

APHIS' American Rescue Plan (ARP) Surveillance Program: Strategic Framework

Goal: Conduct thorough surveillance of SARS-CoV-2 in susceptible animals by building an early warning system to alert public health partners to take steps sooner to potentially prevent or limit the next zoonotic disease outbreak or the next global pandemic.

Background

Up to 75% of emerging infectious diseases in humans are zoonotic, impacting the health of both humans and animals. Over the past two decades, we've experienced devastating outbreaks caused by these diseases, including West Nile Virus, H1N1 influenza and Ebola virus. In each of these, we remained largely unaware of the potential threat until we started seeing illnesses – and deaths – in humans.

Early detection and response to zoonotic diseases while still in animals is essential in limiting or preventing human outbreaks. Addressing zoonotic diseases and other health issues at the human-animal-environmental interface and identifying opportunities for collaboration and joint action between these sectors is referred to as One Health. In 2016, the United States completed an external review of our national capacity¹ to rapidly identify and respond to emerging zoonoses and other human health threats using a multisectoral, One Health approach. Critical gaps identified included: lack of surveillance tools and strategies for the rapid detection and characterization of emerging and re-emerging pathogens at the human-animal-environment interface; inconsistent linkages between human and animal surveillance and laboratory systems; and challenges with data collection, exchange, analysis and reporting.

In December 2017, the U.S. Department of Agriculture partnered with CDC and the U.S. Department of the Interior to organize a One Health Zoonotic Disease Prioritization Workshop² to identify the zoonotic diseases of greatest national concern that should be jointly addressed. Notably, emerging coronaviruses, which includes SARS-CoV-2, were fifth on the list. Sometime during 2019, SARS-CoV-2 became the next emerging zoonotic disease that was detected only after it was well established in humans; public health authorities were left with extremely limited and largely ineffective options for controlling spread and preventing the COVID-19 pandemic.

Congress provided USDA \$300 million through the American Rescue Plan (ARP) Act to conduct monitoring and surveillance of susceptible animals for SARS-CoV-2, addressing the long-standing need to strengthen our ability for early detection of emerging and zoonotic diseases in animals. APHIS has developed an initial framework to build One Health capacity and improve the country's ability to prevent, detect, report and respond to SARS CoV-2, including potential emerging variants. This investment will also strengthen APHIS's ability to detect other current and future emerging and zoonotic diseases. Collectively, the key actions within the framework enable USDA to build an early warning system to alert public health partners to take steps sooner to potentially prevent or limit the next zoonotic disease outbreak, or the next global pandemic.

¹ United States Health Security National Action Plan: Strengthening Implementation of the International Health Regulations based on the 2016 Joint External Evaluation. Available from <https://www.phe.gov/Preparedness/international/Documents/jee-nap-508.pdf>

² Prioritizing Zoonotic Diseases for Multisectoral, One Health Collaboration in the United States – Workshop Summary, available from <https://www.cdc.gov/onehealth/pdfs/us-ohzdp-report-508.pdf>

APHIS' ARP Strategic Framework is outlined in the table below. Our focus is on building a robust surveillance system that provides information for action to address the immediate threat to human and animal health presented by SARS-CoV-2 and emerging variants. This includes expanding surveillance to a wider range of animal species, including farmed animals, free-ranging and captive wildlife, peridomestic species, and companion animals; increasing diagnostic testing capability and capacity; and conducting multisectoral, One Health investigations of new animal detections and exposures. This approach provides essential information needed by USDA and our One Health partners to develop and evaluate effective interventions and prioritize research efforts to safeguard animal health, prevent transmission at the human-animal interface, and minimize potential impacts to the food supply. This framework creates the foundation for an early warning system that offers public health partners the opportunity to act sooner and potentially prevent or limit the next zoonotic disease outbreak or the next global pandemic.

