



National Strategy for  
pandemic  
influenza



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# NATIONAL STRATEGY FOR PANDEMIC INFLUENZA

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# NATIONAL STRATEGY FOR PANDEMIC INFLUENZA

## INTRODUCTION

Although remarkable advances have been made in science and medicine during the past century, we are constantly reminded that we live in a universe of microbes - viruses, bacteria, protozoa and fungi that are forever changing and adapting themselves to the human host and the defenses that humans create.

Influenza viruses are notable for their resilience and adaptability. While science has been able to develop highly effective vaccines and treatments for many infectious diseases that threaten public health, acquiring these tools is an ongoing challenge with the influenza virus. Changes in the genetic makeup of the virus require us to develop new vaccines on an annual basis and forecast which strains are likely to predominate.

As a result, and despite annual vaccinations, the U.S. faces a burden of influenza that results in approximately 36,000 deaths and more than 200,000 hospitalizations each year. In addition to this human toll, influenza is annually responsible for a total cost of over \$10 billion in the U.S.

A pandemic, or worldwide outbreak of a new influenza virus, could dwarf this impact by overwhelming our health and medical capabilities, potentially resulting in hundreds of thousands of deaths, millions of hospitalizations, and hundreds of billions of dollars in direct and indirect costs. This *Strategy* will guide our preparedness and response activities to mitigate that impact.

## THE PANDEMIC THREAT

Pandemics happen when a novel influenza virus emerges that infects and can be efficiently transmitted between humans. Animals are the most likely reservoir for these emerging viruses; avian viruses played

a role in the last three influenza pandemics. Two of these pandemic-causing viruses remain in circulation and are responsible for the majority of influenza cases each year.

Pandemics have occurred intermittently over centuries. The last three pandemics, in 1918, 1957 and 1968, killed approximately 40 million, 2 million and 1 million people worldwide, respectively. Although the timing cannot be predicted, history and science suggest that we will face one or more pandemics in this century.

The current pandemic threat stems from an unprecedented outbreak of avian influenza in Asia and Europe, caused by the H5N1 strain of the Influenza A virus. To date, the virus has infected birds in 16 countries and has resulted in the deaths, through illness and culling, of approximately 200 million birds across Asia. While traditional control measures have been attempted, the virus is now endemic in Southeast Asia, present in long-range migratory birds, and unlikely to be eradicated soon.

A notable and worrisome feature of the H5N1 virus is its ability to infect a wide range of hosts, including birds and humans. As of the date of this document, the virus is known to have infected 121 people in four countries, resulting in 62 deaths over the past two years. Although the virus has not yet shown an ability to transmit efficiently between humans, as is seen with the annual influenza virus, there is concern that it will acquire this capability through genetic mutation or exchange of genetic material with a human influenza virus.

It is impossible to know whether the currently circulating H5N1 virus will cause a human pandemic. The widespread nature of H5N1 in birds and the likelihood of mutations over time raise our concerns that

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the virus will become transmissible between humans, with potentially catastrophic consequences. If this does not happen with the current H5N1 strain, history suggests that a different influenza virus will emerge and result in the next pandemic.

### **THE NATIONAL STRATEGY FOR PANDEMIC INFLUENZA**

Preparing for a pandemic requires the leveraging of all instruments of national power, and coordinated action by all segments of government and society. Influenza viruses do not respect the distinctions of race, sex, age, profession or nationality, and are not constrained by geographic boundaries. The next pandemic is likely to come in waves, each lasting months, and pass through communities of all size across the nation and world. While a pandemic will not damage power lines, banks or computer networks, it will ultimately threaten all critical infrastructure by removing essential personnel from the workplace for weeks or months.

This makes a pandemic a unique circumstance necessitating a strategy that extends well beyond health and medical boundaries, to include the sustainment of critical infrastructure, private-sector activities, the movement of goods and services across the nation and the globe, and economic and security considerations. The uncertainties associated with influenza viruses require that our *Strategy* be versatile, to ensure that we are prepared for any virus with pandemic potential, as well as the annual burden of influenza that we know we will face.

