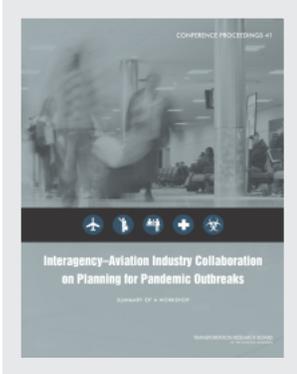


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Interagency–Aviation Industry Collaboration on Planning for Pandemic Outbreaks

Summary of a Workshop

KATHERINE F. TURNBULL, Texas Transportation Institute
Rapporteur

September 5–7, 2007
Washington, D.C.

Sponsored by
Airport Cooperative Research Program
Transportation Research Board

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

Washington, D.C.
2008
www.TRB.org

Transportation Research Board Conference Proceedings 41

ISSN 1073-1652

ISBN 978-0-309-11311-3

Subscriber Category

V aviation

Transportation Research Board publications are available by ordering individual publications directly from the TRB Business Office, through the Internet at www.TRB.org or national-academies.org/trb, or by annual subscription through organizational or individual affiliation with TRB. Affiliates and library subscribers are eligible for substantial discounts. For further information, contact the Transportation Research Board Business Office, 500 Fifth Street, NW, Washington, DC 20001 (telephone 202-334-3213; fax 202-334-2519; or e-mail TRBsales@nas.edu).

Printed in the United States of America.

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the project were chosen for their special competencies and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to the procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

This project was sponsored by the Transportation Research Board and the Airport Cooperative Research Program.

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Preface

In September 2007, approximately 70 people assembled in Washington, D.C., to participate in a workshop on Interagency–Aviation Industry Collaboration on Planning for Pandemic Outbreaks. The conference brought together individuals involved in planning and responding to pandemic events—from both the public sector (federal agencies and state and local agencies, including public airports) and the private sector (airlines and consultants with expertise in various facets of aviation).

The workshop goals were to examine (a) the action items included in the section on Transportation and Borders in the May 2006 National Pandemic Plan that directly or indirectly affect air transportation, (b) the current state of the practice for pandemic planning by airports and airlines, (c) coordination among various agencies and the aviation sector to implement these plans, and (d) potential areas for public–private sector cooperation in pandemic planning.

To plan the workshop, TRB assembled a committee appointed by the National Research Council to organize and develop the workshop program. Katherine B. Andrus of the Air Transport Association chaired the planning committee. Katherine Turnbull of the Texas Transportation Institute prepared this summary of the workshop.

The workshop program was designed to maximize the exchange of information and perspectives among the program participants. During the workshop, consecutive ses-

sions were organized on the major issues identified by the planning committee. Individuals invited to the workshop were asked to participate in sessions directly related to their area of expertise and professional responsibilities. The sessions were moderated to facilitate open discussion of the issues among all invited participants. This summary report is based on the moderated discussions that took place in each session on the workshop agenda.

This report was reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council’s Report Review Committee. The purposes of this independent review are to provide candid and critical comments that will assist the institution in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the project charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

TRB thanks the following individuals for reviewing this report: Katherine Andrus, Air Transport Association; Kathryn Maxwell, White House Homeland Security Council; and Bonnie Wilson, Jackson Municipal Airport Authority. Although these reviewers provided many constructive comments and suggestions, they did not see the final draft of the report before its release. The review of this report was overseen by C. Michael Walton, Ernest H.

Cockrell Centennial Chair in Engineering, University of Texas at Austin. Appointed by the National Research Council, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered.

The committee thanks Katherine Turnbull for her work in preparing this workshop summary report and extends special thanks to the Airport Cooperative Research Program Oversight Committee for providing funding support for the workshop along with the vision and encouragement that made the event the success that it was.

Overview

Over the course of the 3 days in September 2007 when this workshop took place, representatives from more than nine federal agencies, the airline and airport community, and several related associations representing numerous aviation interests provided their thoughts on pandemic planning in the United States as it relates to the aviation industry. At the beginning of the workshop, the chair of the workshop planning committee, Katherine Andrus of the Air Transport Association, provided background information to establish a common base for the discussion to take place during the workshop.

Ms. Andrus explained that aviation and public health draw a lot of media attention. Whether the risk is real or perceived, air travel has a role in spreading disease. Consequently, the industry is being asked to prepare for a possible event involving an as-yet-unknown disease that will come at some indefinite point in the future. The task is daunting, but there is a coordinated governmentwide effort, both domestically and internationally, to prepare an effective plan.

The U.S. government has issued a national strategic plan and a related implementation plan that includes three overarching goals: (a) stopping, slowing, or otherwise limiting the spread of a pandemic event to the United States; (b) limiting the spread of a pandemic event domestically; and (c) sustaining infrastructure and mitigating impacts to the economy. The aviation industry has a role to play in all three goals; however, sometimes these goals are in conflict, and what is needed to limit the spread of disease may affect the economic well-being of the aviation industry. This workshop was structured to

address these conflicting issues and concerns in the context of those parts of the plan that deal directly or indirectly with the aviation sector.

After this background discussion, officials from the various agencies and the airline and airport community briefly summarized their roles and responsibilities and current pandemic planning activities. These summaries were followed by detailed session discussions that expanded on their comments. Ken Staley of the White House Homeland Security Council was the first to speak; he explained that, in November 2005, the Homeland Security Council created a pandemic preparedness strategy followed by an implementation plan that was released in May 2006. This strategy represented the first time the federal government has committed the use of all instruments of national power against a potential disease.

The Council is also working with Canadian and Mexican partners on a North American Avian and Pandemic Influenza Plan that will create a perimeter to respond to a pandemic virus originating outside of North America. This perimeter will not be able to stop a pandemic illness from entering North America, but it may delay the arrival by a few days or weeks, allowing time to initiate appropriate measures against its spread. As part of this perimeter strategy, a community mitigation strategies concept is being discussed to focus on nonpharmaceutical interventions after identifying an individual with an infectious disease. This and the other elements of the plan will provide a broad policy framework for managing borders during a pandemic event.

Til Jolly of the Department of Homeland Security (DHS) next discussed the three major responsibilities

that organization has related to planning for pandemic events. DHS is responsible for responding to large-scale incidents of national significance, protecting the nation's infrastructure during a pandemic event, and protecting the country's borders. Most planning efforts to date have focused on addressing a pandemic event that begins in another part of the world as well as those events that are classified as most severe according to the recently completed community mitigation guidance's severity index.

Andrew Plummer of the Centers for Disease Control and Prevention (CDC) then discussed the role of the Division of Global Migration and Quarantine (DGMQ) and its interface with different aviation groups, including an agencywide pandemic flu scenario in which an after-action report is being used to assess how the various groups responded. In addition to this scenario, the DGMQ is focused on all-hazards planning through the development of table-top exercises at many of the quarantine stations throughout the country that allow all groups to work together in a coordinated manner. The DGMQ has also focused on improving data collection methods through the Quarantine Activity Reporting System, a secure web-based electronic system that enables quarantine stations to track ill passengers on inbound airlines and vessels and at land border crossings as well as infectious disease threats or actions related to imported pathogens. A software application known as E-manifest has also been implemented that will facilitate improved communication of relevant public health information with participating state health agencies, and the CDC website is available to communicate health information to travelers and the travel industry. The DGMQ is also planning a research study examining the potential use, effectiveness, and resource requirements of thermal scanning as part of the screening of domestic and international arriving and exiting passengers.

Kate Lang and Laura Valero from the FAA explained their role in leading all aviation-related tasks from the National Implementation Plan assigned to the U.S. Department of Transportation. The FAA has focused on internal business continuity planning and operational planning to ensure a viable aviation industry, which is critical to this country. It is examining the implementation and costs of possible solutions for air traffic control contingency plans as well as aviation safety inspector contingency plans to address anticipated employee absenteeism. As with the CDC, the FAA has conducted table-top exercises based on different scenarios and is working with the airport community to identify critical information needs such as staffing levels to maintain safe operating requirements, fuel availability, quarantine status, availability of on-site health personnel, and the status of the air carriers. The FAA has also taken the lead in developing an interagency aviation concept of operations to address coordinated responses to inbound air-

craft with sick passengers who may have pandemic flu or other contagious diseases and has contributed to other activities including developing the draft aircraft disinfection guidance, draft sector-specific guidelines, and stakeholder meetings.

Terry Lowe of US Airways summarized his company's activities related to pandemic planning. He indicated that an ad hoc group of airline representatives from various companies have been meeting regularly for the past year to address pandemic planning issues. Whereas individual airlines are developing their own plans and processes, this forum has given the airline community the opportunity to share information and discuss common issues. When US Airways' Occupational Safety and Health Group took the charge to develop a pandemic response plan, they quickly learned that a lot of information is available to them but that it is not always easy to determine what is valuable and useful. Through this exercise, they learned they were not prepared for high levels of absenteeism, which led to discussions on personnel needs to maintain a viable airline; they examined the need for essential supplies and have purchased some items; they developed a video on communicable diseases for internal use to address the types of diseases workers might face; and they learned it is difficult to keep a high level of interest in pandemic planning within the organization in the absence of a crisis or other event.

