network supports postings and discussions about disease outbreaks and other public health events that could involve multiple jurisdictions.

Challenges

- A study found that nearly one-third of state and local public health employees are considering leaving their organization in the next year, and 44% are considering leaving within the next five years.
- Pandemic fatigue has weakened the system.
- Salaries are higher outside the public health workforce.

D3.3. Workforce training – Score 5

Strengths

- HHS HRSA provides funds to accredited health profession schools, health centres, and other healthcare providers, and offers support to individual healthcare professionals in exchange for commitments to serve underserved communities.
- Training programmes are in place to develop qualified public health professionals who then join federal, state, local, tribal, or territorial public health organizations.
- The Epidemic Intelligence Service (EIS) is a HHS CDC-run advanced two-year on-the-job training programme that uses epidemiology to solve public health problems.
- As of 31 March 2024, over 50% of HHS CDC's Division of Workforce Development fellows across EIS, the Laboratory Leadership Service, and the Public Health Associates Program were serving in SLTT health agencies and laboratories.
- The USDA Outbreak Investigations Programme, conducted biennially, provides epidemiologists with a standard approach to disease outbreak investigations.

Challenges

- There is a need for more coordinated engagement with workforce training.
- The country has many high-quality training programmes, but they are not completely coordinated, leading to gaps in certain areas and difficulty tracking their overall impact.

D3.4. Workforce surge during a public health event – Score 5

Strengths

- Federal surge workforces for public health events include the United States Public Health Service Commissioned Corps, the National Disaster Medical System, the FEMA Surge Capacity Force, the National Guard, and the Medical Reserve Corps.
- The federal government can make public health personnel available to respond to emergencies.
- Skilled personnel can be reassigned quickly to support disaster responses.
- Some capacities, like the National Guard and Medical Reserve Corps, can be activated by states and localities, ensuring that response needs are dictated at state and local level.

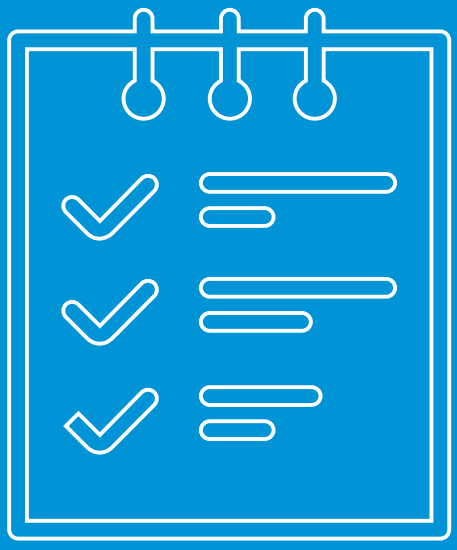
Challenges

- There is a need to increase public health workforce surge capacity in some local areas.
- Certain areas have trouble attracting healthcare workers.

Recommendations for priority actions

- Ensure that workforce monitoring is able to identify professional groups and geographic locations that may be underserved, tracking inflows and outflows of public health specialists in the local, state and federal workforce.
- Sustain funding to maintain IHR-relevant capabilities and the expanded workforce created during the COVID-19 pandemic, recognizing the current importance of federal funding in maintaining key capacities at state and local levels.
- Ensure that training and availability of surge staffing encompasses not only technical specialists, but also professionals who provide enabling functions such as programme administration and legal advice.

Respond



R1. Health emergency management

Introduction

This capacity focuses on management of health emergency and systems for enabling countries to be prepared and operationally ready for response to any public health event, including emergencies, as per the all-hazard requirement of IHR. Ensuring risk-based plans for emergency preparedness, readiness and response, robust emergency management structures and mobilization of resources during an emergency is critical for a timely response to public health emergencies.

Target

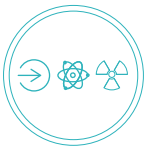
(1) Existence of national strategic multi-hazard emergency assessments (risk profiles) and resource mapping. (2) Existence of emergency readiness assessment. (3) Development of national health EOC81 plans and procedures. (4) Establishment of an emergency response coordination mechanism or incident management system. (5) Evidence of at least one response to a public health emergency within the previous year that demonstrates that the country sent or received medical countermeasures and personnel according to written national or international protocols. (6) Existence of an emergency logistic and supply chain management system/mechanism. (7) Existence of policies and procedures for research, development and innovation for emergency preparedness and response.

Level of capabilities

The United States has a comprehensive, crosscutting, multi-hazard National Preparedness System (NPS) that supports public health readiness and resilience. The national planning frameworks and Federal Interagency Operational Plan (FIOP) organize specific requirements and tasks among lead and supporting agencies and define roles and responsibilities in a scalable, adaptive manner.

National preparedness and response systems have been tested by multiple concurrent public health situations and are continually refined by new data. The Strategic National Risk Assessment (SNRA) provides the basis for domestic capacity development and a means for agencies to share information and planning considerations and align policy and planning. Recent public health events, including the COVID-19 pandemic and a regional outbreak of mpox, highlighted opportunities to ensure strong coordination of national responses to complex incidents requiring concurrent domestic and international effort.

The SNRA presents national risks in the context of available national resources, grouping them into three categories: natural hazards, technological/accidental hazards, and adversarial, human-caused threats/hazards. The SNRA prioritizes risks for potential incidents and consequences; lists the threats and hazards prioritized in preparedness efforts; and affirms an all-hazards, capability-based approach to preparedness planning. The NPS defines the logistics, stockpiles, experts and funding needed to respond to emergencies and provides a consistent, reliable approach to support decision-making, resource allocation and measuring progress. The National Risk and Capability Assessment is a suite of assessment products that measures risk and capability across the nation in a standardized and coordinated way.



An extensive multiagency, multisectoral EOC network coordinates information and resources for public health incident management at all levels of government. This network is empowered, guided and facilitated by authorities, systems and mechanisms that operationalize the EOC network in accordance with specific plans and procedures. Most federal EOCs maintain 24/7/365 coverage, while states and most local jurisdictions, tribal governments, and territories have standing EOC facilities or the ability to establish them quickly if needed. The federal government ensures that incident-specific guidelines are publicly available, disseminated throughout the EOC network at all levels, and available for partners supporting the domestic response. While some EOCs maintain continuous watch teams, most EOCs below national level activate to support or maintain situational awareness when an event or incident is occurring.

The capability to activate an EOC relies on guidelines and frameworks that ensure EOCs have similar functional processes, terminologies, internal command structures, and coordination and communication protocols. The operational scope and responsibilities of each EOC reflect department-, agency- and sector-specific considerations in the context of the common national framework. Federal EOCs maintain close contact with one another and take the lead for national or international emergencies as needed according to the National Response Framework (NRF) or as directed by the President.

Public health EOCs have a range of scenarios, triggers and activation levels. Triggers are developed using an all-hazard approach to preparedness and response and vary by department and agency. EOC staff and associated multisectoral rapid response teams receive routine training for their roles during a response. Once an EOC is activated or increases its activity level in some way, the EOC or incident manager may request additional standby or duty personnel.

Various simulation exercises are conducted multiple times per year. The National Exercise Program was established in 2006 as the principal mechanism for examining national preparedness and readiness, and provides a consistent method for examining and validating federal and whole-of-community partners' core capabilities. Each four-year National Exercise Program cycle is a progressive schedule of exercises addressing a specific area of concern based on the national risk assessment.

During natural or man-made disasters, HHS ASPR leads the coordinated federal mission to provide public health and medical care capabilities in coordination with HHS CDC. The Emergency Support Function (ESF) system provides the structure by which an incident response is coordinated. ESF #8 – Public Health and Medical Services is led by HHS, with responsibility delegated to the HHS ASPR.

The FIOPs provide further detail regarding federal roles and responsibilities, specify critical tasks, and identify resource and source requirements for delivering core capabilities. Individual United States departments and agencies may develop operational plans to supplement the FIOPs.

The HHS mission encompasses five frameworks: protection, prevention, mitigation, response and recovery. The federal response mission is operationalized through SOPs that support the HHS All Hazards Plan, which facilitates and supports incident management by providing federal resources in response to a disaster or emergency event (regardless of cause). The HHS All-Hazards Plan was developed in September 2011 in conjunction with the NRF and the FIOPs, with scenario-specific annexes that address HHS's capabilities, essential tasks and resources by the phase of response, and specify requirements for ESF #8 and other federal partners who support HHS in its response mission.

Once a public health and medical response is activated, it is initially coordinated by the Emergency Management Group (EMG) through the HHS Secretary's Operations Center, before command and control transitions to an incoming Incident Response Coordination Team (IRCT). Requests for federal public health and medical assistance are submitted either to the EMG or to the IRCT depending on the current structure. Requests for federal assistance are made by the EMG on behalf of the Secretary, and public health and medical subject matter experts from HHS and other appropriate organizations are consulted as needed.

DHS FEMA has developed an international assistance system concept of operation, last updated in July 2022, which describes the United States interagency procedures and decision-making around sending and receiving health personnel during a public health emergency. The system was designed to enable the federal government to coordinate adjudication of international offers of assistance and provides guidance for the United States response entities that use international resources during catastrophic domestic incidents.

The Government supports the WHO Global Outbreak Alert and Response Network (GOARN) through HHS CDC's Event Based Surveillance Team. Personnel deployments are addressed through the HHS Pandemic Preparedness Plan or other emergency preparedness plans. The United States supported the creation of the WHO Emergency Medical Team (EMT) Initiative and continues to engage with the regional WHO EMT Initiative and has engaged in multiple PAHO EMT events. The United States has not registered its National Disaster Medical System teams under the WHO EMT structure.

Robust domestic systems for developing, stockpiling, distributing and dispensing medical countermeasures (MCM) are used when and where they are needed. Exercises are conducted on national plans and capabilities to deploy MCM and guide updates of response policies and procedures that reflect new capabilities and address limitations.

Through near-real-time direct data feeds from medical supply distributors, early detection and monitoring of demand surges and identification of regional shortages within the medical supply chain are possible. HHS ASPR maintains the Strategic National Stockpile (SNS), which can supplement MCM needed by SLTT and the largest metropolitan areas during public health emergencies. The logistics system can provide adequate and rapid delivery of MCM. Some agencies, states and local jurisdictions maintain their own stockpiles.

HHS ASPR's SNS and BARDA implement and maintain contracts with MCM manufacturers and distributors to procure and stockpile MCM prior to a public health emergency, and for rapid surge production and delivery during a public health emergency. HHS FDA works closely on legal and regulatory issues related to MCM stockpiling.