**The *National Strategy for Pandemic Influenza* guides our preparedness and response to an influenza pandemic, with the intent of (1) stopping, slowing or otherwise limiting the spread of a pandemic to the United States; (2) limiting the domestic spread of a pandemic, and mitigating disease, suffering and death; and (3) sustaining infrastructure and mitigating impact to the economy and the functioning of society.**

The *Strategy* will provide a framework for future U.S. Government planning efforts that is consistent with *The National Security Strategy* and the *National Strategy for Homeland Security*. It recognizes that preparing for and responding to a pandemic cannot be viewed as a purely federal responsibility, and that the nation must have a system of plans at all levels of government and in all sectors outside of government that can be integrated to address the pandemic threat. It is guided by the following principles:

- The federal government will use all instruments of national power to address the pandemic threat.
- States and communities should have credible pandemic preparedness plans to respond to an outbreak within their jurisdictions.
- The private sector should play an integral role in preparedness before a pandemic begins, and should be part of the national response.
- Individual citizens should be prepared for an influenza pandemic, and be educated about individual responsibility to limit the spread of infection if they or their family members become ill.
- Global partnerships will be leveraged to address the pandemic threat.

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## **PILLARS OF THE *NATIONAL STRATEGY***

Our *Strategy* addresses the full spectrum of events that link a farmyard overseas to a living room in America. While the circumstances that connect these environments are very different, our strategic principles remain relevant. The pillars of our *Strategy* are:

- **Preparedness and Communication:** Activities that should be undertaken before a pandemic to ensure preparedness, and the communication of roles and responsibilities to all levels of government, segments of society and individuals.
- **Surveillance and Detection:** Domestic and international systems that provide continuous “situational awareness,” to ensure the earliest warning possible to protect the population.
- **Response and Containment:** Actions to limit the spread of the outbreak and to mitigate the health, social and economic impacts of a pandemic.

## **IMPLEMENTATION OF THE *NATIONAL STRATEGY***

This *Strategy* reflects the federal government’s approach to the pandemic threat. While it provides strategic direction for the Departments and Agencies of the U.S. Government, it does not attempt to catalogue and assign all federal responsibilities. The implementation of this *Strategy* and specific responsibilities will be described separately.

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## PILLAR ONE: PREPAREDNESS AND COMMUNICATION

Preparedness is the underpinning of the entire spectrum of activities, including surveillance, detection, containment and response efforts. We will support pandemic planning efforts, and clearly communicate expectations to individuals, communities and governments, whether overseas or in the United States, recognizing that all share the responsibility to limit the spread of infection in order to protect populations beyond their borders.

### *Planning for a Pandemic*

To enhance preparedness, we will:

- Develop federal implementation plans to support this *Strategy*, to include all components of the U.S. government and to address the full range of consequences of a pandemic, including human and animal health, security, transportation, economic, trade and infrastructure considerations.
- Work through multilateral health organizations such as the World Health Organization (WHO), Food and Agriculture Organization (FAO), World Organization for Animal Health (OIE) and regional organizations such as the Asia-Pacific Economic Cooperation (APEC) forum, as well as through bilateral and multilateral contacts to:
  - Support the development and exercising of avian and pandemic response plans;
  - Expand in-country medical, veterinary and scientific capacity to respond to an outbreak; and
  - Educate populations at home and abroad about high-risk practices that increase the likelihood of virus transmission between species.

- Continue to work with states and localities to:
  - Establish and exercise pandemic response plans;
  - Develop medical and veterinary surge capacity plans; and
  - Integrate non-health sectors, including the private sector and critical infrastructure entities, in these planning efforts.
- Build upon existing domestic mechanisms to rapidly recruit and deploy large numbers of health, medical and veterinary providers within or across jurisdictions to match medical requirements with capabilities.