Lydia Kellogg of the Airports Council International-North America (ACI-NA) concluded the opening remarks by providing an overview of the activities of her organization and its constituents. Preliminary results of a survey conducted by ACI-NA of its membership indicate that a wide range of planning activities are under way at airports throughout the country. Many airports have biological and pandemic response plans based on the National Incident Management System National Response Plan. Some airports have also developed business continuity plans to address support of critical job functions in the event of a 40% projected staff absenteeism rate. The survey also revealed that airports are conducting table-top exercises in coordination with federal, state, local, health, and emergency response personnel to discuss best practices and to ensure business continuity. Many airports have made arrangements to provide employees and other workers with personal protective equipment such as masks, gloves, and gowns; have developed response plans that address deploying sanitization stations and increasing the cleaning and disinfecting of common areas; and have examined the potential to extend operating hours for stranded traveler services if needed.

The detailed discussion sessions following these opening remarks gave the attendees an opportunity to explore the issues of pandemic planning under two main themes and seven general topic areas.

1. Minimizing the spread of disease via air travel
 - Risk-based screening at airports
 - Regulatory and legal authority and responsibility for illness-based screening of passengers at airports
 - Legal implications of denied boarding
 - Situational changes during a pandemic event
 - Review of current legislation and regulations in light of a pandemic event
 - CDC health-related travel notices
 - Passive and active passenger screening methods
 - Entry and exit screening
 - Public notification and outreach
 - State-level pandemic response planning activities
 - Difficulties in identifying signs and symptoms of infectious diseases
 - Level of effort needed for screening and quarantining infectious passengers
 - Differences in pandemic and nonpandemic response
 - Managing and protecting passenger data
 - Enhanced communication and coordination between industry and agencies
 - In-flight measures
 - Existing procedures and protocols for responding to ill passengers in flight
 - Identifying infectious passengers in flight
 - Providing airline crews with essential equipment and protection devices
 - Procedures for dealing with in-flight medical situations
 - Airport response
 - How airports will remain solvent during a pandemic event
 - Procedures for coordinating responses at airports during a pandemic event
 - Availability of trained medical personnel and space to address the anticipated number of ill passengers
 - Potential need to clean and disinfect aircraft and airport facilities during a pandemic event
 - Determining appropriate responses based on various conditions at various airports
2. Maintaining air service as critical infrastructure during a pandemic event
 - Economic impacts of a pandemic event on the aviation sector
 - Impact of severe acute respiratory syndrome
 - Importance of managing the message
 - Economic impact on international and domestic air carriers
 - Economic link between air carriers and airports
 - Unique impacts of a pandemic event
 - Difficulty of planning for an event with so much uncertainty
 - Effects on business, leisure, and recreational travel
 - Effects of a pandemic event on air cargo services
 - Air cargo effects from social distancing
 - Impacts of antitrust laws
 - Types of measures passengers may require to continue to travel by air during a pandemic event
 - Flexibility of air carrier and airport personnel in responding to a pandemic event
 - Maintaining essential employee functions
 - Roles and responsibilities
 - Air transportation as critical infrastructure
 - Distribution of medical and other essential supplies
 - Lessons learned during Hurricane Katrina
 - Short- and long-term disruptions to service
 - North American avian and pandemic influenza plan
 - Impacts of a pandemic event on rural areas and small communities
 - State-level responsibilities
 - What are essential services
 - Maintaining key aviation infrastructure versus providing essential services
 - Public travel behavior during a pandemic event
 - Effects of regional hot spots of the disease
 - Different approaches to quarantining passengers
 - Critical partnerships between CDC and local health officials
 - Needs of the utility aviation sector
 - Workforce issues in the aviation industry
 - Workforce absenteeism during a pandemic event
 - Alternatives in addressing the estimated 40% absenteeism rate
 - Distribution of essential supplies
 - Multiregional coordination of supplies during a pandemic event
 - Employee relations and union rules in the planning process
 - Modifying operating standards during a pandemic event
 - Importance of open and ongoing communication with employees in all segments of the aviation industry
 - Staffing levels during and after an event
 - Mitigating economic impacts and preserving air service

- Financial health of the aviation industry
- Industry revenue effects
- Example of the local economic impact of the aviation industry
- Effects of different scenarios on the air industry
- Attracting customers after a pandemic event
- Funding sources available to airports
- Use of aircraft in emergency response
- Effects of hot zones in certain parts of the country
- Ability of airports and airlines to share information, coordinate, and cooperate during a pandemic event
- Possible scenarios during the recovery phase of a pandemic event
- Impact of a pandemic event on general aviation
- Long-term viability of the airline industry
- Assessing the current financial situation of the various airlines
- Plans to return to normal operations

The workshop concluded with a brief recap of earlier discussions for invited senior-level officials from the various federal agencies and industry associations with a role in pandemic planning for the aviation industry. These individuals were then given an opportunity to express their thoughts on the workshop and any other

information relevant to the discussions. Items mentioned include the soon-to-be-completed first draft of the federal contingency plan that outlines the response of each federal department during different stages of a pandemic event and that will include the border management plan establishing screening protocols and control of the borders. This plan was developed in coordination with DHS, the Department of State, the Department of Health and Human Services, CDC, and the U.S. Department of Transportation. Other planning activities under way include the national strategy for aviation security, the air transport system recovery plan, and the National Governors Association pandemic workshops in coordination with the Department of Health and Human Services.

On the basis of information gathered throughout the workshop and in these summary discussions, a number of potential next steps were noted for future consideration. These steps include the following:

- Share workshop information with others within an organization or agency.
- Continue dialogue among all groups.
- Promote and conduct additional research.
- Assist with reviewing agency plans and programs.
- Conduct additional workshops.
- Leverage resources and build on existing relationships.
- Use TRB as a catalyst for communication.

Welcome and Opening Remarks

Katherine Andrus, *Air Transport Association*
 Ken Staley, *White House Homeland Security Council*
 Til Jolly, *Department of Homeland Security*
 Andrew Plummer, *Centers for Disease Control and Prevention*
 Kate Lang, *Federal Aviation Administration*
 Laura Valero, *Federal Aviation Administration*
 Terry Lowe, *US Airways*
 Lydia T. Kellogg, *Airports Council International–North America*

At the beginning of the workshop, the chair of the planning committee officially welcomed the participants and provided a summary of the development and purpose of the workshop. Officials from federal agencies, airports, and airlines were then invited to discuss briefly the status of their pandemic planning activities relevant to aviation. Their individual remarks are presented in this section.

WELCOME

Katherine Andrus

It is a pleasure to welcome you to the Interagency–Aviation Industry Collaboration on Planning for Pandemic Outbreaks Workshop. The workshop is sponsored by the Airport Cooperative Research Program (ACRP) and TRB. I would like to thank the FAA, in particular Kate Lang, for providing funding for the workshop through ACRP. I have the privilege of serving as chair of the Workshop Oversight Committee. I would like to recognize and thank the members of the Committee, Christine Gerencher, and other TRB staff for their outstanding work organizing the workshop. I learned a great deal from Committee members over the past 6 months.

I would also like to recognize a few individuals who contributed to planning this workshop but were unable

to attend. Jean Watson and Rob Sweet, FAA; Joan Harris, U.S. Department of Transportation; and Christie Reed, Centers for Disease Control and Prevention, all helped plan the workshop.

I am an attorney with the Air Transport Association. For those of who do not know, we are a trade association representing the major commercial airlines—passenger and cargo.

We have a broad and diverse group of participants for the workshop. It is encouraging to see the different agencies, organizations, and specialty areas of expertise represented. That was by design. The Planning Committee attempted to include all the agencies and groups involved in planning for pandemic events. As is always the case, a few invited participants were not able to attend because of scheduling conflicts.

Let me begin the workshop by providing some background information to establish a common base for discussion over the next 3 days. The intersection of aviation and public health has been in the news lately. The case of an individual with extreme drug-resistant tuberculosis flying on a commercial airline drew a lot of publicity. The incident pointed out some of the gaps in the current system of dealing with individuals with communicable diseases on aircraft. Most of the media attention focused on the flights that he took, the other passengers, and the flight attendants who might have been exposed, rather than the people who might have been exposed to him at

work or other locations. I think that tells us something both about the real risks and about the perceived risks. For whatever reason, people focus on airplanes and on aviation.

The World Health Organization recently released its annual report, which addresses many threats to public health including security, infrastructure, military conflicts, and mutation of viruses. The media, however, focused on the role air travel may play in spreading infectious diseases. There was a headline a few weeks ago—“Air Travel Spreads Disease Faster Than Ever.” Again, that tells you something about the actual risk but also about the perceived risk and the fact that, like it or not, aviation becomes a focal point when we are talking about the spread of any disease.