The SNS has been activated continuously since January 2020 to respond to an array of infectious disease outbreaks and has convened comprehensive after-action processes to capture lessons and refine processes.

Policies are in place to address the legal, regulatory and logistical challenges associated with transferring MCM across international borders during public health emergencies. The United States works continuously to exercise policies and plans to receive, consider and respond to international requests for assistance.

One goal of the National Biodefence Strategy is to create a plan and processes to develop and implement a coordinated, transparent national research agenda for responses to nationally or internationally significant biological incidents. The Biological Incident Notification and Assessment Protocol, playbook and research-related annexes systematize outreach, describe coordination and provide relevant information for government agencies during an emergency response. The Pandemic Preparedness Plan is a framework for biomedical R&D to shorten timelines between emergence of a public health threat and the authorization/approval of candidate therapeutics, vaccines and devices.

HHS ASPR's BARDA catalyzes innovation in advanced R&D, manufacturing and procurement of MCM for public health emergencies through a network of performers and capabilities that can pivot rapidly to address new threats. Working closely with interagency partners, the model has been successful in leveraging public-private partnerships to accelerate MCM development. Strategic investments in advanced R&D of platform technologies have established a foundation for rapidly deployable capabilities and have advanced several important MCM.

As the largest public funder of biomedical research in the world, HHS NIH supports a wide range of extramural research organizations, domestically and internationally, to advance understanding of potential infectious disease threats. It supports resources and networks for R&D innovations that can be leveraged during an emergency response.

Indicators and scores

R1.1. Emergency risk and readiness assessment – Score 5

Strengths

- DHS FEMA's Annual National Preparedness Report provides policy makers and planners with a foundation for domestic capacity development and a means for agencies to share information and planning considerations.
- The Government regularly reviews and updates all capabilities, resources and plans according to evolving risks, resources and preparedness efforts.
- Federal and SLTT governments can leverage a wide range of different resources to expand the public health sector's capacity to respond.

Challenges

- The changing nature of society and the risk landscape requires preparation for new hazards, threats and/or events (e.g. cyber attacks) with potentially greater consequences than have occurred in the past.
- Some events may cause consequences that are dispersed throughout the nation, creating different types of impact for preparedness planners to consider across jurisdictions.

R1.2. Public health emergency operations centre (PHEOC) – Score 4

Strengths

- An extensive multisectoral, multilevel EOC network and an emergency support function system provide the structure to coordinate information, resources and responses.
- Specific plans are in place for general and specific threats and circumstances, with planning teams in multiple agencies ready to modify existing plans or begin new plans when the situation dictates.
- National level exercises allow all levels of government, the private sector, non-governmental organizations (NGOs), and community groups to test operational capabilities, plans, and communication, and to address specific areas of concern based on the national risk assessment.
- The annual Senior Officials Exercise tests bio-preparedness for health emergencies across the federal government.

Challenges

- While some EOCs maintain continuous watch teams, most subnational EOCs only activate to support responses, or maintain situational awareness when an event or incident is occurring. In steady state, EOC activities and staffing may decrease significantly.
- The EOCs that are operated by different federal agencies often have multiple unique responses occurring simultaneously, all utilizing limited federal resources.

R1.3. Management of health emergency response – Score 5

Strengths

- The federal response mission to provide public health and medical care is operationalized by one entity, HHS ASPR, through SOPs that support the HHS All Hazards Plan. This plan facilitates and supports incident management by providing federal resources for responses.
- SLTT governments supplement and facilitate local efforts before, during and after disaster events. States provide direct and routine assistance – including public health, medical and human services – to local jurisdictions.
- In a public health emergency response, internal efforts and response resources are monitored as part of HHS's response evaluation plan. Data and information collected from response staff are used to make improvements through after-action reports and improvement plans once the emergency response ends.

Challenges

- Partnerships with the private sector could be strengthened further. This could provide significant additional capabilities and resources to strengthen local community resilience.

R1.4. Activation and coordination of health personnel in a public health emergency – Score 4

Strengths

- The Government routinely partners with EMTs around the globe to share expertise and lessons, and the United States humanitarian NGOs have registered teams under the WHO EMT Initiative.
- HHS entities provide subject matter expert surge capacity to states on request to support emergency operations.
- Multisectoral rapid response teams receive routine response training, and surge personnel attend regular and just-in-time EOC training.

Challenges

- There are legal and logistical barriers to receiving response personnel from across states and overseas, including around medical licencing, which is controlled at state level.

R1.5. Emergency logistic and supply chain management – Score 5

Strengths

- HHS ASPR's PHEMCE convenes multiple federal agencies to determine and prioritize research, development, acquisition, stockpiling and maintenance requirements for MCM. HHS FDA works closely with PHEMCE partners and manufacturers to approve, clear, grant and license MCM, or to authorize them for emergency use when appropriate.
- HHS ASPR's SNS and BARDA contract with manufacturers and distributors to procure and stockpile MCM, and can surge production and delivery rapidly during a public health emergency.
- Critical, response-ready stockpiled MCM can be delivered rapidly to supplement vaccines, medicines and supplies needed by SLTTs during public health emergencies.

Challenges

- Annual appropriations for long-term costs are being used to sustain MCM acquired through one-time COVID-19 supplemental funds. Significant holdings of expiring PPE and other medical supplies acquired during COVID-19 will require replenishment.
- Health equity can be improved by enhancing SLTT communities' access to stockpiled MCM during public health emergency responses.
- There is a need to continue expansion of support to SLTT preparedness for MCM planning through increased training, exercises, information sharing and direct technical assistance.

R1.6. Research, development and innovation – Score 5

Strengths

- There is a whole-of-government approach to MCM preparedness and response, with accelerated development of MCM through commercial manufacturing and regulatory approval to support national security.
- Research organizations are supported domestically and internationally, including for high risk/high reward programmes, with specific funding and investment in cutting edge technologies to bring them into the MCM space.

Challenges

- Significant further investment is required to develop MCM manufacturing capacity, and there is limited existing infrastructure for manufacturing active ingredients and some finished drug products.
- Current advanced development funding is inadequate to advance all MCM coming out of early development, and/or to support long-term manufacturing capabilities and product development.

Recommendations for priority actions

- Ensure joint testing that involves federal agencies and a broader range of SLTTs in emergency response – particularly through exercise scenarios requiring the sending and receiving of surge personnel.
- Identify, prioritize and close gaps in access to resources, assets and technical assistance for SLTT partners in public health responses, with particular focus on tribal and territorial communities and resources for seldom-encountered and/or emerging threats.
- Establish adequate and consistent funding for MCM, especially those that are necessary for an immediate response to future outbreaks and pandemics.

R2. Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade or naturally occurring. In a public health emergency, law enforcement will need to quickly coordinate its response with public health and medical officials.

Target

Country conducts a rapid, multisectoral response for any event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide timely international assistance.

Level of capabilities

The capacity to link public health and law enforcement is a strong component of the United States' public health emergency preparedness and response system, and includes the investigation of alleged deliberate use events. This capacity is demonstrated through different levels of legislative and normative documents in force at both national and subnational levels.

In the United States, the foundation for linking public health and law enforcement is the Joint Criminal-Epidemiologic (Crim-Epi) Investigation model. The Crim-Epi model was developed to raise mutual awareness and increase collaboration between professionals in the public health, law enforcement and other sectors around the identification and assessment of, and response to, biological threats, including intentional acts.

The federal government has made efforts to improve public health, law enforcement and multisectoral response by creating frameworks and protocols and by conducting national and subnational training and exercises. Regular weekly contact (or more frequent if needed) between national public health and law enforcement authorities ensures timely information sharing and the coordination of response operations.

The United States has also demonstrated capacity to link animal and plant health agencies and law enforcement to investigate alleged deliberate use events against the agriculture and food sector, using the Animal-Plant Health Joint Criminal Epidemiological Investigation (APH Crim-Epi) model. This model includes conducting awareness raising, training and exercises among national and subnational animal and plant health, law enforcement and private sector partners.

The responsible national agencies maintain relevant memoranda of understanding, protocols or similar agreements to authorize and coordinate their respective subject matter areas. Similar arrangements exist between national and local law enforcement agencies. Public health and security authorities regularly and effectively exchange reports and information on events of concern at federal (national), state (intermediate) and local (primary) public health levels.

Enforcement systems are in place, including at points of entry (POE), to help prevent contamination of food, medical products and the environment, and to ensure the necessary monitoring. Existing laboratory systems and networks can identify select and unknown agents.

The demonstrated level of capacity to link public health and law enforcement has the potential to be a point of reference for international cooperation on global health security.

Indicators and scores

R2.1. Public health and security authorities, (e.g., law enforcement, border control, customs) are involved during a suspect or confirmed biological, chemical or radiological event – Score 5

Strengths

- The Government has several plans, memoranda of understanding and other agreements between national public health and law enforcement agencies that are continually leveraged to ensure biosurveillance, information sharing and coordinated responses, and to increase national health security.
- Federal memoranda of understanding are in place regarding: identification and notification of, and response to, biological threats; coordination of responses to importations of illegal controlled substances, drugs and/or biologics; quarantine enforcement in the maritime environment; and border health security.
- The Government has multiple memoranda of understanding, other similar agreements and partnerships with SLTT authorities, showing good understanding of the importance of collaboration between the federal and SLTT levels for health security.
- There are established, specific cooperation mechanisms to enhance national preparedness for incident identification and to support risk assessments.
- Training activities are sustained at federal level and between federal and SLTT levels, based on Crim-Epi and APH Crim-Epi models.
- The Government conducts several exercises each year, which include information sharing and joint investigations and responses, to test and enhance health security preparedness and response.
- Established legislation allows for detention and quarantine of persons for public health reasons.
- The Government conducts regular meetings (at least weekly and more frequently if needed) between national public health and law enforcement authorities to ensure timely information sharing, reporting and the coordination of response operations.
- There is established collaboration with the International Criminal Police Organization (INTERPOL) on incidents with the potential to impact public, animal and/or plant health and related law enforcement.

Challenges

- Workforce retention and recruitment of subject matter experts are consistently challenging. High turnover rates, internally and externally, mean that constant efforts must be made to establish new relationships, subject matter expertise and mutual understanding of roles and responsibilities.
- Multiple levels of government and administrative complexity require bespoke protocols and agreements with subnational and primary government structures.