### *Communicating Expectations and Responsibilities*

A critical element of pandemic planning is ensuring that people and entities not accustomed to responding to health crises understand the actions and priorities required to prepare for and respond to a pandemic. Those groups include political leadership at all levels of government, non-health components of government and members of the private sector. Essential planning also includes the coordination of efforts between human and animal health authorities. In order to accomplish this, we will:

- Work to ensure clear, effective and coordinated risk communication, domestically and internationally, before and during a pandemic. This includes identifying credible spokespersons at all levels of government to effectively coordinate and communicate helpful, informative messages in a timely manner.
- Provide guidance to the private sector and critical infrastructure entities on

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their role in the pandemic response, and considerations necessary to maintain essential services and operations despite significant and sustained worker absenteeism.

- Provide guidance to individuals on infection control behaviors they should adopt pre-pandemic, and the specific actions they will need to take during a severe influenza season or pandemic, such as self-isolation and protection of others if they themselves contract influenza.
- Provide guidance and support to poultry, swine and related industries on their role in responding to an outbreak of avian influenza, including ensuring the protection of animal workers and initiating or strengthening public education campaigns to minimize the risks of infection from animal products.

#### ***Producing and Stockpiling Vaccines, Antivirals and Medical Material***

In combination with traditional public health measures, vaccines and antiviral drugs form the foundation of our infection control strategy. Vaccination is the most important element of this strategy, but we acknowledge that a two-pronged strategy incorporating both vaccines and antivirals is essential. To establish production capacity and stockpiles in support of our containment and response strategies, we will:

- Encourage nations to develop production capacity and stockpiles to support their response needs, to include pooling of efforts to create regional capacity.
- Encourage and subsidize the development of state-based antiviral stockpiles to support response activities.
- Ensure that our national stockpile and stockpiles based in states and communities are properly configured to respond to the diversity of medical requirements presented by a pandemic,

including personal protective equipment, antibiotics and general supplies.

- Establish domestic production capacity and stockpiles of countermeasures to ensure:
  - Sufficient vaccine to vaccinate front-line personnel and at-risk populations, including military personnel;
  - Sufficient vaccine to vaccinate the entire U.S. population within six months of the emergence of a virus with pandemic potential; and
  - Antiviral treatment for those who contract a pandemic strain of influenza.
- Facilitate appropriate coordination of efforts across the vaccine manufacturing sector.
- Address regulatory and other legal barriers to the expansion of our domestic vaccine production capacity.
- Expand the public health recommendations for domestic seasonal influenza vaccination and encourage the same practice internationally.
- Expand the domestic supply of avian influenza vaccine to control a domestic outbreak of avian influenza in bird populations.

#### ***Establishing Distribution Plans for Vaccines and Antivirals***

It is essential that we prioritize the allocation of countermeasures (vaccines and antivirals) that are in limited supply and define effective distribution modalities during a pandemic. We will:

- Develop credible countermeasure distribution mechanisms for vaccine and antiviral agents prior to and during a pandemic.

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- Prioritize countermeasure allocation before an outbreak, and update this prioritization immediately after the outbreak begins based on the at-risk populations, available supplies and the characteristics of the virus.

***Advancing Scientific Knowledge and Accelerating Development***

Research and development of vaccines, antivirals, adjuvants and diagnostics represents our best defense against a pandemic. To realize our goal of next-generation countermeasures against influenza, we must make significant and targeted investments in promising technologies. We will:

- Ensure that there is maximal sharing of scientific information about influenza viruses between governments, scientific entities and the private sector.

- Work with our international partners to ensure that we are all leveraging the most advanced technological approaches available for vaccine production.
- Accelerate the development of cell culture technology for influenza vaccine production and establish a domestic production base to support vaccination demands.
- Use novel investment strategies to advance the development of next-generation influenza diagnostics and countermeasures, including new antivirals, vaccines, adjuvant technologies, and countermeasures that provide protection across multiple strains and seasons of the influenza virus.

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## **PILLAR TWO: SURVEILLANCE AND DETECTION**

Early warning of a pandemic and our ability to closely track the spread of avian influenza outbreak is critical to being able to rapidly employ resources to contain the spread of the virus. An effective surveillance and detection system will save lives by allowing us to activate our response plans before the arrival of a pandemic virus to the U.S., activate additional surveillance systems and initiate vaccine production and administration.