This is not a new phenomenon. We spent a lot of time in the 1990s dealing with the threat of tuberculosis spreading on aircraft. There were a number of extensive studies examining the risk of transmission on aircraft, which led to the development of guidance that has been used in recent planning efforts. A number of factors contributed to the focus on air travel: the speed of air travel, the fact that people can go around the world in a relatively short time and take their disease and pathogens with them, and the fact that you are in relatively close quarters on an airplane. There is also a sort of an intangible fascination that people have with air travel.

More recently, severe acute respiratory syndrome (SARS) brought attention to the role air travel could and did play in taking a disease that was fairly isolated geographically and transporting it halfway around the world. Toronto was not an obvious place for an outbreak absent air travel. We learned a lot from both situations.

For the past 2 years, the focus has been on pandemic influenza. This situation is different from what we have dealt with in the past. We are being asked to prepare proactively for something that we think is coming, but we do not know for sure when. We are not just reacting to an event or a series of events, we actually have an opportunity at this point to plan ahead. Another difference is that we are seeing a governmentwide effort and an international effort. The response is much more coordinated than anything that I am aware of in the past. That is very promising, although it brings with it its own challenges. Anytime you are trying to work between agencies and between governments, it is a little bit more difficult.

The other thing that is different about the current planning activities is that we have some clearly stated goals. The U.S. government has come out with a national plan, a strategy, and an implementation plan for that strategy. The plan includes three overarching goals. The first goal is stopping, slowing, or otherwise limiting the spread of a pandemic event to this country. The second

goal is limiting the domestic spread of a pandemic event. The third goal is sustaining infrastructure and mitigating impacts to the economy. Aviation is right in the middle of the first and third goals and also has a role in the second goal.

The aviation sector has a dual role. Airplanes carry people who may spread a disease. Airports and air carriers are also part of the critical infrastructure and a key element of the economy. Sometimes those two roles are in conflict. What is needed to help limit the spread of an infectious disease does not necessarily promote the economic well-being of the aviation industry.

We have structured this workshop to address these conflicting issues and concerns. Topics for discussion today focus on the spread of an infectious disease and aviation's role in this issue. The discussion tomorrow will focus on the role of aviation as part of our nation's critical infrastructure and part of the world economy. Those two topics overlap and interrelate in ways that we are not even cognizant of, but hopefully we will find out more about that over the next couple of days.

This workshop emerged from recognition of the role the aviation industry plays in planning, preparing, and responding to a pandemic event. There was also some frustration that many of us on the industry side felt in not having good guidance, not really knowing how we should go about planning or preparing, either as companies or as airports, and what would be expected of the aviation sector if a pandemic event occurred. Although a tremendous amount of work has been accomplished over the past 2 years within agencies and interagency groups, stakeholder input has sometimes been missing. There have been good examples of coordinated efforts to get input from industry, airports, airlines, and other players within the aviation sector, but those examples have been isolated.

None of us within the aviation industry has full-time pandemic planning staff. So we are not necessarily able to attend every meeting, workshop, or conference or read every article that is published. We rely very much on what we pick up at conferences here and there. It seems there has not been a real, organized method for us to get the information or for the agencies that are involved in planning to obtain stakeholder input. We do not have the resources to participate in working groups for every subissue. We thought this workshop would be a way of beginning dialogue or continuing that dialogue.

We are trying to determine what is already occurring, what we can tap into, and where the gaps are. What more do we need to be doing as airlines or airports? We hope the agencies represented at the workshop will share information on current activities and discuss ideas from the air carriers, airports, and other groups participating. We all share a common goal of a plan that makes sense and that can be implemented when needed. Hopefully,

we will not need to implement the plan, but one will be available.

Let me touch on a few things we do not intend to cover during the workshop. We will not discuss the specifics of avian influenza, pandemic influenza, and various diseases. Resources are available for those interested in learning more about specific diseases. We are not going to be reliving the 1918 flu pandemic. We also do not intend to discuss the whole national plan. We plan to focus on the elements in the national plan that deal directly or indirectly with the aviation sector.

In addition, I would like to suggest that the discussion not be limited to the official planning assumptions. We are talking about pandemic events that may take different forms. As SARS taught us, we may not know where the next outbreak will come from. It may be a novel virus; it may not be a virus at all. It may be a drug-resistant strain of an old disease. I think it is important that we talk broadly about communicable diseases. Plans should be adaptable to deal with all types of threats.

We are talking about a disease with near-universal susceptibility, which may cause 30% of the population to become ill. I think we also have to keep in mind that we may end up facing something that turns out not to be that easily transmissible or to have the same kind of fatality rate that a severe pandemic scenario would have. I remind people that swine flu was originally thought to be the 1918 virus. In 1976, the scientific knowledge that we have now with DNA testing was not available, so many experts at the time believed they were facing the beginning of another pandemic event on the scale of 1918. That turned out to be wrong, but before they realized it was wrong they had stood up an incredible, unprecedented government program. Some 40 million people were inoculated in less than 6 months. The fact that it was a false alarm should not cloud our ability to learn some lessons from that experience.

We may well find ourselves in the early stages of an outbreak without full knowledge of the transmissibility of the disease, the severity, the death rate, and the attack rate. In those early days, we have to be prepared with a scalable response. We also need the ability to scale down the response if warranted. Many of the things we will be talking about in terms of measures would be implemented in the early stages of a pandemic outbreak and would affect aviation. Actions such as entry screening (and potentially quarantining people at an airport) will affect the aviation industry. Those actions would be taken in the early stages when there may be less than perfect knowledge about a disease. Therefore, I do not think we should be bound by the planning assumptions. We should feel free to explore what might happen if things do not follow the script.

We have asked representatives from various agencies and organizations to provide a brief summary of their

roles, responsibilities, and current planning activities. I hope you find the discussion over the next 3 days interesting and productive. Thank you.

STATUS OF PANDEMIC PLANNING ACTIVITIES RELEVANT TO AVIATION

White House Homeland Security Council

Ken Staley

Thank you, Katherine. I appreciate the invitation to participate in this session. My comments focus on the roles and responsibilities of the Homeland Security Council, accomplishments of the Council and other groups to date, and future activities.

The Homeland Security Council at the White House is similar in function to the National Security Council. It serves as the coordinating board for the federal government. In November 2005, President Bush directed the Homeland Security Council to create a pandemic preparedness strategy. The Council is in a good position to develop a strategy that incorporates the capabilities of the various federal departments and agencies. The pandemic preparedness strategy was released in November 2005, and the implementation plan was released in May 2006.

The pandemic preparedness strategy represents the first time the federal government has committed the use of all instruments of national power against a disease—actually a potential disease, one that may not currently exist. It is important to realize this point, as it represents an important change as well as a significant commitment from the federal government. I think our preparedness to respond to a pandemic event has implications for improving our ability to respond to all types of natural and man-made disasters.

It is also important to remember that we do not know what the next pandemic event will be. We do not know the type of disease, when and where the outbreak will occur, the rate at which it will spread, and many other factors. An infectious disease like severe acute respiratory syndrome will have a much different impact and require different responses than an isolated case of extensively drug-resistant tuberculosis. Many of the health system capabilities and the transportation system capabilities needed to respond to any type of pandemic event are similar, however.

There have been extensive discussions at the national level on the best approaches to respond to pandemic events outside our borders. We have a commitment to protect lives and to maintain the movement of people and cargo across our borders. We will work with our Canadian and Mexican partners to create a North America perimeter to respond to a pandemic virus that origi-

nates outside North America. Screening stations will be established for maritime and air travel. Although the exact screening tools may vary by country, the stations will help slow the spread of a pandemic event.

We are realistic about the potential effectiveness of this approach. We do not think it will be able to stop a pandemic illness from entering the country. We do think it can delay the arrival by a few days or a few weeks. The delay time can be used to initiate other measures to counteract the spread of the disease and to ensure that essential services continue to be provided.

We need to communicate to the public the important role of air transportation in responding to a pandemic event. Americans living and working abroad may wish to return home during a pandemic event. Ensuring access to air services and safe passage at international borders will be important.

Discussion has also focused on the appropriate response after identifying an individual with an infectious disease. The community mitigation strategies focus on nonpharmaceutical interventions that can be used in response to a pandemic event. Individually these interventions may be only partially effective, but used together they may have a synergistic effect on the spread of a disease and on death rates. The community migration strategies are an integral part of the planned border policies.

These elements provide a broad policy framework for managing our borders during a pandemic event. As noted, a focus is to direct infectious individuals away from transportation centers to seek medical attention and to care for themselves. A concept of operations is being developed for entry and exit screening at all ports of entry based on this policy framework. In the coming months the concept of operations will be discussed with the various agencies, airports, air carriers, and other groups. Outreach, interaction, and collaboration are critical to a successful approach, but no single government level or entity can do it alone. An effective response depends on a coordinated and collaborative effort.