Recommendations for priority actions

- Conduct comprehensive subnational and local level training on the Crim-Epi (public health) and APH Crim-Epi (animal and plant health) models.
- Develop training programmes and simulation exercises on collaboration, coordination and communication between public health and security authorities at national, subnational and local levels; and ensure the involvement of representatives of other technical areas including but not limited to zoonotic diseases, biosafety and biosecurity, surveillance and the national laboratory system.
- Identify potential national and health security threats in the context of border health and import vigilance, working in coordination with other United States law enforcement authorities and subnational and local partners.

R3. Health services provision

Introduction

Resilient national health systems are essential for countries to prevent, detect, respond to and recover from public health events, while ensuring the maintenance of health systems functions, including the continued delivery of essential health services at all levels. Particularly in emergencies, health services provision for both event-related case management and routine health services are equally as important. Moreover, ensuring minimal disruption in health service utilization before, during and beyond an emergency and across the varied contexts within a country is also a critical aspect of a resilient health system.

Target

(1) Evidence of demonstrated application of case management procedures for events caused by IHR-relevant hazards. (2) Optimal utilization of health services, including during emergencies. (3) Ensuring continuity of essential health services in emergencies.

Level of capabilities

The healthcare system of the United States excels in technological innovation, specialized care and medical research. These strengths ensure that the country remains a global leader in medical advancement and cutting-edge treatment options. But health care in the United States is considered expensive, and the country spends more per capita on health care than any other. Even with insurance, patients often face high out-of-pocket costs that can be significant barriers to accessing care.

Under the federal system, much of the responsibility for providing health services is that of states, localities and independent bodies. The federal government engages with these entities to track and support health services provision and cross-jurisdictional issues.

Under this decentralized system, health services are delivered by different service providers. Most such services in the United States are provided by private entities. Publicly funded public healthcare providers offer services through public hospitals and clinics, particularly in underserved or rural areas, and some people receive care through health maintenance organizations (HMOs), preferred provider organizations (PPOs), or other managed care plans that try to control costs by negotiating rates and managing access to certain services.

Healthcare is mainly structured around a mixed system of public and private insurance. The majority of Americans receive health insurance through private insurance. Medicare, a federal programme, is also available – primarily covering people aged 65 and older and certain younger people with disabilities. Medicaid, a joint federal and state programme, provides health coverage for low-income individuals and families. The HHS CMS-administered Children's Health Insurance Program provides health coverage to children in families with incomes too high to qualify for Medicaid but too low to afford private insurance. Some people, including some migrants, fall between the cracks of these systems, which – while they seek to cater for the most vulnerable – are neither universal nor comprehensive.

Provision of healthcare services during emergencies is done through a well-developed emergency response system in which multiple components work together. HHS CDC and HHS ASPR play crucial roles in coordinating responses to public health emergencies, including infectious disease outbreaks. Disaster response is coordinated by DHS FEMA, which provides support during large-scale emergencies like natural disasters and pandemics. The HHS ASPR-managed National Disaster Medical System provides medical

and public health support during emergencies. Rapid response teams of medical professionals called disaster medical assistance teams, can be deployed to disaster areas to provide emergency care, triage, and medical evacuation services. HHS CDC Public Health Emergency Preparedness (PHEP) programme helps state and local public health agencies prepare for and respond to public health emergencies.

Indicators and scores

R3.1. Case management – Score 3

Strengths

- Clinical case management guidelines are available and distributed systematically.
- The federal government provides financial support for local level development of context-specific guidelines.

Challenges

- While guidelines for local care take local situations into account, harmonization is needed to avoid creating different levels of care quality throughout the county.
- There is a need to ensure implementation of national guidelines at state and local levels.
- A national assessment has indicated that a significant number of hospitals do not have disaster plans that include special provisions for children. There is a need to focus on case management for children and other unique populations during emergencies.

R3.2. Utilization of health services – Score 4

Strengths

- The HHS Agency for Healthcare Quality Research monitors health systems performance, including utilization of services, through their Healthcare Cost and Utilization Project databases.
- Tools and data from the HHS emPOWER Program are used by national and state public health authorities and partners to strengthen emergency preparedness, response, recovery, and mitigation, and to protect at-risk populations before, during and after incidents, emergencies and disasters.
- The Joint Commission sets quality improvement and patient safety standards for healthcare organizations. The Commission has accredited more than 22 000 healthcare organizations to date.

Challenges

- Crisis Standards of Care (CSC) provide a set of guidelines and principles to guide the healthcare system's response during extreme emergencies that overwhelm normal healthcare services (e.g. pandemics, natural disasters or mass casualty events); but the CSC are not developed in some states, and in others where they do exist, they lack the necessary focus.

R3.3. Continuity of essential health services (EHS) – Score 4

Strengths

- The Government does extensive continuity of operations planning (COOP) – i.e. mitigation and planning to create resilience and ensure continuation of services when challenged – and provides guidance and resources for state, local and private sector entities to develop their own COOP.
- The NRF takes an all-hazards approach to disasters. Its federal coordinating structures group resources and capabilities into the functional areas most frequently needed in national responses to ensure health services remain available during any type of disaster.
- Accredited organizations provide guides on continuity of essential services and emergency management.

- The HHS CMS's Emergency preparedness requirements for Medicare and Medicaid participating providers and suppliers establish national emergency preparedness requirements to ensure adequate planning for natural and man-made disasters.

Challenges

- There is a need to ensure that essential health services are able to treat a variety of needs in vulnerable populations.

Recommendations for priority actions

- Advocate with relevant authorities to ensure national clinical case management guidelines for priority health events are implemented at state and local level.
- Review and regularly update national clinical case management guidelines for high priority health events.
- Develop/update hospital emergency/disaster plans, incorporating provisions for managing children and other vulnerable populations during emergencies.
- Review and regularly update information on service utilization, and use the updated information to improve service utilization.

R4. Infection prevention and control

Introduction

To have strong, effective infection prevention and control (IPC) programmes that enable safe health care and essential services delivery, and prevention and control of healthcare-acquired infections (HCAIs), it is critical to initially ensure that at least the minimum requirements for IPC are in place, both at the national and facility level, and to gradually progress to the full achievement of all requirements within the WHO IPC core components recommendations.

Target

(1) National IPC programme strategy has been developed and disseminated. (2) Implementation of the national IPC programme plans, with monitoring and reporting of HCAIs. (3) Established national standards and resources for safe health facilities.

Level of capabilities

The United States has a comprehensive, highly effective approach to IPC in healthcare settings that includes robust collaboration between several federal agencies, state and local partners, specialty societies, and IPC programmes in healthcare facilities. The system exceeds minimum standards and ensures that care is delivered within a system that is optimized to reduce the risk of HCAIs and adverse events, and which reduces the risk of transmission of highly resistant pathogens that can be found in healthcare settings.

The overall system includes several well-maintained surveillance components, including the HHS CDC NHSN. The NHSN definitions are widely used, including in some international settings, for HCAI surveillance. Data from these systems inform IPC action plans at national, state and facility levels, help further important research and inform training needs.

Expertise in IPC is widely available and includes high-quality national guidance for IPC as well as programmes supporting ongoing training and education of healthcare personnel. Regulatory oversight ensures that facilities maintain effective IPC programmes.

The system also addresses the safety of the healthcare environment by ensuring access to clean water; standards for the built environment, including appropriate ventilation and airborne infection isolation rooms; and standards for the efficacy and safety of medical equipment (including validated procedures for disinfection and sterilization of reusable medical equipment).

Indicators and scores

R4.1. IPC programmes – Score 5

Strengths

- Coordinated national action plans are in place and regularly updated.
- State HCAI plans are required to qualify for HHS CDC health department funding, and are updated yearly (or as needed).

- HHS CMS issues requirements and conducts regular assessments of IPC practices in regulated healthcare facilities. Examples of requirements include:
- an infection control programme led by trained individuals;
- current policies based on nationally recognized guidelines; and
- surveillance.
- HHS CMS publishes quality measures for healthcare settings.
- HHS CDC and other professional associations issue evidence-based guidelines and assessment tools for safe healthcare environments and delivery.
- State-based healthcare-acquired infections/antibiotic resistance (HCAI/AR) programmes provide IPC support for healthcare facilities and coordination between federal and local IPC activities (e.g. for outbreak response).
- HHS CMS supports regional programmes to improve health quality at local level.
- National infection control training materials are available that target frontline healthcare personnel.
- Infection control training is integrated into community colleges' nursing and allied health curricula.

Challenges

- There is a need to ensure compliance with, and effectiveness of, IPC programmes.
- Coordination of infection control activities across all states/jurisdictions could be improved.
- Not all healthcare facilities are certified or accredited.
- Not all healthcare facilities are surveyed annually.
- State requirements for healthcare facilities vary.

R4.2. HCAI surveillance – Score 5

Strengths

- The national surveillance system (the NHSN) is of high quality, and adaptable.
- There is population-based surveillance of 12 catchment areas across the country through the Emerging Infections Program.
- A laboratory network (the Antibiotic Resistance Lab Network) provides nationwide lab capacity for rapid detection of targeted AMR to inform local responses.
- Surveillance data are used regularly to support regulatory functions, public reporting, targeting of prevention and incentive payment programmes.
- A surveillance plan is included in the National HCAI Action Plan.

Challenges

- Further use of automated surveillance methods would be desirable, as surveillance currently requires manual data collection, can be labour-intensive and needs IT support.
- Metrics are needed for hospital-onset bacteremia.
- Novel surveillance capacity would benefit from expansion, and particularly from broader sequencing capability to allow better understanding of epidemiology and more comprehensive detection of emerging threats.

R4.3. Safe environment in health facilities – Score 5

Strengths

- National standards and resources are in place for air and water quality, waste handling, and the built environment.
- Healthcare-specific water management plans are in place.
- State and federal regulations govern staffing in nursing homes and hospitals.
- Standards are in place that address early detection and management of potentially infectious persons and safe handling (e.g. sterilization) of medical equipment.

Challenges

- Coordination across all states is insufficient.
- State requirements for water, built environments, etc. in healthcare facilities can vary.

Recommendations for priority actions

- Develop and implement novel infection control strategies and support their evaluation (e.g. by working to improve understanding of decolonization/pathogen reduction strategies).
- Continue strengthening national capacity for surveillance of healthcare-associated infections by investing in building and expanding automated surveillance methodologies (e.g. for non-ventilator pneumonia and hospital-onset bacteremia) in additional settings (e.g. long-term care settings).
- Promote the expansion of the healthcare infection control workforce by developing training and tools to increase expertise and address challenges such as burnout.