Table: Strategic Framework Focal Areas and Associated Activities

PREVENT	DETECT	INVESTIGATE and CONTROL SPREAD	COMMUNICATION/ OUTREACH
<ul style="list-style-type: none"> • Improve regional and global collaboration to build additional capacity in One Health, multidisciplinary surveillance, including data collection, analysis and control measures to help the United States safeguard against the entry of diseases in the first place • Support and contribute to global surveillance and early warning systems that generate and share data and information to improve prevention, detection and control • Strengthen early warning system capacity to identify new emerging threats to prevent future pandemics • Prioritize research and capacity-building measures to address gaps in prevention • Work with One Health partners to identify risks and plan effective interventions to prevent transmission at the human-animal interface and/or impacts to the food supply 	<ul style="list-style-type: none"> • Partner with Agricultural Research Service, federal, academic and industry partners to identify and prioritize research needs, including improving how we find new cases and susceptible animals sooner • Work with One Health partners to strengthen surveillance tools and strategies for rapid detection and characterization of SARS-CoV-2 and emerging variants • Strengthen diagnostic laboratory capability and capacity, methods, and reporting for early detection of emerging pathogens and variants in animals • Advance data management reporting capabilities, including exchange and integration of critical information needed to protect both human and animal health 	<ul style="list-style-type: none"> • Strengthen and standardize multisectoral and multiagency field epidemiology capacity, including investigation of new detections of SARS-CoV-2 or emerging variants to guide immediate control efforts to prevent further transmission • Engage One Health partners to use surveillance data to plan and evaluate interventions and programs that minimize risks to human health and the food supply • Ensure that the National Veterinary Stockpile has supplies and equipment needed to protect investigation teams from risk of zoonotic transmission and potential spillover events • Partner with CDC on One Health workforce development and training opportunities to build a skilled cadre of professionals to manage and lead activities in all focal areas 	<ul style="list-style-type: none"> • Extensive communication and outreach to traditional and non-traditional stakeholders, including Tribal, minority and underserved farmers to identify and address potential gaps in strategic framework • Strengthen coordinated messaging efforts to ensure dissemination of accurate and timely messages to the public to help prevent disease. • Expand partnerships with academia, industry and non-governmental organizations to broaden reach of communication efforts

Cross-Cutting Activities

- Research to Address Knowledge Gaps
- Leverage Technology and Information Management
- Monitoring and Evaluation

Strategy 1.1: Improve our understanding of susceptibility, transmission and disease processes to plan effective prevention, surveillance and response activities

Focus Area: Detect

Activities:

- Expand partnerships with Agricultural Research Service at the Foreign Animal Disease Diagnostic Laboratories (FADDL – Plum Island), the National Bio and Agro-Defense Facility (NBAF) and National Veterinary Services Laboratories (NVSL), and with other federal, academic and industry partners to strengthen research and diagnostic laboratory capability and capacity, addressing gaps in validated diagnostic tests for SARS-CoV-2 in wildlife and high-throughput capacity, improving how we find new cases and susceptible animals sooner.
- Work with the CDC and other One Health partners to build a national One Health framework to strengthen surveillance tools and strategies for rapid detection and characterization of emerging and zoonotic pathogens at the human-animal-environmental interface, including:
 - Review and incorporate lessons learned from FY20-21 COVID response activities.
 - Identify enhancements to animal surveillance diagnostic capability and capacity.
 - Link surveillance and laboratory systems, including the ability to exchange and integrate critical information needed to protect both human and animal health
- Plan and implement initial surveillance sampling from a broad range of animal species to evaluate susceptibility and develop science-based strategies to prioritize testing and surveillance in species at highest risk of transmission.
- Identify and prioritize critical enhancements to data management and reporting.
- Build capability and capacity to detect coronavirus in wildlife, including
 - strengthen and standardize procedures and processes for sample collection and processing to improve reliability of results;
 - develop and validate of coronavirus diagnostic tests to ensure comparability of surveillance results with other countries;
 - build critical additional laboratory capacity to test increased numbers of samples from wildlife species.
- Establish performance metrics and framework for ongoing evaluation of program effectiveness

Focus Area: Investigate and Control Spread

Activities:

- Strengthen and standardize multisectoral, One Health field epidemiology capacity to investigate new detections of SARS-CoV-2, identify additional infections and prevent further transmission and spillover events.
 - Establish criteria (triggers) and processes for coordinated, multisectoral investigations for detections or exposure events in animals with Federal, and State/Local/territorial/Tribal (SLTT) animal and public health counterparts.
 - Identify sampling strategies for investigations.
- Partner with CDC and other federal One Health partners on workforce development and training opportunities for epidemiologists and other technical experts that integrate One Health principles to strengthen coordination during surveillance and field investigations of new cases of disease.
- Ensure that the National Veterinary Stockpile has the necessary disinfectants, personal protective equipment, and other supplies needed to protect investigation teams from zoonotic transmission risks and prevent spillover events.

- Engage One Health partners to use surveillance data to plan and evaluate interventions / programs that minimize risks to human and animal health and the food supply.

Strategy 1.2: Equitable and effective communication and outreach with partners and stakeholders

Focus Area: Communication/Education

Activities:

- Engage stakeholders to share information about our plans and provide meaningful opportunities for all interested entities to review and comment on our draft framework (see separate American Rescue Plan Act Proposed Stakeholder Engagement Plan).