As I noted earlier, the response capabilities we are developing for pandemic events are appropriate for all types of emergencies. Our work on pandemic event preparedness planning allows us to be more responsive to other man-made hazards and natural disasters. I look forward to a productive discussion at this workshop on topics of interest to all groups. Thank you.

Department of Homeland Security

Til Jolly

Thank you very much for inviting me to participate in this workshop. My comments will focus on the roles and

responsibilities of the Department of Homeland Security (DHS) related to pandemic events. I will also highlight some of our current activities. With approximately 208,000 employees, DHS is a large agency. We are also still a relatively new agency. DHS has three major responsibilities related to planning for pandemic events.

First, DHS has responsibility for responding to large-scale incidents of national significance, which a pandemic event would be. We tend to think of major incidents as terrorist attacks, natural disasters, and other significant events. A pandemic event is a different type of incident, but it has far-reaching implications. The second responsibility related to a pandemic event is protection of the nation's infrastructure. The third responsibility is protection of the country's borders. DHS has numerous other responsibilities. The Customs and Border Patrol and the Transportation Security Administration have specific responsibilities related to the movement of people and goods into and out of the country.

The DHS Office of Health Affairs is responsible to the Secretary for all medical and health issues and for coordinating these issues within DHS and throughout the federal government. Dr. Jeff Runge, Assistant Secretary for Health Affairs, heads the office, which is also responsible for planning for biological incidents, including pandemic events. The opportunity exists to build on the planning activities undertaken for pandemic events to improve the nation's readiness for biological and other incidents.

Most of the planning efforts to date have focused on addressing a pandemic event that begins in another part of the world. We also need to be prepared to respond if a pandemic event begins in this country, however. In that case, under international health regulations, screening of exiting passengers would be required.

Airlines, airports, and other air industry groups will play important roles in responding to a pandemic event. Screening passengers in other countries before they board an aircraft will be needed. Onboard passenger screening may also be needed. Airlines have experience dealing with ill passengers, but responding to potentially large numbers of infectious passengers is another matter.

Numerous uncertainties surround planning for a pandemic event. We do not know the exact disease, the speed at which it will spread, the intensity of the disease, the death rate, and other factors. The recently completed community mitigation guidance includes a pandemic event severity index, which mirrors hurricane categories, ranging from 1 for the least severe type of pandemic event to 5 for the most severe.

The planning efforts to date have focused primarily on the most severe scenarios. Although we need to be prepared for a major pandemic event, we also need to be

ready to respond to an Index 1 or 2 event. These types of events might be similar to seasonal flu, which typically causes about 36,000 deaths a year.

Communicating with air passengers, employees, and the public represents an important element of responding to a pandemic event regardless of its severity. Managing the message will be critical. Providing accurate information on the nature of the infectious disease, the anticipated transmission rate, and the response measures used will be challenging given the potential uncertainty surrounding an event. We are developing strategies to respond to diseases that do not exist today.

I am an emergency physician, and I still practice in a local emergency medical department. I receive numerous questions from health workers about possible pandemic diseases and responses. I try to provide realistic responses based on what we currently know about various infectious diseases.

A number of DHS personnel will participate in this workshop. We work closely with representatives from the Department of Health and Human Services, the U.S. Department of Transportation, the Homeland Security Council, and the Centers for Disease Control and Prevention on the various planning efforts under way. I look forward to a productive discussion at the workshop and to continuing to work with the various agencies and organizations. Thank you.

Centers for Disease Control and Prevention

Andrew Plummer

Thank you for the opportunity to discuss some of the activities under way at the Centers for Disease Control and Prevention (CDC), especially those related to the aviation industry. The CDC Division of Global Migration and Quarantine (DGMQ) has significant interface with different aviation groups. We recently participated in an agencywide pandemic flu scenario in which the aviation sector played a significant role. The after-action report is being used to assess how the various participating groups responded.

We have also focused on all-hazards planning. We have developed and conducted table-top exercises at many of the quarantine stations throughout the country. After-action reports were also prepared on these exercises and distributed to participating groups. We will continue these types of exercising with state and local health agencies, airports, air carriers, and other organizations. These exercises allow all groups to work together in a coordinated manner. Through an iterative process, we learn from each exercise with the goal of all groups being better prepared for an actual event.

We have also focused on improving data collection methods. DGMQ's Quarantine Activity Reporting System (QARS), a secure web-based electronic system, enables quarantine stations to track ill passengers on inbound airlines and vessels and at land border crossings as well as infectious disease threats and actions related to imported pathogens. QARS will allow DGMQ to better track, quantify, and respond to public health threats at ports of entry.

We learned during the outbreak of severe acute respiratory syndrome that it is a challenge to contact passengers after potential exposure to a communicable disease onboard an aircraft. More often than not, persons are willing to share personal information; however, not everyone has a cell phone, and not everyone has a permanent address. Being able to collect and disseminate critical information efficiently is important. We are also examining the current contact information forms to ensure that the focus is on the data elements that will optimally facilitate passenger contact. We will continue to work with airlines, customs, and other federal partners and agencies on coordinating data-collection activities and sharing information. Additional work is needed on identifying the best methods to communicate with passengers after a flight that included infectious passengers. We realize there are differences in the information needs of various groups as well as privacy concerns, and we take these concerns very seriously.

We are working with state agencies to develop effective methods of communicating public health information. We have developed and implemented a software application, E manifest, which exists within a secure electronic information-sharing system that will facilitate improved communication of relevant public health information with participating state public health agencies.

Identifying the best methods and the appropriate messages to communicate with the public is also important. The CDC website includes health information for travelers (wwwn.cdc.gov/travel/default.aspx), including at-risk countries and the appropriate public health and medical countermeasures travelers should take as part of travel preparation. We also prepare and distribute up-to-date health travel alert notices. In addition, there is a section on the website that has information specific to the travel industry, including special guidance for air crews and maintenance crews. Promoting the availability of this information with the public and the media is important.

Future outbreaks of infectious diseases may require global public health authorities to screen domestic and international arriving and exiting passengers. More research is required to determine what modalities are effective and practical. A research study examining the potential use of thermal scanning as part of the air passenger screening process is planned. It will

assess the effectiveness of thermal scanning and the resource requirements to implement the process. We will work with the airline industry as the research project develops.

Again, thank you for the opportunity to participate in this workshop. I look forward to a productive discussion on numerous topics.

Federal Aviation Administration

Kate Lang

I am delighted to participate in this session. Let me begin by thanking Katherine Andrus from the Air Transport Association and Jim Crites from the Dallas–Fort Worth International Airport for identifying the need for enhanced communication and coordination among the airline and airport communities and federal agencies related to planning for possible pandemic events. They brought these concerns to the Airport Cooperative Research Program Oversight Committee, of which they both are active members. TRB agreed that a workshop would be beneficial to promote communication and collaboration among the various groups. Christy Gerencher and other TRB staff, along with the workshop oversight group, have done an excellent job organizing this workshop.

It is important to understand the roles and responsibilities of the various federal agencies, airlines, airports, and local and state agencies. The terrorist attacks of September 11, 2001 (9/11), taught us that roles and responsibilities must be clearly defined before an emergency. As you are all well aware, the aviation industry experienced a crisis after 9/11.

Laura Valero will provide additional information on FAA activities, but I would like to highlight a few efforts under way at the Office of Airports. We have been working with airports and state and local governments in planning for a pandemic event. We have focused on some of the basic questions, including those related to maintaining an adequate workforce if absenteeism rates reach the projected 40%, providing a safe environment for workers and passengers, and obtaining and distributing essential supplies. Maintaining a viable aviation industry is critical to this country.

Part of our charter in the Office of Airports is to help communities and airports meet their aviation requirements. We are also responsible for safety oversight of airports. In developing our pandemic response plan, we had to consider how the office would continue to provide assistance to airports if we experienced high levels of absenteeism. Telecommuting is a major component of the office's response plan. As part of the planning process, we identified key personnel and their backups.

We tested the computer system to ensure access from different locations. We also conducted table-top exercises based on different pandemic scenarios.

We are working with our partners at the Airport Council International, the American Association of Airport Executives, and the National Association of State Aviation Officials on numerous activities. We have learned from recent hurricane response experiences. These experiences reinforce the importance of maintaining updated 24-hour personnel lists. Knowing how to contact key personnel at each airport is important.

The recent hurricane response experience also highlighted the importance of having critical information available for decision makers, especially real-time information. We have been working with the airport community to identify information needs. Examples of critical information are staffing levels to maintain safe operating requirements, fuel availability, the quarantine status, the availability of on-site health personnel, and the status of air carriers. Airport personnel are also identifying responses to quarantines, employee absenteeism, and obtaining critical supplies.

A pandemic event will have a significant economic impact on airports. The FAA is concerned about the financial health of airports, including their ability to continue to meet their financial obligations. The aftermath of 9/11, the severe acute respiratory syndrome epidemic, and the recent hurricanes illustrate the potential negative impacts and the vulnerability of airports. The FAA has financial aid programs that can provide assistance in these situations. We can also work with Congress on emergency legislation if needed. We are capable of responding quickly with a variety of assistance.