### ***Ensuring Rapid Reporting of Outbreaks***

To support our need for “situational awareness,” both domestically and internationally, we will:

- Work through the International Partnership on Avian and Pandemic Influenza, as well as through other political and diplomatic channels such as the United Nations and the Asia-Pacific Economic Cooperation forum, to ensure transparency, scientific cooperation and rapid reporting of avian and human influenza cases.
- Support the development of the proper scientific and epidemiologic expertise in affected regions to ensure early recognition of changes in the pattern of avian or human outbreaks.
- Support the development and sustainment of sufficient U.S. and host nation laboratory capacity and diagnostic reagents in affected regions and domestically, to provide rapid confirmation of cases in animals or humans.
- Advance mechanisms for “real-time” clinical surveillance in domestic acute care settings such as emergency departments, intensive care units and laboratories to provide local, state and federal public health officials with continuous awareness of the profile of

illness in communities, and leverage all federal medical capabilities, both domestic and international, in support of this objective.

- Develop and deploy rapid diagnostics with greater sensitivity and reproducibility to allow onsite diagnosis of pandemic strains of influenza at home and abroad, in animals and humans, to facilitate early warning, outbreak control and targeting of antiviral therapy.
- Expand our domestic livestock and wildlife surveillance activities to ensure early warning of the spread of an outbreak to our shores.

### ***Using Surveillance to Limit Spread***

Although influenza does not respect geographic or political borders, entry to and egress from affected areas represent opportunities to control or at the very least slow the spread of infection. In parallel to our containment measures, we will:

- Develop mechanisms to rapidly share information on travelers who may be carrying or may have been exposed to a pandemic strain of influenza, for the purposes of contact tracing and outbreak investigation.
- Develop and exercise mechanisms to provide active and passive surveillance during an outbreak, both within and beyond our borders.
- Expand and enhance mechanisms for screening and monitoring animals that may harbor viruses with pandemic potential.
- Develop screening and monitoring mechanisms and agreements to appropriately control travel and shipping of potentially infected products to and from affected regions if necessary, and to protect unaffected populations.

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## **PILLAR THREE: RESPONSE AND CONTAINMENT**

We recognize that a virus with pandemic potential anywhere represents a risk to populations everywhere. Once health authorities have signaled sustained and efficient human-to-human spread of the virus has occurred, a cascade of response mechanisms will be initiated, from the site of the documented transmission to locations around the globe.

### ***Containing Outbreaks***

The most effective way to protect the American population is to contain an outbreak beyond the borders of the U.S. While we work to prevent a pandemic from reaching our shores, we recognize that slowing or limiting the spread of the outbreak is a more realistic outcome and can save many lives. In support of our containment strategy, we will:

- Work through the International Partnership to develop a coalition of strong partners to coordinate actions to limit the spread of a virus with pandemic potential beyond the location where it is first recognized in order to protect U.S. interests abroad.
- Where appropriate, offer and coordinate assistance from the United States and other members of the International Partnership.
- Encourage all levels of government, domestically and globally, to take appropriate and lawful action to contain an outbreak within the borders of their community, province, state or nation.
- Where appropriate, use governmental authorities to limit non-essential movement of people, goods and services into and out of areas where an outbreak occurs.
- Provide guidance to all levels of government on the range of options for

infection-control and containment, including those circumstances where social distancing measures, limitations on gatherings, or quarantine authority may be an appropriate public health intervention.

- Emphasize the roles and responsibilities of the individual in preventing the spread of an outbreak, and the risk to others if infection-control practices are not followed.
- Provide guidance for states, localities and industry on best practices to prevent the spread of avian influenza in commercial, domestic and wild birds, and other animals.