R5. Risk communication and community engagement

Introduction

Risk communication and community engagement (RCCE) should be a multilevel and multifaceted process which aims at helping stakeholders define risks, identify hazards, assess vulnerabilities and promote community resilience, thereby promoting the capacity to cope with an unfolding public health emergency. An essential part of risk communication is the dissemination of information to the public about health risks and events, such as disease outbreaks. For any communication about risk caused by a specific event to be effective, the social, religious, cultural, political and economic aspects associated with the event should be taken into account, including the voice of the affected population.

Target

States Parties use multilevel, multisectoral and multifaceted RCCE capacity for public health emergencies. Real-time exchange of information, advice and opinions during unusual and unexpected events and emergencies so that informed decisions to mitigate the effects of threats, and protective and preventive action can be made. This includes a mix of communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement, community engagement and infodemic management.

Level of capabilities

The United States has a wide range of communication plans, policies and procedures for emergency response and coordination at federal and SLTT levels. However, capacity varies greatly between these jurisdictional levels.

The national response plan contains a function for risk communication, but this is media-focused and leaves community engagement primarily to state and local jurisdictions. The current infrastructure excels at one-way communication (e.g. messaging) from public health/responding authorities and subject matter experts to a range of audiences, but the infrastructure lacks systems and processes aligned with the channels that communities are already using and which work to strengthen bidirectional communication with those communities.

Establishing and maintaining trust is an essential element of effective RCCE activities – although RCCE activities are not the only influence on trust. Overall public confidence in science, the scientific community, and leaders of scientific communities, is high relative to trust in other civic, cultural and governmental institutions, but confidence and trust in these institutions has fallen in the last five years as the challenge of infodemic management has increased.

Personal liberty, autonomy and independence are core values in American culture and must be considered in RCCE activities. In addition, the interactions and relationships between technical experts and policy/decision makers in government institutions at all jurisdictional levels need to be managed continually to maintain trust and ensure that risk communication activities are coherent.

Effective risk communication cannot occur without engaging communities. Community collaboration occurs primarily at local jurisdictional level. However, there is great variability in how local authorities involve communities in public health activities, whether related to emergencies, infectious disease, injury prevention, mental health, or chronic disease. Ongoing challenges include developing sustainable and enduring infrastructure that maintains community interaction and collaboration and builds resilience before and after emergencies.

While there is commitment to advancing more meaningful community engagement, further progress will require consistent action beyond acknowledging power imbalances between participants. Resources and action need to be directed to emergency preparedness and recovery phases, not just emergency responses, using disease agnostic community engagement activities that enable and build community resilience and which can be leveraged and augmented during emergency responses.

Indicators and scores

R5.1. RCCE systems for emergencies – Score 3

Strengths

- The United States has robust multilevel, multisectoral, multifaceted plans and communication structures at national level (e.g. the NRF and the National Incident Management System). Varied levels of capability exist in SLTT jurisdictions.
- Risk communication functions are included in the Incident Management System at the national level. However, this capability needs to be expanded to SLTT jurisdictions and should include dedicated community engagement experts.
- Systems and plans are tested regularly through a national level, DHS-led comprehensive exercise programme. Agencies and some SLTT jurisdictions also conduct their own exercises.

Challenges

- The federal system of government that gives autonomy and decision-making authority to SLTT jurisdictions leads to inconsistent communication, varied approaches, and sometimes vastly different levels of preparedness and response across the country.
- The diverse United States population is sometimes polarized, hampering the ability of SLTT jurisdictions to deliver consistent, supportive messaging.
- Communication monitoring systems exist but are not consistently resourced though emergency phases or jurisdictional levels. Results are not systematically analysed and incorporated into communication strategies.

R5.2. Risk communication – Score 3

Strengths

- HHS CDC's Crisis and Emergency Risk Communication (CERC) curriculum is founded on psychology and communication sciences and draws on the lessons of past responses. The CERC programme provides training, tools and resources to help health communicators, emergency responders and leaders of organizations communicate effectively during emergencies.
- The DHS Science and Technology Directorate's Probabilistic Analysis for National Threats Hazards and Risks programme provides support within the Homeland Security Enterprise by aligning chemical, biological, radiological and nuclear (CBRN) hazard awareness and characterization activities to provide timely, accurate and defensible decision support tools and knowledge to stakeholders.
- Current systems and processes excel at one-way communication from public health or responding authorities, allowing urgent protective information to to reach many people quickly.

Challenges

- Limitations affecting federal agencies constrain systematic inquiry with the public, making it difficult to gain timely insights from communities.
- Inconsistent resourcing of RCCE activities outside emergencies inhibits the ability to build and maintain trust with communities and/or connections with trusted messengers.

R5.3. Community engagement – Score 2

Strengths

- One important strength observed during the JEE is a growing commitment to community engagement, with greater recognition of its importance in public health emergency preparedness and response. Expectations for meaningful community engagement are being included in national frameworks and guidelines.
- There is an admirable focus on health equity and collaboration with diverse populations, particularly those at higher risk. These collaborations facilitate better understanding of local issues and foster the co-development of interventions and guidance that are relevant and impactful in local contexts.
- The integration of social and behavioural science expertise into response efforts enables better understanding of the needs and perspectives of communities, allowing for tailored interventions.
- Within HHS CDC, dedicated branches and teams have been established to strengthen community engagement and mitigation and embed them into readiness and response efforts. This demonstrates a dedication to enhancing collaboration, engaging communities and involving affected populations in decision-making processes.

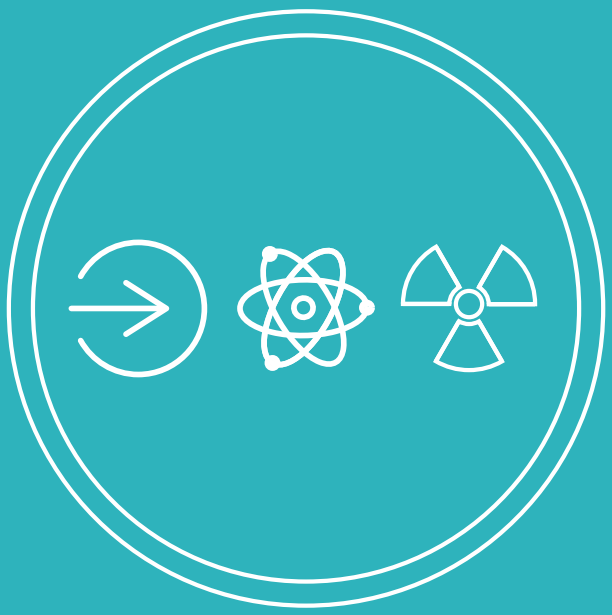
Challenges

- Limited prioritization, funding and duration of community engagement pose significant challenges. Without sustained support, it becomes difficult to establish meaningful relationships with communities and/or to sustain effective engagement channels over time.
- The lack of systematic integration of community perspectives into decision-making processes leaves a need for better mechanisms to incorporate diverse voices into planning and response efforts and ensure interventions truly reflect community needs.
- Disconnects between routine public health community engagement and emergency operations present challenges that need to be addressed in order to ensure consistent integration of community engagement throughout all phases of emergency response. Building collaborative relationships to address everyday threats can help address those threats more effectively.
- Building and maintaining relationships with at-risk/affected populations requires ongoing effort, cultural sensitivity and authentic trust-building to enable effective engagement with communities that may have unique needs or which may face barriers to accessing healthcare services equitably.
- Adapting strategies to address cultural and linguistic differences poses a significant challenge in community engagement. Approaches must be culturally appropriate, accessible, equitable and inclusive to reach diverse communities effectively.

Recommendations for priority actions

- Prioritize consistent investment in RCCE across all phases of emergency management at all jurisdictional levels, incorporating RCCE specialists with dedicated resources to ensure that technical experts are able not only to disseminate information but also to listen to, learn from, and incorporate input from communities.
- Establish and maintain sustainable RCCE infrastructures at all jurisdictional levels, engaging communities throughout the process, and ensuring that systems, tools and methods are continuously working rather than only activated during emergencies. These infrastructures should reflect the diversity of American settings, and be able to adapt approaches and strategies that are culturally appropriate and inclusive of various values, beliefs and priorities.
- Support and enhance community-led emergency readiness and response by fostering ongoing bidirectional communication between federal, state and local stakeholders, with open channels for community feedback so that ground truth can inform technical recommendations and responses.
- Facilitate ongoing education for policymakers so that emergency planning and response efforts are informed by scientific expertise, community input, and real-time data, ensuring that diverse American realities are reflected in policy decisions.
- Enhance online and offline systems for monitoring community concerns and managing mis- and disinformation, including:
- providing equitable opportunities for communities to voice needs and solutions;
- providing training and tools to enable communities and national/subnational partners to discern credible sources and counter inaccurate information; and
- developing partnerships with trusted local influencers to combat mis- and disinformation.

IHR related hazards and points of entry and border health



POE. Points of entry and border health

Introduction

All core capacities and potential hazards apply to points of entry (POE) and thus enable the effective application of health measures to prevent international spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings), which will implement specific public health measures required to manage a variety of public health risks.

Target

States Parties designate and maintain core capacities at international airports and ports (and were justified for public health reasons, a State Party may designate ground crossings) that implement specific public health measures required to manage a variety of public health risks.

Level of capabilities

The United States shares land borders with two countries – Canada to the north and Mexico to the south. The HHS CDC Port Health Stations have the authority to support the implementation of the IHR at points of entry.

The HHS CDC Port Health Stations are under the authority of the Division of Global Migration Health (DGMH), which comprises five branches: Travelers' Health; Southern Border Health and Migration; Immigrant and Refugee Health; Port Health Protection; and Travel Risk Assessment and Migration.

The authority to issue, inspect and require ship sanitation control certificates and ship sanitation control exemption certificates (SSCCs/SSCECs) within the United States or its territories resides solely with the HHS CDC DGMH. Per agreement with HHS CDC, the United States Coast Guard and the United States Navy have been authorized to conduct inspections and issue SSCCs/SSCECs (CG-5100B) to ships of their respective services (for example, the United States Coast Guard Cutters), as well as vessels of the National Oceanic and Atmospheric Administration. HHS CDC does not currently require SSCCs/SSCECs for ships arriving at United States ports to embark or disembark passengers, crew or cargo within the United States.