I think there are a number of important topics to be addressed related to airport operations during a pandemic event. These topics include how infectious passengers will be handled; what quarantine facilities will be available at individual airports; what entity will be in charge; and the roles and responsibilities of the various federal, state, and local agencies and public health officials. Other important topics are maintaining safe operations with anticipated absenteeism levels and obtaining needed supplies. Another issue is how to fund on-site airport quarantine facilities if they are necessary.

It is important to remember that a pandemic event may last 6 to 8 months, or longer. We know that airports along the Gulf Coast experienced lower levels of operation, and thus lower revenues, after Hurricanes Katrina and Rita. Providing realistic expectations of the potential economic impact of a pandemic event, as well as possible sources of financial assistance, is important.

I am impressed with the level of participation at this workshop. The FAA is well represented, and we look forward to hearing from others and participating in the discussion over the next 3 days. Thank you.

Federal Aviation Administration

Laura Valero

It is a pleasure to participate in this opening session. Joan Harris, who served on the workshop oversight committee, sends her regrets for not being able to attend the workshop due to a previous commitment. Joan heads a team at the U.S. Department of Transportation (DOT), Office of the Secretary, charged with implementing the 71 tasks in the implementation plan assigned to U.S. DOT in May 2006. In addition to the aviation sector, the U.S. DOT team is also focusing on the trucking, rail, public transportation, and shipping industries.

Joan is the primary U.S. DOT representative to the Sub-Policy Coordinating Committee (Sub-PCC) at the Homeland Security Council led by Ken Staley. The Sub-PCC is working with other agencies and groups to ensure we are prepared for a pandemic. This is a challenging responsibility as we cannot fully predict the exact nature, extent, and duration of these types of events.

I will highlight some of the recent activities the FAA has undertaken. First and foremost, the FAA is the lead on all the aviation-related tasks assigned to U.S. DOT. We are very focused on the aviation tasks in the implementation plan. We have also provided input and suggestions on the nonaviation tasks based on experience with other events.

We have been focusing on internal planning and operational response planning and have been working on business continuity planning, also known as continuity of operations or COOP. Within the FAA, the air traffic operations, aviation safety, and airports lines of businesses have been working on contingency plans for shifting resources and responsibilities, as needed, to keep the National Airspace System operational in a pandemic event. Chapter 5 of the *National Strategy for Pandemic Influenza: Implementation Plan* identifies the National Airspace System as one of the critical areas that must be kept operational during a pandemic. We have been working on our air traffic control contingency plans, as well as aviation safety inspector contingency plans, to address anticipated employee absenteeism.

A critical element of the initial guidance mirrors the Occupational Safety and Health Administration workplace protection policy. Air traffic controllers cannot be readily replaced. They cannot control aircraft and the national airspace from the comfort of their homes. It is also not possible to maintain the recommended 6-foot spacing between controllers in towers and centers. In such a close working environment, it is difficult to protect controllers from the potential spread of communicable diseases. We are examining possible solutions, how the solutions would be implemented, and the costs of different options. Providing controllers with powered air-purifying respirators (PAPRs) is one possible

approach. At a cost of approximately \$1,000 per PAPR, equipping 15,000 air traffic controllers would cost in the range of \$15 million. Funding to purchase these respirators has not been identified.

The FAA took the lead in developing an interagency aviation operational concept of operations. This effort will be discussed in more detail in a session this afternoon. The concept of operations addresses coordinated responses to inbound aircraft with sick passengers who may have pandemic flu or other contagious diseases. The concept of operations establishes a specialized aviation response cell at the Transportation Security Administration's Freedom Center in Herndon, Virginia, which was formerly called the Transportation Security Operations Center. The interagency aviation concept of operations will be included in the broader concept of operations under development.

The FAA will continue to support the National Response Plan during a pandemic. For example, we have focused on ensuring priority handling of air shipments from the strategic national stockpile to areas where they are needed. We are also reaching out to other countries to better coordinate responses on an international level. The trilateral aviation concept of operations recognizes the critical roles Mexico and Canada will play in responding to a pandemic. Both countries have participated in planning activities. The North American Avian and Pandemic Influenza Plan addresses responses by all three countries in North America. When we started working with our counterparts in Mexico and Canada, we found that they had not yet considered how to protect their air traffic controllers from potential contagious diseases. The planning process has been beneficial for all three countries.

We are also active in promoting communication, coordination, and cooperation on an international basis. We are reaching out to the European Civil Aviation Consortium, the Asia Pacific Air Traffic Forums, and other groups as part of this effort.

Finally, we are contributing to a number of other activities, including developing the draft aircraft disinfection guidance, the draft sector-specific guidelines, and stakeholder meetings. We will participate in a series of meetings after the draft aviation concept of operations for health screening is released.

I appreciate the opportunity to participate in the workshop and look forward to interesting and productive discussions on a variety of topics. Thank you.

Airline Perspective: US Airways

Terry Lowe

Thank you, Katherine. I appreciate the opportunity to participate in this session. I do not speak for all airlines, but an ad hoc group of airline representatives has been

meeting on a regular basis over the past year to discuss many of these issues. While it is not a formal body, the ad hoc group provides the opportunity for airline representatives to share information and discuss common issues. Individual airlines are developing their own plans and processes. Airlines are also working with airport personnel, the Centers for Disease Control and Prevention (CDC) and local health officials, and state and local government representatives on various activities.

Until the recent concerns about pandemic flu, airlines were primarily addressing unique events, such as a passenger with meningitis or tuberculosis. If a passenger exhibits the symptoms in flight, assistance is provided. In other cases, symptoms are not documented until after a flight. Passengers on a flight with a reported contagious individual are notified after the fact. There has not been a great deal of preplanning with these types of events.

When US Airways and America West merged about 2 years ago, we realized that we were not prepared for a major event, such as pandemic flu. Our occupational safety and health group took the lead in developing a response plan, working with the emergency planning and response group and our medical group.

Our initial activity focused on gathering information, which proved to be challenging. There is a lot of available information, but determining what is valuable and useful is not always easy. We found some good tools and we developed an outline for a pandemic preparedness plan for the company. We brought together representatives from 20 to 25 different departments throughout the airline to assist with developing the plan.

As the group discussed different possible scenarios relating to the extent and duration of a pandemic event, it became apparent that we were not prepared for high levels of absenteeism. The group considered personnel needs to maintain a viable airline. Pilots, flight attendants, ground crews, baggage handlers, ticket agents, maintenance personnel, and reservation agents are all needed to operate an airline. An operations plan was needed that would allow for reductions in service as well as for returning to full operation.

Development of the plan led to additional detailed discussions about the impacts of different scenarios. We also discussed the roles information technology and telecommuting could play in helping meet staffing needs. Telecommuting can play a part in responding to a pandemic event, but you cannot operate an airline by telecommuting.

We have also examined the need for essential supplies and have purchased some items. We have not stockpiled extensive supplies, however, so it would be difficult to respond to a major event. The group is considering the appropriate level of supplies to maintain given the uncertainty surrounding possible events and concerns over expiration dates on vaccines and other related items.

We developed a video on communicable diseases for internal use. It is not specific to pandemic events. Instead,

it addresses exposure to all types of diseases that workers might face. We have also conducted initial training of some employees. We have conducted internal training and we have participated in different exercises at airports throughout the country.

We have tried to reconvene the group on a regular basis after the plan was completed. It is difficult to maintain a high level of interest in pandemic planning when there is not a crisis or other event. We have also worked with international airlines and have learned from their experiences over the past few years. Additional communication and coordination with international carriers would benefit all airlines.

A number of issues and topics need further discussion and clarification. Examples of these issues include releasing passenger information from a flight after a passenger on the flight has been found to have an infectious disease, denying boarding to a passenger who appears to have an infectious disease, and dealing with passengers displaying symptoms of an infectious disease in flight.

Communicating with passengers and the public is also a concern. Airlines want to be prepared, and we want our passengers to know we are prepared. We do not want to scare off potential passengers by publicizing these activities too much, however. Communicating this type of information might be a role for the Air Transport Association or some other group. Logistics is another area that additional communication and cooperation would benefit. Ensuring that airlines, airports, federal agencies, and local communities work together to provide food, medical supplies, fuel, and other essential items requires additional planning.

Additional guidance is also needed on responding to infectious passengers in flight. The role of flight attendants, potential diversion of the aircraft to an airport with a CDC facility, quarantine facilities at various airports, providing medical attention for other passengers and in-flight crews, and cleaning the aircraft represent just a few of the issues that need additional discussion.

We have made a lot of progress in the past few years related to pandemic planning and response. The informal group of airline representatives provides a forum for sharing information. This workshop provides the opportunity to share additional information, to discuss issues of mutual concern, and to develop stronger working relationships. Creating an ongoing forum for communication and coordination would benefit all groups.

