National Aviation Resource Manual for Quarantinable Diseases

"By preparing now, we can give our citizens some peace of mind knowing that our nation is ready to act at the first sign of danger..."

- President George W. Bush, November 2005
National Aviation Resource Manual
For Quarantinable Diseases

Office of the Secretary
United States Department of Transportation
Washington, D.C. 20590

In coordination with the
Centers for Disease Control and Prevention
United States Department of Health and Human Services

Prepared by the
Oak Ridge Institute for Science and Education

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A Message from the Secretary of Transportation

More than 100 years ago, the Wright Brothers unlocked so much more than the secret of flight on that cold, windy December day. They unlocked the door of opportunity and the economic potential that aviation has brought by shrinking the vast distances across this great Nation, and across the world.

Today, civil aviation has grown into a $900 billion industry, employing more than 11 million people. Such is the power of flight. It brings hope and economic vitality to so many parts of our country.

With more than 9 million flights a year traversing our skies, the potential exists for unwelcome diseases to land on our shores. That is why federal agencies are working with each other to prepare for such a scenario.

Within the pages of the Manual, the federal government aims to bolster the capabilities of airport operators, air carriers, first responders, and state and local governments by sharing information on successful past practices. Being prepared means being informed.

We are taking aim at quarantinable diseases that have the potential to disrupt our way of life. These communicable diseases include smallpox, cholera, viral hemorrhagic fevers, severe acute respiratory syndrome and—of particular concern today—those strains of influenza viruses that have the potential to cause a pandemic.

My thanks go to Health and Human Services Secretary Mike Leavitt and his team for working so closely with the Department of Transportation on this publication.

Sincerely,

Norman Y. Mineta
A Message from the Secretary of Health and Human Services

(Placeholder)
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MANUAL OVERVIEW AND SCOPE

Introduction
The United States government has become increasingly concerned about global travel as a means for the spread of new or reemerging communicable diseases. Of particular interest is the international airline industry because thousands of travelers come into the U.S. daily through more than 130 international airports. Because of the sheer volume of travelers flowing through these airports, the potential exists for the quick and widespread dissemination within the U.S. of any communicable disease. However, at the current writing, there are nine quarantinable diseases designated under Section 361(b) of the Public Health Service Act and by Executive Order 13295 that are of particular note. The need for international airports and other interested entities to be prepared for responding to and containing these quarantinable diseases is of utmost importance.

Any response and containment effort to a quarantinable disease incident of major public health significance will require well coordinated actions by the airlines and airports with the U.S. Centers for Disease Control and Prevention (CDC)*, state and local public health departments, and first responders. Airlines already have their protocols and guidelines in place, as do some of the airports within the country. However, most airports do not have a manual that reviews the total effort necessary for preventing widespread transmission of quarantinable diseases throughout the U.S. This Manual provides that information. It also provides a “big picture” for those involved in both planning for and responding to a quarantinable disease incident at a U.S. international airport. It does not prescribe what airport planners and responders should do or have to do at their airport. Those details are left to the individual airport planners and responders to put together based on their own logistical and jurisdictional issues.

While this Manual provides a general guide for airport quarantinable disease planning, it is important to recognize that differences in the epidemiology of quarantinable diseases require that the response to each disease be tailored and specific to that disease. For example, the recent concern regarding avian influenza (H5N1) and the possibility of an influenza pandemic has led the federal government to actively draft a national pandemic influenza response plan specific to the epidemiological traits of that strain of influenza. Therefore, please note that the actions and planning recommendations outlined in this Manual may need to be updated, altered, or tailored based on novel disease characteristics or additional federal guidance as it becomes available.

Purpose
The purpose of this Manual is to be a national aviation resource outlining the response to and recovery from a quarantinable disease incident of major public health significance at a U.S. international airport. The target audience for the Manual is airlines, airports, federal response agencies and other first responders, local and state health departments, and other local and state government stakeholders that would be involved in the response to or recovery from the incident.

*Note: A list of the abbreviations used within this Manual is provided in Appendix I.
Scope and Assumptions
The scope and assumptions for the Manual are listed below.

1. The response activities described in this Manual are those that would occur at international airports only when a significant public health threat exists to warrant airline and airport authorities; federal, state, and local public health agencies; and first responders to be on heightened alert and awareness for the introduction of a quarantinable disease into the U.S. on an international air flight. As a result, the combination of heightened alert and awareness coupled with a potentially ill person on an international flight would trigger the high alert response activities described in this Manual.

2. A quarantinable disease incident of major public health significance at a U.S. international airport has never occurred. Generally, CDC and other public health responders deal mostly with communicable diseases such as chickenpox, influenza, and measles as well as gastrointestinal illnesses. However, this fact does not diminish the need for the target audience of this Manual to plan and prepare for the introduction of a quarantinable disease into the U.S. via an international air flight.

3. The response to a quarantinable disease incident at an international airport most likely would be considered to be an incident of national significance, and, therefore, would be subject to the purview of the National Response Plan (NRP). As such, airport response plans will need to take into account the NRP structure when developing or updating their own airport response plans. The NRP structure is described in this Manual. However, it is beyond the scope of the Manual to detail exactly how individual airport response plans should incorporate the NRP structure into their own response plans. This level of detail is left to individual airport planners and responders to compile based on their own logistical and jurisdictional issues.

4. The diseases addressed in the Manual are those that are quarantinable as designated under Section 361(b) of the Public Health Service Act and by Executive Order 13295 (see Section 1 and Appendix F in this Manual).

5. The response activities described in this Manual are for a non-bioterrorism event.

6. This Manual describes response activities at U.S. international airports.

7. The response activities described in this Manual are those that would occur at the scheduled arrival airport for an incoming international flight. In other words, the Manual does not address response activities for an airport to which the flight has been diverted. However, it should be noted that most of the response activities described in this Manual would apply at the airport to which the flight has been diverted.

8. The use of the term “airport response plan” or “airport communicable disease response plan” in this Manual refers to an airport response plan that deals with the response to a quarantinable disease at an international airport.

9. It is beyond the scope of this Manual to describe those response activities that would occur in a quarantinable disease incident in which an illness is not discovered until after the ill person has exited the airplane and been processed through the airport.

10. It is beyond the scope of this Manual to provide specific information on local or state public health or law enforcement statutes or regulations relating to the response to or recovery from a quarantinable disease incident at an international airport. Each airport may have to address its own jurisdictional or legal issues relating to public health and law enforcement.
11. This Manual does not address legal due process protections for isolated or quarantined individuals.

12. This Manual does not address pre-clearance procedures in foreign countries. It addresses the response to and recovery from a quarantinable disease incident at a domestic international airport and the measures taken to prevent further dissemination of the disease. It does not address preventative measures taken at the originating foreign country or airport.

13. The principles covered in this Manual apply to general aviation flights, but general aviation is not discussed within this Manual because the threat that might be associated with such flights would appear to be much smaller.

14. This Manual does not address the importation, processing, or quarantining of animals.

15. The information contained in this Manual was current as of April 30, 2006.

**Clarifications**
For the purposes of this Manual, the terms listed below need to be clarified and understood.

**Infectious vs. Communicable Disease**
The terms *infectious disease* and *communicable disease* often are used interchangeably. For the purposes of this Manual, *communicable disease* will be used. A communicable disease is an infectious disease transmissible (as from person to person) by direct contact with an affected individual or the individual's discharges or by indirect means (as by a vector). (An infectious disease may or may not be communicable. An example of a non-communicable, infectious disease is tetanus.)

**Communicable vs. Quarantinable Disease**
Not all communicable diseases are quarantinable. *Quarantinable diseases* are diseases that are specifically designated under Section 361(b) of the Public Health Service Act and by Executive Order 13295 (see Appendix E in this Manual).

**Isolation vs. Quarantine**
*Quarantine* is an often misused and misunderstood term, one that is frequently confused with the term *isolation*. *Isolation* refers to the separation of persons who have a specific communicable disease from those who are healthy and to the restriction of their movements to stop the spread of that disease. Isolation allows for the focused delivery of specialized health care to people who are ill, and it protects healthy people from being exposed to the disease and thus becoming ill. *Quarantine* refers to the separation and restriction of movement of persons who, while not yet ill, have been exposed to a communicable disease and, therefore, may transmit the disease.

**Triggered Response vs. Non-Triggered Response**
With regard to quarantinable disease incidents at international airports, a *trigger* is a combination of circumstances that would lead a person to deduce that a potentially dangerous situation exists and, therefore, pertinent authorities should be contacted immediately. Usually, this combination of circumstances would involve heightened alert and awareness for a particular quarantinable disease along with a symptomatic traveler returning from an area for which an alert had been posted. The trigger would lead to a heightened response to a potential quarantinable disease incident.
A *non-triggered response* could be a response to normal illness, such as gastrointestinal disorders or air sickness. It also could be a response to a quarantinable disease incident that is not discovered until post-arrival and passenger processing. This Manual does not describe the response activities to non-triggered quarantinable disease incidents.

**CDC Quarantine Stations vs. CDC Headquarters**

CDC Quarantine Stations are managed under the auspices of the CDC Division of Global Migration and Quarantine (DGMQ). These Quarantine Stations are staffed by federal public health personnel who respond to and assess quarantinable (and communicable) disease incidents at international airports. CDC Headquarters (HQ) provides guidance to these Quarantine Stations as needed and has the authority to issue quarantine orders.

**Manual Production**

This Manual was produced with input from representatives of major airlines; international airports; airline and airport associations; federal, state, and local response agencies; state and local health departments; and other federal, state, and local public health and emergency response stakeholders. Much of the information provided in this Manual was compiled from the abovementioned entities during the commission of pandemic influenza tabletop exercises conducted for CDC at major international airports around the country. (See Appendix J: Acknowledgements for a listing of organizations that provided input and comments on this Manual.)

**Contents**

This Manual is divided into nine sections and has ten appendices. The first eight sections provide general concepts while the ninth section provides detailed guidance. Covered within this Manual are the following:

- The **Lead Authority**—CDC DGMQ—for the response to quarantinable disease incidents at U.S. airports.

- The role responders play in **Communicable Disease Awareness at Airports**, from disease surveillance to disease alerts.

- **Pre-Incident Planning** to ensure an effective and efficient response to a quarantinable disease incident at an international airport.

- The **Roles and Responsibilities** of conveyance operators, airport operators, state and local governments, local healthcare facilities and support organizations, and agencies of the federal government.

- The **In-Flight Response** to a quarantinable disease incident at an international airport, including notifications, aircraft gating considerations, and responder preparations.

- The **On-Arrival Response** to a quarantinable disease incident at an international airport, including the gate response and passenger and crew treatment.

- The **Post-Arrival Response** to a quarantinable disease incident at an international airport, including ill person hospitalization and isolation, and quarantine of other passengers and crew.
• The **Recovery Phase** of a quarantinable disease incident at an international airport, including disinfecting potentially exposed assets, restocking equipment and supplies, recovering financial expenditures, and tending to quarantine staff.

• **Airport Communicable Disease Response Planning** guidance for airports to use for developing their own response plans.

• **Appendices** of relevant information on:
  – CDC DGMQ Quarantine Stations,
  – CDC travel notices,
  – Personal protective equipment,
  – Legal authorities for isolation and quarantine,
  – Quarantinable diseases,
  – An example of an international airport quarantine plan,
  – Incident command/unified command,
  – Abbreviations, and
  – Acknowledgments.
SECTION 1: LEAD AUTHORITY

Introduction
Title 42 United States Code Section 264 (Section 361 of the Public Health Service [PHS] Act) gives the Secretary of the Department of Health and Human Services (HHS) responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the United States and from one state or U.S. possession into another. This statute is implemented through regulations found at 42 CFR Parts 70 and 71. Under its delegated authority, CDC, through DGMQ, is empowered to detain, medically examine, or conditionally release persons suspected of carrying a communicable disease. DGMQ makes the determination as to whether an airport communicable disease incident involves a potentially quarantinable disease of public health significance.

CDC Division of Global Migration and Quarantine
Under its delegated authority, DGMQ has statutory responsibility to make and enforce regulations necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the United States. Some of the tasks undertaken to meet legal and regulatory responsibilities as they relate to the intended audiences for this Manual are to:

- Oversee the screening of arriving international travelers for symptoms of illness that could be of public health significance and respond to reports of illness on board arriving aircraft.
- Provide travelers with essential health information through publications, automated fax, and the Internet.
- Provide guidance on entry requirements for certain animals, etiologic agents, and vectors deemed to be of public health significance.
- Collect and disseminate worldwide health data.
- Perform inspections of maritime vessels and cargos for communicable disease threats.

DGMQ’s authority pertains to all arriving international flights and, in some instances, to domestic flights carrying a traveler(s) suspected of having a quarantinable disease.

CDC Quarantine Stations
CDC Quarantine Stations are located at 18 ports of entry, including 17 international airports across the United States: Anchorage, Atlanta, Boston, Chicago, Detroit, Honolulu, Houston, Los Angeles, Miami, Minneapolis, New York, Newark, San Diego, San Francisco, San Juan, Seattle, and Washington. (There is one additional quarantine station at El Paso, TX. It is a land border crossing. Additionally, two new Quarantine Stations will be added in 2006.) Each Quarantine Station has responsibility for enforcing federal quarantine regulations at all ports of entry within its assigned area of jurisdiction. At ports of entry where no CDC Quarantine Station is present, the Officer in Charge at the CDC Quarantine Station that has jurisdiction over the area will assist the state and local public health authorities and provide technical guidance and communication. (See Appendix A for a detailed listing of Quarantine Stations and their corresponding jurisdictions.)
Each Quarantine Station is staffed with an Officer in Charge, a Quarantine Medical Officer, and Quarantine Public Health Officers. The roles and responsibilities of each are as follows:

- **Officer in Charge**: The Officer in Charge serves as the team leader of DGMQ staff at the assigned Quarantine Station and as the recognized authority for DGMQ programs and activities at the ports of entry under his or her jurisdiction. The Officer in Charge provides guidance and direction to port partners in quarantine principles, bioterrorism preparedness, and other public health activities related to the control and prevention of communicable diseases.

- **Quarantine Medical Officer**: The Quarantine Medical Officer serves as a medical consultant to DGMQ staff, state and local health departments, travel industry staff, and other federal agencies directly encountering ill persons. The Quarantine Medical Officer also provides clinical, epidemiologic, and technical consultation and guidance in response to reports of illness, including threats of bioterrorism, and collaborates with local partners to apply the appropriate public health treatment.

- **Quarantine Public Health Officers**: Quarantine Public Health Officers conduct active and passive surveillance of travelers, crew, and cargo on international and domestic conveyances for indications of communicable diseases. They also direct and perform activities related to the collection, distribution, and management of medical information of immigrants, refugees, and other migrants.

**Quarantinable Diseases**
Under Section 361(b) of the Public Health Service Act, DGMQ has the authority to isolate and quarantine individuals or groups exposed to the following diseases (see Appendix F for more information on each disease):

1. **Cholera and suspected cholera**
2. **Diphtheria**
3. **Communicable tuberculosis**
4. **Plague**
5. **Smallpox**
6. **Yellow fever**
7. **Viral hemorrhagic fevers** (Lassa, Marburg, Ebola, Crimean-Congo, South American, and others not yet isolated or named)

Executive Order 13295 added two more diseases to the list:

8. **Severe acute respiratory syndrome** (SARS) (April 2003)
9. **Influenza** (April 2005) caused by novel or re-emergent influenza viruses that are causing, or have the potential to cause, a pandemic.

It is important to note that the diseases addressed in this Manual are those that are quarantinable as designated under Section 361(b) of the Public Health Service Act and by Executive Order 13295 (see Appendix E in this Manual).
Additionally, it is important to note that quarantine authority also resides with state and local public health officials and that some state and/or local laws may require isolation and/or quarantine for other communicable diseases (e.g., measles).

**DGMQ Partnerships**

DGMQ would work in collaboration with a number of federal, state, and local partners when dealing with containment issues related to the nine quarantinable diseases at an international airport.

- **Federal partners** include U.S. Customs and Border Protection (CBP), Immigration and Customs Enforcement (ICE), U.S. Fish and Wildlife Service (FWS), and the Transportation Security Administration (TSA). These agencies would notify DGMQ when a situation of public health interest arises. Subsequently, DGMQ staff then would assess the situation, take appropriate action, and involve CDC specialists when necessary.

- **State and local partners** include state and local health departments, which would be quickly notified of a quarantinable disease incident and would be asked to provide valuable assistance in the incident response.

**HHS Partnerships**

The Department of Homeland Security (DHS) is working closely with the Department of Health and Human Services (HHS), and, in October, the two agencies signed a Memorandum of Understanding (MOU) to enhance the nation's preparedness against the introduction, transmission, and spread of quarantinable and serious communicable diseases from foreign countries into the States, territories and possessions of the United States. Specifically, this MOU addresses issues regarding information sharing and collection; travelers' health and medical surveillance, disease reporting, inspection, and entry requirements, quarantine enforcement and detention, transportation, and employee health and worker protection and countermeasures.
SECTION 2: COMMUNICABLE DISEASE AWARENESS AT AIRPORTS

Introduction
As stated in Manual Overview and Scope, the response activities described in this Manual are those that would occur at domestic international airports only when a significant public health threat exists to warrant airline and airport authorities; federal, state, and local public health agencies; and first responders to be on heightened alert and awareness for the introduction of a quarantinable disease into the U.S. on an international air flight. This section addresses activities that could be conducted by those authorities and agencies while under that heightened alert and awareness condition.

Communicable Disease Definition
For the purposes of preventing the introduction of communicable disease from foreign countries into the U.S., 42 CFR, Section 71.1 states that an ill person is one who has:

1. A temperature of 38 degrees Celsius (100 degrees Fahrenheit) or greater, accompanied by one or more of the following: rash, jaundice, glandular swelling, or temperature persisting for two or more days.

2. Diarrhea severe enough to interfere with normal activity or work (three or more loose stools within 24 hours or a greater than normal number of loose stools).

Additionally, 42 CFR, Section 71.21, requires that the jurisdictional CDC Quarantine Station, or a Quarantine Station that is geographically closer, be notified immediately by a pilot-in-command, about any illness that fits these criteria. The CDC Quarantine Station may be the jurisdictional Quarantine Station or a Quarantine Station that is geographically closer. (Note: Forthcoming CDC rule changes may alter this notification requirement.)

Disease Surveillance
Surveillance is defined as “the act of observing.” In the case of disease surveillance at airports, it means observing travelers for signs and symptoms of communicable diseases. There are two types of disease surveillance: passive and active.

1. **Passive Surveillance:** This type of surveillance is ongoing. DGMQ airport partners—TSA, CBP and FWS—as well as airport police and fire department personnel, airline employees, and wheelchair service staff at airports should always be on the lookout for outward signs of illness that could be a communicable disease. They should observe arriving passengers and crew for signs of illness, including cough and shortness of breath; flushed or pale complexion; yellowing of the eyes; glassy, filmy, or unusually red or bloodshot eyes; profuse sweating; shivering; inability to walk without aid; unusual body odors indicative of diarrhea or bleeding; seepage of blood or other fluids from any visible orifice, such as the pores or out of the ears; stiff or swollen neck; and unusual emanation of heat.

   If a passenger or crew member is considered to be ill on inspection, he or she should be taken aside and asked for his or her history of travel outside of the country. Once this information is obtained, the appropriate CDC Quarantine Station should be notified immediately. The travel history is important because there may have been a disease outbreak of concern in specific countries. (See Disease Alerts and Travel Notices below.) Knowing that the individual has traveled to a country that is experiencing a disease outbreak will aid the Quarantine Station personnel in deciding how to respond to the incident.
2. **Active Surveillance**: In the event of a communicable disease outbreak of concern to public health authorities, active surveillance measures may be implemented. These measures may consist of a number of methods to assess risk that individuals arriving from affected countries or regions are carrying a potentially quarantinable illness or an illness of public health significance.

**Disease Alerts**
Should one of the quarantinable diseases—or a new, unknown disease—emerge, the public health system is notified via a disease or health alert network. Throughout the world, there are several interacting disease/health alert networks. These are presented below to make airport personnel, DGMQ partners, and first responders aware of them.

- **CDC’s Traveler’s Health**: CDC’s Traveler’s Health program provides information on global disease outbreaks to the general public in the form of travel notices and through other information provided on their Web site. (URL: [http://www.cdc.gov/travel](http://www.cdc.gov/travel))

- **Global Outbreak and Response Network (GOARN)**: Administered by the World Health Organization (WHO), GOARN “is a technical collaboration of existing institutions and networks that pool human and technical resources for the rapid identification, confirmation, and response to outbreaks of international importance. The Network provides an operational framework to link this expertise and skill to keep the international community constantly alert to the threat of outbreaks and ready to respond.” (URL: [http://www.who.int/csr/outbreaknetwork/en/](http://www.who.int/csr/outbreaknetwork/en/))

  GOARN is part of WHO’s Communicable Disease Surveillance and Response (CSR) network, which electronically updates member countries about rumored or confirmed disease outbreaks. (URL: [http://www.who.int/csr/don/en](http://www.who.int/csr/don/en))

- **Global Public Health Intelligence Network (GPHIN)**: GPHIN is a “secure, Internet-based ‘early warning’ system that gathers preliminary reports of public health significance in seven languages on a real-time, 24-hour basis. This unique, multilingual system gathers and disseminates relevant information on disease outbreaks and other public health events by monitoring global media sources such as news wires and web sites. The information is filtered for relevancy by an automated process, and then is analyzed by Public Health Agency of Canada GPHIN officials. The output is categorized and made accessible to users. Notifications about public health events that may have serious public health consequences are immediately forwarded to users.” (URL: [http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk_e.html](http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk_e.html))

- **CDC Health Alert Notice (HAN)**: CDC’s HAN is dedicated to strengthening the core public health infrastructure for information access, communications, and distance learning at the state and community levels. Its purpose is to “ensure that each community has rapid and timely access to emergent health information; a cadre of highly-trained professional personnel; and evidence-based practices and procedures for effective public health preparedness, response, and service on a 24-hour basis.” (URL: [http://www.phppo.cdc.gov/han/](http://www.phppo.cdc.gov/han/))

If a HAN has been issued regarding a disease in a particular country, Quarantine Station personnel may distribute copies of the notice to each arriving traveler (or to an adult member of a family of travelers) on an inbound flight from that country. In the event of multiple flights, DGMQ may rely on its airport partners to assist in the distribution of these notices.
(Note: HANs distributed by DGMQ to airplane passengers or crews differ from HANs distributed to public health professionals by CDC. The former are written in simple, easy to understand language and are designed for the “average” citizen’s mental capabilities. These notices are provided in several foreign languages and contain specific information about the disease, along with a 24-hour phone number that passengers can call to receive further information.)

**Travel Notices**

Travel notices are issued by CDC’s Travelers’ Health based on the level of risk posed by a disease outbreak. (See Appendix B for a complete description of these notices.) The four levels of travel notices are:

1. **In the News**: Report of sporadic cases of diseases of significance.
2. **Outbreak Notice**: Report of a disease outbreak in a limited geographic area or setting.
3. **Travel Health Precaution**: Issued when an outbreak of greater scope is affecting a larger geographic area. Travel Health Precautions outline specific measures for travelers to take before, during, and after travel.
4. **Travel Health Warning**: Issued when there is a widespread outbreak that has moved outside the initially affected population. The warning would include a recommendation to reduce nonessential travel to that area.

Airport personnel might have to familiarize themselves with these travel notices to become aware of diseases in foreign countries that potentially could be brought back into the U.S.

**Triggers**

In terms of disease awareness at airports, a trigger is a combination of circumstances that would lead a person to deduce that a potentially dangerous situation exists and, therefore, pertinent authorities, such as CDC, should be contacted immediately. Usually, this combination of circumstances would involve a disease alert and a travel notice along with a symptomatic traveler returning from an area for which the alert or notice had been posted. It is for this reason that airport authorities and personnel need to keep up to date on the global status of disease outbreaks.
Case Study

A Triggered Response—Changi Airport

SARS was first brought into Singapore in March 2003 by three Singaporeans who contracted the disease in Hong Kong. Triggered by the incident and realizing that they were on the front line of containment should additional cases of SARS appear in Hong Kong, Changi Airport implemented a range of measures to contain the spread of SARS, some of which were more rigorous than the recommendations of WHO. Located in Singapore, airport staff had to quickly devise containment measures that were both practical and reliable. To this end, airport staff:

- Began temperature checks on all travelers.
- Helped the Immigration Authority to distribute and collect health declaration cards.
- Initiated contact tracing when required by the Ministry of Health.