### ***Leveraging National Medical and Public Health Surge Capacity***

Rather than generating a focal point of casualties, the medical burden of a pandemic is likely to be distributed in communities across the nation for an extended period of time. In order to save lives and limit suffering, we will:

- Implement state and local public health and medical surge plans, and leverage all federal medical facilities, personnel and response capabilities to support the national surge requirement.
- Activate plans to distribute medical countermeasures, including non-medical equipment and other material, from the Strategic National Stockpile and other distribution centers to federal, state and local authorities.
- Address barriers to the flow of public health, medical and veterinary personnel across state and local jurisdictions to meet local shortfalls in public health, medical and veterinary capacity.
- Determine the spectrum of public health, medical and veterinary surge

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capacity activities that the U.S. military and other government entities may be able to support during a pandemic, contingent upon primary mission requirements, and develop mechanisms to activate them.

***Sustaining Infrastructure, Essential Services and the Economy***

Movement of essential personnel, goods and services, and maintenance of critical infrastructure are necessary during an event that spans months in any given community. The private sector and critical infrastructure entities must respond in a manner that allows them to maintain the essential elements of their operations for a prolonged period of time, in order to prevent severe disruption of life in our communities. To ensure this, we will:

- Encourage the development of coordination mechanisms across American industries to support the above activities during a pandemic.
- Provide guidance to activate contingency plans to ensure that personnel are protected, that the delivery of essential goods and services is maintained, and that sectors remain

functional despite significant and sustained worker absenteeism.

- Determine the spectrum of infrastructure-sustainment activities that the U.S. military and other government entities may be able to support during a pandemic, contingent upon primary mission requirements, and develop mechanisms to activate them.

***Ensuring Effective Risk Communication***

Effective risk communication is essential to inform the public and mitigate panic. We will:

- Ensure that timely, clear, coordinated messages are delivered to the American public from trained spokespersons at all levels of government and assist the governments of affected nations to do the same.
- Work with state and local governments to develop guidelines to assure the public of the safety of the food supply and mitigate the risk of exposure from wildlife.

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## ROLES AND RESPONSIBILITIES

Because of its unique nature, responsibility for preparedness and response to a pandemic extends across all levels of government and all segments of society. No single entity alone can prevent or mitigate the impact of a pandemic.

### *The Federal Government*

While the Federal government plays a critical role in elements of preparedness and response to a pandemic, the success of these measures is predicated on actions taken at the individual level and in states and communities. Federal responsibilities include the following:

- Advancing international preparedness, surveillance, response and containment activities.
- Supporting the establishment of countermeasure stockpiles and production capacity by:
  - Facilitating the development of sufficient domestic production capacity for vaccines, antivirals, diagnostics and personal protective equipment to support domestic needs, and encouraging the development of production capacity around the world;
  - Advancing the science necessary to produce effective vaccines, therapeutics and diagnostics; and
  - Stockpiling and coordinating the distribution of necessary countermeasures, in concert with states and other entities.
- Ensuring that federal departments and agencies, including federal health care systems, have developed and exercised preparedness and response plans that take into account the potential impact of

a pandemic on the federal workforce, and are configured to support state, local and private sector efforts as appropriate.

- Facilitating state and local planning through funding and guidance.
- Providing guidance to the private sector and public on preparedness and response planning, in conjunction with states and communities.

Lead departments have been identified for the medical response (Department of Health and Human Services), veterinary response (Department of Agriculture), international activities (Department of State) and the overall domestic incident management and Federal coordination (Department of Homeland Security). Each department is responsible for coordination of all efforts within its authorized mission, and departments are responsible for developing plans to implement this *Strategy*.

### *States and Localities*

Our communities are on the front lines of a pandemic and will face many challenges in maintaining continuity of society in the face of widespread illness and increased demand on most essential government services. State and local responsibilities include the following:

- Ensuring that all reasonable measures are taken to limit the spread of an outbreak within and beyond the community's borders.
- Establishing comprehensive and credible preparedness and response plans that are exercised on a regular basis.
- Integrating non-health entities in the planning for a pandemic, including law enforcement, utilities, city services and political leadership.

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- Establishing state and community-based stockpiles and distribution systems to support a comprehensive pandemic response.
  - Identifying key spokespersons for the community, ensuring that they are educated in risk communication, and have coordinated crisis communications plans.
  - Providing public education campaigns on pandemic influenza and public and private interventions.