Airports Perspective: Airports Council International-North America

Lydia T. Kellogg

Thank you, Katherine and TRB, for the opportunity to participate in this workshop. This topic is of great inter-

est and importance to airports, including members of the Airports Council International (ACI). I also appreciated the opportunity to serve on the workshop oversight group.

Airports have always had a public service mission. They are custodians of air transportation, which is a critical element of the nation's infrastructure. As public entities, airports are expected to maintain their facilities, particularly in times of national emergencies. They do not have the luxury of closing their doors, as critical response personnel and supplies must be able to reach their destinations as rapidly as possible.

ACI recently conducted a survey of its members related to pandemic planning activities. Approximately 20% of 147 airports have responded. The survey results indicate that a wide range of planning activities are under way at airports throughout the country. Many airports have biological and pandemic response plans based on the National Incident Management System (NIMS) National Response Plan, and others are developing plans.

Some airports have developed business continuity plans. The survey results indicate that most airports anticipate being able to operate with up to 40% staff absenteeism. Staff would still be able to support critical job functions, which include airfield maintenance, airport security, and fire fighting. Information provided by the airports also indicates that telecommuting would be allowed for some noncritical job functions.

Airport operations would be affected at higher absentee levels. Possible actions identified if lower staffing levels are encountered include reducing the number of operating runways, prohibiting general aviation, reduc-

ing the number of gates in use, and restricting airport operations to daylight hours.

The survey responses also reveal that airports are conducting table-top exercises to discuss best practices and to ensure business continuity. Representatives from federal, state, local, health, and emergency response agencies are involved in these table-top exercises. Many airports have made arrangements to provide employees and other workers with personal protection equipment such as masks, gloves, and gowns. Airport response plans also address deploying sanitization stations and increasing the cleaning and disinfecting of common areas. Airports would also extend operating hours for stranded traveler services if needed.

The NIMS National Response Plan and the National Strategy for Pandemic Influenza have been used as models for most airport plans. In addition, many airport plans use an emergency unified command to coordinate response activities.

Questions raised by survey respondents included how individuals with symptoms of influenza will be identified and at what point airport personnel will be notified. The level and nature of response at individual airports will depend on when information is received and the type of disease. For example, different actions would be taken if information on a possible infectious passenger were received before a plane landed or when a plane arrived at a gate.

It is a pleasure to have the opportunity to participate in this workshop. I look forward to learning about what other agencies and groups are doing and how we can be more proactive in planning activities. Thank you.

Discussion Sessions

Discussion Facilitators:

Laura Valero, *Federal Aviation Administration*
 Alan Black, *Dallas–Fort Worth International Airport*
 Jack Wells, *U.S. Department of Transportation*
 Kathie McCracken, *Department of Homeland Security*
 Bonnie Wilson, *Jackson Municipal Airport Authority*
 Rich Golaszewski, *GRA, Inc.*

The central portion of the workshop was a facilitated discussion on seven general topics under the two major themes of minimizing the spread of disease via air travel and maintaining air service as a critical infrastructure during a pandemic event. The topics addressed under minimizing the spread of disease via air travel were risk-based screenings at airports, in-flight measures, and airport responses. The topics discussed under maintaining air service as a critical infrastructure during a pandemic event included the economic impacts of a pandemic event on the aviation sector, air transportation as critical infrastructure, workforce issues in the aviation industry, and mitigating economic impacts and preserving air service.

Members of the workshop planning committee led the discussion on different elements associated with each of the broad topic areas. Various issues were discussed during the sessions. Some topics were discussed in multiple sessions. In addition, different groups of individuals participated in the sessions, resulting in some issues being discussed from different perspectives. This section summarizes the main topics of discussion in the different sessions and highlights major points and issues raised by various individuals during the discussions.

MINIMIZING THE SPREAD OF DISEASE VIA AIR TRAVEL

Risk-Based Screening at Airports

Laura Valero, Discussion Facilitator

Topics discussed associated with risk-based screening at airports included the roles and responsibilities of various

agencies and groups, how screening would be implemented, and identifying the signs of illness. Other topics were the possible impacts of denying boarding, the liability associated with screening decisions, and the impact on operations.

- **Regulatory and legal authority and responsibility for illness-based screening of passengers at airports:** Because of the complexity of this issue, it was noted that more work is needed to determine the authority, roles, and responsibilities of federal, state, and local agencies to conduct illness-based screening and to deny boarding and detain passengers. The Transportation Security Administration has responsibility for screening passengers at airports for security purposes, but they do not screen passengers for infectious diseases. Customs and Border Protection and the Department of Agriculture conduct entry screenings on passengers arriving on international flights. Because airports are typically established as state, regional, or local entities, state legislation or local authorities may have to give airport personnel the authority to screen, deny, or detain passengers. The link to state public health legislation is important, as in some states local health officials have the authority to detain passengers on the basis of public health concerns.

- **Legal implications of denied boarding:** Airlines have the ability to deny boarding, and the final authority over the matter rests with the aircraft captain. Most airlines have processes to address these types of situations, including holding a passenger off a flight and arranging for another flight after the specific concern has been examined. However, airlines may face legal action if a

passenger is not ill or if an individual thinks he or she has been discriminated against. The complexity and the potential legal concerns of restricting travel of an individual was discussed as well as the need to base the decision to restrict travel on community well-being and public health aspects of these situations in a consistent and standard manner.

- **Situational changes during a pandemic event:** With 65 international airports in the United States and many more that serve international charter flights, screening might be critical during a pandemic event to try to detain infected individuals from entering the country. Airports may also be identified for use in diverting flights with ill passengers.

- **Review of current legislation and regulations in light of a pandemic event:** Existing U.S. Department of Transportation regulations focus on nondiscrimination and protecting individual rights, not on public health-related concerns and protecting the public interest. These regulations may need to be modified if the goal is to prevent the transmission of an infectious disease.

- **Centers for Disease Control and Prevention (CDC) state legislation or local authority health-related travel notices:** These notices are currently issued using different levels of severity. The first level is “in the news,” the second level is an “outbreak notice,” the third level is a “travel caution,” and the highest level is a “travel health warning.” These travel notices are updated daily and posted on the CDC website.

- **Passive and active passenger screening methods:** These methods include using advanced technologies to help identify infectious individuals. Applying different approaches to determine the health of passengers and focusing on those that provide the best opportunities to identify and detain infectious passengers were noted as important. Determining the use and effectiveness of advanced technologies—such as thermal scanning and other technologies—to help identify infectious individuals also was noted as important, along with the need for funding to purchase the systems and train personnel to operate machinery.

- **Entry and exit screening:** The need for screening, who would authorize it, and how it would be conducted at airports are some questions under discussion. If a pandemic event started in this country, exit screening might be necessary to meet World Health Organization requirements, and the requirement for screening would be linked to the level and severity of a pandemic event. Many of these topics are still being worked on in the different planning activities, and specific elements have not been determined.

- **Public notification and outreach:** Information would need to be provided to the public about the reasons for screening and screening protocols using different outreach and information dissemination techniques.

Identifying the agency or group most appropriate to present these messages and the desirability of using multiple methods and sources to communicate with the various target audiences were noted. Some people may be more likely to listen to health officials, whereas others may be more likely to respond to information from government agency personnel.

- **State-level pandemic response planning activities:** Different planning activities are under way, including the requirements for states to develop pandemic response plans. Personnel in state public health departments interact regularly with CDC staff, and this interaction might be considered during development of the state plans.

- **Difficulties in identifying signs and symptoms of infectious diseases:** Airlines and airports train employees to help them recognize ill passengers. It was noted that additional training would be needed for airline, airport, and other aviation industry personnel to identify potentially ill passengers during a pandemic event.

- **Level of effort needed for screening and quarantining infectious passengers:** The initial purpose of these activities is to delay the entry and spread of a disease, taking into account possible multiple waves of a disease. Once a disease has entered the country, however, a different approach may be taken. The pandemic severity index can be used to identify appropriate responses, including possible layered approaches with multiple layers of surveillance, screening, and contact tracing. Surveillance and screening may be used to identify potentially ill passengers before they board an aircraft. Contact tracing provides follow-up communication with passengers who may have been exposed to ill passengers on a flight. There is also the potential use of a no-fly health-related passenger list as has been done in cases related to infectious tuberculosis.

- **Differences in pandemic and nonpandemic responses:** Airlines and airports regularly deal with sick passengers and medical emergencies. Responding to a pandemic event is different, as it would probably involve a lengthy period of time and a large number of passengers. Having trained health professionals on site was noted as important.

- **Managing and protecting passenger data:** There are advantages and disadvantages to different methods of contacting passengers after a flight based on the roles and responsibilities of airlines and agencies, including privacy concerns related to contact tracing. If a disease were spreading rapidly during a pandemic event, contact tracing might not be beneficial.

- **Enhanced communication and coordination between industry and agencies:** During the development of different plans, screening strategies, and other measures, aviation industry officials expressed interest in the opportunity to review draft documents and to better understand their potential roles in different activities.