Temperature screening was done at the departure halls, gates, and staff entrances. Thermal scanners were employed to screen the temperatures of all arriving and departing travelers. This screening process did not involve contact but rather sensed facial surface temperatures through an infrared process. The checks were non-intrusive and had no impact on the time needed by travelers to clear the various airport processes. (The temperatures of airport workers also were screened before they entered the departure areas.) Travelers with elevated temperatures were required to get a doctor's certification before being allowed to fly.

By the end of March 2003, all incoming flights from affected areas identified by WHO were met by nurses who checked on travelers who appeared ill. Those who had fever were sent to Tan Tock Seng Hospital for assessment. Additionally, the Civil Aviation Authority of Singapore (CAAS) issued a directive that took immediate effect to all airlines operating at Changi Airport. It required them to ask travelers three questions recommended by WHO before allowing them to board flights to Singapore. The three questions were:

1. Do you have a fever of more than 38 degrees Celsius?
2. Do you have one or more respiratory symptoms, including cough, shortness of breath and difficulty breathing?
3. Have you had close contact with a person who has been diagnosed with SARS or had a recent history of travel to areas reporting cases of SARS?

Even after Changi Airport had been removed from the WHO list of SARS affected areas, it continued to be vigilant against the SARS virus. Temperature screening of outbound travelers at Changi Airport was not discontinued until the end of July 2003. Temperature screening for inbound travelers continued, but the screening took place at the immigration halls instead of at the aerobridges where travelers disembarked from the aircraft.

(Note: In the case study provided above, Changi Airport officials initiated thermal temperature screening. Inclusion of this case study should not be construed as an endorsement of thermal temperature screening at airports.)
SECTION 3: PRE-INCIDENT PLANNING

Introduction
There is no substitute for planning and preparation when it comes to responding to a quarantinable disease incident at an international airport. Having plans and procedures in place prior to the event will ensure an effective and efficient response to the incident, thus averting the potential nationwide spread of a serious disease. While planning and preparing are an ongoing process, there are several tasks outlined in this section that might be considered.

Authorities
It is incumbent upon all airport response personnel to know that CDC DGMQ is the lead authority (see Section 1) for the response to a quarantinable disease incident at an international airport, and to know how they and their organization interact with DGMQ authority. This pre-knowledge is of particular importance when the time comes to set up an Incident Command System (ICS) to respond to a communicable disease incident (see Section 5 and Appendix H). A well-planned ICS is of utmost importance to an appropriate response.

Since the lead authority of the response is CDC through its on-site or jurisdictional Quarantine Station, airport response personnel should consider acquainting themselves with the Quarantine Station staff, including their roles and responsibilities, their physical location within the airport complex, and how to contact them on an “around-the-clock” basis.

Roles and Responsibilities
In addition to learning the roles and responsibilities of Quarantine Station staff, airport response personnel should know the roles and responsibilities of all responders (see Section 4). Of particular note are the following pre-incident roles and responsibilities that airports might consider having in place:

- **Airport Operations Center, in concert with the Federal Aviation Administration (FAA),** should consider having in place:
  - An airport emergency response plan that specifically addresses the response to a quarantinable disease incident.
  - A designated “holding area” on the airport property where exposed persons can be held separately for a few hours while CDC and other public health authorities decide on next steps when confronted with a potential quarantine situation. The airport in cooperation with CDC and state and local health authorities should have identified in the airport communicable disease response plan sites for a temporary quarantine or an extended quarantine. These might be on the airport or off-airport at a site identified as part of a comprehensive community solution for dealing with possible quarantinable diseases. The Quarantine Station and the health department would cooperate in their responsibility for identifying the supplies and personnel needed to maintain the quarantine sites (see Section 7).
  - An identified location and procedure for parking an airplane during the response to a quarantinable disease incident. This should be done in coordination with FAA, and the location should not unnecessarily hinder access by emergency responders.
• **State and Local Health Departments** (in the event that state or local health authorities issue a quarantine order) should consider having in place:
  - An identified quarantine facility and the supplies and personnel needed to manage this quarantine site (see Section 7).

• **FAA, in coordination with CDC,** would be expected to have in place:
  - An identified location and procedure for parking an airplane during the response to a communicable disease incident.

• **CDC** would be expected to have in place:
  - A familiarity with state and local public health authorities and emergency management agencies.

**Pre-Incident Planning: In-Flight Response**

There are a number of tasks that might be considered ahead of time that pertain to the in-flight response to a quarantinable disease incident (see Section 5).

• **Notification Trees** – Once initial notification has been made of an arriving airplane with a suspected quarantinable disease onboard, a series of other notifications begins. To ensure that proper notifications are made, airport response personnel should consider developing “notification trees” that show which organization(s) to contact and the methods to use (e.g., phone, radio, e-mail, etc.).

• **Airplane Parking Location** – After notifications have been made, it will be necessary to determine where to park the airplane. As mentioned above, the Airport Operations Center (in coordination with FAA and CDC) should consider identifying a location and procedure for parking an airplane during the response to a quarantinable disease incident.

• **Initial Response Team** – Airport response personnel should be aware of who is on the initial response team prior to the incident and what their roles and responsibilities are. They also should take into consideration “after hours” response issues, such as around-the-clock notifications and delays in assembling the initial response team.

• **Incident Command System** – Depending on the scope of the quarantinable disease incident, the initial response team may want to set up an ICS (see Section 5 and Appendix H). As mentioned above, a well planned ICS is of utmost importance to an appropriate response to a quarantinable disease incident. Therefore, responders should consider understanding the nature of ICS and Unified Command (UC) prior to an incident, and how their organization interacts within the ICS/UC structure. Additionally, they should understand the protocols in the NRP and the National Incident Management System (NIMS) (see Appendix H).

• **Pre-Designated Hospital Facilities** – At some international airport cities, CDC has signed agreements with certain local hospitals—known as Memorandum of Agreement (MOA) hospitals—to manage ill travelers. An MOA hospital is a hospital that has met certain criteria and has signed a confidential agreement with CDC to manage ill travelers who are suspected of having a quarantinable disease. If there are no MOA hospitals near the
airport or the pre-designated MOA hospital(s) cannot take in the ill traveler(s), responders will transfer them to another hospital designated by CDC Quarantine Station personnel or their authorized representative(s) in coordination with state or local EMS and public health agencies. Therefore, airport responders need to be aware that these MOA hospitals exist and that CDC will provide their names at the time of an incident. Naturally, the severity of the illness, bed availability, and security precautions for non-compliant patients need to be taken into consideration when deciding on ill person hospitalization.

- **Personal Protective Equipment** – Once airport responders have been notified of the forthcoming arrival of an airline with a suspected quarantinable disease onboard, those that will be interacting with the ill passengers will need to assemble the appropriate personal protective equipment (PPE) for responding to the suspect disease. Therefore, those responders should consider having appropriate PPE accessible and have knowledge about which PPE to use for each particular disease and how to use it.

**Pre-Incident Planning: On-Arrival Response**

As mentioned above, responders should know prior to the incident who the initial response team is and what PPE to use. PPE should be appropriate to the situation, as determined by CDC. Another task to be accomplished ahead of time is:

- **Passenger Information Scripts** – While ill persons are being evaluated, the remaining passengers need to be informed of what is taking place and they need to be kept informed. “Information scripts” prepared by CDC and airlines prior to an incident will help responders and the flight crew keep people informed of the unfolding events on the plane.

**Pre-Incident Planning: Post-Arrival Response**

Two pre-incident planning tasks that have been mentioned previously, but bear mentioning again are:

- **Identified Quarantine Facility** – The airport should consider designating a “holding area” within the airport facility for the purpose of quarantining exposed people. Included in this task would be the identification of the supplies and personnel required to maintain this quarantine site (see Section 7). This quarantine site may be for short-term or long-term detention, depending on procedures identified in the airport communicable disease response plan and depending on coordinated discussions and planning with state and local health departments.

- **Pre-Designated Hospital Facilities** – At some international airport cities, CDC has signed agreements with certain local hospitals—known as Memorandum of Agreement (MOA) hospitals—to manage ill persons. An MOA hospital is a hospital that has met certain criteria and has signed a confidential agreement with CDC to manage ill travelers who are suspected of having a quarantinable disease. If there are no MOA hospitals near the airport or the pre-designated MOA hospital(s) cannot take in the ill traveler(s), responders will transfer them to another hospital designated by CDC Quarantine Station personnel or their authorized representative(s) in coordination with state or local EMS and public health agencies. Therefore, airport responders need to be aware that these MOA hospitals exist and that CDC will provide their names at the time of an incident. Naturally, the severity of the illness, bed availability, and security precautions for non-
compliant patients need to be taken into consideration when deciding on ill traveler hospitalization.

**Pre-Incident Planning: Recovery**

With regard to recovery, two pre-incident planning tasks are:

- **Emergency Support Function (ESF) #14** – ESF #14 “Long-Term Community Recovery and Mitigation” coordinates the resources of federal departments and agencies to support the long-term recovery of states and communities, and to reduce or eliminate risk from future incidents. Airport responders need to be aware of ESF #14 and understand its structure. (See “Federal Assistance in Recovery” on page 45 of this Manual for more information about ESF #14.)

- **Objectives of Recovery** – The objectives of recovery are to assist the public, restore the environment, and restore the infrastructure. Airport responders need to have considered ahead of time the tasks required by all agencies involved in the recovery effort to accomplish these objectives.
SECTION 4: INCIDENT RESPONSE: ROLES AND RESPONSIBILITIES

Introduction
A successful response to a quarantinable disease event at an international airport will require a well-coordinated effort by conveyance operators, airport operators, state and local governments, local healthcare facilities and support organizations, and agencies of the federal government. The first step to developing and implementing an airport communicable disease response plan is to understand the roles and responsibilities of each of these authorities. These roles and responsibilities are for ill traveler incidents when there is suspicion that the illness may be one of the quarantinable diseases mentioned in Section 361(b) of the Public Health Service Act and in Executive Order 13295.

Note: The roles and responsibilities listed may not reflect those roles and responsibilities that may result from an escalating public health incident.

Conveyance Operators

Pilot-in-Command of Airplane*

The roles and responsibilities of the pilot-in-command (PIC) and crew of the airplane are to:

- Immediately report ill passenger(s) or crew members suspected of having a communicable disease to the CDC Quarantine Station through established protocols.
- Make an initial assessment. Seek assistance from medical professionals on board the aircraft and on the ground (either airline medical staff or contract medical consultants) to make an initial assessment of the situation and communicate pertinent information to CDC personnel.
- Determine, in consultation with medical professionals, CDC, and other governmental entities, whether to proceed to the scheduled destination or divert to another airport. (Depending on the medical situation and current national security concerns, CDC, FAA, and TSA may directly influence the decision to divert.) Recommend what services should be staged at the airport upon arrival.
- Maintain contact with the FAA, and the Airline Operations Center, which will establish and maintain contact with the CDC Quarantine Station of jurisdiction.
- Keep other passengers informed to the best extent possible. CDC will suggest to the lead flight attendant what medical facts, if any, to disclose to other passengers. However, if diversion is required, the PIC typically will make an announcement about the unfolding incident.
- Isolate the ill person(s) to the extent possible and provide a mask if the individual(s) does (do) not have breathing difficulties. Those caring for the ill person(s) should don masks also.

*Note: The notification procedure may be somewhat different in communicating with foreign airlines as opposed to U.S. airlines. The principal difference is that foreign airlines do not have an Airline Operations Center at a U.S. airport and, therefore, must have an airline representative meet their planes upon arrival at the domestic airport.
Airline Operations Center/Airline Representative

The roles and responsibilities of the Airline Operations Center/Airline Representative are to:

- Coordinate operations and maintain communication between the PIC of the airplane and CDC to monitor the status of an ill person.
- Provide instructions to the airplane crew, in consultation with FAA, CBP, airport operators, CDC Quarantine Station, and, if appropriate, the Federal Bureau of Investigation (FBI).
- Coordinate with CBP and other federal partners.
- Provide assistance for an on-site crisis management team when requested to assist public health authorities. The team may include experts in communications, medical and mental health services, occupational health, environmental health, and engineer or manufacturer representatives and passenger service staff.
- Coordinate with CDC and state and local health departments on media relations.
- Help make travel arrangements and transport travelers to their final destinations when public health considerations allow.

Airport Operators

Airport Operations Center

The roles and responsibilities of the Airport Operations Center are to:

- Assist in deciding when and where the airplane should land.
- Assist with logistics.
- Provide credentials and security escorts to public health personnel and emergency responders who require access to restricted areas of the airport.
- Make appropriate notifications about the incident.
- Work with CDC and other agencies to assist in the care of passengers and crew if they are housed at a temporary care facility or quarantine facility at the airport.
- Coordinate with CBP and other federal partners.
- Provide transportation for passengers and crew to the temporary care or quarantine facility.
- Participate in determining a location where Incident Command (IC) or UC would operate.
- Assist with providing information to family and friends of passengers and crew.
- Coordinate with the FAA to provide a parking area for the aircraft.
Emergency Medical Services (EMS)
The roles and responsibilities of the EMS, which may require supplemental assistance from local jurisdictions, are to:

- When requested, assist public health personnel in the assessment of the ill person.
- Implement the use of infection control measures to limit transmission of communicable disease on the airplane, after landing, and during transit.
- Remove the ill person from the airplane and transport by ambulance to the designated medical facility.
- Provide first aid and other emergency medical services to ill or injured passengers or crew members.
- Assist the public health responders and other on-site healthcare providers, and coordinate with CDC personnel.

State and Local Governments

State and Local Health Departments
The roles and responsibilities of the state and local health departments are to:

- Perform preliminary assessment of ill person(s) after the plane lands if CDC Quarantine Station staff is not available. (The specifics as to notification, response, assessment, and ill person disposition should be worked out between individual local and/or state health departments and the jurisdictional CDC Quarantine Station.)
- Assist in preliminary assessment of ill person(s) when CDC Quarantine Station staff is available.
- Notify state and local medical examiner or coroner if indicated.
- Provide staff to assist in managing a surge of ill people from the quarantine site arriving at a hospital (or hospitals).
- Assist, as needed, federal public health agencies with setting up a medical clinic at the quarantine site.
- Provide guidance to designated hospitals and/or the quarantine site medical clinic on the clinical and diagnostic management of ill people, including assisting with arrangements for laboratory testing at local or state public health laboratories or at CDC.
- Prepare strategies for mental health interventions for ill persons and persons who have been exposed and are under quarantine, their families, and service providers.
- Assist emergency management agencies, if needed, in planning for and activating a temporary care facility and quarantine facility.
- Provide clinical and public health information to local healthcare providers and the public.
- Provide information and recommendations to local and state authorities.
• Coordinate with the IC/UC on media relations.
• Coordinate with CDC Quarantine Station on recommendations and guidance as needed.

State and Local Emergency Management Authorities
The roles and responsibilities of the state and local emergency management authorities are to:

• Assist and support state and local public health authorities with financial and other measures if temporary care and quarantine facilities are activated.
• Work with state and local health departments to support the planning and preparation activities to operate temporary care and quarantine facilities at each international and domestic airport, seaport, and land border crossing.
• Seek assistance from the Federal Emergency Management Agency (FEMA) when appropriate.

Law Enforcement Agencies
The roles and responsibilities of law enforcement agencies are to:

• Provide security for the response staging area and control access to and from the airplane and the airport.
• Provide security for the route between the aircraft and Incident Command. Escort agency representatives into and out of Incident Command and the airport as needed.
• Provide representatives to Incident Command.
• Maintain order.
• Assist in and expedite the transfer of ill persons and clinical materials for evaluation and treatment.
• Enforce required actions (e.g., transportation) for ill persons or persons who have been exposed to an illness if any such persons are uncooperative.

Local Healthcare Facilities and Support Organizations

Healthcare Facilities
The roles and responsibilities of healthcare facilities are to:

• Isolate ill persons when medically indicated.
• Institute infection control measures to limit the spread of quarantinable diseases. This may include isolation of ill persons and use of PPE by staff and visitors when medically indicated.
• Evaluate and treat referred ill persons. This includes obtaining specified diagnostic specimens and assuring the specimens are promptly and safely transported to designated laboratories.
• Evaluate exposed people if they develop illness signs or symptoms under appropriate quarantine conditions.
• Provide clinical and laboratory information to federal, state, and local public health authorities.
• Work with public health authorities on media relations.

Support Organizations
The roles and responsibilities of support organizations (e.g., the American Red Cross and the Salvation Army) are to provide supportive services to people exposed to the illness (quarantined individuals), as well as to service providers. These services will be coordinated by Incident Command, and include, but are not limited to, providing:

• Meals (including special meals for those under dietary restrictions)
• Beverages
• Eating utensils, plates and napkins
• Tables and chairs
• Cots and bedding
• Space heaters and fans
• Portable toilet facilities
• Hand-washing facilities
• Portable showering facilities
• Telephones
• Means of communicating with family
• Television, movies, radio
• Internet access and email
• Reading materials and games
• PA system
• Interpreter services
• Spiritual support
• Mental health support

Federal Government

Centers for Disease Control and Prevention (CDC)
The roles and responsibilities of CDC are to:

• Authorize the order to temporarily detain passengers and crew for appropriate evaluation and response to reports of illness.
• Issue quarantine orders if warranted.
• Notify and collaborate with other federal agencies when ill travelers have been detained or paroled into the United States for evaluation or treatment for communicable diseases.
• Arrange or assist in the arrangement of medical evaluations of ill travelers and determine the need for public health interventions.

• Provide advice and guidance to the public health responders, including state and local public health authorities, in implementing quarantine measures and caring for ill persons and persons who have been exposed to the illness.

• Obtain information on ill and exposed travelers (e.g., demographics, contact information, travel itinerary, illness history, and medical status) and conveyance (number of passengers, manifest availability).

• Communicate with other federal, state, and local response and public health partners regarding the ill person’s medical treatment.

• Participate in the management of media relations, in collaboration with state and local health departments and information officers from other response partners.

• Work with the Department of State and WHO to provide information about ill international travelers to ministries of health at their place of origin and at intermediate destinations.

• Assist in the development of occupational health and infection control guidelines for the Federal Inspection Site (FIS) at ports of entry.

• Rescind quarantine orders when the public health situation allows.

Customs and Border Protection (CBP)
The roles and responsibilities of CBP are to:

• Support initial entry screening of international travelers (using up-to-date information provided by CDC) for the purposes of identifying potentially infected travelers.

• Provide enforcement resources during a medical response until the appropriate enforcement agency arrives at the plane.

• For international flights, meet the conveyance and prevent disembarkation until CDC or their designated alternate arrives. (TSA has concurrent authority.)

• Escort medical personnel and other emergency responders on to the aircraft.

• Detain ill travelers and notify appropriate CDC Quarantine Station to initiate their medical assessment before releasing them.

• Assist public health authorities in identifying travelers at risk by providing passenger customs declarations, Advance Passenger Information System (APIS) data, and other sources of traveler information in response to a specific request by CDC.

• Assist public health authorities by providing information for use in locating people suspected to have been in contact with an ill person.

• Parole, if necessary, ill non-U.S. citizens and non-permanent residents (e.g. nonimmigrant students, workers, etc.,) into the United States if public health interventions are indicated.

• Assist CDC in distributing health information at ports of entry.

• Assist in the development of occupational health and infection control guidelines for FIS at ports of entry.
Immigration and Customs Enforcement (ICE)
ICE is an investigative agency of the U.S. Department of Homeland Security (DHS). Specific ICE officers are authorized under the Public Health Act to:

- Assist CDC in the enforcement of quarantine.

Federal Aviation Administration (FAA)
The roles and responsibilities of FAA are to:

- Provide air traffic control services and handling priority as required to permit safe and expeditious arrival and landing at the destination airport.
- Provide taxi instructions to a parking location designated by competent authority to effectively implement public health intervention in response to illnesses on board.
- Establish and assist with enforcement of temporary flight restrictions (TFR) where requested by competent authority in the interest of public health and safety.

Transportation Security Administration (TSA)
Under the Aviation and Transportation Security Act (ATSA), if the Secretary of the Department of Homeland Security (DHS) determines that a communicable disease presents a threat against transportation, TSA has the authority to:

- Keep a flight destined for the U.S. from landing in the U.S. or direct the flight to land at a specified airport in the U.S. that is equipped to examine and handle a suspected infectious person on the aircraft.
- Meet domestic conveyances and prohibit disembarkation until CDC or their designated alternate arrives.
- Assist in dealing with travelers at U.S. airports who refuse to comply with the lawful direction of a health officer acting under the authority of CDC.
- Report Federal Air Marshals’ observations of travelers displaying symptoms of a quarantinable disease to aid in concluding that there may be infected people on a flight.
SECTION 5: INCIDENT RESPONSE: IN-FLIGHT

Introduction
Federal law requires the pilot-in-command to immediately contact the appropriate CDC Quarantine Station of an illness or death on an aircraft. The pilot can do this through either the FAA or the airline’s dispatch center, which would then notify the CDC Quarantine Station. This notification would then trigger other notifications and preparations prior to the arrival of the aircraft. Notifications among responding agencies to a communicable disease incident on an international aircraft should be timely and redundant. This section describes these notifications and preparations.

Notifications: Airports with an On-Site CDC Quarantine Station
The notification process for international airports with an on-site CDC Quarantine Station differs slightly from those airports that do not have a Quarantine Station. The difference is mainly in the delegation of authority to other on-site responders at non-CDC Quarantine Station airports. Listed below are the notifications for the in-flight response to a quarantinable disease incident on an international flight at airports with an on-site CDC Quarantine Station. Please note that, in this list, there are built in redundancies to ensure proper notification of all responding entities. Airport communicable disease response planners may wish to reduce or eliminate these redundancies as they see fit for their particular airport operation.

- **Pilot-In-Command** notifies:
  - Airline dispatch center
  - FAA
  - CDC Quarantine Station

- **CDC Quarantine Station** notifies:
  - CBP
  - Airport police/Fire Department/EMS Dispatch Center
  - State and local public health departments
  - Healthcare facility (depending on the nature of the event)
  - CDC headquarters (depending on the nature of the event)
  - FBI

- **FAA** notifies:
  - CDC Quarantine Station
  - Airport Operations
  - CBP
  - TSA

- **Airport Police/Fire Department/EMS Dispatch Center** notifies:
  - Airport operations center
  - CDC Quarantine Station
  - CBP
  - TSA

- **Airport Police/Fire Department/EMS** notifies:
  - CDC Quarantine Station
  - Airport operations center
- **Airline Operations Center/Airline Representative** notifies:
  - CDC Quarantine Station
  - Airport police/fire department/EMS
  - CBP
  - TSA

- **CBP** notifies:
  - CDC Quarantine Station

- **TSA** notifies:
  - CBP

**Notifications: Airports Without an On-Site CDC Quarantine Station**

At international airports without an on-site CDC Quarantine Station, the response to a quarantinable disease incident on an international flight relies on on-site responders who have been delegated authority by the jurisdictional Quarantine Station to act on its behalf. Airports without a Quarantine Station should notify the jurisdictional Quarantine Station and the local health department for both domestic and international flights. Listed below are the notifications for the in-flight response at airports without an on-site CDC Quarantine Station. Please note that, in this list, there are built in redundancies to ensure proper notification of all responding entities. Airport communicable disease response planners may wish to reduce or eliminate these redundancies as they see fit for their particular airport operation.

- **Pilot-In-Command** notifies:
  - Airline dispatch center
  - FAA
  - CDC Quarantine Station

- **CDC Quarantine Station** notifies:
  - CBP
  - Airport police/Fire department/EMS Dispatch Center
  - State/local health department
  - Healthcare facility
  - CDC Headquarters
  - FBI

- **FAA** notifies:
  - Jurisdictional CDC Quarantine Station
  - CBP
  - Airport police/fire department/EMS dispatch center
  - TSA

- **Airport Police/Fire Department/EMS Dispatch Center** notifies:
  - Airport police/fire department/EMS
  - Airport operations center
  - CDC Quarantine Station
  - CBP
  - TSA
• **Airport Operations Center/Airline Representative** notifies:
  - CDC Quarantine Station
  - Airport police/fire department/EMS
  - CBP
  - TSA

• **CBP** notifies:
  - CDC Quarantine Station

• **TSA** notifies:
  - CBP

**Other Notification Considerations**
In addition to the responders listed in the notifications above, the entities listed below may be considered in notification lists for airport response planning:

- **City/County Responders**
  - Emergency Management Agency
  - EMS
  - Law enforcement
  - Communicable disease specialist/controller
  - Medical laboratory
  - Public information officers

- **State Responders**
  - Emergency Management Agency
  - Health department
  - Law enforcement
  - Communicable disease specialist/controller
  - Medical laboratory
  - Public information officers

- **National Organizations**
  - American Red Cross
  - Salvation Army

**In-Flight Response**
The in-flight response to a quarantinable disease incident on an international flight involves three activities: deciding where to park the aircraft, assembling the initial response team, and preparing for the arrival of the ill person(s).