The port health stations are located at the 20 POE that are "designated" under the IHR, which together make up 18 airports and two ground crossings with Mexico (El Paso and San Diego), which covers 51 other southern land border crossings. These designated POE are staffed with HHS CDC medical, veterinary and public health officers.

Under section 361 of the Public Health Service Act, HHS CDC has the legal authority to detain anyone reasonably believed to have (or have been exposed to) a federally quarantinable communicable disease specified by Executive Order and to require a medical examination; HHS CDC additionally has the authority to isolate or quarantine such persons to prevent the spread of a quarantinable communicable disease.

Health officers at Port Health Stations assess ill persons entering the United States or travelling between states or territories and decide what measures should be taken to prevent the spread of communicable diseases. They also implement CDC regulations for importing certain animals or items that can spread infectious diseases to people.

No port authorities, public agencies, or private organizations are authorized to issue SSCCs/SSCECs in the United States.

The CDC's Vessel Sanitation Program helps the cruise industry prevent and control the spread of gastrointestinal illness. The Vessel Sanitation Program may issue SSCCs/SSCECs during their routine unannounced cruise ship inspections. Ship sanitation under the IHR applies to all ships, including but not limited to cruise ships, cargo ships, container ships, bulk carriers, fishing vessels and tanker ships. Currently, there is no authorized way for a ship other than the ones listed above to obtain a ship sanitation certificate in the United States.

HHS CDC does reserve the right to inspect vessels if a public health concern is identified or suspected.

Indicators and scores

POE1. Core capacity requirements at all times for POE (airports, ports and ground crossings) – Score 5

Strengths

- Law enforcement and emergency medical services at POE receive similar training and job aids and notify port health stations of ill travellers and other potential public health threats.
- By agreement, SLTT health departments notify the port health stations if a person is identified after travel as having been contagious during travel with a communicable disease of public health concern.
- The USDA is responsible for inspecting specific food and agricultural items, and HHS FDA is responsible for inspecting all other food, ingredients and medical products.
- Airline and ship crews receive guidance, training and job aids on identifying sick travellers or other public health risks (including deaths on a conveyance) and reporting to port health stations before arriving at United States POE.
- The HHS FDA, the Interstate Travel Program (ITP), the DOT Federal Aviation Administration (FAA), and EPA share oversight of aircraft drinking water supply and/or associated systems. The DOT FAA oversees airline operation and maintenance programmes, including for potable water systems.
- Federal agencies onsite at POE (e.g. the USDA, and – if present – HHS CDC) participate in their own public health POE inspection programmes under their respective legal authorities.
- The control of vectors and vector reservoirs in or near POE varies by location, as the risks for vector-borne diseases vary with geography and are the responsibility of state or local authorities

Challenges

- Acquiring data from state and local health departments for individuals who have a communicable disease associated with their international or interstate travel is based on voluntary reporting and relies on recognition by the public health officials involved; it is possible that some instances go unreported and current information systems make it difficult to identify illnesses that were not reported.
- While all illnesses and deaths associated with international and interstate travel reported to CDC are fully documented in a security information system, significant additional coordination with state and local health departments, supported by additional resources, is needed to improve the completeness of these records for detailed epidemiological analysis.

POE2. Public health response at POE – Score 4

Strengths

- HHS CDC has developed a template for POE communicable disease response plans, which are in place at all designated POE.
- Staff at port health stations conduct outreach to other airports, land border crossing authorities and maritime port authorities within their jurisdictions, to help develop complementary public health emergency response plans.
- Federal, state and local staff are experienced in collaborative preparedness, planning and emergency response.
- In 2012, the HHS Secretary and Mexico's Secretary of Health signed a declaration adopting a shared set of technical guidelines. This declaration led to the Operations Protocol for the United States-Mexico Binational Communication and Coordination on Disease Notifications and Outbreaks, which both countries now follow to respond to public health events.

Challenges

- The National Aviation Public Health Emergency Preparedness Plan is not yet finalized.
- Implementation of public health emergency contingency plans is not generalized to all designated POE and they are not yet incorporated into all emergency plans at airports, aerodromes and/or the El Paso and San Diego ground crossings.
- Scalable approaches are needed for disease control strategies for large numbers of incoming travellers, including strategies to identify potential sites for large-scale isolation and quarantine facilities.
- Aligning the specific protocols and procedures of the Communicable Disease Response Plan (CDRP) with the broader IHR POE public health emergency plan would create more seamless integration.
- Clearer escalation procedures could be defined from routine CDRP activities to broader IHR emergency response actions, thereby providing clear criteria on when an incident involving communicable disease requires invoking the IHR emergency plan to ensure mobilization of additional resources.
- There is a need for greater frequency and scope of simulation exercises at POE, including seaports, held in collaboration with relevant stakeholders to enhance preparedness and response capabilities.
- Coordination mechanisms established during the COVID-19 pandemic with the aviation and maritime sectors could be built upon to formalize risk mitigation SOPs that would be triggered in a public health emergency.

POE3. Risk-based approach to international travel-related measures – Score 5

Strengths

- Data related to volume and patterns of travel and global health risks are available for risk assessments and shared among key agencies.
- National public health preparedness and response strategies and plans integrate requirements for POE and international travellers.
- Federal agencies share information on international arrivals, cargo and travellers crossing land borders. These data streams are reviewed periodically to assist with regional preparedness and partner outreach.
- The DHS and the National Security Council (NSC) determine the need for international travel-related measures at national level. Depending on the threat, senior leaders consider advice and recommendations from the Department of State, the DHS, the DOT, USDA and HHS.

- Coordination with state and local health departments is critical when implementing travel-related measures at borders, particularly in response to specific public health threats. This necessity stems from the legal framework established by the Tenth Amendment of the United States Constitution, which reserves to the states all powers not explicitly delegated to the federal government.

Challenges

- There is a need for regular updates from multisectoral risk assessment teams, using an all-hazards approach, to inform decisions on measures related to international travel and ensure they are commensurate with risk levels.
- Training is needed across sectors and at all levels on SOPs/guidelines for implementing a risk-based approach to measures related to international travel.
- There is a need to continue implementing national multisectoral processes and mechanisms to ensure adoption of international travel-related measures at all levels, and to ensure they are exercised as appropriate, reviewed, evaluated and updated regularly in response to events and/or emergencies.
- Regular monitoring and evaluation of the functionality, effectiveness and impact of risk-based international travel-related measures is needed.
- There is a need for multisectoral simulation exercises using risk-based scenarios and intra- and after-action reviews at designated POE to test entry/exit screening, communication, testing, transport to referral hospitals, etc.

Recommendations for priority actions

- Complete the development and approval of the National Aviation Public Health Emergency Preparedness Plan, to ensure readiness to respond to public health emergencies within the aviation sector.
- Expand the frequency and scope of simulation exercises at POE, ensuring collaboration with all relevant stakeholders, to enhance preparedness and response capabilities.
- Develop targeted guidelines for consistent data collection and reporting practices, and support their implementation with technical assistance and onsite visits.
- Per the IHR Annex 5, coordinate with and support state and local health departments and other agencies with responsibilities for environmental health which may develop, implement and validate vector control programmes that may be up to a minimum radius of 400 metres from areas involving travellers, conveyances, containers, cargo and postal parcels at POE.

CE. Chemical events

Introduction

Timely detection and effective response to potential chemical risks and/or events requires collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal. This would entail that States Parties need to have surveillance and response capacity to manage chemical risk or events and effective communication and collaboration among the sectors responsible for chemical safety.

Target

States Parties with surveillance and capacity for chemical risks or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, including health, occupational health, emergencies, environment, transportation and safe disposal, agriculture/veterinary, as well as industries.

Level of capabilities

The United States has substantial preparedness and response capacity for chemical incidents, with established and functioning mechanisms to detect and respond to events and emergencies; however, it has limited capacity to detect chemical events in public spaces. The Government conducts baseline public health assessments to inform national, state and local strategies, guidelines, plans and protocols for chemical incident response.

Active and passive surveillance can be established to help determine the scope, impact and evolution of a chemical incident. When requested, the federal government assists the responses of impacted state and local jurisdictions by providing support and resources including clinical and other response guidance, training and laboratory analytical capability. The United States has responded to many chemical incidents, domestically and internationally, and the lessons of these responses are used to improve plans and develop new approaches.

The United States has comprehensive national regulatory mechanisms and participates in many international agreements related to chemical hazards. In total, 54 laboratories across 62 states, territories and metropolitan areas provide emergency response capabilities for their local areas and/or the nation as a component of HHS CDC's Laboratory Response Network for Chemical Threats (LRN-C). Federal agencies maintain "special teams" with specific expertise in assisting response activities, including environmental remediation techniques and risk assessment.

The United States also has 55 poison centres across the nation that upload case information in near real time to the National Poisons Data System. Prepositioned containers of nerve agent MCM called CHEMPACKs are strategically placed in more than 1300 locations throughout the country.

Indicators and scores

CE1. Mechanisms established and functioning for detecting and responding to chemical events or emergencies – Score 4

Strengths

- Sentinel surveillance, environmental monitoring and consumer product monitoring occurs frequently through full and cross-cutting interagency and public-private engagement.
- The National Contingency Plan provides a framework for preparedness and response with participation from SLTT and federal governments.
- There are programmes and offices that conduct risk assessments and use them to scale their responses appropriately to chemical events.
- An inventory of healthcare facilities and emergency contacts for specific chemical hazard safety capabilities is publicly available.

Challenges

- There is a need to improve public communication of risks and scientific and technical information, and how this information is used to inform decision-making.
- Monitoring of long-term medical recovery in communities following large-scale chemical incidents is currently insufficient.
- ChemPACKS cover the response for only limited types of chemical compounds.

CE2. Enabling environment in place for management of chemical events – Score 4

Strengths

- The United States has good chemical safety and hazard regulations and comprehensive authorities and regulatory frameworks are in place at all levels.
- Government response organizations participate in required and ad hoc hazardous material exercises, simulations and real-world responses every year, including many that relate to chemical incidents.
- Five recent iterations of a national-to-local level exercise involving chemicals have assessed community preparedness and supported the development of a comprehensive, multiagency concept of operations for chemical incident response.