Year 2+ Objective: Improve APHIS' ability to prevent, detect, report and respond to emerging and zoonotic diseases, including SARS-CoV-2, in the United States earlier

Strategy 2.1: Strengthen measures for preventing emerging and zoonotic diseases at the human-animal-environmental interface

Focus Area: Prevent

Activities:

- Leverage our specialized International Services to improve existing national, regional and global collaboration, particularly in higher-risk geopolitical regions, to build additional capacity in multisectoral, One Health prevention, detection and response, including implementing activities within the [Global Health Security Agenda](#) (GHSA), to help the United States safeguard against the entry of diseases in the first place. Initial focus within the 19 priority countries for GHSA will include:
 - Improving communication and collaboration across sectors to strengthen foundational surveillance, health security, and trade systems infrastructure and continuity.
 - Enhancing collaborations with global and regional animal health organizations to provide critical diplomatic relations and technical expertise to strengthen emerging disease surveillance and ability to link and analyze data to improve early warning systems and inform prevention and safeguarding efforts
 - Working with partners and stakeholders to identify and mitigate risks and potential pathways for disease introduction.
- Strengthen indicator-based (syndromic) surveillance tools, information sharing, and early warning system capacities to identify new threats such as new variants or other factors involved in virulence or resistance to existing treatments, as well as effective prevention measures to prevent future pandemics. Identify opportunities to link with other One Health surveillance systems designed to detect emerging threats, e.g., antimicrobial-resistance bacteria.
- Expand collaborations with ARS and other partners to identify and prioritize research needs on effective prevention measures, diagnostic tests and methods and other tools to identify new cases and susceptible animals sooner and prevent future pandemics.
- Work with One Health partners to identify risks and effective interventions to prevent transmission at the human-animal interface and/or impacts to the food supply.

Strategy 2.2: Plan and Implement a risk-based, comprehensive, integrated monitoring and surveillance system

Focus Area: Detect

Activities:

- Address previously identified gaps in national One Health capacity, including developing surveillance tools and strategies for the rapid detection and characterization of emerging and re-emerging pathogens at the human-animal-environment interface.
- Build comprehensive and coordinated animal diagnostic and laboratory capacity and capability including developing and conducting validated testing and building critical additional laboratory capacity to ensure we have timely and reliable surveillance results.
- Support national and international diagnostic testing and laboratory information management advancements, providing technical expertise to efforts to collect and analyze quality data for decision making.
- Strengthen capabilities to capture, analyze and visualize data on emerging and zoonotic diseases from multiple sources in a secure and efficient manner.
- Advance communication and reporting capabilities to maximize value of information and knowledge from data collection efforts.

Strategy 2.3: Enhance coordinated multisectoral investigation and response to SARS-CoV-2 and other emerging and zoonotic diseases to guide immediate control efforts to prevent disease spread and potential impacts to animal and human health

Focus Area: Investigate and Control Spread

Activities

- Strengthen and standardize multisectoral and multiagency field epidemiology capacity and outbreak response.
- Partner with CDC and other federal One Health partners on workforce development and training opportunities that integrate One Health principles to build a skilled cadre of One Health professionals to manage and lead One Health surveillance activities.

Strategy 2.4: Engage One Health partners to use surveillance data to plan and evaluate interventions / programs that minimize risks to human and animal health and the food supply

Focus Area: Investigate and Control Spread

Activities:

- Ensure that the National Veterinary Stockpile has the necessary disinfectants, personal protective equipment, and other supplies needed to protect investigation teams from zoonotic transmission risks and prevent spillover events.
- Build public-private-academic One Health partnerships to investigate new cases, identify risks and effective interventions, including biosecurity and biosafety countermeasures, to safeguard animal health, prevent transmission at the human-animal interface and potential impacts to the nation's food supply and economy.

Strategy 2.5: Strengthen coordinated messaging efforts to ensure dissemination of accurate and timely messages to the public to help prevent disease

Focus Area: Communication/Outreach

Activities:

- Continue extensive communication and outreach to traditional and non-traditional stakeholders, including Tribal, minority and underserved farmers to identify and address potential gaps in strategic framework.
- Work within other USDA Agencies to identify joint projects to reach Tribal, underserved, and minority farmers, ranchers, and communities utilizing accurate and timely public messages.
- Expand partnerships with academia, industry and non-governmental organizations to broaden reach of communication efforts.