**Parking the Aircraft**
The nature of the event and the scope of the anticipated response will dictate where to park the aircraft. Three options for parking the aircraft are:

1. **Park the aircraft at its assigned gate.** Airport operator in coordination with the FAA, CBP and CDC will decide where the aircraft will be parked. The advantages of parking the aircraft at its assigned gate are that responders will have easy access to the ill person(s) and that, should the incident be a minor one, travelers will be able to disembark quickly. The disadvantage is that the infected person(s) may have the potential to contaminate
the passenger boarding bridge and gate area. Additionally, if the incident turns out to be a major event, it will tie up the gate for hours, and may be more difficult to manage.

2. **Park the aircraft at a secure, remote gate.** The advantage of parking the aircraft at a secure, remote gate is that responders will have unconstrained access to the ill person(s). The disadvantages are that the remoteness of the gate could prevent the responders from getting to it and exiting it quickly and that, should the incident be a minor one, the plane may have to be moved to its original gate or an alternate gate at the airport.

3. **Isolate the aircraft on the airport ramp.** One advantage of isolating the aircraft on the airport ramp is that responders will have access to passengers and crew. The disadvantages are that special equipment may be needed for responders to board the plane and that the remoteness of the area could prevent the responders from getting to it and exiting it quickly. Another disadvantage is that, should the incident be a minor one, the plane may have to be moved to its original gate or an alternate gate at the airport.

**Passenger Considerations**

Holding people on an airplane or on airport grounds presents some sensitive issues to consider:

- Maintaining the health of the “well” passengers and crew – Inadequate ventilation, insufficient bathroom facilities, and the potential for deep vein thrombosis from sitting for long periods of time pose health risks for “well” passengers and crew. It is important that the Quarantine Station or public health personnel evaluate the ill person(s) in an expeditious manner and remove them promptly if warranted.

- Keeping the passengers informed – Passengers want to know what is going on. If they don’t get the information from the flight crew or emergency responders, they will try to get through other avenues using their cell phones. Responding agencies need to assist and encourage the flight crew to keep passengers informed and calm.

- Keeping the situation under control – The public health officer who enters the plane should ask the flight attendants to keep everyone seated until the medical evaluation is made.

- Informing family members and those waiting for the airplane – Airlines need to keep those waiting for the airplane informed about what is occurring on the airplane. Some airports/airlines have waiting areas for the families and friends awaiting passengers and crew.

**Assembling the Initial Response Team**

The initial response team for a quarantinable disease incident at an international airport should be assembled and waiting for the aircraft.* This team should have gathered as much information from the airline ahead of time as possible in order to make an informed judgment as to the type of disease(s) they may encounter and to have the necessary PPE on hand to make an initial screening and diagnosis. The initial response team could comprise:

- CDC Quarantine Station personnel
- CBP
- Airport police/fire department/EMS
- Local public health department

At international airports without an on-site CDC Quarantine Station, the initial response team could comprise:

- CBP (Acting Lead in consultation with CDC Quarantine Station)
- Local public health department
- Airport police/fire department/EMS

As noted in Section 3, Pre-Incident Planning, all airport response personnel should consider knowing who is on the initial response team prior to the incident and what their roles and responsibilities are. They also should take into consideration “after hours” response issues, such as around-the-clock notifications, delays in assembling the initial response team, etc.

*Note: In the “best case” scenario, notifications would be made in a timely manner to all of the appropriate authorities. However, there are instances when notifications are late, thereby delaying the assemblage of the initial response team. Responders need to keep in mind the health and safety of both the ill person(s) and the well passengers and crew. The response to the quarantinable disease incident needs to be swift and effective. Ill person disposition should not be delayed while waiting for the entire response team to assemble.

Incident Command System
If a quarantinable disease is suspected, the initial response team would set up an Incident Command Structure. The ICS is a standardized on-scene incident management concept designed specifically to allow responders to adopt an integrated organizational structure equal to the complexity and demands of any single incident or multiple incidents without being hindered by jurisdictional boundaries. (See Appendix H for more detailed information on Incident Command or Unified Command.)

Preparing for the Arrival of Ill Passenger(s)
In addition to the initial response team, other entities may need to prepare for the arrival of not only an ill person or persons, but also the treatment of exposed people (i.e., quarantine). Those entities and their corresponding roles and responsibilities are:

- **Local Healthcare Facilities**
  - Prepare for the arrival of ill people who may need medical care under isolation and
  - Develop strategies with the state and local health departments to deliver care to people under quarantine who need medical services.

- **State and Local Governments**
  - Prepare for on-site or remote consultation to determine medical and public health treatment of the ill person and possible quarantine of people who may have been exposed to the illness;
  - Inform local agency partners and prepare for the enforcement of quarantine in a temporary-care facility for people who were exposed to the ill person; and
  - Develop strategies with the local healthcare facility to deliver care to people under quarantine who need medical services.
• **Federal Government**
  - Develop strategies to isolate the ill person and to quarantine people exposed to the ill person,
  - Prepare for the enforcement of isolation and quarantine measures for the arriving travelers and conveyance at the port of entry, and
  - Prepare to request and collect passenger locating information.

**Personal Protective Equipment (PPE)**
The decision about what type of PPE to use depends on the degree of communicability of the suspected illness and its route of spread. CDC, in consultation with the airline and its medical experts, will have made an initial assessment about the suspected illness and will provide guidance about appropriate PPE to be used by responders.

However, it is important to take appropriate precautions and don only PPE that is required for the situation. If the staff who initially board the plane for a medical assessment are “over-dressed” (e.g., wearing a biohazard suit when only a surgical mask is necessary), it will frighten the passengers and crew and may make the initial assessment more difficult to conduct. In some situations, full PPE may be appropriate, but, in any case, it is important to explain why that level of precaution is being taken.

One of the most important principles to understand is that the best PPE practices for a respiratory disease may be simply to mask ill person(s) if they are not having any breathing difficulties. Sometimes this will be all that needs to be done.

Detailed instructions about suggested usage of PPE are included in Appendix C of this Manual.
SECTION 6: INCIDENT RESPONSE: ON ARRIVAL

Introduction
The on-arrival response to a quarantinable disease incident at an international airport poses a “balancing act” for the initial response team and the airline. While responders want to take as much time as necessary to interview the ill travelers on board the aircraft and make an informed diagnosis, they also must take into consideration the hundreds of other passengers and crew who may or may not have been exposed to a potentially dangerous disease and who want to disembark as soon as possible to return to their homes or continue their travels, and the airline that needs to put the aircraft back in service.

Planeside Response
Once the plane has been parked, two activities will occur:

1. CDC Quarantine Station personnel or their designated alternates (e.g., CBP) will board the plane and be directed to the ill person(s). Before reaching the ill person(s), they may don PPE prescribed for the anticipated illness. Once they reach the ill persons, they will assess the symptoms, take a travel history, and make an initial determination and treatment. (See “Treatment of Ill People” below.)

2. The remaining people should have been notified prior to the plane being parked that there is an ill person on board requiring medical evaluation before anyone else can be cleared for deplaning. This announcement should be made again as the medical responders are boarding the plane, and it should be made periodically during the assessment. However, note that, the longer the assessment takes, the more anxious the remaining people will become. Therefore, airport law enforcement may be asked to board the plane to maintain order. (See “Treatment of Exposed People” below.)

Treatment of Ill People
The response to ill or exposed passengers and crew on the aircraft depends on the initial determinations and diagnosis of those assessing the ill person(s). The following “if-then” conditional statements outline how the passengers and crew will be managed:

1. If the ill person is assessed and determined to have an illness that is not of public health significance (e.g., diabetes), then:
   - The ill person, upon receiving a planeside medical clearance by CBP, will be transported to a healthcare facility, if necessary.
   - The other passengers and crew will be released to continue CBP processing.

2. If the ill person is assessed and is suspected of having an illness of public health significance but not one that would pose a threat to other people on the aircraft or in the community (e.g., malaria), then:
   - The ill person, upon receiving a planeside medical clearance by CBP, will be transported to a healthcare facility for further evaluation or treatment.
   - The other passengers and crew will be released to continue CBP processing.
3. If the ill person is assessed and is suspected of having a non-quarantinable illness (e.g., measles) that could pose a threat to other people on the aircraft or in the community then:

- The ill person will be isolated and provided a mask, if this has not been done already.
- Other responders and the designated healthcare facility (local hospital) will be alerted to apply appropriate precautions (e.g., PPE).
- The ill person may be transported under appropriate isolation measures to a local hospital.
- Notifications will be made to CDC Headquarters, healthcare facilities, and state and local health departments.
- Health alert notices about the disease may be distributed to the passengers and crew.
- Locator information may be collected from some or all of the remaining “well” passengers and crew before releasing them. CBP may be called upon to provide some of this information to CDC.

4. If an ill person is assessed and suspected of having a quarantinable illness (e.g., pandemic influenza), then:

- The ill person will be isolated from others and provided a mask if available, or tissues, if this has not been done already and if the person does not have breathing difficulties;
- Other responders and designated healthcare facilities will be alerted to apply appropriate precautions, including PPE.
- The ill person will be transported under appropriate isolation measures to a designated healthcare facility.
- Notifications will be to CDC Headquarters, healthcare facilities, and state and local health departments.
- All people who may have been exposed to the ill person will be identified, and contact information for each will be collected.
- An order for quarantine will be issued by CDC.
- Quarantine plans for the exposed passengers and crew will be implemented (see Section 7).
- State and local support organizations will be alerted.
- Appropriate agencies will coordinate IC, ensuring consistency and accuracy.
**Treatment of Exposed People**
As seen above, when an ill person is assessed and suspected of having an illness that could pose a threat to other people on the airplane or in the community, those remaining will be asked to provide contact information before being released or they will be quarantined. In the case of quarantine, the information will be collected at the quarantine site. Quarantine is covered in Section 7.

**Information Given to Exposed People**
If the exposed people are going to be allowed to deplane and not be quarantined, they will be provided with health information instructing them about the signs and symptoms of the disease and what to do if they see any of these signs and symptoms in themselves.

**Information Collected from Exposed People**
Both the airlines and CDC learned from the SARS experience that tracing exposed passengers and crew is a very difficult task. Fortunately, they have worked together to improve the methods for collecting information from exposed passengers and crew. Several methods of collecting passenger and crew information are described below.

- **Passenger Locator Cards**: The passenger locator card was developed by CDC with input from the airlines to collect contact information from passengers in a machine-readable format. Using a targeted approach, CDC will identify countries where exposure to quarantinable disease is most likely and then stock the Passenger Locator Cards, as well as Health Alert Notices, on flights arriving from these countries. Using this approach, passenger information can be collected before deplaning.

- **Immigration Forms**: Non-U.S. citizens and non-permanent residents with certain exceptions (e.g. Canadian citizens) must fill out CBP Form I-94 or I-94W, Arrival/Departure Record. A crewmember must complete CBP Form I-95, Crewman Landing Permit. These forms provide information about the passengers’ or crewmembers’ nationalities and their travel itineraries within the U.S.

- **eAPIS**: CBP’s Electronic Advance Passenger Information System (eAPIS) online transmission system collects passenger information for arriving and departing flights. For international flights arriving in the U.S., passenger information needs to be submitted in advance of an aircraft’s arrival.

Because most international flights carry hundreds of people, CDC may call on the airline, CBP, and TSA to assist them in obtaining the abovementioned information.
Case Study
On-Arrival Response to a Suspected Quarantinable Disease

The CDC Quarantine Station staff at an international airport stepped up passive surveillance when alerted to the possibility of community transmission of SARS in foreign countries in 2003. The increased surveillance efforts are described below:

- Every flight coming from any Asian country was met by a CDC officer or a person representing CDC.
- The person meeting the flight waited on the passenger boarding bridge for the plane door to open and queried the flight attendant about illnesses on board.
- If an illness was reported, the CDC officer proceeded to board, evaluate, and arrange transportation when necessary. All parties concerned were notified.
- If no illnesses were reported, the CDC officer visually examined each person as he or she disembarked. Those with active respiratory symptoms were isolated and interviewed.
- SARS informational brochures were given to everyone on board.

At this airport, CDC responded to notifications of illness in approximately eight instances in which there were symptoms similar to those exhibited by people with SARS. The following is a description of one of those illnesses and how the protocol was followed:

A gentleman was traveling from an Asian country and notified flight attendants that he was ill with fever and ear pain. He had been in one of the countries known to have community transmission of SARS. The flight attendant escorted him to a first class seat away from other travelers, which permitted isolation of several feet from others on the plane.

When the plane landed, the Quarantine Medical Officer who met the plane was briefed on the person’s symptoms and travel history. He gave the person a dust/mist mask to wear. The Quarantine Medical Officer also wore an N-95 respirator and latex gloves. The person was escorted off the aircraft, keeping him at least 10 feet away from other crew and passengers.

The person was taken to the passenger boarding bridge, where additional information was gathered. It was determined that this might be SARS, and the gentleman was told that it would be necessary to transport him by ambulance to a nearby hospital. He was feeling quite ill and was amenable to receiving immediate medical attention.

The Quarantine Medical Officer called the hospital to alert health providers there that a person with symptoms possibly indicative of SARS was en route. The cabin crew on the airplane passed out Passenger Locator Cards to those who had remained on board. Each individual and family unit provided information on the card. Quarantine staff took the time to ensure that travelers included at least one telephone number and an e-mail address, if available. After gathering the locator cards, the passengers and crew were authorized to disembark. Quarantine officers accomplished evaluation of the sick person and management of the remaining passengers and crew in 45 minutes.

During this 45-minute process, quarantine officers notified the state and local health departments and the CBP supervisor. Additionally, the Quarantine Medical Officer was
updated on the condition of the ill person. By the next day, it was confirmed that the traveler had a sinus infection and that his symptoms were unlikely to be the result of SARS.

Each day, quarantine officers protected their own health by hand washing after monitoring each flight; bringing PPE, such as N-95 face masks and latex gloves to each flight; wearing the PPE when the situation warranted it; and standing a distance from each ill person.

Quarantine officers also were provided with a personal thermometer. Officers were instructed to keep the thermometer in their homes. Officers monitored their own temperatures daily. Any quarantine officer with an elevated temperature of 100.5°F or greater or with symptoms that might be indicative of SARS, such as a cough, difficulty breathing, shortness of breath, or unusual respiratory symptoms, was placed on automatic, mandatory sick leave. Quarantine officers were provided with a CDC physician’s name to contact for clinical instructions.
SECTION 7: INCIDENT RESPONSE: POST-ARRIVAL

Introduction
The post-arrival response to a quarantinable disease incident at an international airport is multi-faceted and depends on the nature of the incident and the scope of the response. As seen in the previous section, in an event of low public health significance, the ill person is assessed and, if necessary, hospitalized, and the remaining passengers and crew are released. In an event of high public health significance, the ill person is assessed and hospitalized, and the remaining passengers and crew either are released after providing contact information or are quarantined. Contact information was discussed in the previous section. This section covers hospitalization of ill persons and quarantine of exposed passengers and crew.

Hospitalization of the Ill Persons
Once the initial response team has decided to hospitalize the ill person(s), there are three considerations that need to be addressed:

1. To which hospital does the ill persons go?
2. Under whose charge are they going?
3. What happens if they don’t want to go?

Memoranda of Agreement Hospitals
The answer to the first question is that EMS would take ill people to one of CDC's pre-designated Memorandum of Agreement (MOA) hospitals for that particular airport. An MOA hospital is a hospital that has met certain criteria and has signed a confidential agreement with CDC to manage ill travelers who are suspected of having a quarantinable disease. If there are no MOA hospitals near the airport or the pre-designated MOA hospital(s) cannot take in ill travelers, responders will transfer them to another hospital designated by CDC Quarantine Station personnel or their authorized representative(s) in coordination with state or local EMS and public health agencies.

Naturally, the severity of the illness, bed availability, and security precautions for non-compliant patients need to be taken into consideration when deciding on hospitalization of ill persons. In a life-threatening situation, responders will take ill travelers to the closest hospital that can treat them.

CBP
All travelers on international flights must go through the federal clearance process before entering the U.S. Therefore, they are under federal authority and control until they have been released into the country. If necessary, CBP may provide planeside clearances of ill people to allow for disembarkation from the passenger boarding bridge directly to an awaiting ambulance on the tarmac. The advantage of this protocol is that it would lessen the potential of exposure to other people within the federal inspection area and the airport terminal.

Recalcitrant Travelers
Ill travelers may insist that they are not ill enough to require hospitalization. Should this case arise, CDC Quarantine Station personnel or their authorized representative(s) will:

- Consult with state and local health authorities and issue an isolation order.
Call on local, state, or federal law enforcement to enforce the order.

Should ill travelers resist an isolation order or attempt to flee, CDC Quarantine Station personnel will invoke federal regulations to authorize local, state, or federal law enforcement to take the person into custody and provide security during medical evaluation and treatment.

**Quarantine**

Quarantine and isolation represent two ways of trying to contain a quarantinable disease within a community. Historically, both methods have been used, most recently during the 2003 SARS epidemics in which China, Hong Kong, Singapore, and Canada issued quarantine orders. There has not been any large-scale quarantine incident in the United States in recent history. Whatever method of quarantine is used, the government has an obligation to provide adequate health care, food and water, and a means of communication with family and friends.

The terms *isolation* and *quarantine* often are used interchangeably, but they have very different meanings and serve different purposes. CDC’s “Fact Sheet: Isolation and Quarantine” (URL: http://www.cdc.gov/ncidod/dq/sars_facts/isolationquarantine.pdf) explains the two terms in the following way:

- **Isolation** refers to the separation of people who have a specific infectious illness from those who are healthy and to the restriction of their movement to stop the spread of that illness. Isolation allows for the focused delivery of specialized health care to people who are ill, and it protects healthy people from getting sick. People in isolation may be cared for in their homes, hospitals, or designated healthcare facilities. Isolation is a standard procedure used in hospitals today for patients with tuberculosis (TB) and certain other infectious diseases. In most cases, isolation is voluntary; however, many levels of government (federal, state, and local) have basic authority to compel isolation of sick people to protect the public.

- **Quarantine** refers to the separation and restriction of movement of people who, while not yet ill, have been exposed to an infectious agent and therefore may become infectious. Quarantine of exposed people is a public health strategy, like isolation, that is intended to stop the spread of infectious disease. Quarantine is medically very effective in protecting the public from disease.

**Authority to Quarantine**

Section 1 explained that CDC DGMQ is the lead authority for the response to a quarantinable disease incident at an international airport. Under this authority, DGMQ is empowered to detain, medically examine, or conditionally release people suspected of carrying a quarantinable disease. However, another responsibility of DGMQ is to prevent the spread of communicable diseases within the U.S. and its territories or possessions. It is under this responsibility that DGMQ has the authority to quarantine a person or a group of people. Therefore, in an incident where a traveler on an international flight is suspected to be ill with a quarantinable disease and quarantine of the remaining passengers and crew is indicated, the initial order to quarantine the exposed passengers and crew will come from CDC. However, because state and local health authorities may have concurrent legal power to order quarantine, secondary orders to quarantine may come from these entities. (See “Fact Sheet: Legal Authorities for Isolation and Quarantine” in Appendix D.)
**Change in Quarantine Authority**

Depending on the scope of the incident and the nature of the disease, quarantine may last from a few days to a few weeks. In short-term quarantines, federal authorities will maintain their authority. However, in long-term quarantine situations, they may transition the authority to state and local governments.

**Quarantine Planning**

As noted above, CDC will be the lead authority for quarantining exposed passengers and crew. However, because the quarantine may take place on airport grounds or within the local community, CDC may consult with airport, state, and local organizations to select and prepare the quarantine site and manage the overall quarantine. Therefore, these organizations need to understand state and local quarantine laws, prescribed responsibilities, and requisite documentation. They also need to be prepared in advance for a quarantine incident within their jurisdictional boundaries. This planning and preparation includes:

1. Identifying a secure location and requisite lodging for quarantine.
2. Identifying the staff needed to sustain, enforce, and provide services to quarantined individuals and from where this staff will come.
3. Identifying the supplies needed to sustain quarantine and from where these supplies will come.
4. Identifying the medical and mental health needs of the quarantined population and how these needs will be met.
5. Identifying the special needs (e.g., children, pregnant women, people with disabilities, and differing cultures and religions) of the quarantined population and how these needs will be met.
6. Identifying the support organizations available to assist in managing quarantine.
7. Identifying the financial needs for managing quarantine.
8. Addressing the legal needs for managing quarantine (e.g., due process protections for quarantined passengers and crew).
9. Addressing media and public information issues [e.g., setting up a Joint Information Center (JIC)].

**Quarantine Considerations**

The preceding paragraph lists nine steps to planning for quarantine (i.e., developing a quarantine plan). Outlined below are considerations when developing this plan. (See Appendix G for an example of an international airport quarantine plan.)

- **Site/Location**: There are several considerations for selecting a quarantine site:
  - Security: The site needs to have containment boundaries (e.g., fences or walls) to keep people in and keep people out.
  - Size: The site needs to be large enough to accommodate at a minimum the number of passengers, crew, and staff that would be on the largest capacity airplane that might visit the airport. When considering how many people would be quarantined, take into account the largest (in terms of passenger and crew capacity) international flight arriving at the airport.
- Accessibility: The site needs to be readily accessible to security forces, medical personnel, and suppliers.
- Comfort: Because quarantine may be a long-term situation, the comfort—both physical and mental—of the quarantined passengers and crew as well as staff needs to be taken into consideration.

- Staff: A variety of functions need to be performed by quarantine staff: medical, mental health, occupational, spiritual, etc. Also, quarantine is an around-the-clock activity, so different shifts of staff need to be taken into consideration.

- Supplies: When considering supply needs, take into account that quarantine may extend over a week, or longer depending on the incubation period. Types of supplies range from medical to food to occupational needs for passengers who want to work during quarantine.

- Medical Needs: Quarantined people may have medical needs unrelated to the disease for which they have been quarantined.

- Special Needs: Because the quarantined people will be coming off of an international flight, they will be a diverse group of people with varying religious and cultural needs. Things to take into consideration are communication issues, religious issues, and dietary needs. Have foreign-language interpreters on call to deal with non-English speaking passengers.

- Support Organizations: Many support organizations are available to assist with quarantine. On the national level, the American Red Cross is one such entity.

- Financial Needs: One of the big questions about quarantine is who is going to pay for it. While the answer sometimes lies in a “gray zone,” planners can help determine payment obligations by tracking all expenditures and costs before, during and after quarantine.

- Public Information Issues: The media will be ever present to keep a spotlight on quarantine.

Ending Quarantine
Quarantine is usually ended when two disease incubation periods have passed with no signs or symptoms of the quarantinable disease in the quarantined community. The incubation period includes the period between having acquired the infectious agent, becoming infected, and becoming symptomatic. This process varies for different diseases. The order to end quarantine will come from the entity having final jurisdiction over the quarantine.

Just as there are things to consider when instituting quarantine, there are several considerations to take into account when ending quarantine:

- Rebooking Flights: Some quarantined people had planned further travels before they were quarantined. Their continuing travel needs to be considered.

- Traveler Briefing: The quarantined passengers and crew have just gone through a long ordeal. They may be hounded by the media for details or questioned by friends and
families about it. CDC, public information officers, and public health officers should brief them ahead of time to help them cope with these inquiries.

- Some of the end-of-quarantine activities involve the recovery phase of quarantine. These activities will be discussed in the next section.

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Case Study
Taiwan’s Airport SARS Surveillance and Quarantine Strategy
Taiwan was on the front line of the SARS outbreaks in 2003. To prevent the importation or exportation of the SARS virus through international travel, Taiwan’s Civil Aeronautics Administration, Ministry of Transportation and Communications, developed the protocols outlined below for SARS surveillance and quarantine.

Pre-boarding Procedures
Airlines provided written health questionnaires to travelers during the seat assignment process. Travelers were observed for symptoms of SARS. If they did not have any SARS-like symptoms, they were asked:

- Have you or any of your family members traveled to China, Hong Kong, Hanoi, Singapore, or other SARS “hot zones”?
- Have you or any of your family had contact with a SARS patient?

Travelers answering “no” were permitted to board. Travelers answering “yes” were permitted to board only if they wore a face mask and sat in an assigned seat.

If, during the pre-boarding surveillance, travelers had SARS-like symptoms, they were sent to the airport clinic for further diagnosis and the Taiwan Center for Disease Control was contacted. If SARS was ruled out, the travelers were permitted to board. If it was not ruled out, they were sent to a hospital and the local health station was informed.