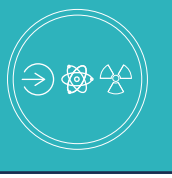
Challenges

- There is a need to strengthen community planning and preparedness.
- Resources may vary based on locations.
- Better data management is required during large-scale chemical incidents to enable integration of purpose-built tools and systems.
- There is a need to incorporate stakeholder feedback to develop best practices for managing chemical events – including by integrating lessons, feedback and best practices from many federal agencies and chemical sector stakeholders.
- Rigorous scientific data and knowledge of large-scale toxic chemical releases is lacking and insufficient to characterize chemical dispersion, behaviour and impact for many scenarios.

Recommendations for priority actions

- Strengthen community planning and preparedness at local level by leveraging federal tools and resources to improve capabilities and reduce variabilities in incident response capacities between different localities.
- Support large-scale field testing and experiments with chemical threat agents to fill data gaps, validate and improve modelling, and guide emergency response.
- Enhance federal multiagency emergency response capabilities through training and exercises on chemical incidents that involve SLTT partners.
- Improve data management during chemical responses by integrating purpose-built tools and systems to provide a common operating picture for response to large-scale chemical incidents.
- Improve chemical event response plans and guidance by incorporating stakeholder feedback from all levels – territorial, tribal, local, state and federal – and lessons and best practices from simulated exercises or real events.
- Ensure that multiagency recovery plans and resilience strategies for large-scale chemical incidents incorporate enhancement of long-term medical and environmental monitoring capacities.



RE. Radiation emergencies

Introduction

To counter radiological and nuclear emergencies, timely detection and an effective response towards potential radiological and nuclear hazards/events/emergencies are required in collaboration with sectors responsible for radiation emergency management.

Target

States Parties should have surveillance and response capacity for radiological emergencies and nuclear accidents. This requires effective coordination among all sectors involved in radiation emergencies preparedness and response.

Level of capabilities

The United States is highly capable of developing and applying nuclear and radiation technologies in a wide range of applications, from power generation and military use to medical and industrial practices. Over the decades, the country has developed comprehensive capabilities for responding to potential nuclear and radiological emergencies.

Strong legislation, regulations and emergency plans are in place for managing nuclear and radiological risks and emergencies. The United States is a signatory to the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

The NRF's National Radiological Incident Annex (NRIA) outlines the roles, responsibilities, and authorities of federal, state and local agencies during an emergency response. As described in the NRIA, overall coordination of consequence management in response to a significant radiological/nuclear emergency would be done by DHS FEMA, in close coordination with DHS Countering Weapons of Mass Destruction (CWMD) and the NSC. The Department of Justice's Federal Bureau of Investigation (FBI) would also take lead actions if the incident was suspected to be the result of terrorism or other federal crimes.

The United States follows a robust, multiagency approach to radiological and nuclear emergency preparedness and response, based on several decades of experience and refinement. The system of response is determined by the nature of the incident and uses the agencies that have the response capabilities or statutory authority for the materials involved in the emergency. Emergency exercises are held regularly and frequently to improve preparedness for emergencies of various origins.

The United States has adequate resources to respond to typical emergencies at federal, state and local levels. Technical procedures and laboratory capabilities are readily available for detecting and monitoring radiation in the environment, and for monitoring, assessment and medical management of exposed populations and individuals.

Indicators and scores

RE1. Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies – Score 4

Strengths

- National systems are in place and functioning for monitoring environmental radiation: the EPA's RadNet system monitors radiation in air, precipitation and drinking water across the country, and the Department of Energy Federal Radiological Monitoring and Assessment Center coordinates federal agencies' monitoring of radiation in the environment following an emergency.

- Modelling and simulation tools are in place to assess and mitigate risks following radiation incidents. The Interagency Modeling and Atmospheric Assessment Center coordinates and disseminates federal atmospheric dispersion modelling and other hazard prediction products.
- Federal laws oblige reporting of releases of reportable quantities of radionuclides to the National Response Center, which is staffed by the United States Coast Guard.
- A roster of radiological health experts and emergency contacts for specific protective actions is maintained. The Advisory Team for the Environment, Food, and Health is a federal interagency group of radiological health experts who provide recommendations for protective action to decision makers at all levels following accidents or incidents that result in the release of radioactive materials into the environment, from the early phase through the late phase.
- Capabilities are in place to monitor human exposures to radiation, developed and coordinated by HHS CDC for population monitoring, health surveillance and risk communication. Education materials and training resources are available on HHS CDC website, and HHS CDC has also published a Radiation Hazard Scale as a tool to assist communicators during radiation emergencies.
- Laboratory testing capabilities have been developed to ensure rapid availability of information to assess risks during an incident. Several laboratory networks in the United States contribute to risk assessments.
- Medical management capabilities and guidance have been developed for individual clinical care and population health after a nuclear or radiological emergency. Radiation emergency medical management guidance published by HHS provides extensive information to clinicians on radiation, radiation protection, radiation injury and treatment; the Radiation Injury Treatment Network (RITN) is a consortium of hospitals and physicians with primary expertise in radiation oncology and bone marrow transplantation; and HHS FDA has published guidance documents for responses to accidental radioactive contamination in food and protection of the thyroid for children and adults following ingestion of radioactive iodine.

Challenges

- Workforce recruitment and retention of subject matter experts is difficult, with high turnover rates internally and externally.
- Required subject matter expertise and corresponding roles and responsibilities need to be fully understood by federal and SLTT responders.
- Capacity for testing human clinical samples is limited, with challenges around specialized analytical requirements.
- Data sharing and the common operating picture for radiological detection need to be strengthened; current tools and systems developed by various agencies need to be inherently redesigned to be integrated or interoperable with one another.

RE2. Enabling environment in place for management of radiological and nuclear emergencies – Score 4

Strengths

- A national framework for radiation emergency preparedness, response and recovery is in place, with participation from local, state, tribal and federal governments. The NRIA describes the overall framework for federal response and recovery to a wide range of radiological/nuclear incidents and supplements the FIOP.
- Individual agencies also develop and maintain their own emergency response plans to carry out the responsibilities described in the NRIA. The Protective Action Guides Manual published by EPA and other federal agencies covers triggering of public safety measures to minimize or prevent radiation exposure during an emergency.

- National plans for radiation safety have been developed, supported by national level bodies such as the Federal Radiological Preparedness Coordinating Committee (a DHS FEMA-led interagency group of federal agencies with specific capabilities or stakes in radiological/nuclear response) and the National Alliance for Radiation Readiness (a consortium of federal, state and local public health organizations and NGOs that helps coordinate planning of public health responses to radiation incidents at all levels, and helps organize state and local radiation professionals).
- Hazard regulations are in place: the Nuclear Regulatory Commission (NRC) requires each nuclear power plant licensee to have emergency plans for radiation incidents/accidents at the plant, which typically include memoranda of understanding with local response officials for support in areas such as fire and medical response. The Hazardous Materials Regulations (HMR) ensure the safe and secure movement of hazardous materials by all modes of transportation. The HMR apply to any material determined by DOT to pose an unreasonable risk to health, safety, and/or property when transported in commerce, including radioactive materials.
- Depending on the scale of the response, federal funding and resources may be available to support government agencies leading state and local responses. HHS ASPR's BARDA and NIH National Institute of Allergy and Infectious Diseases (NIAID) fund the development and acquisition of MCMs to diagnose and treat acute effects of radiation exposure. ASPR BARDA also develops MCMs for blast trauma, and has the responsibility for acquiring and stockpiling MCM resources in the SNS.
- Exercises and simulations for real-world responses are conducted regularly. The United States' radiological and nuclear emergency response community participates in five to ten exercises and drills of different types each year, and the DHS FEMA Radiological Emergency Preparedness Program coordinates national efforts to provide SLTT governments with relevant and executable planning, training, exercise guidance and template policies.

Challenges

- Capacity for exercising radiological and nuclear incident responses is limited.
- Very often, exercising radiological emergency responses competes with other priorities for time and resources.

Recommendations for priority actions

- Sustain national capacity for effective response to nuclear or radiological emergencies by amplifying recruitment and retention plans for subject matter experts.
- Increase interoperability between federal agencies in emergency responses, including through common operating procedures for detecting and monitoring radiation in the environment and a common framework for data sharing, integration and interpretation.
- Increase national laboratory capabilities and capacity for emergency human monitoring and assessment, focusing on biological dosimetry and radionuclide bioassay.
- Increase national exercise capacity for responding to nuclear and radiological emergencies by involving stakeholders from all relevant agencies and levels of government and securing sufficient resources.

Annex: JEE background

Mission location and duration

Washington, DC and Atlanta, Georgia,18–25 September 2024

Mission team members including technical areas

Team Co-leads
Stella Chungong, Director, Health Security Preparedness, WHO Health Emergencies Programme
Howard Njoo, Deputy Chief Public Health Officer, Public Health Agency of Canada

IHR core capacity		Lead	Institution
P1	Legal instruments	Richard Fairbrother	Director, Border Health Section Emergency Management Branch Health Security and Emergency Management Division / Interim Australian Centre for Disease Control Australian Government Department of Health and Aged Care
P2	Financing	Mohamed Moussif	Chatham House Global Health Security Centre Graduate & Fellow; WHO IHR Roster of Experts Member, Aviation Medicine and Travel Medicine Graduate
P3	IHR coordination, NFP functions	Suriyakumar Mahendra Arnold	Deputy Director General (Public Health Services 1) Ministry of Health, Sri Lanka
P4	Antimicrobial resistance (AMR)	Sebastian Haller	Deputy Head of Unit for Healthcare-associated Infections, Surveillance of Antibiotic Resistance and Consumption, Robert Koch Institute, Berlin, Germany
P5	Zoonotic disease	Andrea Ellis	One Health Consultant Former Senior Advisor to the Chief Veterinary Officer/WOAH Delegate for Canada Canadian Food Inspection Agency
P6	Food safety	Andrea Ellis	One Health Consultant Former Senior Advisor to the Chief Veterinary Officer/WOAH Delegate for Canada Canadian Food Inspection Agency
P7	Biosafety and biosecurity	Mayra Ameneiros	Senior Fellow, International Biosecurity and Biosafety Initiative for Science
P8	Immunization	Andrea Vicari	Andrea Vicari, Chief of the Infectious Hazards Management Unit, Pan American Health Organization