### ***The Private Sector and Critical Infrastructure Entities***

The private sector represents an essential pillar of our society because of the essential goods and services that it provides. Moreover, it touches the majority of our population on a daily basis, through an employer-employee or vendor-customer relationship. For these reasons, it is essential that the U.S. private sector be engaged in all preparedness and response activities for a pandemic.

Critical infrastructure entities also must be engaged in planning for a pandemic because of our society's dependence upon their services. Both the private sector and critical infrastructure entities represent essential underpinnings for the functioning of American society. Responsibilities of the U.S. private sector and critical infrastructure entities include the following:

- Establishing an ethic of infection control in the workplace that is reinforced during the annual influenza season, to include, if possible, options for working offsite while ill, systems to reduce infection transmission, and worker education.
- Establishing contingency systems to maintain delivery of essential goods and services during times of significant and sustained worker absenteeism.

- Where possible, establishing mechanisms to allow workers to provide services from home if public health officials advise against non-essential travel outside the home.
- Establishing partnerships with other members of the sector to provide mutual support and maintenance of essential services during a pandemic.

### ***Individuals and Families***

The critical role of individuals and families in controlling a pandemic cannot be overstated. Modeling of the transmission of influenza vividly illustrates the impact of one individual's behavior on the spread of disease, by showing that an infection carried by one person can be transmitted to tens or hundreds of others. For this reason, individual action is perhaps the most important element of pandemic preparedness and response.

Education on pandemic preparedness for the population should begin before a pandemic, should be provided by all levels of government and the private sector, and should occur in the context of preventing the transmission of any infection, such as the annual influenza or the common cold. Responsibilities of the individual and families include:

- Taking precautions to prevent the spread of infection to others if an individual or a family member has symptoms of influenza.
- Being prepared to follow public health guidance that may include limitation of attendance at public gatherings and non-essential travel for several days or weeks.
- Keeping supplies of materials at home, as recommended by authorities, to support essential needs of the household for several days if necessary.

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### ***International Partners***

We rely upon our international partnerships, with the United Nations, international organizations and private non-profit organizations, to amplify our efforts, and will engage them on a multilateral and bilateral basis. Our international effort to contain and mitigate the effects of an outbreak of pandemic influenza is a central component of our overall strategy. In many ways, the character and quality of the U.S. response and that of our international partners may play a determining role in the severity of a pandemic.

The International Partnership on Avian and Pandemic Influenza stands in support of multinational organizations. Members of the Partnership have agreed that the following 10 principles will guide their efforts:

1. International cooperation to protect the lives and health of our people;
2. Timely and sustained high-level global political leadership to combat avian and pandemic influenza;
3. Transparency in reporting of influenza cases in humans and in animals caused by virus strains that have pandemic potential, to increase understanding and preparedness and especially to ensure rapid and timely response to potential outbreaks;
4. Immediate sharing of epidemiological data and samples with the World Health Organization (WHO) and the international community to detect and characterize the nature and evolution of any outbreaks as quickly as possible, by utilizing, where appropriate, existing networks and mechanisms;
5. Rapid reaction to address the first signs of accelerated transmission of H5N1 and other highly pathogenic influenza strains so that appropriate international and national resources can be brought to bear;
6. Prevent and contain an incipient epidemic through capacity building and in-country collaboration with international partners;
7. Work in a manner complementary to and supportive of expanded cooperation with and appropriate support of key multilateral organizations (including the WHO, Food and Agriculture Organization and World Organization for Animal Health);
8. Timely coordination of bilateral and multilateral resource allocations; dedication of domestic resources (human and financial); improvements in public awareness; and development of economic and trade contingency plans;
9. Increased coordination and harmonization of preparedness, prevention, response and containment activities among nations, complementing domestic and regional preparedness initiatives, and encouraging where appropriate the development of strategic regional initiatives; and
10. Actions based on the best available science.

Through the Partnership and other bilateral and multilateral initiatives, we will promote these principles and support the development of an international capacity to prepare, detect and respond to an influenza pandemic.