During the peak influenza season between December and February, travelers who had a fever and wanted to fly out of Taiwan were required to be examined at a hospital. Boarding was not allowed until they had been examined. Even if SARS was ruled out, these travelers had to wear a surgical mask during the flight.

In-Flight Procedures
Travelers were monitored in-flight for SARS-like symptoms and were given symptom declaration sheets. They also were provided with audio and video reminders about checking for SARS-like symptoms.

If a traveler reported SARS-like symptoms in flight, the airport control tower was notified to prepare to receive the affected travelers. Once on the ground, the traveler was taken to a hospital for additional testing. If the traveler tested positive for SARS, the rest of the travelers were quarantined and the plane was disinfected.

On-Arrival Procedures—SARS “Hot Zones”
Travelers arriving from a SARS “Hot Zones” listed by the WHO were asked to complete a SARS survey form, providing a detailed home address in Taiwan and contact phone numbers. Airport quarantine personnel then compiled a list of addresses provided through this form and forwarded it to the local health agency for verification and quarantine listing. Travelers also were asked to read the “Notice about Compulsory Quarantine for Special Epidemic Prevention” and to abide by the regulations stipulated in the notice.

Before disembarking, travelers from SARS “Hot Zones” were asked to put on surgical masks, and, once inside the airport, their temperatures were taken. Those travelers exhibiting an elevated temperature were sent to the hospital to be evaluated for SARS symptoms and to be immediately given blood tests. (The blood tests targeted such diseases as SARS, Japanese encephalitis, dengue fever, influenza, and malaria.) These travelers were required to remain in the hospital for three days for observation. Other travelers on the plane were quarantined. Quarantine locations and management were handled in the following way:

- Travelers with a foreign passport and who had a normal temperature were sent to group quarantine either at the airport transit hotel or at a nearby military barracks. The Aviation Police Bureau provided transportation to the airport transit hotel, and its officers stood guard to control entry around the clock. The Bureau also provided transportation to the military barracks, but the local police department stood guard.
- Travelers with a Taiwanese passport and who had a normal temperature were sent into home quarantine. (Airports were asked to increase personnel to manage enough buses, taxis, and rental cars to transport individuals and groups to their homes.) Those being home quarantined were required to report their home address within 24 hours to the health authority or chief of the township, or risk a fine and possible additional legal action.

Airports were asked to keep a record of all quarantined travelers’ passport numbers and to report this data to the Bureau of Consular Affairs, so that travel histories could be traced if necessary. The government also ordered all commercial harbors to perform similar measures.

**On-Arrival Procedures—Non-SARS “Hot Zones”**
Travelers who had not changed planes nor stayed in WHO-designated “Hot Zones” had to present their tickets to airport inspectors to verify this information. Following that, they were given health information cards and were asked to monitor their health for 10 days. If symptoms outlined on the card manifested themselves, the travelers were asked to put on a mask and seek medical treatment as well as to provide a travel record and history of contacts.
SECTION 8: INCIDENT RESPONSE: RECOVERY

Introduction

What is Recovery?
Recovery entails taking actions to help individuals and the community to return to normal as soon as can reasonably be done. The NRP defines recovery as “the development, coordination, and execution of service- and site-restoration plans and the reconstitution of government operations and services through individual, private-sector, nongovernmental, and public assistance programs.”

With regard to a quarantinable disease incident at an international airport, recovery may entail only cleaning an aircraft and rebooking travelers. Or, in a major public health incident, it may entail a large-scale effort, such as decontaminating a quarantine site, re-stocking medical and social supplies, providing mental health services, and rebooking passenger flights, among other things.

Federal Assistance in Recovery
[The following information is taken from “Long-Term Community Recovery (LTCR) and ESF #14, (URL: http://www.fema.gov/rebuild/lcr/index.shtm]) Under the NRP, Emergency Support Function (ESF) #14 "Long-Term Community Recovery and Mitigation" coordinates the resources of federal departments and agencies to support the long-term recovery of states and communities, and to reduce or eliminate risk from future incidents. While consideration of long-term recovery is imbedded in the routine administration of the disaster assistance and mitigation programs of the Federal Emergency Management Agency (FEMA) and other federal agencies, some incidents, because of the severity of the impacts and the complexity of the recovery, will require considerable inter-agency coordination and technical support.

ESF #14 efforts are driven by state or local priorities, focusing on permanent restoration of infrastructure, housing, and the local economy. When activated, ESF #14 provides the coordination mechanisms for the federal government to:

- Assess the social and economic consequences in the impacted area and coordinate Federal efforts to address long-term community recovery issues resulting from an incident of national significance.
- Advise on the long-term community recovery implications of response activities; the transition from response to recovery in field operations; and facilitate recovery decision-making across ESFs.
- Work with state, local, and tribal governments; non-governmental organizations (NGOs); and private-sector organizations to conduct comprehensive market disruption and loss analysis and develop a forward-looking, market-based comprehensive long-term recovery plan for the affected community.
- Identify appropriate federal programs and agencies to support implementation of the long-term community recovery plan, ensure coordination, and identify gaps in available resources.
• Avoid duplication of assistance. Coordinate, to the extent possible, program application processes and planning requirements to streamline assistance. Identify and coordinate resolution of policy and program issues.

• Determine or identify responsibilities for recovery activities. Provide a vehicle to maintain continuity in program delivery among federal departments and agencies, and with state, local, and tribal governments and other involved parties, to ensure follow-through of recovery and hazard mitigation efforts.

ESF #14, led by FEMA, is supported by six primary agencies including the Departments of Agriculture, Commerce, Homeland Security, Housing and Urban Development, and Treasury, as well as the Small Business Administration. A number of other agencies serve in a support role.

Objectives of Recovery
As discussed in the UTL, there are three objectives for the recovery mission:

• **Assist the public** – Help individuals directly impacted by an incident to return to pre-incident levels, where feasible. Sub-objectives of this objective are to: (1) provide long-term healthcare, (2) educate the public, and (3) provide social services.

• **Restore the environment** – Reestablish or bring back to a state of environmental or ecological health the water, air, and land, and the interrelationship that exists among and between water, air, and land and all living things. Sub-objectives are to: (1) conduct site cleanup, (2) dispose of materials, (3) conduct site remediation, and (4) restore natural resources.

• **Restore the infrastructure** – Restore the infrastructure in the affected communities in order to return to pre-incident levels, where feasible. Sub-objectives are to: (1) reconstitute government services and (2) rebuild property.

With regard to applicability to a quarantinable disease incident at an international airport, tasks that might be performed within the scope of each objective are to:

• **Assist the Public**
  - Provide mental health services for quarantine residents and support staff.
  - Address issues related to lost work time.
  - Re-book flights.

• **Restore the Environment**
  - Decontaminate the airplane.
  - Decontaminate the quarantine site(s).
  - Dispose of medical waste per protocols.

• **Restore the Infrastructure**
  - Establish systems for tracking and reporting on resources.
  - Document resources committed to incident response.
  - Maintain records of equipment and materials.
  - Track personnel, equipment, and supplies.
  - Maintain inventories of supplies.
  - Replenish resources (i.e., medical supplies).
  - Maintain accountability of expenditures.
  - Maintain records of expenditures.
SECTION 9: AIRPORT COMMUNICABLE DISEASE RESPONSE PLANNING*

Introduction
The previous eight sections outline the “big picture” of the response to a quarantinable disease incident at an international airport. This section looks at planning for such an incident, more specifically, developing an international airport communicable disease response plan. In keeping with the big picture scope of the Manual, the planning template or guidance provided herein is not all inclusive nor does it go into detail. Mainly, it outlines the topics that might be covered in a communicable disease response plan and leaves it up to a planner to provide the specifics.

*Note: When the word “airport” is used below, it refers to international airports, although this section on response planning could apply to and be used by domestic airports. Also, the use of the term “communicable disease response plan” refers to communicable diseases that are quarantinable, although airports may wish to address other diseases in their response plans.

Contents of an Airport Communicable Disease Response Plan
Because the arrival of a quarantinable disease at an international airport may become an incident of national significance, elements and concepts of the NRP may apply to the response to and recovery from the event. Additionally, Homeland Security Presidential Directive 5 (HSPD-5, February 28, 2003), regarding the management of domestic incidents, requires the use of the NIMS for all disaster responses. Therefore, airports should consider adopting the framework and terminology of the NRP and NIMS in their own airport communicable disease response plan. This framework and terminology is provided below. (For more information on the NRP, see http://www.dhs.gov/dhspublic/interapp/editorial/editorial_0566.xml)

Introduction
The Introduction to the airport communicable disease response plan sets forth the Purpose and the Scope and Applicability of the plan. As the name implies, the Purpose contains the stated purpose for the plan. The Scope and Applicability subsection identifies what the plan covers and to whom it applies (i.e., what agencies and organizations).

Planning Assumptions and Considerations
In this section of the airport communicable disease response plan, the Planning Assumptions and Considerations upon which the airport communicable disease response plan is based are outlined. Several examples of planning assumptions and considerations taken from the NRP are as follows:

- Incidents are typically managed at the lowest possible geographic, organizational, and jurisdictional level.
- Incident management activities will be initiated and conducted using the principles contained in the NIMS.
- The combined expertise and capabilities of government at all levels, the private sector and nongovernmental organizations, will be required to prevent, prepare for, respond to, and recover from Incidents of National Significance.
An example of a planning assumption from an international airport communicable disease response plan is as follows:

Only through a concerted and coordinated effort by all responding agencies can the situation be contained, reducing or preventing unnecessary exposure to personnel in the terminal; preventing potentially contaminated/contagious passengers from entering the community at large; allowing public health the opportunity to begin its epidemiological investigation; and allowing state and/or federal law enforcement agencies the opportunity to begin their investigation into a possible terrorist event.

Roles and Responsibilities
As the name implies, the Roles and Responsibilities section of the airport communicable disease response plan outlines the roles and responsibilities of all agencies and organizations involved in the response to and recovery from the incident. Examples of a roles and responsibilities section can be found in Section 4 of this Manual. However, an individual airport communicable disease response plan would want to go into more detail by clearly and definitively identifying organizations and individuals by name and providing contact information.

Concept of Operations
This section outlines the incident management structure and protocols that will be set in place to manage the airport communicable disease incident. As with the Roles and Responsibilities section, an individual airport communicable disease response plan would want to clearly and definitively describe its concept of operations. Examples of a concept of operations can be found in Appendix H of this document in the flowchart entitled “Unified Command Flowchart Example.”

Incident Management Actions
This section describes the actual response to an airport communicable disease incident. Within the NRP, incident management actions are divided into five areas: notification and assessment, activation, response, recovery, and mitigation. For the purpose of the airport communicable disease response plan, these five areas pertain to:

1. Notification and Assessment – Pre- and post-confirmation notification requirements for a communicable disease incident at an airport; also, assessment requirements and protocols for assessing the incident. (Notification and Assessment requirements are covered in Sections 5 and 6 of this Manual.)

2. Activation – Activation and deployment of the response and support agencies and organizations; activation and deployment of the Incident Command System. (Activation is covered in Section 5 of this Manual.)

3. Response – The activities that occur (as a result of notification, assessment, and activation) to address the communicable disease incident at the airport. These activities may include isolation or hospitalization of ill people and quarantine of exposed travelers. As with all sections of the airport communicable disease response plan, the requirements of this subsection will be clearly and definitively defined. (Response activities are outlined in Sections 5, 6, and 7 of this Manual)

4. Recovery – Actions needed to be taken to help individuals, communities, and agencies return to normal following the incident. (Recovery activities are addressed in Section 8 of this Manual.)
5. **Mitigation** – Activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident. (It is beyond the scope of this Manual to address mitigation activities.)

**Ongoing Plan Management and Maintenance**
This section of the airport communicable disease response plan describes actions that will be taken to update the plan based on new statutory requirements and lessons learned from exercises or actual incidents.

**Appendices**
The appendices include clarifying information (e.g., glossary of terms), references (e.g., statutes), and other material deemed necessary for and pertinent to supporting the contents of the airport communicable disease response plan.

**Important Considerations for an Airport Communicable Disease Response Plan**
The above information provides a framework from which airport authorities are able to design their airport communicable disease response plan, but does not explicitly identify the requisite contents of the plan. The provision of this information is left to airport authorities and responders to determine based on the airport location and its organizational and community structure. However, some important considerations for planners when putting together their plan are identified below.

- **Clearly identified lines of authority.** At international airports, the response to a quarantinable disease incident will be led by several federal agencies. The roles and responsibilities of these agencies as well as their statutory authority to undertake these roles and responsibilities needs to be clearly and definitively defined and explained in the airport communicable disease response plan. Additionally, any legal authority conveyed to state or local response agencies by these lead federal agencies needs to be clearly defined.

- **Agreed upon incident management structure.** In conjunction with clearly identified lines of authority, a clearly defined and agreed upon incident management structure needs to be developed prior to an actual communicable disease incident at an airport. An effective and efficient response requires all parties to be “on the same page” at the same time. Pre-incident planning could lead to this desired response.

- **Pre-determined location(s) and assets for quarantine.** Each international flight carries hundreds of travelers. Quarantining just one flight will require a large space and numerous assets to support the quarantine. The quarantine may require more than one location: a short-term site while laboratory diagnostic testing is performed to determine what disease is present, and a long-term site once positive confirmation has been determined and quarantine has been ordered. Both sites may be on or off the airport property. For the sake of the safety and the well-being of travelers, the airport itself, and the general public, it is imperative that planners determine ahead of time the location(s) and assets necessary to manage a large-scale, temporary quarantine or an extended quarantine.

- **Management of public information.** Today’s world is one of fast and easily accessible and transmittable information. As soon as travelers on a plane suspect that a serious incident is occurring on their plane, they can be expected to use their cell phones to alert family, friends, and the media. Airport planners need to take a serious look at how they will handle the onslaught of media inquiries and reports from the very outset of the
communicable disease incident. Airport public relations staff should consider developing contacts with their CDC counterparts before an incident occurs. Remember the old adage, “You only get one chance to make a good first impression.”

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Case Study

Hartsfield-Jackson Atlanta International Airport’s Communicable Disease Response Plan

The Georgia Division of Public Health developed a communicable disease response plan (hereafter referred to as the Plan) for Hartsfield-Jackson Atlanta International Airport in 2003. Public health professionals worked with the Atlanta CDC Quarantine Station, airport responders, and local and state agencies to develop the comprehensive plan, which is an annex to the State of Georgia’s Public Health Emergency Response Plan.

The Plan addresses the following areas: Purpose; Situation and Assumptions; Concept of Operations – Pre-Confirmation; Concept of Operations – Post Confirmation; and Appendices. Discussion of each content area is provided below.

Purpose

The stated purpose of the Plan is to “provide a coordinated response to a potential contagious (communicable) disease situation of Public Health significance at Hartsfield-Jackson Atlanta International Airport . . . The intent is to isolate and possibly quarantine, evaluate and treat aircraft crew members and passengers with a suspected communicable disease of Public Health significance; to provide care, shelter and feeding for those passengers and crew members until the disease(s) has/have been identified.”

The Purpose section of the Plan also:

- Identifies the communicable diseases covered within the scope of the Plan;
- Addresses jurisdictional issues resulting from the airport being located in more than one county; and
- Identifies the lead operational authority and supporting local and state agencies for both bioterror and non-bioterror incidents.

Situation and Assumptions

As the name implies, the Situation section briefly describes the situation parameters that would cause the response outlined in the Plan to occur. The Assumption section:

- States that a unified command system will be established, and it identifies the lead operational authorities for both a bioterror and non-bioterror incident;
- Identifies coordinating activities between state and federal responders;
- Asserts that there may be a need to isolate and quarantine passengers and crews;
- Recommends PPE to be used by airport EMS personnel; and
- Discusses its approach to isolation and quarantine.
Concept of Operations – Pre-Confirmation
The Pre-Confirmation section pertains to a scenario in which an inbound aircraft has an ill passenger or crew member aboard, no credible threat has been posted by the Georgia Bureau of Investigation (GBI) or FBI, and the passenger or crew member has not been evaluated in one of the pre-designated metro Atlanta’s Emergency Departments. This section covers:

- Who will be notified of the incident;
- Where the airplane will be parked on the ramp;
- Who will board the plane and evaluate the ill travelers, and what PPE will be used;
- Which agencies will provide airplane security while the initial diagnosis is being made;
- Which primary and secondary hospitals will be designated to treat the ill travelers;
- How the family of the ill travelers will be notified;
- How the laboratory response will be conducted and how the results will be communicated; and
- How public information and media communication will be handled.

Concept of Operations – Post Confirmation
The Post Confirmation section pertains to a scenario in which an inbound aircraft has an ill passenger or crew member on board with a possible communicable disease of Public Health concern or GBI or FBI has received a verifiable credible threat of a contaminated passenger or crew member or a release of a Category A agent on the aircraft. The section covers the same areas as the Pre-Confirmation section but with a different focus due to the involvement of Category A agents. (It also addresses non-Category A diseases such as SARS and pandemic influenza.) In this scenario, if a Category A disease is confirmed, all passengers or crew members will be vaccinated/prophylaxed/treated per public health protocol.

One of the many strengths of the Plan is the detailed attention to and development of an operational plan for quarantine, including the designation of a specific, onsite facility. Called a Special Needs Population Site, the Post Confirmation section goes into detail about this site and the agencies that will staff it. (Appendix G of this Manual provides the entire Quarantine Plan from the Hartsfield-Jackson Atlanta International Airport Communicable Disease Response Plan.)

The Post Confirmation section also addresses the “Resolution” phase of a communicable disease incident. The costs incurred by all agencies would be monitored and annotated routinely, as directed by the Department of Human Resources Personnel Branch, and their submission for reimbursement would be coordinated through Unified Command (if a state or federal disaster had been declared).
APPENDIX A

CDC Quarantine Stations
**Introduction**

In response to concerns about disease importation and bioterrorism, DGMQ increased the number of stations and enhanced the training and response capability of its staff. Existing CDC Quarantine Stations were improved, and the number of Quarantine Stations increased to 18 in FY 2005, with more to be added in FY 2006. These field stations will provide advanced emergency response capabilities, including isolation and communications facilities. Regional health officers assigned to each station will provide clinical, epidemiologic, and programmatic support, and quarantine public health officers will conduct surveillance and response and communicable disease prevention activities. The transformed CDC Quarantine Stations will bring new expertise to bridge gaps in public health and clinical practice, emergency services, and response management.

**Quarantine Station Listing**

1. **CDC Anchorage Quarantine Station**  
   4600 Postmark Drive, Suite NC 206  
   Anchorage, AK 99502  
   (907) 271-6301  
   (907) 271-6325 (Fax)  
   Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.  
   Officer in Charge: Shahrokh Roohi  
   Quarantine Medical Officer: N/A  
   Jurisdiction: All ports in Alaska.

2. **CDC Atlanta Quarantine Station**  
   Hartsfield International Airport  
   P.O. Box 45256  
   Atlanta, GA 30320  
   (404) 639-1220  
   (404) 639-1224 (Fax)  
   Hours: Monday–Friday, 8:30 a.m.–6:30 p.m.  
   Officer in Charge: Terrence Daley  
   Quarantine Medical Officer: David Kim  
   Jurisdiction: All ports in Georgia, Alabama, Arkansas, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

3. **CDC Boston Quarantine Station**  
   Terminal E  
   Logan International Airport  
   East Boston, MA 02128  
   (617) 820-6877 (Temporary)  
   (617) 561-5701  
   (617) 561-5708 (Fax)  
   Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.  
   Officer in Charge: Maria Pia Sanchez  
   Quarantine Medical Officer: Alcia Sanchez  
   Jurisdiction: All ports in Massachusetts, Maine, New Hampshire, and Rhode Island.
4. **CDC Chicago Quarantine Station**
   O'Hare International Airport
   AMF O'Hare, POB 66012
   Chicago, IL 60666-0012
   (773) 894-2960
   (773) 894-2970 (Fax)
   Hours: Monday–Friday, 8:00 a.m.–8:00 p.m
   Saturday, Sunday, and Holidays, 12:00 p.m.–8:00 p.m.
   Officer in Charge: Sena Blumensaadt
   Quarantine Medical Officer: N/A
   Jurisdiction: All ports in Illinois, Indiana, Iowa, Kansas, Missouri, and Wisconsin.
   Canadian pre-clearance port: Toronto.

5. **CDC Detroit Quarantine Station**
   2613 World Gateway Place
   McNamara Terminal, Building 830
   Detroit, MI 48242
   (734) 955-6197
   (734) 955-7790 (Fax)
   Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.
   Officer in Charge: Gabe Palumbo
   Quarantine Medical Officer: N/A
   Proposed jurisdiction: All ports in Michigan, Kentucky, and Ohio.

6. **CDC El Paso Quarantine Station**
   Center for Border Health Research
   1100 N. Stanton, Suite 410
   El Paso, TX 79902
   (915) 577-0970 (Extension 12 or 20)
   (915) 543-2829 (24-hour Answering Service)
   (915) 541-1137 (Fax)
   Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.
   Officer in Charge: Todd Wilson
   Quarantine Medical Officer: Miguel Escobedo
   Jurisdiction: All ports in West Texas and New Mexico, including the U.S.-Mexico border for those two states.

7. **CDC Honolulu Quarantine Station**
   Honolulu International Airport
   300 Rodgers Blvd., #67
   Honolulu, HI 96819-1897
   (808) 861-8530
   (808) 861-8532 (Fax)
   Hours: Monday–Friday, 6:00 a.m.–4:00 p.m.
   Officer in Charge: Robert Tapia
   Quarantine Medical Officer: William Jackson
   Jurisdiction: All ports in Hawaii, Guam, and Pacific Trust Territories.
8. **CDC Houston Quarantine Station**  
   George Bush Intercontinental Airport (IAH)  
   3870 North Terminal Road  
   C/O CBP, International Arrivals  
   U.S. Public Health Service, IA2.0833  
   Houston, Texas 77032  
   (281) 230-3784  
   Hours: Monday–Friday, 8:00 a.m.–5:30 p.m.  
   Officer in Charge: Jacqueline Polder  
   Quarantine Medical Officer: Stephen Harris  
   Jurisdiction: All ports in East Texas (includes Dallas-Ft. Worth, Austin, and San Antonio), Texas Gulf ports, and Oklahoma.

9. **CDC Los Angeles Quarantine Station**  
   Tom Bradley International Airport  
   380 World Way, Box N19  
   Los Angeles, CA 90045  
   (310) 215-2365  
   (310) 215-2285 (Fax)  
   Hours: Monday–Friday, 7:00 a.m.–4:30 p.m.  
   Saturday, Sunday, and Holidays, 8:00 a.m.–4:30 p.m.  
   Officer in Charge: Mike Marty  
   Quarantine Medical Officer: William MacKenzie  
   Jurisdiction: All ports in Southern California, Nevada, and Arizona (excluding the U.S.-Mexico border). Southern California counties include Los Angeles, Orange, San Bernardino, Riverside, Ventura, Santa Barbara, and San Luis Obispo.

10. **CDC Miami Quarantine Station**  
    Miami International Airport  
    P.O. Box 996488  
    Miami, FL 33299-6488  
    (305) 526-2910  
    (305) 526-2798 (Fax)  
    Hours: Monday–Friday, 6:00 a.m.–4:00 p.m.  
    Saturday, Sunday, and Holidays, 8:00 a.m.–4:00 p.m.  
    Officer in Charge: Toney Drew  
    Quarantine Medical Officer: Kiren Mitruka  
    Jurisdiction: All ports in Florida; Also, pre-clearance ports in the Bahamas.

11. **CDC Minneapolis Quarantine Station**  
    Minneapolis–St. Paul International Airport  
    Lindberg Terminal, Suite G-2256  
    4300 Glumack Drive  
    St. Paul, MN 55111  
    (612) 725-3005  
    Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.  
    Officer in Charge: Pamela Lutz  
    Quarantine Medical Officer: Karen Mariendau  
    Jurisdiction: All ports in Minnesota, Nebraska, North Dakota, and South Dakota.
12. CDC Newark Quarantine Station  
Newark Liberty International Airport  
Terminal B - Box 52  
Newark, NJ 07114  
(973) 368-6200 (6201, 6202, and 6203)  
(973) 368-6204 (Fax)  
Hours: Monday–Friday, 9:00 a.m.–5:30 p.m.  
Officer in Charge: John Bateman  
Quarantine Medical Officer: Andrew Plummer  
Jurisdiction: All ports in New Jersey and Delaware.