IHR core capacity		Lead	Institution
D1	National laboratory systems	Eun-Jin Kim	Division Director, Division of Emerging Infectious Diseases, Korea Disease Control and Prevention Agency
D2	Surveillance	Marc Ho	Group Director, Policy and Systems, Interim Communicable Diseases Agency Singapore; Lead, Pandemic Preparedness, Asia Centre for Health Security
D3	Human resources	Oliver Morgan	Director, Pandemic and Epidemic Intelligence Systems, WHO Hub for Pandemic and Epidemic Intelligence
R1	Health emergency management	Marc Ho	Group Director, Policy and Systems, Interim Communicable Diseases Agency Singapore; Lead, Pandemic Preparedness, Asia Centre for Health Security
R2	Linking public health and security authorities	Julio Gouveia Carvalho	Commander of the Biological and Chemical Defence Laboratory, Portuguese Army
R3	Health services provision	Suriyakumar Mahendra Arnold	Deputy Director General (Public Health Services 1) Ministry of Health, Sri Lanka
R4	IPC	Tim Eckmanns	Head of Unit for Healthcare-associated Infections, Surveillance of Antibiotic Resistance and Consumption, and Head of WHO Collaborating Centre for Antimicrobial Resistance, Consumption and Health Care-Associated Infections, Robert Koch Institute, Berlin, Germany
R5	RCCE	Howard Njoo	Deputy Chief Public Health Officer, Public Health Agency of Canada
POE	Points of entry and border health	Mohamed Moussif	Chatham House Global Health Security Centre Graduate & Fellow WHO IHR Roster of Experts Member, Aviation Medicine and Travel Medicine Graduate
CE	Chemical events	Raquel Duarte-Davidson	Head, Chemicals and Environmental Effects Department and Commissioner, UK National Poisons Information Service
RE	Radiation emergencies	Chunsheng Li	Senior research scientist, Radiation Protection Bureau, Health Canada

Objective

To reassess the United States of America's capacities and capabilities in the 19 technical areas of the JEE tool, building on the results of their first JEE evaluation, and to provide updated data to support ongoing national efforts to enhance public health security.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation – including discussions around the priority actions, strengths, areas that need strengthening, best practices, challenges, and scores – is collaborative, with JEE team members and host country experts seeking full agreement on all aspects of the final report findings and recommendations.

Should there be significant and irreconcilable disagreements between the external team members and the host country experts, or among the external experts, or among the host country experts, the JEE team lead will decide the outcome. This will be noted in the final report along with the justification for each party's position.

Limitations and assumptions

- The evaluation was limited to one week, which limited the amount and depth of information that could be managed.
- It is assumed that the results of this evaluation will be publicly available.
- The evaluation is not just an audit. Information provided by the United States will not be independently verified but will be discussed and the evaluation rating mutually agreed by the host country and the evaluation team. This is a peer-to-peer review.
- The evaluation and resulting recommendations are based on the collaborative discussions and professional judgment of the JEE team, and may be subject to other considerations outside the JEE process.

Key United States participants and institutions

- United States Department of Health and Human Services
  - Administration for Children and Families
  - Administration for Community Living
  - Administration for Strategic Preparedness and Response
  - Agency for Toxic Substances and Disease Registry
  - Assistant Secretary for Financial Resources
  - Assistant Secretary for Planning and Evaluation
  - Assistant Secretary for Public Affairs
  - Centers for Disease Control and Prevention
  - Centers for Medicare and Medicaid Services
  - Food and Drug Administration
  - Immediate Office of the Secretary
  - Indian Health Service
  - Health Resources and Services Administration

  - National Institutes of Health
  - Office of the Assistant Secretary for Health
  - Office of the General Counsel
  - Office of Global Affairs
  - Substance Abuse and Mental Health Services Administration
- United States Department of Agriculture
  - Animal and Plant Health Inspection Service
  - Food Safety and Inspection Service
- United States Department of Commerce
  - Bureau of Industry and Security
- United States Department of Defense
- United States Department of Energy
- United States Department of Justice
  - Federal Bureau of Investigation
  - Bureau of Alcohol, Tobacco, Firearms and Explosives
- United States Department of Labor
  - Occupational Safety and Health Administration
- United States Department of Homeland Security
  - Office of Health Security
  - Federal Emergency Management Agency
  - Countering Weapons of Mass Destruction Office
- United States Department of the Interior
- United States Geological Survey
- United States Department of State
- United States Department of Transportation
- United States Department of the Treasury
- United States Department of Veterans Affairs
- United States Environmental Protection Agency
- United States Nuclear Regulatory Commission
- United States Agency for International Development
- The Executive Office of the President of the United States
  - National Security Council
  - Office of Pandemic Preparedness and Response Policy
  - Office of Management and Budget

Supporting documentation provided by the United States

01. Legal instruments

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- Public Health Service Act (1944)
- Disaster Relief Act (1974)
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- United States Code
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- HHS Section 564 Declaration
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- National Defense Strategy
- Global Health Security Strategy
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- National Public Health Strategy to Prevent and Control Vector-Borne Disease
- National Strategy for Pandemic Influenza
- American Pandemic Preparedness Plan (AP3)
- National Strategy to Combat Antibiotic-Resistant Bacteria
- Healthy People 2030
- National Response Framework
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- HHS Centers for Medicare and Medicaid Framework for Equity
- HHS Sexual Orientation and Gender Identity (SOGI) Data Action Plan

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  - HHS CDC fiscal year 2025 congressional budget justification
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- Trust for America's Health 2024 Report

03. IHR coordination, NFP functions

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- National Response Framework, 2019
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- CDC's Traveler-Based Genomic Surveillance program (https://wwwnc.cdc.gov/travel/page/travel-genomic-surveillance)
- Pathogen Genomics Centers of Excellence (https://www.cdc.gov/advanced-molecular-detection/php/success-stories/pgcoe-announcement.html)
- BioSense Platform (https://www.cdc.gov/nssp/php/about/about-nssp-and-the-biosense-platform.html)
- National Syndromic Surveillance System (https://www.cdc.gov/nssp/index.html)
- National Syndromic Surveillance System - Stakeholder engagement (https://nsspcommunityofpractice.org/about-the-nssp-community-of-practice/#_ftnref1)
- National Wastewater Surveillance System (https://www.cdc.gov/nwss/about.html)
- Healthcare-Associated Infections – Community Interface (https://www.cdc.gov/healthcare-associated-infections/php/haic-eip/haicviz.html)
- DOD: Armed Forces Health Surveillance Directorate/Global Emerging Infections Surveillance
- DOD: Multidrug-Resistant Organism Repository and Surveillance Network within the Walter Reed Army Institute of Research

11. Human resources

- Hiring Practices That Support State Integration of Community Health
- How Community Health Workers Are Impacting Rural Communities
- State Policies Bolster Investment in Community Health Workers
- Community Health Workers: Evidence of Their Effectiveness
- Public Health Workforce Interests and Needs Survey
- Association of American Medical Colleges report (2024)
- ASTHO webpage on State and Territorial Policies to Strengthen the Public Health and Healthcare Workforce
- American Rescue Plan Act
- HHS CDC launched a new five-year cooperative agreement - Strengthening Public Health Systems and Services in Indian Country
- TRAIN learning management system
- Council for State and Territorial Epidemiologists 2024 epidemiology capacity assessment
- Profile of State and Territorial Public Health
- National Profile of Local Health Departments surveys
- Public Health in Indian Country Capacity Scan
- Emergency Preparedness Training and Educational Resources
- In-Person Training for Government Personnel the Basics of Public Health Emergency Law
- The Tribal Legal Preparedness Project
- Apply to Be a Host Site for HHS CDC's Public Health Law Fellowship
- Public Health Law Academy

- Public Health Law Practitioners Convening
- NACCHO Public Health Law Workgroup
- ASTHO Public Health Lawyers Peer Network
- Health workforce requirements for universal health coverage and the Sustainable Development Goals. (Human Resources for Health Observer, 17) (https://iris.who.int/bitstream/handle/10665/250330/9789241511407-eng.pdf?utm_source=chatgpt.com)
- Web WHO GHO Health Workforce: https://www.who.int/data/gho/data/themes/health-workforce
- One Field Epidemiologist per 200,000 Population: Lessons Learned from Implementing a Global Public Health Workforce Target, by Williams, Seymour G. ; Fontaine, Robert E. ; Turcios Ruiz, Reina M. ; ...(http://dx.doi.org/10.1089/hs.2019.0119)

12. Health emergency management

National Preparedness System

- National Planning Frameworks, National Response Framework (https://www.fema.gov/emergency-managers/national-preparedness/frameworks/response), FIOP (https://www.fema.gov/emergency-managers/national-preparedness/frameworks/federal-interagency-operational-plans)
- Strategic National Risk Assessment (https://www.dhs.gov/xlibrary/assets/rma-strategic-national-risk-assessment-ppd8.pdf)
- 2023 National Preparedness Report (https://www.fema.gov/sites/default/files/documents/fema_2023-npr.pdf)
- Emergency Support Function #8 – Public Health and Medical Services (https://www.fema.gov/sites/default/files/2020-07/fema_ESF_8_Public-Health-Medical.pdf)
- Biological Incident Annex (https://www.fema.gov/sites/default/files/documents/fema_incident-annex_biological.pdf)

HHS

- Pandemic Influenza Plan (https://www.cdc.gov/flu/pandemic-resources/pdf/pan-flu-report-2017v2.pdf)

CDC

- Public Health Emergency Preparedness and Response Capabilities (https://www.cdc.gov/readiness/php/capabilities/index.html)

ASPR

- National Health Security Strategy (https://aspr.hhs.gov/NHSS/Pages/default.aspx)
- Public Health Emergency Medical Countermeasure Enterprise Strategy and Implementation Plan (https://aspr.hhs.gov/PHEMCE/2022-SIP/Documents/PHEMCE-SIP-2022-508.pdf)

Federal

- Presidential Policy Directive / PPD– 8: National Preparedness (https://www.dhs.gov/presidential-policy-directive-8-national-preparedness)
- National Security Memorandum 15 - Countering Biological Threats, Enhancing Pandemic Preparedness, and Achieving Global Health Security (https://www.whitehouse.gov/briefing-room/presidential-actions/2022/10/18/national-security-memorandum-on-countering-biological-threats-enhancing-pandemic-preparedness-and-achieving-global-health-security/)
- American Pandemic Preparedness Plan: Transforming Our Capabilities (https://www.whitehouse.gov/wp-content/uploads/2021/09/American-Pandemic-Preparedness-Transforming-Our-Capabilities-Final-For-Web.pdf?page=29)

- National Biodefense Strategy (https://www.whitehouse.gov/wp-content/uploads/2022/10/National-Biodefense-Strategy-and-Implementation-Plan-Final.pdf)