In-Flight Measures

Laura Valero, Discussion Facilitator

Topics discussed related to in-flight measures including identifying and responding to communicable disease incidents in flight, airline reporting methods, infection control, and passenger and crew contact tracing. The interagency concept of operations (CONOPS) for managing flights with infectious passengers was also discussed.

- **Existing procedures and protocols for responding to ill passengers in flight:** Flight attendants, pilots, air traffic control, airports, and the Centers for Disease Control and Prevention (CDC) have different roles in responding to ill passengers. The exact procedures may vary by air carrier and airport. Additionally, a memorandum of understanding between air carriers and the CDC could be beneficial to help outline the roles and responsibilities of different groups.

- **Identifying infectious passengers in flight:** It is difficult to recognize symptoms of different diseases, especially those that are not currently known. It was noted that airline and airport personnel would need training in recognizing the symptoms of different infectious diseases.

- **Providing airline crews with essential equipment and protection devices:** It is important for airline personnel to have access to masks, gloves, and other protection devices that would be effective against pandemic disease, but current “grab-and-go” kits available to some airline personnel may not contain suitable personal protective equipment for pandemic diseases and may need to be reviewed, approved, and updated.

- **Procedures for dealing with in-flight medical situations:** Flights may be diverted to nearby airports in the case of medical emergencies; typically, the goal is to get the passenger on the ground as quickly as possible so that he or she can receive necessary medical treatment. The captain makes the decision to divert, based on input from the airlines’ on-the-ground medical experts. This situation could change during a pandemic event, including how to identify ill passengers in flight, what agency would decide to divert an aircraft containing suspected or confirmed infectious passengers, and the location of the airport where the aircraft would be diverted. The availability of a CDC presence at the airports targeted for diverted aircraft is also a consideration. The U.S. government CONOPS for managing flights with ill passengers, including approaches to diverting aircraft, is still being developed. More involvement from the aviation industry could assist in the discussion of possible approaches.

Airport Response

Alan Black, Discussion Facilitator

Topics discussed in this session included addressing inbound flights with potentially infectious passengers, coordinating response activities at airports, and managing passengers and crew. Other topics discussed focused on maintaining airport operations during a pandemic event and cleaning and disinfecting aircraft and airports. Some participants discussed the economic impacts of a pandemic event on airports. The session on the economic impacts of a pandemic event in the aviation sector covered this topic in more detail.

- **How airports will remain solvent during a pandemic event:** If airports are not receiving revenues from landing fees, parking, and terminal concessions, it was suggested that they would likely need financial support. Possible financing sources include short-term loans, federal and state emergency funding, financing from local governments, and other sources. More discussion is needed on this topic with the involvement of all affected groups.

- **Procedures for coordinating responses at airports during a pandemic event:** It was noted that identifying the roles and responsibilities of all groups is critical, as are coordination and communication among all groups. Building on the current working relationships among agencies and organizations and establishing who is in charge and the roles of local agencies and federal officials were identified as key elements to successful responses. For example, a coordinated approach is used at airports involving airline, airport, emergency medical service, fire, and other personnel that includes notifying the Centers for Disease Control and Prevention and local health officials about passengers with potential infectious diseases. However, different approaches may be needed at different airports based on the type of airport and community served, the number and type of air carriers and aircraft, the size of the airport, the local organizational structure, existing institutional arrangements, and available facilities and services.

- **Availability of trained medical personnel and space to attend to the anticipated number of ill passengers:** Facilities for isolating or quarantining passengers are limited at most airports. Using a section of a terminal or a separate nearby building are possible alternatives.

- **Potential need to clean and disinfect aircraft and airport facilities during a pandemic event:** Although the Environmental Protection Agency has information on the use of various cleaning products, further guidance is needed on the cleaning methods and protocols, frequency of disinfecting areas during a pandemic event,

and funding for these activities. Communicating to the public that aircraft and airports are clean and safe from infectious diseases is also a concern. According to previous research on airflow circulation in aircraft cabins, the aircraft environment is safer than is commonly thought, although more research is needed on the potential transmission of influenza.

- **Determining appropriate responses based on various conditions at different airports:** Airports vary in size, type of community served, number and type of air carriers, institutional structures, and other characteristics. As a result, a “one size fits all” response to a pandemic would probably not meet the needs of individual airports. It was suggested that layered or stratified approaches could provide the flexibility needed to respond to local conditions at various airports as well as the characteristics of the different types of influenza and illnesses that may be encountered during a pandemic event.

MAINTAINING AIR SERVICE AS CRITICAL INFRASTRUCTURE DURING A PANDEMIC EVENT

Economic Impacts of a Pandemic Event on the Aviation Sector

Jack Wells, Discussion Facilitator

Topics discussed in this session included the potential economic impacts of a pandemic event on different elements of the aviation sector and possible reactions from passengers, airline and airport personnel, and cargo shippers. The impacts on the broader travel industry and local communities were also explored. The experiences from recent health threats, natural disasters, and the aftermath of the attacks of 9/11 on the aviation sector were also discussed.

- **Impact of severe acute respiratory syndrome (SARS):** SARS had a significant negative effect on air carriers, especially those serving markets in Asia. Passenger volumes declined during the SARS event, and the volume of air cargo also declined. Airlines in Asia and Canada and other parts of the world had difficulty convincing the public it was safe to fly. As a result of the SARS experience, all groups are more prepared to provide timely and accurate information and have learned the importance of developing a coordinated public information plan now that can be implemented if needed.

- **The importance of managing the message:** Travelers are influenced by what they hear and read in the media. There are advantages and disadvantages of different agencies providing information during a pandemic event, but providing accurate and credible information

in all cases was noted as important. The public will expect information on the health aspects of the situation, the availability of air services, requirements for travel, and actions that are being taken to address preventing spread of the disease. The fear of exposure to the disease will be a factor in the public’s reaction, and having a measured response using an appropriate messenger with credible information would help to counteract this fear. In addition to providing information to the general public, it was noted that the airlines would have a role to play in providing information to pilots, flight attendants, ticket agents, other personnel, and passengers.

- **Economic impact on international and domestic air carriers:** International carriers would probably experience more significant economic negative effects, especially if the pandemic event originates outside the United States. Domestic airlines would also feel the impacts as the pandemic event spreads.

- **Economic link between air carriers and airports:** Financially healthy air carriers make for financially healthy airports. When air carriers are struggling financially, airports feel the impacts. The effects would be different for major commercial airports, smaller commercial airports, and general aviation airports; planning efforts for responding to a pandemic event would also be different. It was suggested that coordinating planning with surrounding communities, state agencies, and other local groups would be important.

- **Unique impacts of a pandemic event:** A pandemic event is worldwide and during a worldwide event, international and domestic carriers, as well as the airports they serve, will be negatively affected. The duration of a pandemic event will influence the ability to maintain an economically healthy aviation industry; the longer a pandemic event lasts, the more severe the economic effects will be on all sectors of the aviation industry. However, the initial impact of a pandemic event could be particularly severe because all elements of society, not just the aviation sector, would be affected—in particular, the financial sectors of the economy, including the banking industry.

- **Difficulty in planning for an event with so much uncertainty:** When and where an outbreak will occur, the nature of the infectious disease, the rate at which it will spread, the ability to provide a medical response, and other factors are not known. As a result, it is difficult to forecast how individuals, airlines, government agencies, and other groups will respond. If a pandemic event originates outside the United States, American citizens living and traveling abroad may wish to return home. Maintaining air services to accommodate them will be important. At the same time, there may be a demand to curtail international service to prevent or delay the spread of the disease to the United States.

- **Effects on business, leisure, and recreational travel:** During a pandemic event, corporate and governmental travel policies regarding nonessential travel will probably be canceled or postponed. There may also be travel restrictions placed on serving some markets, depending on where the pandemic occurs. Short-haul carriers to specific vacation destinations would probably experience significant declines in passenger volumes; the businesses and communities serving tourists would also experience significant economic losses. It will be important to keep travel agents and the travel insurance industry informed.

- **Impacts of a pandemic event on air cargo services:** Cargo does not get sick; however, pilots, crews, ground support, and air traffic controllers can get sick. Keeping supply chains open for medical supplies and other critical items will likely be a priority during a pandemic event, particularly during the early phase of the incident. As a result, air cargo businesses may need to be able to continue to provide relatively normal operations. Passenger airlines may also be able to focus more on cargo to provide a revenue stream and to maintain some level of service during a pandemic event. A number of factors could influence the ability of airlines to increase cargo shipments. These factors include the availability of aircraft and crews, airport infrastructure and services to accommodate cargo, and local infrastructure and services. For example, trucks are not allowed on the George Washington Parkway in the Washington, D.C., area, which poses limitations for air cargo shipments at Ronald Reagan Washington National Airport. Additionally, there may be a disruption in air cargo from certain parts of the world during the major portion of an event if flights are restricted.

- **Air cargo effects from social distancing:** In an effort to prevent catching a disease, many individuals may socially distance themselves. As a result, shopping from home may increase during a pandemic event, contributing to a possible increasing trend in air shipments.