13. CDC New York Quarantine Station  
JFK International Airport  
Room 219.016 Terminal 4 (E)  
Jamaica, NY 11430-1081  
(718) 553-1685  
(718) 553-1524 (Fax)  
Hours: Monday–Friday, 8:00 a.m.–6:00 p.m.  
Saturday, Sunday, and Holidays, 10:00 a.m.–6:00 p.m.  
Officer in Charge: Margaret Becker  
Quarantine Medical Officer: Paul Edelson  

14. CDC San Diego Quarantine Station  
CDC San Diego Quarantine Station  
3851 Rosecrans St.  
P.O. Box 85524, MS-P511B OBH  
San Diego, CA 92138-5524  
(619) 692-5659  
(619) 692-8821 (Fax)  
Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.  
Officer in Charge: David Gambill  
Quarantine Medical Officer: Steve Waterman  
Jurisdiction: All ports in San Diego and Imperial Counties of Southern California, and the U.S.-Mexico border crossings in California and Arizona.

15. CDC San Francisco Quarantine Station  
San Francisco International Airport  
PO Box 280548 SFIA  
San Francisco, CA 94128-0548  
(650) 876-2872  
(650) 876-2796 (Fax)  
Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.  
Officer in Charge: Susan Dwyer  
Quarantine Medical Officer: N/A  
Jurisdiction: All ports in Central and Northern California (46 counties).
16. CDC San Juan Quarantine Station
CDC San Juan Quarantine Station
P.O. Box 37197
San Juan, PR 00937-0197
(787) 253-7868
(787) 774-7812 (Alternate phone)
Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.
Officer in Charge: Olga Joglar
Quarantine Medical Officer: Francisco Alvarado-Ramy
Jurisdiction: All ports in Puerto Rico and the U.S. Virgin Islands.

17. CDC Seattle Quarantine Station
Seattle-Tacoma International Airport, Room S-2067
Seattle, WA 98158-1250
(206) 553-4519
(206) 553-4455 (Fax)
Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.
Officer in Charge: Heather Hastings
Quarantine Medical Officer: Peter Houck

18. CDC Washington Quarantine Station
Dulles International Airport
P.O. Box 17087
Washington, DC 20041
(703) 661-1320
(703) 661-1318 (Fax)
Hours: Monday–Friday, 8:00 a.m.–4:30 p.m.
Officer in Charge: Jason Thomas
Quarantine Medical Officer: Michael Doney
Jurisdiction: All ports in Washington, DC, Maryland, Virginia, and West Virginia

New Quarantine Stations to be Added in 2006

19. CDC Dallas Quarantine Station

20. CDC Philadelphia Quarantine Station
APPENDIX B

Travel Notices
Introduction

(From [http://www.cdc.gov/travel/outbreaks.htm](http://www.cdc.gov/travel/outbreaks.htm))

CDC issues different types of notices for international travelers. As of May 20, 2004, these definitions have been refined to make the announcements more easily understood by travelers, healthcare providers, and the general public. The definitions are laid out below. They describe both levels of risk for the traveler and recommended preventive measures to take at each level of risk.

<table>
<thead>
<tr>
<th>Type of Notice/Level of Concern</th>
<th>Scope*</th>
<th>Risk for Travelers†</th>
<th>Preventive Measures</th>
<th>Example of Notice</th>
<th>Example of Recommended Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the News</td>
<td>Reports of sporadic cases</td>
<td>No increased risk over baseline for travelers observing standard recommendations</td>
<td>Keeping travelers informed and reinforcing standard prevention recommendations</td>
<td>Report of cases of dengue in Mexico, 2001</td>
<td>Reinforced standard recommendations for protection against insect bites</td>
</tr>
<tr>
<td>Outbreak Notice</td>
<td>Outbreak in limited geographic area or setting</td>
<td>Increased but definable and limited to specific settings</td>
<td>Reminders about standard and enhanced recommendations for the region</td>
<td>Outbreak of yellow fever in a state in Brazil in 2003</td>
<td>Reinforced enhanced recommendations, such as vaccination</td>
</tr>
<tr>
<td>Travel Health Precaution</td>
<td>Outbreak of greater scope affecting a larger geographic area</td>
<td>Increased in some settings, along with risk for spread to other areas</td>
<td>Specific precautions to reduce risk during the stay, and what to do before and after travel‡</td>
<td>Outbreak of avian influenza among poultry and humans in several countries in Southeast Asia in early 2004</td>
<td>Recommended specific precautions including avoiding areas with live poultry, such as live animal markets and poultry farms; ensuring poultry and eggs are thoroughly cooked; monitoring health</td>
</tr>
<tr>
<td>Travel Health Warning</td>
<td>Evidence that outbreak is expanding outside the area or populations initially affected</td>
<td>Increased because of evidence of transmission outside defined settings and/or inadequate containment measures</td>
<td>In addition to the specific precautions cited above, postpone nonessential travel‡</td>
<td>SARS outbreak in Asia in 2003</td>
<td>Recommended travelers to postpone nonessential travel because of level of risk</td>
</tr>
</tbody>
</table>

* The term “scope” incorporates the size, magnitude, and rapidity of spread of an outbreak.

† Risk for travelers is dependent on patterns of transmission, as well as severity of illness.

‡ Preventive measures other than the standard advice for the region may be recommended depending on the circumstances (e.g., travelers may be requested to monitor their health for a certain period after their return, or arriving passengers may be screened at ports of entry).
Travel Notices: Interim Definitions and Criteria As of May 20, 2004

Rationale
CDC issues different types of notices for international travelers. We are refining these definitions to make the announcements more easily understood by travelers, healthcare providers, and the general public. In addition, defining and describing levels of risk for the traveler will clarify the need for the recommended preventive measures. From the public health perspective, scalable definitions will enhance the usefulness of the travel notices, enabling them to be tailored readily in response to events and circumstances.

1. **In the News:** notification by CDC of an occurrence of a disease of public health significance affecting a traveler or travel destination. The purpose is to provide information to travelers, Americans living abroad, and their healthcare providers about the disease. The risk for disease exposure is not thought to be increased beyond the usual baseline risk for that area, and only standard guidelines are recommended.

2. **Outbreak Notice:** notification by CDC that an outbreak of a disease is occurring in a limited geographic area or setting. The purpose of an outbreak notice is to provide accurate information to travelers and resident expatriates about the status of the outbreak and to remind travelers about the standard or enhanced travel recommendations for the area. Because of the limited nature of the outbreak, the risk for disease exposure is thought to be increased but defined and limited to specific settings.

3. **Travel Health Precaution:** CDC does NOT recommend against travel to the area. A travel health precaution is notification by CDC that a disease outbreak of greater scope is occurring in a more widespread geographic area. The purpose of a travel health precaution is to provide accurate information to travelers and Americans living abroad about the status of the outbreak (e.g., magnitude, scope, and rapidity of spread), specific precautions to reduce their risk for infection, and what to do if they become ill while in the area. The risk for the individual traveler is thought to be increased in defined settings or associated with specific risk factors (e.g., transmission in a healthcare or hospital setting where ill patients are being cared for).

4. **Travel Health Warning:** CDC recommends against nonessential travel to the area. A travel health warning is a notification by CDC that a widespread, serious outbreak of a disease of public health concern is expanding outside the area or populations that were initially affected. The purpose of a travel health warning is to provide accurate information to travelers and Americans living abroad about the status of the outbreak (e.g., its scope, magnitude, and rapidity of spread), how they can reduce their risk for infection, and what to do if they should become ill while in the area. The warning also serves to reduce the volume of traffic to the affected areas, which in turn can reduce the risk of spreading the disease to previously unaffected sites. CDC recommends against nonessential travel to the area because the risk for the traveler is considered to be high (i.e., the risk is increased because of evidence of transmission outside defined settings or inadequate containment). Additional preventive measures may be recommended, depending on the circumstances (e.g., travelers may be requested to monitor their health for a certain period after their return; arriving passengers may be screened at ports of entry).
Criteria for Instituting Travel Notices

- Disease transmission: The modes of transmission and patterns of spread, as well as the magnitude and scope of the outbreak in the area, will affect the decision for the appropriate level of notice. Criteria include the presence or absence of transmission outside defined settings, as well as evidence that cases have spread to other areas.

- Containment measures: The presence or absence of acceptable outbreak control measures in the affected area can influence the decision for what level of notice to issue. Areas where the disease is occurring that are considered to have poor or no containment measures in place have the potential for a higher risk of transmission to exposed persons and spread to other areas.

- Quality of surveillance: Criteria include whether health authorities in the area have the ability to accurately detect and report cases and conduct appropriate contact tracing of exposed persons. Areas where the disease is occurring that are considered to have poor surveillance systems may have the potential for a higher risk of transmission.

- Quality and accessibility of medical care: Areas where the disease is occurring that are considered to have inadequate medical services and infection control procedures in place, as well as remote locations without access to medical evacuation, present a higher level of risk for the traveler or Americans living abroad.

Criteria for Downgrading or Removing Notices

To downgrade a travel health warning to a travel health precaution, there should be—

- Adequate and regularly updated reports of surveillance data from the area

- No evidence of ongoing transmission outside defined settings for two incubation periods after the date of onset of symptoms for the last case, as reported by public health officials.

To remove a travel precaution, there should be—

- Adequate and regularly updated reports of surveillance data from the area

- No evidence of new cases for three incubation periods after the date of onset of symptoms for the last case, as reported by public health authorities.

- Limited or no recent instances of exported cases from the area; this criterion excludes intentional or planned evacuations.

In the News and Outbreak Notices will be revisited at regular intervals and will be removed when no longer relevant or when the outbreak has resolved.
APPENDIX C

Personal Protective Equipment (PPE)
Interim Recommendations for the Selection and Use of Protective Clothing and Respirators Against Biological Agents

From the National Institute for Occupational Safety and Health

The approach to any potentially hazardous atmosphere, including biological hazards, must be made with a plan that includes an assessment of hazard and exposure potential, respiratory protection needs, entry conditions, exit routes, and decontamination strategies. Any plan involving a biological hazard should be based on relevant infectious disease or biological safety recommendations by the Centers for Disease Control and Prevention (CDC) and other expert bodies including emergency first responders, law enforcement, and public health officials. The need for decontamination and for treatment of all first responders with antibiotics or other medications should be decided in consultation with local public health authorities.

This INTERIM STATEMENT is based on current understanding of the potential threats and existing recommendations issued for biological aerosols. CDC makes this judgment because:

- Biological weapons may expose people to bacteria, viruses, or toxins as fine airborne particles. Biological agents are infectious through one or more of the following mechanisms of exposure, depending upon the particular type of agent: inhalation, with infection through respiratory mucosa or lung tissues; ingestion; contact with the mucous membranes of the eyes, or nasal tissues; or penetration of the skin through open cuts (even very small cuts and abrasions of which employees might be unaware). Organic airborne particles share the same physical characteristics in air or on surfaces as inorganic particles from hazardous dusts. This has been demonstrated in military research on biological weapons and in civilian research to control the spread of infection in hospitals.

- Because biological weapons are particles, they will not penetrate the materials of properly assembled and fitted respirators or protective clothing.

- Existing recommendations for protecting workers from biological hazards require the use of half-mask or full facepiece air-purifying respirators with particulate filter efficiencies ranging from N95 (for hazards such as pulmonary tuberculosis) to P100 (for hazards such as hantavirus) as a minimum level of protection.

- Some devices used for intentional biological terrorism may have the capacity to disseminate large quantities of biological materials in aerosols.

- Emergency first responders typically use self-contained breathing apparatus (SCBA) respirators with a full facepiece operated in the most protective, positive pressure (pressure demand) mode during emergency responses. This type of SCBA provides the highest level of protection against airborne hazards when properly fitted to the user’s face and properly used. National Institute for Occupational Safety and Health (NIOSH) respirator policies state that, under those conditions, SCBA reduces the user’s exposure to the hazard by a factor of at least 10,000. This reduction is true whether the hazard is from airborne particles, a chemical vapor, or a gas. SCBA respirators are used when hazards and airborne
concentrations are either unknown or expected to be high. Respirators providing lower levels of protection are generally allowed once conditions are understood and exposures are determined to be at lower levels.

**Interim Recommendations for the selection and use of protective clothing and respirators against biological agents.**

When using respiratory protection, the type of respirator is selected on the basis of the hazard and its airborne concentration. For a biological agent, the air concentration of infectious particles will depend upon the method used to release the agent. Current data suggest that the self-contained breathing apparatus (SCBA) which first responders currently use for entry into potentially hazardous atmospheres will provide responders with respiratory protection against biological exposures associated with a suspected act of biological terrorism.

Protective clothing, including gloves and booties, also may be required for the response to a suspected act of biological terrorism. Protective clothing may be needed to prevent skin exposures and/or contamination of other clothing. The type of protective clothing needed will depend upon the type of agent, concentration, and route of exposure.

**Interim recommendations for the selection and use of protective clothing and respirators against biological agents.**

The interim recommendations for personal protective equipment, including respiratory protection and protective clothing, are based upon the anticipated level of exposure risk associated with different response situations, as follows:

- Responders should use a NIOSH-approved, pressure-demand SCBA in conjunction with a Level A protective suit in responding to a suspected biological incident where any of the following information is unknown or the event is uncontrolled:
  - the type(s) of airborne agent(s);
  - the dissemination method;
  - if dissemination via an aerosol-generating device is still occurring or it has stopped but there is no information on the duration of dissemination, or what the exposure concentration might be.

- Responders may use a Level B protective suit with an exposed or enclosed NIOSH-approved pressure-demand SCBA if the situation can be defined in which:
  - the suspected biological aerosol is no longer being generated;
  - other conditions may present a splash hazard.

- Responders may use a full facepiece respirator with a P100 filter or powered air-purifying respirator (PAPR) with high efficiency particulate air (HEPA) filters when it can be determined that:
  - an aerosol-generating device was not used to create high airborne concentration,
  - dissemination was by a letter or package that can be easily bagged.

These type of respirators reduce the user’s exposure by a factor of 50 if the user has been properly fit tested.
Care should be taken when bagging letters and packages to minimize creating a puff of air that could spread pathogens. It is best to avoid large bags and to work very slowly and carefully when placing objects in bags. Disposable hooded coveralls, gloves, and foot coverings also should be used. NIOSH recommends against wearing standard firefighter turnout gear into potentially contaminated areas when responding to reports involving biological agents.

Decontamination of protective equipment and clothing is an important precaution to make sure that any particles that might have settled on the outside of protective equipment are removed before taking off gear. Decontamination sequences currently used for hazardous material emergencies should be used as appropriate for the level of protection employed. Equipment can be decontaminated using soap and water, and 0.5% hypochlorite solution (one part household bleach to 10 parts water) can be used as appropriate or if gear had any visible contamination. Note that bleach may damage some types of firefighter turnout gear (one reason why it should not be used for biological agent response actions). After taking off gear, response workers should shower using copious quantities of soap and water.

October 2001

DHHS (NIOSH) Publication Number 2002-109

http://www.cdc.gov/niosh/unp-intrecppe.htm
APPENDIX D

Fact Sheet: Legal Authorities for Isolation and Quarantine
Introduction

- **Isolation** and **quarantine** are two common public health strategies designed to protect the public by preventing exposure to infected or potentially infected persons.

- In general, **isolation** refers to the separation of persons who have a specific infectious illness from those who are healthy and the restriction of their movement to stop the spread of that illness. Isolation is a standard procedure used in hospitals today for patients with tuberculosis and certain other infectious diseases.

- **Quarantine**, in contrast, generally refers to the separation and restriction of movement of persons who, while not yet ill, have been exposed to an infectious agent and therefore may become infectious. Quarantine of exposed persons is a public health strategy, like isolation, that is intended to stop the spread of infectious disease.

- Both isolation and quarantine may be conducted on a **voluntary basis** or **compelled on a mandatory basis** through legal authority.

State/Local and Tribal Law

- A state's authority to compel isolation and quarantine within its borders is derived from its inherent "police power"—the authority of a state government to enact laws and promote regulations to safeguard the health, safety, and welfare of its citizens. As a result of this authority, the individual states are responsible for intrastate isolation and quarantine practices, and they conduct their activities in accordance with their respective statutes.

- Tribal laws and regulations are similar in promoting the health, safety, and welfare of tribal members. Tribal health authorities are responsible for isolation and quarantine practices within tribal lands in accordance with their respective laws.

- State and local laws and regulations regarding the issues of compelled isolation and quarantine vary widely. Historically, some states have codified extensive procedural provisions related to the enforcement of these public health measures, whereas other states rely on older statutory provisions that can be very broad. In some jurisdictions, local health departments are governed by the provisions of state law; in other settings, local health authorities may be responsible for enforcing state or more stringent local measures. In many states, violation of a quarantine order constitutes a criminal misdemeanor.

- Examples of other public health actions that can be compelled by legal authorities include disease reporting, immunization for school attendance, and tuberculosis treatment.

Federal Law

- The HHS Secretary has statutory responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the United States, e.g., at international ports of arrival, and from one state or possession into another.
• The communicable diseases for which federal isolation and quarantine are authorized are set forth through executive order of the President and include cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, viral hemorrhagic fevers, and severe acute respiratory syndrome (SARS). On April 2005, the President added to this list Influenza caused by novel or reemergent influenza viruses that are causing, or have the potential to cause, a pandemic.

• By statute, CBP and Coast Guard officers are required to aid in the enforcement of quarantine rules and regulations. Violation of federal quarantine rules and regulations constitutes a criminal misdemeanor, punishable by fine and imprisonment.

• Federal quarantine authority includes the authority to release persons from quarantine on the condition that they comply with medical monitoring and surveillance.

Interplay between Federal and State/Local Laws

• States and local jurisdictions have primary responsibility for isolation and quarantine within their borders. The federal government has authority under the Commerce Clause of the U.S. Constitution to prevent the interstate spread of disease.

• The federal government has primary responsibility for preventing the introduction of communicable diseases from foreign countries into the United States.

• By statute, the HHS Secretary may accept state and local assistance in the enforcement of federal quarantine regulations and may assist state and local officials in the control of communicable diseases.

• It is possible for federal, state, and local health authorities simultaneously to have separate but concurrent legal quarantine power in a particular situation (e.g., an arriving aircraft at a large city airport).

• Because isolation and quarantine are "police power" functions, public health officials at the federal, state, and local levels may occasionally seek the assistance of their respective law enforcement counterparts to enforce a public health order.
APPENDIX E

Executive Orders on Quarantinable Diseases
Executive Order 13295 of April 4, 2003

Revised List of Quarantinable Communicable Diseases

By the authority vested in me as President by the Constitution and the laws of the United States of America, including section 361(b) of the Public Health Service Act (42 U.S.C. 264(b)), it is hereby ordered as follows:

Section 1. Based upon the recommendation of the Secretary of Health and Human Services (the "Secretary"), in consultation with the Surgeon General, and for the purpose of specifying certain communicable diseases for regulations providing for the apprehension, detention, or conditional release of individuals to prevent the introduction, transmission, or spread of suspected communicable diseases, the following communicable diseases are hereby specified pursuant to section 361(b) of the Public Health Service Act:

(a) Cholera; Diphtheria; infectious Tuberculosis; Plague; Smallpox; Yellow Fever; and Viral Hemorrhagic Fevers (Lassa, Marburg, Ebola, Crimean-Congo, South American, and others not yet isolated or named).

(b) Severe Acute Respiratory Syndrome (SARS), which is a disease associated with fever and signs and symptoms of pneumonia or other respiratory illness, is transmitted from person to person predominantly by the aerosolized or droplet route, and, if spread in the population, would have severe public health consequences.

Sec. 2. The Secretary, in the Secretary's discretion, shall determine whether a particular condition constitutes a communicable disease of the type specified in section 1 of this order.

Sec. 3. The functions of the President under sections 362 and 364(a) of the Public Health Service Act (42 U.S.C. 265 and 267(a)) are assigned to the Secretary.

Sec. 4. This order is not intended to, and does not, create any right or benefit enforceable at law or equity by any party against the United States, its departments, agencies, entities, officers, employees or agents, or any other person.

Sec. 5. Executive Order 12452 of December 22, 1983, is hereby revoked.

George W. Bush

THE WHITE HOUSE,
Executive Order: Amendment to E.O. 13295 Relating to Certain Influenza Viruses and Quarantinable Communicable Diseases

By the authority vested in me as President by the Constitution and the laws of the United States of America, including section 361(b) of the Public Health Service Act (42 U.S.C. 264(b)), it is hereby ordered as follows:

Section 1. Based upon the recommendation of the Secretary of Health and Human Services, in consultation with the Surgeon General, and for the purpose set forth in section 1 of Executive Order 13295 of April 4, 2003, section 1 of such order is amended by adding at the end thereof the following new subsection:

"(c) Influenza caused by novel or reemergent influenza viruses that are causing, or have the potential to cause, a pandemic.".

Sec. 2. This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, entities, officers, employees or agents, or any other person.

GEORGE W. BUSH

THE WHITE HOUSE,

April 1, 2005.
APPENDIX F

Quarantinable Disease Information
Cholera

(From [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/cholera_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/cholera_g.htm))

**Disease History**
In January 1991, epidemic cholera appeared in South America and quickly spread to several countries. A few cases have occurred in the United States among persons who traveled to South America or ate contaminated food brought back by travelers.

Cholera has been very rare in industrialized nations for the last 100 years; however, the disease is still common today in other parts of the world, including the Indian subcontinent and sub-Saharan Africa.

Although cholera can be life-threatening, it is easily prevented and treated. In the United States, because of advanced water and sanitation systems, cholera is not a major threat; however, everyone, especially travelers, should be aware of how the disease is transmitted and what can be done to prevent it.

**What is cholera?**
Cholera is an acute, diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*. The infection is often mild or without symptoms, but sometimes it can be severe. Approximately one in 20 infected persons has severe disease characterized by profuse watery diarrhea, vomiting, and leg cramps. In these persons, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

**How does a person get cholera?**
A person may get cholera by drinking water or eating food contaminated with the cholera bacterium. In an epidemic, the source of the contamination is usually the feces of an infected person. The disease can spread rapidly in areas with inadequate treatment of sewage and drinking water.

The cholera bacterium may also live in the environment in brackish rivers and coastal waters. Shellfish eaten raw have been a source of cholera, and a few persons in the United States have contracted cholera after eating raw or undercooked shellfish from the Gulf of Mexico. The disease is not likely to spread directly from one person to another; therefore, casual contact with an infected person is not a risk for becoming ill.

**What is the risk for cholera in the United States?**
In the United States, cholera was prevalent in the 1800s but has been virtually eliminated by modern sewage and water treatment systems. However, as a result of improved transportation, more persons from the United States travel to parts of Africa, Asia, or Latin America where epidemic cholera is occurring. U.S. travelers to areas with epidemic cholera may be exposed to the cholera bacterium. In addition, travelers may bring contaminated seafood back to the United States; foodborne outbreaks have been caused by contaminated seafood brought into this country by travelers.

**What should travelers do to avoid getting cholera?**
The risk for cholera is very low for U.S. travelers visiting areas with epidemic cholera. When simple precautions are observed, contracting the disease is unlikely.
All travelers to areas where cholera has occurred should observe the following recommendations:

- Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated, bottled beverages with no ice.
- Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
- Avoid undercooked or raw fish or shellfish, including ceviche.
- Make sure all vegetables are cooked avoid salads.
- Avoid foods and beverages from street vendors.
- Do not bring perishable seafood back to the United States.
- A simple rule of thumb is "Boil it, cook it, peel it, or forget it."

**Is a vaccine available to prevent cholera?**

At the present time, the manufacture and sale of the only licensed cholera vaccine in the United States (Wyeth-Ayerst) has been discontinued. It has not been recommended for travelers because of the brief and incomplete immunity it offers. No cholera vaccination requirements exist for entry or exit in any country.

Two recently developed vaccines for cholera are licensed and available in other countries (Dukoral®, Biotec AB and Mutacol®, Berna). Both vaccines appear to provide a somewhat better immunity and fewer side-effects than the previously available vaccine. However, neither of these two vaccines is recommended for travelers nor are they available in the United States.

**Can cholera be treated?**

Cholera can be simply and successfully treated by immediate replacement of the fluid and salts lost through diarrhea. Patients can be treated with oral rehydration solution, a prepackaged mixture of sugar and salts to be mixed with water and drunk in large amounts. This solution is used throughout the world to treat diarrhea. Severe cases also require intravenous fluid replacement. With prompt rehydration, fewer than 1% of cholera patients die.

Antibiotics shorten the course and diminish the severity of the illness, but they are not as important as rehydration. Persons who develop severe diarrhea and vomiting in countries where cholera occurs should seek medical attention promptly.

**What is the U.S. government doing to combat cholera?**

U.S. and international public health authorities are working to enhance surveillance for cholera, investigate cholera outbreaks, and design and implement preventive measures. The Centers for Disease Control and Prevention investigates epidemic cholera wherever it occurs and trains laboratory workers in proper techniques for identification of V. cholerae. In addition, the Centers for Disease Control and Prevention provides information on diagnosis, treatment, and prevention of cholera to public health officials and educates the public about effective preventive measures.