Homeland Security Council

- National Strategy for Pandemic Influenza Implementation Plan (https://www.cdc.gov/flu/pandemic-resources/pdf/pandemic-influenza-implementation.pdf)

13. Linking public health and security authorities

- 2006 National Infrastructure Protection Plan (updated 2013)
- 2013 Department of Health and Human Services Centers for Disease Control and Prevention and Department of Justice FBI memorandum of understanding (updated 2018 and 2020; under review 2024): identification and response to chemical, biological, radiological, and nuclear threats
- 2017 Department of Justice FBI and United States Department of Agriculture memorandum of understanding: identification, notification, and response to biological threats against the food and agriculture sector (under review 2024)
- 2020 Department of Health and Human Services FDA and Department of Homeland Security Customs and Border Protection and Immigration and Customs Enforcement - Homeland Security Investigations memorandum of understanding: illegal controlled substances and drug imports, medical devices, and combination products at international mail facilities
- 2022 Department of Justice FBI, Department of Homeland Security, United States Department of Agriculture, and Department of Transportation memorandum of understanding: identification, notification, and response to unknown biological materials entering or transitioning through United States points of entry
- 1938 Food Drug and Cosmetic Act
- Presidential Policy Directive 21
- United States Coast Guard Commandant Instruction 3121.2B
- Department of Homeland Security Pandemic and Emerging Infectious Disease Workforce Protection Plan
- Department of Defense Instruction 6200.03
- Joint Criminal and Epidemiologic Investigations Handbook
- Radiological/Nuclear Law Enforcement and Public Health Investigation Handbook
- SOPs for: conducting joint/shared risk assessments; collaborating to identify and respond to chemical, biological, radiological, and nuclear threats, including intentional acts; guidance to identify, notify, assess, and respond to biological threats; identify biological hazards; and establish specific cooperation mechanisms
- Biennial Chemical, Biological, Radiological, and Nuclear Strategic Risk Assessment Summary
- DHS United States Coast Guard Area Maritime Security Plan
- 2019 Training Program Strategy
- Titles 8, 21 and 42 of the United States Code
- 2001 Aviation and Transportation Security Act
- 2022 Global Health Security Act

14. Health services provision

- Emergency Management Standards, 2022
- Standard Guide for Community Emergency Preparedness for Persons with Disabilities
- Infection Prevention and Control for the Emergency Medical Services and 911 Workforce
- Guidance for Developing a Plan for Interfacility Transport of Persons Under Investigation or Confirmed Patients with Ebola Virus Disease in the United States
- Infection prevention and control recommendations for patients in United States hospitals who are suspected or confirmed to have selected Viral Hemorrhagic Fevers
- National Veterinary Accreditation Program Reference Guide: Interstate Regulations
- Standard Guide for Containment of Hazardous Material Spills by Emergency Response Personnel
- State Emergency Medical Services (EMS) System Pandemic Influenza Preparedness - Report of the Federal Interagency Committee on EMS, 2009
- CDC National Centre for Health Statistics – Hospital utilisation
- National Electronic Health Records Survey, United States, 2018
- Healthcare cost and utilization project – Kids inpatient database
- Healthcare cost and utilization project – Nationwide Readmissions Database
- Healthcare cost and utilization project – State Inpatient Databases
- Healthcare cost and utilization project – State Emergency Department Databases
- The Joint Commission, Emergency Management – Continuity of Operations Plan and Disaster Recovery

15. IPC

- National Action Plan to Prevent Health Care-Associated Infections: Roadmap to Elimination (https://www.hhs.gov/oidp/topics/health-care-associated-infections/hai-action-plan/index.html)
- National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB) (https://www.hhs.gov/ash/advisory-committees/paccarb/reports-and-recommendations/recommendation-report-7/index.html)
- Conditions for Coverage and Conditions for Participation (https://www.cms.gov/medicare/health-safety-standards/conditions-coverage-participation)
- Health Department HAI/AR Programs, CDC (https://www.cdc.gov/healthcare-associated-infections/programs/index.html)
- Project Firstline, CDC (https://www.cdc.gov/project-firstline/)
- Guidelines and Guidance Library, Infection Control, CDC (https://www.cdc.gov/infection-control/hcp/guidance/index.html)
- VHA Directive 1031 Antimicrobial Stewardship Programs
- VHA Directive 1131 Management of Infectious Diseases and Infection Prevention and Control Programs

16. RCCE

- CDC 2020 workshop on Engaging With Communities – Lessons Learned From COVID-19 (https://www.cdc.gov/pcd/issues/2020/20_0250.htm)
- CDC ATSDR Principles of Community Engagement (https://www.atsdr.cdc.gov/communityengagement/index.html)

- CDC Crisis and Emergency Risk Communication (https://emergency.cdc.gov/cerc/index.asp)
- CDC Office of Readiness and Response, Community Based Solutions and Health Equity Branch (https://www.cdc.gov/orr/divisions-offices/about-division-of-readiness-and-response-science.html)
- CDC Ready Responder (https://www.cdc.gov/about/cdc-moving-forward.html)
- FEMA National Disaster Recovery Framework, Health and Social Services Recovery Support Function (https://www.fema.gov/emergency-managers/national-preparedness/frameworks/recovery)
- FEMA National Incident Communication Conference Line (https://www.fema.gov/pdf/emergency/nrf/nrf-support-pa.pdf)
- FEMA National Risk Index report (2023) (https://www.fema.gov/press-release/20230330/fema-releases-updates-national-risk-index)
- FEMA Risk Communications, Crisis Communications, and Community Engagement Summit (June 2024) (https://www.fema.gov/event/risk-communications-crisis-communications-and-community-engagement-summit)
- Joint External Evaluation (2016) (https://www.who.int/emergencies/operations/international-health-regulations-monitoring-evaluation-framework/joint-external-evaluations)
- National Academies of Science, Engineering, and Medicine's virtual workshop on Building Institutional Capacity for Engaged Research (https://www.nationalacademies.org/event/42782_06-2024_building-institutional-capacity-for-engaged-research-a-workshop)
- National Association of County Health Officials Stories from the Field (https://www.naccho.org/blog/stories)
- National Response Framework Incident Communications Emergency Policy and Procedures (https://www.fema.gov/emergency-managers/national-preparedness/frameworks/response)
- WHO's RCCE Competency Framework (https://www.who.int/publications/i/item/9789240092501)

17. Points of entry and border health

- Final Rules for Control of Communicable Diseases (https://www.federalregister.gov/documents/2017/01/19/2017-00615/control-of-communicable-diseases)
- Bringing a Dog into the United States (https://www.cdc.gov/importation/dogs/index.html)
- CDC Port Health Stations (https://www.cdc.gov/port-health/stations/)
- Preventing Spread of Diseases on Airplanes: Guidance for Cabin Crew (https://www.cdc.gov/port-health/php/airline-guidance/preventing-spread-of-disease-guidance-for-cabin-crew.html)
- Laws and Regulations Governing the Control of Communicable Diseases (https://www.cdc.gov/port-health/legal-authorities/)
- Definition of Signs, Symptoms, and Conditions of Ill Travellers (https://www.cdc.gov/port-health/php/definitions-symptoms-reportable-illness/?CDC_AAref_Val=https://www.cdc.gov/quarantine/air/reporting-deaths-illness/definitions-symptoms-reportable-illnesses.html)
- CDC's Role in Immigration (https://www.cdc.gov/immigrant-refugee-health/about/cdc-role-in-immigration.html)
- FDA Import Program (https://www.fda.gov/industry/import-program-food-and-drug-administration-fda)
- Federal Register: Requirement for Airlines and Operators To Collect and Transmit Designated Information for Passengers and Crew Arriving Into the United States; Requirement for Passengers To Provide Designated Information (https://www.federalregister.gov/documents/2021/11/05/2021-24386/requirement-for-airlines-and-operators-to-collect-and-transmit-

designated-information-for-passengers)

- Preclearance - United States Customs and Border Protection (https://www.cbp.gov/travel/preclearance)
- Interstate Travel Program, FDA (https://www.fda.gov/food/inspections-protect-food-supply/interstate-travel-program)
- Protecting Agriculture, United States Customs and Border Protection (https://www.cbp.gov/border-security/protecting-agriculture)
- At Ports of Entry, United States Customs and Border Protection (https://www.cbp.gov/border-security/ports-entry)

18. Chemical events

- National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (https://www.epa.gov/emergency-response/national-oil-and-hazardous-substances-pollution-contingency-plan-ncp-overview)
- NRF ESF #10 – Oil and Hazardous Materials Annex (https://www.fema.gov/sites/default/files/2020-07/fema_ESF_10_Oil-Hazardous-Materials.pdf)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (https://www.epa.gov/enforcement/comprehensive-environmental-response-compensation-and-liability-act-cercla-and-federal)
- Emergency Planning and Community Right-to-Know Act of 1986 (https://www.epa.gov/epcra/what-epcra)
- National Poison Data System (https://poisoncenters.org/national-poison-data-system)
- Chemical Hazard Emergency Contacts (https://chemm.hhs.gov/emergencycontacts.htm)
- HHS Chemical Hazards Emergency Medical Management (https://chemm.hhs.gov/index.html)

19. Radiation emergencies

- EPA Protective Action Guide (https://www.epa.gov/radiation/protective-action-guides-pags)
- FEMA Planning Guide for Nuclear Detonation (https://www.fema.gov/sites/default/files/documents/fema_nuc-detonation-planning-guide.pdf)
- EPA RadNet (https://www.epa.gov/radnet)
- DOE Federal Radiological Monitoring and Assessment Center (FRMAC) (https://nnss.gov/mission/federal-radiological-monitoring-and-assessment-center-frmac/)
- CDC Radiation Emergencies (https://www.cdc.gov/radiation-emergencies/index.html)
- Interagency Modeling and Atmospheric Assessment Center (https://www.fema.gov/emergency-managers/practioners/hazardous-response-capabilities/imaac)
- HHS Radiation Emergency Medical Management (https://remm.hhs.gov)
- FEMA CBRN Responder Network (https://www.cbrnresponder.net)
- National Alliance for Radiation Readiness (https://www.radiationready.org)
- NIAID Radiation and Nuclear Countermeasures Program (https://www.niaid.nih.gov/research/radiation-nuclear-countermeasures-program)
- FEMA Radiation Emergency Preparedness Program (https://www.fema.gov/emergency-managers/risk-management/hazardous-response-capabilities)

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