The U.S. Agency for International Development is sponsoring some of the international government activities and is providing medical supplies to affected countries.

The Environmental Protection Agency is working with water and sewage treatment operators in the United States to prevent contamination of water with the cholera bacterium.
The Food and Drug Administration is testing imported and domestic shellfish for V. cholerae and monitoring the safety of U.S. shellfish beds through the shellfish sanitation program.

With cooperation at the state and local, national, and international levels, assistance will be provided to countries where cholera is present, and the risk to U.S. residents will remain small.

**Diphtheria**

(From [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/diptheria_t.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/diptheria_t.htm))

**Clinical Features**
Respiratory diphtheria presents as a sore throat with low-grade fever and an adherent membrane of the tonsils, pharynx, or nose. Neck swelling is usually present in severe disease. Cutaneous diphtheria presents as infected skin lesions which lack a characteristic appearance.

**Etiologic Agent**
Toxin-producing strains of *Corynebacterium diphtheriae*.

**Incidence**
Approximately 0.001 cases per 100,000 population in the U.S. since 1980; before the introduction of vaccine in the 1920s incidence was 100-200 cases per 100,000 population. Diphtheria remains endemic in developing countries. The countries of the former Soviet Union have reported >150,000 cases in an epidemic which began in 1990.

**Complications**
Myocarditis (inflammation of the heart muscle), polyneuritis (inflammation of several peripheral nerves at the same time), and airway obstruction are common complications of respiratory diphtheria; death occurs in 5%-10% of respiratory cases. Complications and deaths are much less frequent in cutaneous diphtheria.

**Transmission**
Direct person-to-person transmission by intimate respiratory and physical contact. Cutaneous lesions are important in transmission.

**Risk Groups**
In the pre-vaccine era, children were at highest risk for respiratory diphtheria. Recently, diphtheria has primarily affected adults in the sporadic cases reported in the U.S. and in the large outbreaks in Russia and New Independent States of the Former Soviet Union.

**Challenges**
Circulation appears to continue in some settings even in populations with >80% childhood immunization rates. An asymptomatic carrier state exists even among immune individuals. Immunity wanes over time; decennial booster doses are required to maintain protective antibody levels. Large populations of adults are susceptible to diphtheria in developed countries—appear to be increasing in developing countries as well.

In countries with low incidence, the diagnosis may not be considered by clinician and laboratory scientists. Prior antibiotic treatment can prevent recovery of the organism.

Limited epidemiologic, clinical and laboratory expertise on diphtheria.
Tuberculosis

(From http://www.cdc.gov/nchstp/tb/faqs/qa.htm)

What is TB?
Tuberculosis (TB) is a disease caused by bacteria called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs. But, TB bacteria can attack any part of the body such as the kidney, spine, and brain. If not treated properly, TB disease can be fatal. TB disease was once the leading cause of death in the United States.

TB is spread through the air from one person to another. The bacteria are put into the air when a person with active TB disease of the lungs or throat coughs or sneezes. People nearby may breathe in these bacteria and become infected.

However, not everyone infected with TB bacteria becomes sick. People who are not sick have what is called latent TB infection. People who have latent TB infection do not feel sick, do not have any symptoms, and cannot spread TB to others. But, some people with latent TB infection go on to get TB disease.

People with active TB disease can be treated and cured if they seek medical help. Even better, people with latent TB infection can take medicine so that they will not develop active TB disease.

Why is TB a problem today?
Starting in the 1940s, scientists discovered the first of several medicines now used to treat TB. As a result, TB slowly began to decrease in the United States. But in the 1970s and early 1980s, the country let its guard down and TB control efforts were neglected. As a result, between 1985 and 1992, the number of TB cases increased. However, with increased funding and attention to the TB problem, we have had a steady decline in the number of persons with TB since 1992. But TB is still a problem; more than 14,000 cases were reported in 2003 in the United States.

This booklet answers common questions about TB. Please ask your doctor or nurse if you have other questions about latent TB infection or TB disease.

How is TB spread?
TB is spread through the air from one person to another. The bacteria are put into the air when a person with active TB disease of the lungs or throat coughs or sneezes. People nearby may breathe in these bacteria and become infected.

When a person breathes in TB bacteria, the bacteria can settle in the lungs and begin to grow. From there, they can move through the blood to other parts of the body, such as the kidney, spine, and brain.

TB in the lungs or throat can be infectious. This means that the bacteria can be spread to other people. TB in other parts of the body, such as the kidney or spine, is usually not infectious. People with active TB disease are most likely to spread it to people they spend time with every day. This includes family members, friends, and coworkers.
What is latent TB infection?
In most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria to stop them from growing. The bacteria become inactive, but they remain alive in the body and can become active later. This is called latent TB infection. People with latent TB infection:

- Have no symptoms.
- Don't feel sick.
- Can't spread TB to others.
- Usually have a positive skin test reaction.
- Can develop active TB disease if they do not receive treatment for latent TB infection.

Many people who have latent TB infection never develop active TB disease. In these people, the TB bacteria remain inactive for a lifetime without causing disease. But in other people, especially people who have weak immune systems, the bacteria become active and cause TB disease.

What is active TB disease?
TB bacteria become active if the immune system can't stop them from growing. The active bacteria begin to multiply in the body and cause active TB disease. The bacteria attack the body and destroy tissue. If this occurs in the lungs, the bacteria can actually create a hole in the lung. Some people develop active TB disease soon after becoming infected, before their immune system can fight the TB bacteria. Other people may get sick later, when their immune system becomes weak for another reason.

Babies and young children often have weak immune systems. People infected with HIV, the virus that causes AIDS, have very weak immune systems. Other people can have weak immune systems, too, especially people with any of these conditions: substance abuse, diabetes mellitus, silicosis, cancer of the head or neck, leukemia or Hodgkin’s disease, severe kidney disease, low body weight, certain medical treatments (such as corticosteroid treatment or organ transplants), and specialized treatment for rheumatoid arthritis or Crohn’s disease.

Symptoms of TB depend on where in the body the TB bacteria are growing. TB bacteria usually grow in the lungs. TB in the lungs may cause symptoms such as:

- A bad cough that lasts 3 weeks or longer.
- Pain in the chest.
- Coughing up blood or sputum (phlegm from deep inside the lungs).

Other symptoms of active TB disease are:

- Weakness or fatigue
- Weight loss
- No appetite
- Chills
- Fever
- Sweating at night
Plague

(From http://www.cdc.gov/ncidod/dvbid/plague/info.htm)

General Information
Plague, caused by a bacterium called *Yersinia pestis*, is transmitted from rodent to rodent by infected fleas.

Plague is characterized by periodic disease outbreaks in rodent populations, some of which have a high death rate. During these outbreaks, hungry infected fleas that have lost their normal hosts seek other sources of blood, thus increasing the increased risk to humans and other animals frequenting the area.

Epidemics of plague in humans usually involve house rats and their fleas. Rat-borne epidemics continue to occur in some developing countries, particularly in rural areas. The last rat-borne epidemic in the United States occurred in Los Angeles in 1924-25. Since then, all human plague cases in the U.S. have been sporadic cases acquired from wild rodents or their fleas or from direct contact with plague-infected animals.

Rock squirrels and their fleas are the most frequent sources of human infection in the southwestern states. For the Pacific states, the California ground squirrel and its fleas are the most common source. Many other rodent species, for instance, prairie dogs, wood rats, chipmunks, and other ground squirrels and their fleas, suffer plague outbreaks and some of these occasionally serve as sources of human infection. Deer mice and voles are thought to maintain the disease in animal populations but are less important as sources of human infection. Other less frequent sources of infection include wild rabbits, and wild carnivores that pick up their infections from wild rodent outbreaks. Domestic cats (and sometimes dogs) are readily infected by fleas or from eating infected wild rodents. Cats may serve as a source of infection to persons exposed to them. Pets may also bring plague-infected fleas into the home.

Between outbreaks, the plague bacterium is believed to circulate within populations of certain species of rodents without causing excessive mortality. Such groups of infected animals serve as silent, long-term reservoirs of infection.

Geographic Distribution of Plague
In the United States during the 1980s plague cases averaged about 18 per year. Most of the cases occurred in persons under 20 years of age. About 1 in 7 persons with plague died.

Worldwide, there are 1,000 to 2,000 cases each year. During the 1980s epidemic plague occurred each year in Africa, Asia, or South America. Epidemic plague is generally associated with domestic rats. Almost all of the cases reported during the decade were rural and occurred among people living in small towns and villages or agricultural areas rather than in larger, more developed, towns and cities.

The following information provides a worldwide distribution pattern:

- There is no plague in Australia.
- There is no plague in Europe; the last reported cases occurred after World War II.
- In Asia and extreme southeastern Europe, plague is distributed from the Caucasus Mountains in Russia, through much of the Middle East, eastward through China, and
then southward to Southwest and Southeast Asia, where it occurs in scattered, localized foci. Within these plague foci, there are isolated human cases and occasional outbreaks. Plague regularly occurs in Madagascar, off the southeastern coast of Africa.

- In Africa, plague foci are distributed from Uganda south on the eastern side of the continent, and in southern Africa. Severe outbreaks have occurred in recent years in Kenya, Tanzania, Zaire, Mozambique, and Botswana, with smaller outbreaks in other East African countries. Plague also has been reported in scattered foci in western and northern Africa.
- In North America, plague is found from the Pacific Coast eastward to the western Great Plains and from British Columbia and Alberta, Canada southward to Mexico. Most of the human cases occur in two regions; one in northern New Mexico, northern Arizona, and southern Colorado, another in California, southern Oregon, and far western Nevada.
- In South America, active plague foci exist in two regions; the Andean mountain region (including parts of Bolivia, Peru, and Ecuador) and in Brazil.

How Is Plague Transmitted?
Plague is transmitted from animal to animal and from animal to human by the bites of infective fleas. Less frequently, the organism enters through a break in the skin by direct contact with tissue or body fluids of a plague-infected animal, for instance, in the process of skinning a rabbit or other animal. Plague is also transmitted by inhaling infected droplets expelled by coughing, by a person or animal, especially domestic cats, with pneumonic plague. Transmission of plague from person to person is uncommon and has not been observed in the United States since 1924 but does occur as an important factor in plague epidemics in some developing countries.

Diagnosis
The pathognomic sign of plague is a very painful, usually swollen, and often hot-to-the touch lymph node, called a bubo. This finding, accompanied with fever, extreme exhaustion, and a history of possible exposure to rodents, rodent fleas, wild rabbits, or sick or dead carnivores should lead to suspicion of plague.

Onset of bubonic plague is usually 2 to 6 days after a person is exposed. Initial manifestations include fever, headache, and general illness, followed by the development of painful, swollen regional lymph nodes. Occasionally, buboes cannot be detected for a day or so after the onset of other symptoms. The disease progresses rapidly and the bacteria can invade the bloodstream, producing severe illness, called plague septicemia.

Once a human is infected, a progressive and potentially fatal illness generally results unless specific antibiotic therapy is given. Progression leads to blood infection and, finally, to lung infection. The infection of the lung is termed plague pneumonia, and it can be transmitted to others through the expulsion of infective respiratory droplets by coughing.

The incubation period of primary pneumonic plague is 1 to 3 days and is characterized by development of an overwhelming pneumonia with high fever, cough, bloody sputum, and chills. For plague pneumonia patients, the death rate is over 50%.

Treatment Information
As soon as a diagnosis of suspected plague is made, the patient should be isolated, and local and state health departments should be notified. Confirmatory laboratory work should be initiated, including blood cultures and examination of lymph node specimens if possible. Drug
therapy should begin as soon as possible after the laboratory specimens are taken. The drugs of choice are streptomycin or gentamycin, but a number of other antibiotics are also effective.

Those individuals closely associated with the patient, particularly in cases with pneumonia, should be traced, identified, and evaluated. Contacts of pneumonic plague patients should be placed under observation or given preventive antibiotic therapy, depending on the degree and timing of contact.

It is a U.S. Public Health Service requirement that all suspected plague cases be reported to local and state health departments and the diagnosis confirmed by CDC. As required by the International Health Regulations, CDC reports all U.S. plague cases to the World Health Organization.

Prevention
Plague will probably continue to exist in its many localized geographic areas around the world, and plague outbreaks in wild rodent hosts will continue to occur. Attempts to eliminate wild rodent plague are costly and futile. Therefore, primary preventive measures are directed toward reducing the threat of infection in humans in high risk areas through three techniques—environmental management, public health education, and preventive drug therapy.

Preventive Drug Therapy
Antibiotics may be taken in the event of exposure to the bites of wild rodent fleas during an outbreak or to the tissues or fluids of a plague-infected animal. Preventive therapy is also recommended in the event of close exposure to another person or to a pet animal with suspected plague pneumonia. For preventive drug therapy, the preferred antibiotics are the tetracyclines, chloramphenicol, or one of the effective sulfonamides.

Vaccines
The plague vaccine is no longer commercially available in the United States.

Smallpox

The Disease
Smallpox is a serious, contagious, and sometimes fatal infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. The name smallpox is derived from the Latin word for “spotted” and refers to the raised bumps that appear on the face and body of an infected person.

There are two clinical forms of smallpox. Variola major is the severe and most common form of smallpox, with a more extensive rash and higher fever. There are four types of variola major smallpox: ordinary (the most frequent type, accounting for 90% or more of cases); modified (mild and occurring in previously vaccinated persons); flat; and hemorrhagic (both rare and very severe). Historically, variola major has an overall fatality rate of about 30%; however, flat and hemorrhagic smallpox usually are fatal. Variola minor is a less common presentation of smallpox, and a much less severe disease, with death rates historically of 1% or less.

Smallpox outbreaks have occurred from time to time for thousands of years, but the disease is now eradicated after a successful worldwide vaccination program. The last case of smallpox in
the United States was in 1949. The last naturally occurring case in the world was in Somalia in 1977. After the disease was eliminated from the world, routine vaccination against smallpox among the general public was stopped because it was no longer necessary for prevention.

**Where Smallpox Comes From**
Smallpox is caused by the variola virus that emerged in human populations thousands of years ago. Except for laboratory stockpiles, the variola virus has been eliminated. However, in the aftermath of the events of September and October, 2001, there is heightened concern that the variola virus might be used as an agent of bioterrorism. For this reason, the U.S. government is taking precautions for dealing with a smallpox outbreak.

**Transmission**
Generally, direct and fairly prolonged face-to-face contact is required to spread smallpox from one person to another. Smallpox also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Rarely, smallpox has been spread by virus carried in the air in enclosed settings such as buildings, buses, and trains. Humans are the only natural hosts of variola. Smallpox is not known to be transmitted by insects or animals.

A person with smallpox is sometimes contagious with onset of fever (prodrome phase), but the person becomes most contagious with the onset of rash. At this stage the infected person is usually very sick and not able to move around in the community. The infected person is contagious until the last smallpox scab falls off.
<table>
<thead>
<tr>
<th><strong>Smallpox Disease</strong></th>
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<tbody>
<tr>
<td><strong>Incubation Period</strong></td>
</tr>
<tr>
<td><strong>(Duration: 7 to 17 days)</strong></td>
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<tr>
<td><strong>Not contagious</strong></td>
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<tr>
<td>Exposure to the virus is followed by an incubation period during which people do not have any symptoms and may feel fine. This incubation period averages about 12 to 14 days but can range from 7 to 17 days. During this time, people are not contagious.</td>
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<tr>
<td><strong>Initial Symptoms</strong></td>
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<tr>
<td><strong>(Prodrome)</strong></td>
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<td><strong>(Duration: 2 to 4 days)</strong></td>
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<tr>
<td><strong>Sometimes contagious</strong>*</td>
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<td>The first symptoms of smallpox include fever, malaise, head and body aches, and sometimes vomiting. The fever is usually high, in the range of 101 to 104 degrees Fahrenheit. At this time, people are usually too sick to carry on their normal activities. This is called the <em>prodrome</em> phase and may last for 2 to 4 days.</td>
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<tr>
<td><strong>Early Rash</strong></td>
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<td><strong>(Duration: about 4 days)</strong></td>
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<tr>
<td><strong>Most contagious</strong></td>
</tr>
<tr>
<td>A rash emerges first as small red spots on the tongue and in the mouth. These spots develop into sores that break open and spread large amounts of the virus into the mouth and throat. At this time, the person becomes most contagious. Around the time the sores in the mouth break down, a rash appears on the skin, starting on the face and spreading to the arms and legs and then to the hands and feet. Usually the rash spreads to all parts of the body within 24 hours. As the rash appears, the fever usually falls and the person may start to feel better. By the third day of the rash, the rash becomes raised bumps. By the fourth day, the bumps fill with a thick, opaque fluid and often have a depression in the center that looks like a bellybutton. (This is a major distinguishing characteristic of smallpox.) Fever often will rise again at this time and remain high until scabs form over the bumps.</td>
</tr>
<tr>
<td><strong>Pustular Rash</strong></td>
</tr>
<tr>
<td><strong>(Duration: about 5 days)</strong></td>
</tr>
<tr>
<td><strong>Contagious</strong></td>
</tr>
<tr>
<td>The bumps become pustules—sharply raised, usually round and firm to the touch as if there’s a small round object under the skin. People often say the bumps feel like BB pellets embedded in the skin.</td>
</tr>
<tr>
<td><strong>Pustules and Scabs</strong></td>
</tr>
<tr>
<td><strong>(Duration: about 5 days)</strong></td>
</tr>
<tr>
<td><strong>Contagious</strong></td>
</tr>
<tr>
<td>The pustules begin to form a crust and then scab. By the end of the second week after the rash appears, most of the sores have scabbed over.</td>
</tr>
<tr>
<td><strong>Resolving Scabs</strong></td>
</tr>
<tr>
<td><strong>(Duration: about 6 days)</strong></td>
</tr>
<tr>
<td><strong>Contagious</strong></td>
</tr>
<tr>
<td>The scabs begin to fall off, leaving marks on the skin that eventually become pitted scars. Most scabs will have fallen off three weeks after the rash appears. The person is contagious to others until all of the scabs have fallen off.</td>
</tr>
<tr>
<td><strong>Scabs resolved</strong></td>
</tr>
<tr>
<td><strong>Not contagious</strong></td>
</tr>
<tr>
<td>Scabs have fallen off. Person is no longer contagious.</td>
</tr>
</tbody>
</table>

***Smallpox may be contagious during the *prodrome* phase, but is most infectious during the first 7 to 10 days following rash onset***
Yellow Fever

(From http://www.cdc.gov/ncidod/dvbid/yellowfever/index.htm)

**Disease Information**

Yellow fever occurs only in Africa and South America. In South America sporadic infections occur almost exclusively in forestry and agricultural workers from occupational exposure in or near forests.

In Africa the virus is transmitted in three geographic regions:

- Principally and foremost, in the moist savanna zones of West and Central Africa during the rainy season,
- Secondly, outbreaks occur occasionally in urban locations and villages in Africa, and
- Finally, to a lesser extent, in jungle regions.

Yellow fever is a viral disease transmitted between humans by a mosquito. Yellow fever is a very rare cause of illness in travelers, but most countries have regulations and requirements for yellow fever vaccination that must be met prior to entering the country. General precautions to avoid mosquito bites should be followed. These include the use of insect repellent, protective clothing, and mosquito netting. Yellow fever vaccine is a live virus vaccine which has been used for several decades. A single dose confers immunity lasting 10 years or more. If a person is at continued risk of yellow fever infection, a booster dose is needed every 10 years. Adults and children over 9 months can take this vaccine. Administration of immune globulin does not interfere with the antibody response to yellow fever vaccine.

This vaccine is only administered at designated yellow fever vaccination centers; the locations of which can usually be given by your local health department. Information regarding registered yellow fever vaccination sites can be viewed at the CDC Travelers' Health Yellow Fever website.

**Note:** Vaccination recommendations have recently changed (MMWR Nov. 8, 2002). In addition, there have been recent reports documenting patients between 1996 and 2001 who developed severe illness potentially related to yellow fever vaccination.

**Who Should Not Receive the Yellow Fever Vaccine?**

Yellow fever vaccine generally has few side effects; fewer than 5% of vaccinees develop mild headache, muscle pain, or other minor symptoms 5 to 10 days after vaccination. Under almost all circumstances, there are four groups of people who should not receive the vaccine unless the risk of yellow fever disease exceeds the small risk associated with the vaccine. These people should obtain either a waiver letter prior to travel or delay travel to an area with active yellow fever transmission:

- Yellow fever vaccine should never be given to infants under 6 months of age due to a risk of viral encephalitis developing in the child. In most cases, vaccination should be deferred until the child is 9 to 12 months of age.
- Pregnant women should not be vaccinated because of a theoretical risk that the developing fetus may become infected from the vaccine.
- Persons hypersensitive to eggs should not receive the vaccine because it is prepared in embryonated eggs. If vaccination of a traveler with a questionable history of egg
hypersensitivity is considered essential, an intradermal test dose may be administered under close medical supervision. (Notify your doctor prior to vaccination if you think that you may be allergic to the vaccine or to egg products.)

- Persons with an immunosuppressed condition associated with AIDS or HIV infection, or those whose immune system has been altered by either diseases such as leukemia and lymphoma or through drugs and radiation should not receive the vaccine. People with asymptomatic HIV infection may be vaccinated if exposure to yellow fever cannot be avoided.

If you have one of these conditions, your doctor will be able to help you decide whether you should be vaccinated, delay your travel, or obtain a waiver. In all cases, the decision to immunize an infant between 6 and 9 months of age, a pregnant woman, or an immunocompromised patient should be made on an individual basis. The physician should weigh the risks of exposure and contracting the disease against the risks of immunization, and possibly consider alternative means of protection.

Medical Waivers
Most countries will accept a medical waiver for persons with a medical reason for not receiving the vaccination. CDC recommends obtaining written waivers from consular or embassy officials before departure. Travelers should contact the embassy or consulate for specific advice. Typically, a physician's letter stating the reason for withholding the vaccination and written on letterhead stationery is required by the embassy or consulate. The letter should bear the stamp used by a health department or official immunization center to validate the International Certificate of Vaccination.

Yellow fever vaccination requirements and recommendations for specific countries are available from the CDC Travelers' Health page.

Viral Hemorrhagic Fevers
(From http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/vhf.htm)

What are viral hemorrhagic fevers?
Viral hemorrhagic fevers (VHFs) refer to a group of illnesses that are caused by several distinct families of viruses. In general, the term "viral hemorrhagic fever" is used to describe a severe multi-system syndrome (multi-system in that multiple organ systems in the body are affected). Characteristically, the overall vascular system is damaged, and the body's ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhage (bleeding); however, the bleeding is itself rarely life-threatening. While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening disease.

How are hemorrhagic fever viruses grouped?
VHFs are caused by viruses of four distinct families: arenaviruses, filoviruses, bunyaviruses, and flaviviruses. Each of these families share a number of features:

- They are all RNA viruses, and all are covered, or enveloped, in a fatty (lipid) coating.
- Their survival is dependent on an animal or insect host, called the natural reservoir.
- The viruses are geographically restricted to the areas where their host species live.
Humans are not the natural reservoir for any of these viruses. Humans are infected when they come into contact with infected hosts. However, with some viruses, after the accidental transmission from the host, humans can transmit the virus to one another. Human cases or outbreaks of hemorrhagic fevers caused by these viruses occur sporadically and irregularly. The occurrence of outbreaks cannot be easily predicted. With a few noteworthy exceptions, there is no cure or established drug treatment for VHF.

In rare cases, other viral and bacterial infections can cause a hemorrhagic fever; scrub typhus is a good example.

**What carries viruses that cause viral hemorrhagic fevers?**
Viruses associated with most VHF are zoonotic. This means that these viruses naturally reside in an animal reservoir host or arthropod vector. They are totally dependent on their hosts for replication and overall survival. For the most part, rodents and arthropods are the main reservoirs for viruses causing VHF. The multimammate rat, cotton rat, deer mouse, house mouse, and other field rodents are examples of reservoir hosts. Arthropod ticks and mosquitoes serve as vectors for some of the illnesses. However, the hosts of some viruses remain unknown -- Ebola and Marburg viruses are well-known examples.

**Where are cases of viral hemorrhagic fever found?**
Taken together, the viruses that cause VHF are distributed over much of the globe. However, because each virus is associated with one or more particular host species, the virus and the disease it causes are usually seen only where the host species live(s). Some hosts, such as the rodent species carrying several of the New World arenaviruses, live in geographically restricted areas. Therefore, the risk of getting VHF caused by these viruses is restricted to those areas. Other hosts range over continents, such as the rodents that carry viruses which cause various forms of hantavirus pulmonary syndrome (HPS) in North and South America, or the different set of rodents that carry viruses which cause hemorrhagic fever with renal syndrome (HFRS) in Europe and Asia. A few hosts are distributed nearly worldwide, such as the common rat. It can carry Seoul virus, a cause of HFRS; therefore, humans can get HFRS anywhere where the common rat is found.

While people usually become infected only in areas where the host lives, occasionally people become infected by a host that has been exported from its native habitat. For example, the first outbreaks of Marburg hemorrhagic fever, in Marburg and Frankfurt, Germany, and in Yugoslavia, occurred when laboratory workers handled imported monkeys infected with Marburg virus. Occasionally, a person becomes infected in an area where the virus occurs naturally and then travels elsewhere. If the virus is a type that can be transmitted further by person-to-person contact, the traveler could infect other people. For instance, in 1996, a medical professional treating patients with Ebola hemorrhagic fever (Ebola HF) in Gabon unknowingly became infected. When he later traveled to South Africa and was treated for Ebola HF in a hospital, the virus was transmitted to a nurse. She became ill and died. Because more and more people travel each year, outbreaks of these diseases are becoming an increasing threat in places where they rarely, if ever, have been seen before.

**How are hemorrhagic fever viruses transmitted?**
Viruses causing hemorrhagic fever are initially transmitted to humans when the activities of infected reservoir hosts or vectors and humans overlap. The viruses carried in rodent reservoirs are transmitted when humans have contact with urine, fecal matter, saliva, or other body excretions from infected rodents. The viruses associated with arthropod vectors are spread...
most often when the vector mosquito or tick bites a human, or when a human crushes a tick. However, some of these vectors may spread virus to animals, livestock, for example. Humans then become infected when they care for or slaughter the animals.

Some viruses that cause hemorrhagic fever can spread from one person to another, once an initial person has become infected. Ebola, Marburg, Lassa and Crimean-Congo hemorrhagic fever viruses are examples. This type of secondary transmission of the virus can occur directly, through close contact with infected people or their body fluids. It can also occur indirectly, through contact with objects contaminated with infected body fluids. For example, contaminated syringes and needles have played an important role in spreading infection in outbreaks of Ebola hemorrhagic fever and Lassa fever.

**What are the symptoms of viral hemorrhagic fever illnesses?**

Specific signs and symptoms vary by the type of VHF, but initial signs and symptoms often include marked fever, fatigue, dizziness, muscle aches, loss of strength, and exhaustion. Patients with severe cases of VHF often show signs of bleeding under the skin, in internal organs, or from body orifices like the mouth, eyes, or ears. However, although they may bleed from many sites around the body, patients rarely die because of blood loss. Severely ill patient cases may also show shock, nervous system malfunction, coma, delirium, and seizures. Some types of VHF are associated with renal (kidney) failure.

**How are patients with viral hemorrhagic fever treated?**

Patients receive supportive therapy, but generally speaking, there is no other treatment or established cure for VHF. Ribavirin, an anti-viral drug, has been effective in treating some individuals with Lassa fever or HFRS. Treatment with convalescent-phase plasma has been used with success in some patients with Argentine hemorrhagic fever.

**How can cases of viral hemorrhagic fever be prevented and controlled?**

With the exception of yellow fever and Argentine hemorrhagic fever, for which vaccines have been developed, no vaccines exist that can protect against these diseases. Therefore, prevention efforts must concentrate on avoiding contact with host species. If prevention methods fail and a case of VHF does occur, efforts should focus on preventing further transmission from person to person, if the virus can be transmitted in this way. Because many of the hosts that carry hemorrhagic fever viruses are rodents, disease prevention efforts include:

- Controlling rodent populations;
- Discouraging rodents from entering or living in homes or workplaces; and
- Encouraging safe cleanup of rodent nests and droppings.

For hemorrhagic fever viruses spread by arthropod vectors, prevention efforts often focus on community-wide insect and arthropod control. In addition, people are encouraged to use insect repellant, proper clothing, bednets, window screens, and other insect barriers to avoid being bitten.

For those hemorrhagic fever viruses that can be transmitted from one person to another, avoiding close physical contact with infected people and their body fluids is the most important way of controlling the spread of disease. Barrier nursing or infection control techniques include isolating infected individuals and wearing protective clothing. Other infection control recommendations include proper use, disinfection, and disposal of instruments and equipment used in treating or caring for patients with VHF, such as needles and thermometers.
In conjunction with the World Health Organization, CDC has developed practical, hospital-based guidelines titled “Infection Control for Viral Haemorrhagic Fevers In the African Health Care Setting.” The manual can help healthcare facilities recognize cases and prevent further hospital-based disease transmission using locally available materials and few financial resources.

**Severe Acute Respiratory Syndrome (SARS)**

(From [http://www.cdc.gov/ncidod/sars/factsheet.htm](http://www.cdc.gov/ncidod/sars/factsheet.htm))

**SARS**

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. This fact sheet gives basic information about the illness and what CDC has done to control SARS in the United States.

**The SARS Outbreak of 2003**

According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died. In the United States, only eight people had laboratory evidence of SARS-CoV infection. All of these people had traveled to other parts of the world with SARS. SARS did not spread more widely in the community in the United States.

**Symptoms of SARS**

In general, SARS begins with a high fever (temperature greater than 100.4°F [>38.0°C]). Other symptoms may include headache, an overall feeling of discomfort, and body aches. Some people also have mild respiratory symptoms at the outset. About 10 percent to 20 percent of patients have diarrhea. After 2 to 7 days, SARS patients may develop a dry cough. Most patients develop pneumonia.

**How SARS Spreads**

The main way that SARS seems to spread is by close person-to-person contact. The virus that causes SARS is thought to be transmitted most readily by respiratory droplets (droplet spread) produced when an infected person coughs or sneezes. Droplet spread can happen when droplets from the cough or sneeze of an infected person are propelled a short distance (generally up to 3 feet) through the air and deposited on the mucous membranes of the mouth, nose, or eyes of persons who are nearby. The virus also can spread when a person touches a surface or object contaminated with infectious droplets and then touches his or her mouth, nose, or eye(s). In addition, it is possible that the SARS virus might spread more broadly through the air (airborne spread) or by other ways that are not now known.

**What Does “Close Contact” Mean?**

In the context of SARS, close contact means having cared for or lived with someone with SARS or having direct contact with respiratory secretions or body fluids of a patient with SARS. Examples of close contact include kissing or hugging, sharing eating or drinking utensils, talking to someone within 3 feet, and touching someone directly. Close contact does not include activities like walking by a person or briefly sitting across a waiting room or office.
**CDC Response to SARS During the 2003 Outbreak**

CDC worked closely with WHO and other partners in a global effort to address the SARS outbreak of 2003. For its part, CDC took the following actions:

- Activated its Emergency Operations Center to provide round-the-clock coordination and response.
- Committed more than 800 medical experts and support staff to work on the SARS response.
- Deployed medical officers, epidemiologists, and other specialists to assist with on-site investigations around the world.
- Provided assistance to state and local health departments in investigating possible cases of SARS in the United States.
- Conducted extensive laboratory testing of clinical specimens from SARS patients to identify the cause of the disease.
- Initiated a system for distributing health alert notices to travelers who may have been exposed to cases of SARS.

**What CDC is Doing Now**

CDC continues to work with other federal agencies, state and local health departments, and healthcare organizations to plan for rapid recognition and response if person-to-person transmission of SARS-CoV recurs. CDC has developed recommendations and guidelines to help public health and healthcare officials plan for and respond quickly to the reappearance of SARS in a healthcare facility or community. These are available in the document *Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS)*. CDC provides the latest information on SARS on the [SARS website](http://www.cdc.gov/).  

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**Influenza***

(*Caused by novel or re-emergent influenza viruses that are causing, or have the potential to cause, a pandemic. From [http://www.cdc.gov/flu/pandemic.htm](http://www.cdc.gov/flu/pandemic.htm)*

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**Pandemic Influenza**

**Pandemic: A Worldwide Outbreak of Influenza**

An influenza pandemic is a global outbreak of disease that occurs when a new influenza A virus appears or “emerges” in the human population, causes serious illness, and then spreads easily from person to person worldwide. Pandemics are different from seasonal outbreaks or “epidemics” of influenza. Seasonal outbreaks are caused by subtypes of influenza viruses that already circulate among people, whereas pandemic outbreaks are caused by new subtypes, by subtypes that have never circulated among people, or by subtypes that have not circulated among people for a long time. Past influenza pandemics have led to high levels of illness, death, social disruption, and economic loss.

**Appearance (Emergence) of Pandemic Influenza Viruses**

There are many different subtypes of Influenza or “flu” viruses. The subtypes differ based upon certain proteins on the surface of the virus (the hemagglutinin or “HA” protein and the neuraminidase or the “NA” protein).
Pandemic viruses emerge as a result of a process called "antigenic shift," which causes an abrupt or sudden, major change in influenza A viruses. These changes are caused by new combinations of the HA and NA proteins on the surface of the virus. Changes result in a new influenza A virus subtype. The appearance of a new influenza A virus subtype is the first step toward a pandemic; however, to cause a pandemic, the new virus subtype also must have the capacity to spread easily from person to person. Once a new pandemic influenza virus emerges and spreads, it usually becomes established among people and moves around or "circulates" for many years as seasonal epidemics of influenza. The U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) have large surveillance programs to monitor and detect influenza activity around the world, including the emergence of possible pandemic strains of influenza virus.

**WHO Phases of a Pandemic**

WHO has developed a global influenza preparedness plan, which defines the phases of a pandemic, outlines the role of WHO, and makes recommendations for national measures before and during a pandemic. The phases are:

**Interpandemic Period**

**Phase 1:** No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.

**Phase 2:** No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.

**Pandemic Alert Period**

**Phase 3:** Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.

**Phase 4:** Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.

**Phase 5:** Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans but may not yet be fully transmissible (substantial pandemic risk).

**Pandemic Period**

**Phase 6:** Pandemic: increased and sustained transmission in general population.

Notes:

- The distinction between **Phases 1** and **2** is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localized or widespread, and other scientific parameters.
- The distinction among Phases 3, 4, and 5 is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains (if derived from an animal strain), and other scientific parameters.

### U.S. Government Stages of a Pandemic

The WHO phases provide succinct statements about the global risk for a pandemic and provide benchmarks against which to measure global response capabilities. In order to describe the U.S. government approach to the pandemic response, however, it is more useful to characterize the stages of an outbreak in terms of the immediate and specific threat a pandemic virus poses to the U.S. population. The following stages provide a framework for Federal Government actions:

- **Stage 0**: New Domestic Animal Outbreak in Previously Unaffected Country (WHO Phase 3)
- **Stage 1**: Suspected Human Outbreak Overseas (WHO Phase 3)
- **Stage 2**: Confirmed Human Outbreak Overseas (WHO Phase 4 or 5)
- **Stage 3**: Widespread Human Outbreaks in Multiple Locations Overseas (WHO Phase 6)
- **Stage 4**: First Human Case in North America (WHO Phase 6)
- **Stage 5**: Spread throughout United States (WHO Phase 6)
- **Stage 6**: Recovery and Preparation for Subsequent Waves (WHO Phase 6 or 5)

### Vaccines to Protect Against Pandemic Influenza Viruses

A vaccine probably would not be available in the early stages of a pandemic. When a new vaccine against an influenza virus is being developed, scientists around the world work together to select the virus strain that will offer the best protection against that virus. Manufacturers then use the selected strain to develop a vaccine. Once a potential pandemic strain of influenza virus is identified, it takes several months before a vaccine will be widely available. If a pandemic occurs, the U.S. government will work with many partner groups to make recommendations guiding the early use of available vaccine.

### Antiviral Medications to Prevent and Treat Pandemic Influenza

Four different influenza antiviral medications (amantadine, rimantadine, oseltamivir, and zanamivir) are approved by the U.S. Food and Drug Administration (FDA) for the treatment and prevention of influenza. All four usually work against influenza A viruses. However, the drugs may not always work, because influenza virus strains can become resistant to one or more of these medications. For example, the influenza A (H5N1) viruses identified in human in Asia in 2004 and 2005 have been resistant to amantadine and rimantadine. Monitoring of avian viruses for resistance to influenza antiviral medications continues.

### Preparing for the Next Pandemic

Many scientists believe it is only a matter of time until the next influenza pandemic occurs. The severity of the next pandemic cannot be predicted, but modeling studies suggest that the impact
of a pandemic on the United States could be substantial. In the absence of any control measures (vaccination or drugs), it has been estimated that in the United States a “medium–level” pandemic could cause 89,000 to 207,000 deaths, 314,000 and 734,000 hospitalizations, 18 to 42 million outpatient visits, and another 20 to 47 million people being sick. Between 15% and 35% of the U.S. population could be affected by an influenza pandemic, and the economic impact could range between $71.3 and $166.5 billion.

Influenza pandemics are different from many of the threats for which public health and healthcare systems are currently planning:

- A pandemic will last much longer than most public health emergencies and may include “waves” of influenza activity separated by months (in 20th century pandemics, a second wave of influenza activity occurred 3 to 12 months after the first wave).
- The numbers of healthcare workers and first responders available to work can be expected to be reduced. They will be at high risk of illness through exposure in the community and in healthcare settings, and some may have to miss work to care for ill family members.
- Resources in many locations could be limited, depending on the severity and spread of an influenza pandemic.

Because of these differences and the expected size of an influenza pandemic, it is important to plan preparedness activities that will permit a prompt and effective public health response. The U.S. Department of Health and Human Services (HHS) supports pandemic influenza activities in the areas of surveillance (detection), vaccine development and production, strategic stockpiling of antiviral medications, research, and risk communications. In May 2005, the U.S. Secretary of HHS created a multi-agency National Influenza Pandemic Preparedness and Response Task Group. This unified initiative involves CDC and many other agencies (international, national, state, local and private) in planning for a potential pandemic. HHS has worked with organizations and professional associations at international, federal, state, and local levels to develop a comprehensive Pandemic Influenza Plan in conjunction with the President’s National Strategy for Pandemic Influenza.

**Avian Influenza**


**Avian Influenza In Birds**

Avian influenza is an infection caused by avian (bird) influenza (flu) viruses. These influenza viruses occur naturally among birds. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, avian influenza is very contagious among birds and can make some domesticated birds, including chickens, ducks, and turkeys, very sick and kill them.

Infected birds shed influenza virus in their saliva, nasal secretions, and feces. Susceptible birds become infected when they have contact with contaminated secretions or excretions or with surfaces that are contaminated with secretions or excretions from infected birds. Domesticated birds may become infected with avian influenza virus through direct contact with infected waterfowl or other infected poultry, or through contact with surfaces (such as dirt or cages) or materials (such as water or feed) that have been contaminated with the virus.
Infection with avian influenza viruses in domestic poultry causes two main forms of disease that are distinguished by low and high extremes of virulence. The “low pathogenic” form may go undetected and usually causes only mild symptoms (such as ruffled feathers and a drop in egg production). However, the highly pathogenic form spreads more rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs and has a mortality rate that can reach 90-100% often within 48 hours.

**Human Infection With Avian Influenza Viruses**

There are many different subtypes of type A influenza viruses. These subtypes differ because of changes in certain proteins on the surface of the influenza A virus (hemagglutinin [HA] and neuraminidase [NA] proteins). There are 16 known HA subtypes and 9 known NA subtypes of influenza A viruses. Many different combinations of HA and NA proteins are possible. Each combination represents a different subtype. All known subtypes of influenza A viruses can be found in birds.

Usually, “avian influenza virus” refers to influenza A viruses found chiefly in birds, but infections with these viruses can occur in humans. The risk from avian influenza is generally low to most people, because the viruses do not usually infect humans. However, confirmed cases of human infection from several subtypes of avian influenza infection have been reported since 1997. Most cases of avian influenza infection in humans have resulted from contact with infected poultry (e.g., domesticated chicken, ducks, and turkeys) or surfaces contaminated with secretion/excretions from infected birds. The spread of avian influenza viruses from one ill person to another has been reported very rarely, and transmission has not been observed to continue beyond one person.

“Human influenza virus” usually refers to those subtypes that spread widely among humans. There are only three known A subtypes of influenza viruses (H1N1, H1N2, and H3N2) currently circulating among humans. It is likely that some genetic parts of current human influenza A viruses came from birds originally. Influenza A viruses are constantly changing, and they might adapt over time to infect and spread among humans.

During an outbreak of avian influenza among poultry, there is a possible risk to people who have contact with infected birds or surfaces that have been contaminated with secretions or excretions from infected birds.

Symptoms of avian influenza in humans have ranged from typical human influenza-like symptoms (e.g., fever, cough, sore throat, and muscle aches) to eye infections, pneumonia, severe respiratory diseases (such as acute respiratory distress), and other severe and life-threatening complications. The symptoms of avian influenza may depend on which virus caused the infection.

Studies done in laboratories suggest that some of the prescription medicines approved in the United States for human influenza viruses should work in treating avian influenza infection in humans. However, influenza viruses can become resistant to these drugs, so these medications may not always work. Additional studies are needed to demonstrate the effectiveness of these medicines.

**Avian Influenza A (H5N1)**

Influenza A (H5N1) virus – also called “H5N1 virus” – is an influenza A virus subtype that occurs mainly in birds, is highly contagious among birds, and can be deadly to them. H5N1 virus does
not usually infect people, but infections with these viruses have occurred in humans. Most of these cases have resulted from people having direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces.

**Avian Influenza A (H5N1) Outbreaks**

For current information about avian influenza A (H5N1) outbreaks, see our [Outbreaks](#) page.

**Human Health Risks During The H5N1 Outbreak**

Of the few avian influenza viruses that have crossed the species barrier to infect humans, H5N1 has caused the largest number of detected cases of severe disease and death in humans. In the current outbreaks in Asia and Europe more than half of those infected with the virus have died. Most cases have occurred in previously healthy children and young adults. However, it is possible that the only cases currently being reported are those in the most severely ill people, and that the full range of illness caused by the H5N1 virus has not yet been defined. For the most current information about avian influenza and cumulative case numbers, see the [World Health Organization (WHO) avian influenza website](#).

So far, the spread of H5N1 virus from person to person has been limited and has not continued beyond one person. Nonetheless, because all influenza viruses have the ability to change, scientists are concerned that H5N1 virus one day could be able to infect humans and spread easily from one person to another. Because these viruses do not commonly infect humans, there is little or no immune protection against them in the human population. If H5N1 virus were to gain the capacity to spread easily from person to person, an influenza pandemic (worldwide outbreak of disease) could begin. For more information about influenza pandemics, see the [CDC Pandemic Influenza website](#) and [PandemicFlu.gov](#).

No one can predict when a pandemic might occur. However, experts from around the world are watching the H5N1 situation in Asia and Europe very closely and are preparing for the possibility that the virus may begin to spread more easily and widely from person to person.

**Treatment And Vaccination For H5N1 Virus In Humans**

The H5N1 virus that has caused human illness and death in Asia is resistant to amantadine and rimantadine, two antiviral medications commonly used for influenza. Two other antiviral medications, oseltamivir and zanamavir, would probably work to treat influenza caused by H5N1 virus, but additional studies still need to be done to demonstrate their effectiveness.

There currently is no commercially available vaccine to protect humans against H5N1 virus that is being seen in Asia and Europe. However, vaccine development efforts are taking place. Research studies to test a vaccine to protect humans against H5N1 virus began in April 2005, and a series of clinical trials is under way. For more information about H5N1 vaccine development process, visit the [National Institutes of Health website](#).

**What Changes Are Needed For H5N1 Or Another Avian Influenza Virus To Cause A Pandemic?**

Three conditions must be met for a pandemic to start:

1. A new influenza virus subtype must emerge;
2. It must infect humans and causes serious illness; and
3. It must spread easily and sustainedly (continue without interruption) among humans.
The H5N1 virus in Asia and Europe meets the first two conditions: it is a new virus for humans (H5N1 viruses have never circulated widely among people), and it has infected more than 100 humans, killing over half of them.

However, the third condition, the establishment of efficient and sustained human-to-human transmission of the virus, has not occurred. For this to take place, the H5N1 virus would have to change in such a way that it could spread more easily among humans. This could occur either by “reassortment” or adaptive mutation.

Reassortment occurs when genetic material is exchanged between human and avian viruses during co-infection (infection with both viruses at the same time) of a human or pig. The result could be a fully transmissible pandemic virus—that is, a virus that can spread easily and directly to humans. A more gradual process is adaptive mutation, where the capability of a virus to bind to human cells increases during infections of humans.

**What is CDC doing to prepare for a possible H5N1 flu pandemic?**

CDC is taking part in a number of pandemic prevention and preparedness activities, including:

- Providing leadership to the National Pandemic Influenza Preparedness and Response Task Force, created in May 2005 by the Secretary of the U.S. Department of Health and Human Services.
- Working with the Association of Public Health Laboratories on training workshops for state laboratories on the use of special laboratory (molecular) techniques to identify H5 viruses.
- Working with the Council of State and Territorial Epidemiologists and others to help states with their pandemic planning efforts.
- Working with other agencies such as the Department of Defense and the Veterans Administration on antiviral stockpile issues.
- Working with the World Health Organization (WHO) to investigate influenza H5N1 among people (e.g., in Vietnam) and to provide help in laboratory diagnostics and training to local authorities.
- Performing laboratory testing of H5N1 viruses.
- Starting a $5.5 million initiative to improve influenza surveillance in Asia.
- Holding or taking part in training sessions to improve local capacities to conduct surveillance for possible human cases of H5N1 and to detect influenza A H5 viruses by using laboratory techniques.
- Developing and distributing reagents kits to detect the currently circulating influenza A H5N1 viruses.

CDC also is working closely with the World Health Organization and the National Institutes of Health on safety testing of vaccine candidates and development of additional vaccine virus seed candidates for influenza A (H5N1) and other subtypes of influenza A viruses.
APPENDIX G

Airport Quarantine Plan Example
Special Needs Population Shelter/Alternate Care Facility

Due to the complexity of the sheltering and medical care issues, the quarantine facility will be designated a Special Needs Population Site (SNPS). Within the SNPS, an Alternate Care Facility (ACF) may be established. Division of Public Health (DPH) will provide oversight and logistical coordination of personnel and supplies and coordination of the medical care provided at the SNPS-ACF. DPH will coordinate with the Department of Human Resources (DHR) SNPS Director the medical oversight of the DHR SNPS-ACF. The Metropolitan Medical Strike Team (MMST) may assist DPH setup a 24 hour clinic, and if required/requested by the State Medical Epidemiologist (SME) or Director DPH, an inpatient ward.

Staffing for the clinic may be available through a Georgia Disaster Medical Assistance Team (DMAT), augmented by the MMST, Georgia Nurse Alert System (GNAS) and/or other resources through DPH and Georgia Emergency Management Agency (GEMA). The senior medical provider or designee will liaise with South Fulton Medical Center, Southern Regional Medical Center, Children’s Healthcare of Atlanta and/or other pediatric MTF concerning those patients transferred to those hospitals.

The State Public Health Laboratory (PHL) will assist the ACF medical staff with appropriate resources to provide basic laboratory testing. Testing will be coordinated between the senior medical provider and the Director PHL.

DPH Office of Pharmacy may assist the MMST and DMAT with pharmaceutical supply issues. GEMA and the federal Department of Homeland Security’s Emergency Coordinators (ECs) may assist with obtaining supplies not available through the DPH Office of Pharmacy system.

Radiological services will be coordinated with the Primary and Secondary Medical Treatment Facilities (MTFs), if the service is not available through the MMST or DMAT. The MMST and/or DMAT may have to request radiological assistance through the DPH to GEMA to the federal Department of Homeland Security (DHS)-EC Office.

DHR Emergency Management (EM) will also provide personnel assistance as needed (time cards, over time authorization assistance, etc), and assist as needed in SNPS operations.

A DHD Bioterrorism/Emergency Coordinator (BT/EC) may assist the DHD with oversight of the SNPS-ACF with the DHR DFCS staff; may assist in the SNPS Emergency Operations Center (EOC); and coordinate as required with the Georgia Bureau of Investigation (GBI), Federal Bureau of Investigation (FBI), GEMA Public Affairs Officer (PAO), Director DPH, District Epidemiologists, District Public Information Officer/Risk Communication (PIO/RC), the DPH Emergency Preparedness Team (EPT) and District BT/EC.
DHR Division of Family and Children’s Services (DFCS) staff will provide the primary oversight of the setup, function and maintenance of the SNPS, as stated in the DHR “Care of Special Needs Population December 2002” Manual. DHR’s Director of SNPS will have operational oversight responsibility for the SNPS. Aircrew members can assist DFCS staff with passenger relations, control, as well as assist with the care and well being of the unaccompanied children.

DFCS will provide guidance for personnel to staff the SNPS, provide time sheets for the personnel, and provide other Human Resource/Personnel guidance to the staff, including volunteers. DFCS will coordinate all activities with ARC, DHR EM, DPH EPT, GEMA, and Airport Quarantine Station Office. DFCS personnel will also assist the American Red Cross (ARC) with the distribution of supplies and equipment received at the SNPS dock from ARC, GEMA and other sources.

Airport Special Needs Population Site (SNPS) Operations
DHR DFCS will provide a Director SNPS for the oversight of the operations and functions of the SNPS. The “Care of Special Needs Population, December 2002” Manual will be the operational guide for the staff. The SNPS will be established at the request of the Director of DPH, when it has been determined the aircraft passengers and crew members will require quarantine. Services will be provided by the various support agencies listed below.

The SNPS plan is complicated by potential international crew and passengers and those deemed a high risk under the FBI’s passenger classification system. If the quarantine is caused by a terrorist event, it may require a large number of people to be vaccinated/prophylaxed/treated (VPT), protecting the community at large from a communicable disease of Public Health concern, allowing the federal law enforcement agency in charge a more controlled environment to investigate passengers for a potential terrorist, plus many other aspects.

The SNPS should be a building located on the Airport grounds, allowing better security and ease of transporting the crewmembers and passengers. The current primary site is the former Northwest Airlines Hangar and the secondary site is the old Georgia International Convention Center. The Northwest Hangar is a 5 (five) story hangar, capable of providing space for the unique requirements of the SNPS. On the runway side, the hangar doors open, allowing the nose of a larger aircraft, such as a 747, 767 or 777 to enter the hangar. Having the passengers and crew enter from the runway side protects them from the media, which can locate on the opposite side on the access road. Due to the restricted air access of the airport, this will also limit the opportunity for the media to observe from the air. The passengers and crew will off load and in-process on the first floor. This allows the passengers and crew to be in a controlled access environment. Once in-processed, the passengers and crew will be escorted to the second floor, the “residents” area, via freight elevators. (THIS IS TENTATIVE AND MAY CHANGE. THEREFORE, THIS PLAN AND PARTICIPANTS MUST HAVE THE FLEXIBILITY TO LOCATE AND OPERATE IN A SITE OF OPPORTUNITY).

Personnel required to prepare and initially staff the SNPS will report within 90-120 minutes after alert. The SNPS will be prepared to in-process and house the aircraft crew and passengers within 2 (two) hours after the arrival of staff. In the interim, the crew and passengers will be held in a pre-designated, secluded and secured area until it is prepared. It is accepted not all of the volunteers to staff the SNPS may be pre-VPT. Therefore, they will be part of the group that will receive VPT in the initial hours of the set up. The airport will provide secured transportation to the SNPS when it is ready.
ARC, DFCS, GEMA and DPH will provide the SNPS support for the passengers and crew during their isolation/quarantine; assisting with feeding and clothing of the passengers and crew; assisting with family notification for those that are in quarantine; and assisting with any financial issues of the quarantined crew and passengers. ARC will help establish and maintain a small canteen. Luggage will be “matched” and distributed to the passengers and crew members after appropriate clearance by Customs and/or TSA. On board pets will be handled/coordinated through the Georgia Homeland Security (GHLS) or DPH Veterinarian liaison. DFCS will assist with manning the canteen, as the ARC personnel are not authorized in the area with biologically infected or potentially infected passengers and crew.

The “residents” area is a climate controlled large warehouse like area, with cubicles set up to accommodate up to 400 “residents” in an open, but semi-private environment. Cubicle arrangements will provide space for families, couples and singles (adult and teenager). Separate areas will be set up for unforeseen events requiring separation of specific populations. Appropriate arrangements will be made for the care and supervision of unaccompanied children under 18 years old, including accompanied and unaccompanied pets.

DHR DFCS will request GEMA provide certified law enforcement personnel to be stationed outside and inside the SNPS facility. Those law enforcement personnel stationed inside the SNPS will provide law enforcement against intrusion, protection of staff from passengers/crew members, passengers/crew members from violent passengers/crew members and other duties as requested from DHR DFCS and/or DPH.

There will be a 24 (twenty-four) hour dining facility. The staffing will be provided through GEMA. The menu will be as diverse as possible, to meet the needs of those with special medical diets, religious oriented diets and vegetarian diets. Though there will be a variety of non-alcoholic drinks provided.

Donated foods, supplies, clothing, equipment, etc will be managed and coordinated through GEMA.

An entertainment room will be set up by GEMA with a television, video cassette recorder (VCR) and possibly a digital video disc (DVD) player. A small stereo will be provided.

An internet cafe-like room will be provided by GEMA, at no cost to the passengers and crew. There will be an internet connections for those with their private computers. There will be community computers for those without their computers. Printers will be available. This will allow business people to continue their work, students maintain contact with their schools and the opportunity for the passengers and crew to keep in touch with their families and friends.

A communication room will be provided up by GEMA, with phones to accommodate the passengers and crew, including phone setups for the hearing impaired. Fax machines will be provided. There will be free long distance for those without the funds or ability to pay the long distance fees.

A room will be established so the media will have an opportunity to interview passengers, air crew members and SNPS- Alternate Care Center (ACC) staff.

Security (certified law enforcement officers) will be provided by GEMA. There will be stations at the front entry gate, front entrance, select areas of the SNPS, the entrance to the media center,
to name a few. A radio will always be kept in the SNPS EOC and the GEMA State Operations Center (SOC).

The SNPS EOC will be the administrative center for the SNPS. ARC, GEMA, DPH, CDC, DFCS, FBI, GBI will have stations with telephone and internet access. There will be additional stations set up as required. A dedicated line to the SOC will be provided.

The SNPS Administrative offices will be located in close proximity. This will be the office for the DHD and other SNPS-Alternate Care Facility (ACF) administrators as necessary.

A separate meeting room for SNPS staff will be provided for daily briefs, updates, dignitary visits and other administrative meetings as required.

An area for washing clothes will be provided through GEMA.

A religious area will be established for the passengers and crew to practice their religious beliefs. The area will accommodate services as provided in a protestant chapel, mosque, synagogue and other services as required/requested by the passengers.

A respite area for passengers and crew will be provided.

A separate respite area for the SNPS staff will be provided, including television and radio.

The SNPS staff will be provided a separate sleeping/living area. This will be important for those that receive their initial VPT or the environment is such that staff cannot leave for the duration of the quarantine or for extended times. Most likely, these areas will be cubicle-like areas with a cot and electrical outlets, affording minimal privacy. A separate shower and rest room facility will be established by GEMA, but the style is unknown (semi-private to dorm-like).

Housekeeping services will be provided through GEMA.

Intercom system will be established throughout the SNPS for announcements originating from the EOC.

A separate secured area will be provided for visitation between the passengers and crew and their immediate families. The room will be as comfortable as possible. There will be a solid plexiglass window separating the visitors from the passengers and crew. There will be adequate telephone-like systems for them to talk. There will be no access between the rooms; no physical contact between visitors and “residents”. There will be controlled and escorted access into both rooms, not allowing any physical contact between visitors and passengers and crew.

A recreational area will be provided, so the passengers and crew can play games such as basketball or to walk. A smoking area will be established. Separate areas will be established for the staff.

A children’s play room will be provided. A TV, games and other toys (age dependent) will be provided. There will be an adult attendant at all times in the room (this could be staffed or assigned by DFCS and supplemented by the aircrew).

The loading dock will be available for the SNPS staff 24 (twenty-four) hours a day. Access will be limited to staff only.
Media will be housed in a separate facility, but near the SNPS. Media will have limited escorted access to the passengers, crew and staff.

A credentialing system will be instituted and assigned badges will be prominently displayed at all times while on the SNPS grounds and in the SNPS facility:

- **Media** will be black on white with “MEDIA” and always escorted while in the SNPS and be limited to non-passenger/non-patient care areas unless appropriately VPT’d;
- **Logistics** will be white on black with “LOGISTICS” and limited to the dock area;
- **Medical** will be red on white with “MEDICAL” and access to all areas except tarmac and media center;
- **Administrative** will be yellow on light blue with “ADMIN” and access to all areas except clinic and ward;
- **EOC personnel** will be yellow on black with “EOC” and have access to all areas;
- **Security** will be green on tan with “SECURITY” and access to all areas.

Visitors to the ground/facility will initially be limited to the media, city/local/county/state/federal officials and authorized family. Escorts will be provided by administration and DPH PIO/RC.

**Alternate Care Center (ACC)**

This is defined as the area within the SNPS facility that cares for staff and “well” passengers/crew members requiring routine medical care as well as ill passengers/crew members. The primary role of the ACC is to provide primary medical care similar to a small outpatient clinic/urgent care clinic. Prescription medication dispensing, including refills, will be coordinated through the DPH Office of Pharmacy. Staffing suggestions are covered later in this document.

Ill passengers may be transported to a Medical Treatment Facility (MTF) if the required scope of care exceeds that of the clinic. Prior to transport, if medically possible, the SME should be consulted. Prior to transport, the receiving MTF will be contacted and briefed.

As the “situation” develops, or as required by the Director DPH, CDC, Homeland Security (HLS) (state or federal) or other authoritative agency/legislative body (state and/or federal), the ACC may be required to be staffed and equipped to provide inpatient care to passengers/crew members that are mildly to moderately ill. This inpatient set up should be adjacent to the medical clinic. The inpatient ACC should be expandable, accommodating all ill quarantined passengers/crew members and potentially staff.

Due to the austere setting, it would be ideal to not care for surgical patients or those patients requiring an Intensive Care Unit (ICU)-like environment. However, based on the communicability of the disease and/or agent, it may be for the good of the community outside of the SNPS to provide these services. The limitations of care have to evaluated and approved/waived by the Director Division of Public Health, DHR and DPH legal counsel, GA HLS, Governor, GA Hospital Association and/or other agencies as determined.

The legal issues would have to be pursued and handled at the highest levels of DHR and the Governor’s office.
The medical oversight, medical and nursing care will need to be performed by personnel accustomed to operating in an austere environment. Federal medical resources, including Department of Defense (DoD) and DMAT can be requested through the federal DHS ECs. DPH can contact the EC directly, but the official request would be sent to GEMA, who would coordinate the DHR request.

The in-patient ACC will be expandable, based on needs of those in the SNPS and the ability of the MTF’s to care for these patients, due to their contagiousness. Unless otherwise dictated by the number of ill passengers, crew members and even staff, the ACC inpatient unit should start with 10 (ten) medical “beds” (most likely cots). As the situation worsens, the number of beds will have to increase.

Staffing suggestions are based on the current military model for DoD, Modular Emergency Medical System (MEMS). It is recommended the patient be at least 2 (two) feet off of the floor and have up to 48 (forty eight) square feet of space around them. The MEMS model is based on a 50 (fifty) bed increments. Based on a 10 (ten) bed unit, with increments of 10 (ten), the following is recommended for staffing this ACF per 12 (twelve) hour shift:

- **One physician** (responsible for the outpatient and inpatient care)
- **One Physician's Assistant (PA) or Nurse Practitioner (NP)** (assist with the outpatient and inpatient care)
- **One Pharmacist** (responsible for the clinic and ACC; more would be assigned as the situation warrants)
- **Two nurses**; mix of Registered Nurses (RNs) and Licensed Practical Nurses (LPNs) (one RN to have oversight of the inpatient and outpatient care; one LPN to assist in the clinic if there is an inpatient component)
- **Two nursing assistants**
- **One medical unit secretary**
- **One housekeeper** (per 25 patients)

If patients have respiratory problems, requiring ventilation support, DPH will attempt to acquire ventilators through the Metropolitan Medical Response System (MMRS). If unsuccessful, the DPH will seek them through the DHS EC. Though the ECs are located in Atlanta and can be contacted directly, the request will need to be worked through GEMA and to FEMA.

Dependent upon the medical and Public Health situation in metro Atlanta, including the availability of hospital beds, many other services may not be available to those within the ACC. The Director DPH, the DHD in charge of the ACC and the senior physician will have to decide if and what other procedures and acuity of levels of patients should be cared for in the ACC. Some of the patient types include, but are not limited to invasive surgical procedures, obstetric patients, simple fractures, abdominal pain, dehydration, vascular collapse to name a few.

The supplies and personnel for this medical assistance may not currently be available in the metro Atlanta area. This would include bedding, nursing/medical supplies, ventilators, nursing/medical/laboratory specialist, to name a few.

Potentially infectious waste, linens, bedding, refuse care and disposal will need to be coordinated through the DPH Epidemiology and Environmental Health.
Additional medical assistance may be requested through the federal DHS ECs. This medical assistance might be performed by additional DMATs, medical teams from other hospitals, specialized military (state and federal) medical teams or assistance from other states.

Additional nursing support may be acquired through the DPH Office of Nursing’s GNAS. The MMST Administrator will provide regular updates to the designated DPH and District Health Directors (DHD) staff.

Mental Health teams may be required due to the stressful situation of quarantine and would be requested through both DHR EM and GEMA. The SNPS staff will work with Public Health, assessing and determining those passengers/aircrew members requiring intervention. It is advisable to have a member of each team be available for impromptu consultation by passengers/crew members. Mental Health members will provide seminars for the “residents” and staff, educating them in ways to help deal with their stressful environment. Very few of the passengers and crew should require routine mental health care. For those that will require this type of care, appropriate intervention services and counseling will be available through the DHR Mental Health Services.

All passengers and crew members that were patients and/or residents of the SNPS/ACF will be discharged per protocol in the SNP Manual. They will also be assigned a Public Health liaison, coordinating care and follow-up in their home town and/or their final destination.

*****

Acronyms/Abbreviations

ACC ................................................................. Alternate Care Center
ACF ................................................................. Alternate Care Facility
ARC ............................................................... American Red Cross
BT/EC ............................................................ Bioterrorism/Emergency Coordinator
DFCS ............................................................. Division of Family and Children Services
DHD ............................................................... District Health Directors
DHR .............................................................. Department of Human Resources
DHS .............................................................. Department of Homeland Security
DMAT ............................................................ Disaster Medical Assistance Team
DoD ............................................................... Department of Defense
DPH .............................................................. Division of Public Health
DVD ............................................................. Digital Video Disc
EC ............................................................... Emergency Coordinator
EM ............................................................... Emergency Management
EOC ............................................................. Emergency Operations Center
EPT ............................................................... Emergency Preparedness Team
APPENDIX H

Incident Command/Unified Command
Incident Command
[From the U.S. Department of Labor, Occupational Safety and Health Administration, http://www.osha.gov/SLTC/etools/ics/what_is_ics.html]

The ICS is a standardized on-scene incident management concept designed specifically to allow responders to adopt an integrated organizational structure equal to the complexity and demands of any single incident or multiple incidents without being hindered by jurisdictional boundaries.

In 1980, federal officials transitioned ICS into a national program called the National Interagency Incident Management System (NIIMS) (now known as the National Incident Management System [NIMS]), which became the basis of a response management system for all federal agencies with wildfire management responsibilities. Since then, many federal agencies have endorsed the use of ICS and several have mandated its use.

An ICS enables integrated communication and planning by establishing a manageable span of control. An ICS divides an emergency response into five manageable functions essential for emergency response operations: command, operations, planning, logistics, and finance and administration. Figure 1 (on the next page) shows a typical ICS structure.

The **Incident Commander** (IC) or the **Unified Command** (UC) is responsible for all aspects of the response, including developing incident objectives and managing all incident operations.

The IC is faced with many responsibilities when he/she arrives on scene. Unless specifically assigned to another member of the Command or General Staffs, these responsibilities remain with the IC. Some of the more complex responsibilities include:

- Establish immediate priorities especially the safety of responders, other emergency workers, bystanders, and people involved in the incident.
- Stabilize the incident by ensuring life safety and managing resources efficiently and cost effectively.
- Determine incident objectives and strategy to achieve the objectives.
- Establish and monitor incident organization.
• Approve the implementation of the written or oral Incident Action Plan (IAP).
• Ensure adequate health and safety measures are in place.

The Command Staff is responsible for public affairs, health and safety, and liaison activities within the incident command structure. The IC/UC remains responsible for these activities or may assign individuals to carry out these responsibilities and report directly to the IC/UC.

• The Information Officer's role is to develop and release information about the incident to the news media, incident personnel, and other appropriate agencies and organizations.
• The Liaison Officer's role is to serve as the point of contact for assisting and coordinating activities between the IC/UC and various agencies and groups. This may include Congressional personnel, local government officials, and criminal investigating organizations and investigators arriving on the scene.
• The Safety Officer's role is to develop and recommend measures to the IC/UC for assuring personnel health and safety and to assess and/or anticipate hazardous and unsafe situations. The Safety Officer also develops the Site Safety Plan, reviews the Incident Action Plan for safety implications, and provides timely, complete, specific, and accurate assessment of hazards and required controls.

The General Staff includes Operations, Planning, Logistics, and Finance/Administrative responsibilities. These responsibilities remain with the IC until they are assigned to another individual. When the Operations, Planning, Logistics or Finance/Administrative responsibilities are established as separate functions under the IC, they are managed by a section chief and can be supported by other functional units.

• The Operations Staff is responsible for all operations directly applicable to the primary mission of the response.
• The Planning Staff is responsible for collecting, evaluating, and disseminating the tactical information related to the incident, and for preparing and documenting IAPs.
• The Logistics Staff is responsible for providing facilities, services, and materials for the incident response.
• The Finance and Administrative Staff is responsible for all financial, administrative, and cost analysis aspects of the incident.

The following is a list of Command Staff and General Staff responsibilities that either the IC or UC of any response should perform or assign to appropriate members of the Command or General Staffs:

• Provide response direction;
• Coordinate effective communication;
• Coordinate resources;
• Establish incident priorities;
• Develop mutually agreed-upon incident objectives and approve response strategies;
• Assign objectives to the response structure;
• Review and approve IAPs;
Ensure integration of response organizations into the ICS/UC;
Establish protocols;
Ensure worker and public health and safety; and
Inform the media.

The modular organization of the ICS allows responders to scale their efforts and apply the parts of the ICS structure that best meet the demands of the incident. In other words, there are no hard and fast rules for when or how to expand the ICS organization. Many incidents will never require the activation of Planning, Logistics, or Finance/Administration Sections, while others will require some or all of them to be established. A major advantage of the ICS organization is the ability to fill only those parts of the organization that are required. For some incidents, and in some applications, only a few of the organization’s functional elements may be required. However, if there is a need to expand the organization, additional positions exist within the ICS framework to meet virtually any need.

For example, in responses involving responders from a single jurisdiction, the ICS establishes an organization for comprehensive response management. However, when an incident involves more than one agency or jurisdiction, responders can expand the ICS framework to address a multi-jurisdictional incident.

The roles of the ICS participants will also vary depending on the incident and may even vary during the same incident. Staffing considerations are based on the needs of the incident. The number of personnel and the organization structure are dependent on the size and complexity of the incident. There is no absolute standard to follow. However, large-scale incidents will usually require that each component, or section, is set up separately with different staff members managing each section. A basic operating guideline is that the Incident Commander is responsible for all activities until command authority is transferred to another person.

Another key aspect of an ICS that warrants mention is the development of an IAP. A planning cycle is typically established by the Incident Commander and Planning Section Chief, and an IAP is then developed by the Planning Section for the next operational period (usually 12- or 24-hours in length) and submitted to the Incident Commander for approval. Creation of a planning cycle and development of an IAP for a particular operational period help focus available resources on the highest priorities/incident objectives. The planning cycle, if properly practiced, brings together everyone’s input and identifies critical shortfalls that need to be addressed to carry out the Incident Commander’s objectives for that period.

Unified Command (UC)
(From U.S. Department of Labor, Occupational Safety and Health Administration, http://www.osha.gov/SLTC/etools/ics/what_is_uc.html.)

Although a single Incident Commander normally handles the command function, an ICS organization may be expanded into a Unified Command (UC). The UC is a structure that brings together the "Incident Commanders" of all major organizations involved in the incident in order to coordinate an effective response while at the same time carrying out their own jurisdictional responsibilities. The UC links the organizations responding to the incident and provides a forum for these entities to make consensus decisions. Under the UC, the various jurisdictions and/or agencies and non-government responders may blend together throughout the operation to create an integrated response team.
The UC is responsible for overall management of the incident. The UC directs incident activities, including development and implementation of overall objectives and strategies, and approves ordering and releasing of resources. Members of the UC work together to develop a common set of incident objectives and strategies, share information, maximize the use of available resources, and enhance the efficiency of the individual response organizations.

The UC may be used whenever multiple jurisdictions are involved in a response effort. These jurisdictions could be represented by:

- Geographic boundaries (such as two states, Indian Tribal Land);
- Governmental levels (such as local, state, federal);
- Functional responsibilities (such as fire fighting, oil spill, Emergency Medical Services (EMS));
- Statutory responsibilities (such as federal land or resource managers, responsible party under OPA or CERCLA); or
- Some combination of the above.

Actual UC makeup for a specific incident will be determined on a case-by-case basis taking into account: (1) the specifics of the incident; (2) determinations outlined in existing response plans; or (3) decisions reached during the initial meeting of the UC. The makeup of the UC may change as an incident progresses, in order to account for changes in the situation. The UC is a team effort, but to be effective, the number of personnel should be kept as small as possible.

Frequently, the first responders to arrive at the scene of an incident are emergency response personnel from local fire and police departments. The majority of local responders are familiar with National Interagency Incident Management System (NIIMS) ICS and are likely to establish one immediately. As local, state, federal, and private party responders arrive on-scene for multi-jurisdictional incidents, responders would integrate into the ICS organization and establish a UC to direct the expanded organization. Although the role of local and state responders can vary depending on state laws and practices, local responders will usually be part of the ICS/UC.

Members in the UC have decision-making authority for the response. To be considered for inclusion as a UC representative, the representative’s organization must:

- Have jurisdictional authority or functional responsibility under a law or ordinance for the incident;
- Have an area of responsibility that is affected by the incident or response operations;
- Be specifically charged with commanding, coordinating, or managing a major aspect of the response; and
- Have the resources to support participation in the response organization.

The addition of a UC to the ICS enables responders to carry out their own responsibilities while working cooperatively within one response management system. Under the National Contingency Plan (NCP), the UC may consist of a pre-designated On-Scene Coordinator (OSC), the state OSC, the Incident Commander for the Responsible Party (RP), and the local emergency response Incident Commander.

(The following page shows an example of an international airport UC structure.)
APPENDIX I

Abbreviations
APPENDIX J

Acknowledgements
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Federal Government

- Department of Energy
  - Oak Ridge Institute for Science and Education
- Department of Health and Human Services
  - CDC
    - Atlanta Quarantine Station
    - Boston Quarantine Station
    - Chicago Quarantine Station
    - Division of Global Migration and Quarantine
    - Division of Healthcare Quality Promotion
    - Honolulu Quarantine Station
    - Houston Quarantine Station
    - Los Angeles Quarantine Station
    - New York Quarantine Station
    - San Francisco Quarantine Station
    - Seattle Quarantine Station
    - Washington Quarantine Station
- Department of Homeland Security
  - Customs and Border Protection
  - Immigration and Customs Enforcement
  - Office of Policy Development
  - Transportation Security Administration
- Department of Justice
  - Federal Bureau of Investigation
- Department of Transportation
  - Federal Aviation Administration
  - Office of the Secretary of Transportation
State, Local and Territorial Governments

- California
  - Los Angeles Fire Department
  - California Department of Health
- Virginia
  - Fairfax County Attorney’s Office
- Washington
  - Washington Department of Health
- Guam Customs and Quarantine Agency

International

- Commission to Investigate the Introduction and Spread of SARS in Ontario and Toronto, Canada
- The Canadian Red Cross Society

United Nations

- International Civil Aviation Organization (ICAO)

Professional/Trade Organizations

- Airports Council International-North America (ACI-NA)
- Air Transport Association (ATA)
- Council of State and Territorial Epidemiologists (CSTE)
- International Air Transport Association (IATA)
- National Air Carrier Association (NACA)

Air Industry

- Airlines
  - Delta Airlines
  - Lufthansa
  - Northwest Airlines
  - United Airlines
- Airports
  - Atlanta Hartsfield Airport
  - Singapore Changi Airport (Taiwan)
- Lester B. Pearson International Airport (Toronto)
- Honolulu International Airport
- John F. Kennedy International Airport
- Seattle-Tacoma International Airport

- **Airport Operators**
  - Greater Toronto Airports Authority
  - Los Angeles World Airports
  - The Port Authority of New York and New Jersey
  - Miami-Dade Aviation Department (Florida)