- **Impacts of antitrust laws:** These laws may influence the ability of airlines to coordinate and cooperate during a pandemic event. It was suggested that examining the potential to relax some antitrust provisions during a pandemic event now could be beneficial to prepare for any changes during an event.

- **Types of measures passengers may require to continue to travel by air during a pandemic event:** These measures include the messages airlines and government agencies could send to encourage air travel. A major issue will be to protect passengers from potential infectious diseases and communicate to the public that it is safe to fly—with action supporting the message that passengers are safe from contamination if this effort is to be successful.

- **Flexibility of airline and airport personnel in responding to a pandemic event:** Representatives from various unions and other employee groups have been involved in developing response plans at airlines and airports, and the ongoing involvement of all employee groups was noted as critical to the success of planning efforts as well as actual response and recovery efforts. Employees and passengers are asking questions about different aspects of planning, responding, and recovering from a pandemic event. Well-informed employees are important to the successful operations of all elements of the air industry. Airline and airport personnel also play a key role in communicating accurate information to travelers and shippers.

- **Maintaining essential employee functions:** The aviation system and industry may be subject to vulnerability during a pandemic event and various approaches may need to be taken to mitigate potential problems in maintaining a vibrant and competitive industry, including options for redeploying personnel and equipment during a pandemic event.

- **Roles and responsibilities:** Federal, state, and local agencies, as well as airports and air carriers, have different roles and responsibilities in responding to a pandemic event and in addressing potential economic impacts. Consequently, it was suggested that enhanced communication and coordination among all groups could benefit all parties, including surrounding communities, which will also experience the economic impacts of a pandemic event.

Air Transportation as Critical Infrastructure

Kathie McCracken, Discussion Facilitator

A variety of topics were discussed in the session on air transportation as critical infrastructure. The first topic focused on identifying the essential services provided by the aviation sector to maintain its economic viability and the nation's economic and social stability, as well as to directly support pandemic preparedness, response, and recovery. The essential system components, functions, assets, and equipment that must be maintained during a pandemic event to sustain the delivery of essential aviation services were discussed.

- **Distribution of medical and other essential supplies:** Maintaining air cargo service was identified as important to ensure that medical and other essential supplies can be delivered where they are needed during a pandemic event. Of particular concern to airlines and airports is obtaining needed supplies for personnel to be able to maintain services. It was noted that FAA and

other federal agencies could play a role in helping to secure essential supplies, specifically through their contacts with suppliers and their experience responding to emergencies.

- **Lessons learned from Hurricane Katrina:** Although it is an example of a localized situation, lessons can be learned from the post-Katrina experience. Maintaining continuity of operations was identified as important, as learned in the chaotic experience at the New Orleans airport and other airports along the Gulf Coast after Hurricane Katrina, where it was difficult to get medical supplies and medical personnel into areas through the airports.

- **Short- and long-term disruptions to service:** Air carriers experience disruptions regularly because of weather conditions and other situations. Some airlines have also experienced labor disruptions, including strikes by some employee groups. Air carriers have plans for dealing with these types of disruptions, which are typically relatively short in duration. Most segments of the air industry are not prepared to deal with these types of situations over the long term, however. Domestic and international carriers would face similar issues, although some airlines may be more prepared, and better able, to handle a short-term decline in revenues than others.

- **Planning at the international level:** One outreach activity under way is the North American Avian and Pandemic Influenza Plan involving the United States, Canada, and Mexico. This plan aims to create a North American perimeter to delay the arrival of a pandemic disease that originates outside of North America. Other international outreach activities are being pursued to help strengthen the ability to respond to a worldwide pandemic event.

- **Impacts of a pandemic event on rural areas and small communities:** There are different perspectives on the possible impacts on air service to airports in rural regions. Some suggest that air service to these areas will decline during a pandemic event, with the major focus on providing essential and emergency supplies. Others suggest that service to some of these areas could increase if airports and air service in major metropolitan areas experience the major impact of a pandemic event. Travelers and shippers may turn to smaller airports as safer and functional alternatives.

- **State-level responsibilities:** Each state is responsible for its own planning activities related to responding to a pandemic event and state governors have been identified as the responsible parties for decisions during the event. The states are also responsible for allocating resources during the response and recovery periods and may approach air carriers to assist with transporting essential supplies, which might include food to rural and remote areas.

- **What are essential services?** There are two definitions of essential services used in planning documents: those services essential for businesses to function and those services essential to the nation. It was suggested that it is also important to distinguish essential cargo and essential passengers from all cargo and passengers.

- **Maintaining key aviation infrastructure and providing essential services:** Key infrastructure elements include airports, aircraft, and other fixed facilities. During a pandemic event, the demands on the infrastructure may shift to airports becoming gathering places for individuals trying to leave an area or arranging for incoming passengers as well as serving as field hospitals, with a mix of sick and healthy people.

- **Public travel behavior during a pandemic event:** The experience during the aftermath of 9/11 indicates that people are willing to drive long distances to return home. A similar desire would likely be experienced during a pandemic event. Significant elements of the population—such as college students, temporary workers, and individuals traveling on business or vacation—would probably want to return home, whether they are abroad or just in a different part of the country. Hourly wage earners may respond differently than other employees. It was suggested that, in general, individuals are likely to do what they consider to be in their own best interest; as a result, human behavior may be a “wild card” during a pandemic event.

- **Effects of regional hot spots of the disease:** Some areas of the country may become hot spots for the disease, depending on where it begins or where it enters the country and how quickly it spreads. There could be a need to relocate aircraft from these areas on a temporary or long-term basis. Given the uncertainty surrounding a pandemic event, participants noted the need for flexibility in response plans and being prepared for multiple scenarios.

- **Different approaches to quarantining passengers:** Most airports have limited capacity to accommodate quarantined passengers. In addition to the limited space, both in existing terminals and in nearby buildings, other concerns include the availability of trained medical personnel, medical and other essential supplies, food and water, and other necessary items. The duration of possible quarantines is also an issue, as are the costs associated with quarantining passengers and who would be responsible for paying these costs.

- **Critical partnerships between the Centers for Disease Control and Prevention and local health officials:** Many of these partnerships, through memorandums of understanding and other mechanisms, are in place today, but additional cooperation and coordination would probably be needed during a pandemic event.

- **Needs of the utility aviation sector:** The utility aviation sector often operates from smaller airports and heli-

pads and uses smaller aircraft and helicopters to service oil, gas, coal, and other utility and mining businesses, both onshore and offshore. Ensuring that the demand for oil, gas, and electricity is met during a pandemic event would entail maintaining these types of services.

Workforce Issues in the Aviation Industry

Bonnie Wilson, Discussion Facilitator

Topics covered in the discussion on workforce issues in the aviation industry included identifying essential personnel, protecting employees, and providing personnel with needed medical supplies. Participants also discussed how the projected 40% absenteeism during a pandemic event would affect different sectors of the aviation industry and how various sectors would increase staff after an event. Workforce issues also emerged during the discussions in other sessions. The major workforce topics discussed in all sessions are summarized in this section.

- **Workforce absenteeism during a pandemic event:** A 40% absenteeism rate has been projected; however, this is a peak estimate—not for the duration of a pandemic event—used for planning purposes. Other factors, such as social distancing in which people avoid contact with others for fear of contracting the disease, will influence the actual percentage. Human behavior is also likely to play an important role in how different segments of the population react. For example, hourly wage earners may be more likely to try to work than salaried workers, even if they are sick. Additionally, there are questions about how various sectors of the aviation industry would be able to respond to the 40% absenteeism projected during a pandemic event. Specific questions include what this 40% level means, when it would occur during an event, what the recovery period might be, and what the 60% of employees anticipated to be working would need to perform their duties in a safe and effective manner. If a 40% absenteeism rate is experienced, the industry will not be able to function at a 100% percent level.

- **Alternatives to addressing the estimated 40% absenteeism rate:** Some employees would be able to telecommute, but most employees in the aviation industry have to be on site. Pilots, flight attendants, gate agents, caterers, ground crews, cleaners, and other personnel cannot telecommute. Although some redeployment and job sharing may be possible, the specialized expertise and skill level associated with many airport and aviation jobs limit these approaches. Further, although many airports have mutual-aid agreements with surrounding communities, fueling an aircraft is different than fueling a truck and responding to a fire on an aircraft is different than responding to a house fire. How-

ever, participants noted that providing opportunities to cross-train personnel to enhance job sharing during a pandemic event could be initiated now.

- **Distribution of essential supplies:** There is a need to determine who essential employees are and whether priority will be given to them in the distribution of vaccines, masks, gloves, and other essential supplies. Who will make these decisions, how people will be notified, how the vaccines will be administered, and how other medical supplies will be distributed also need to be addressed. It was noted that more information is needed from federal agencies concerning plans to provide medical supplies to the aviation sector, along with training in the use of protective masks, gloves, and other equipment.

- **Multiregional coordination of supplies during a pandemic event:** The ability to obtain necessary medical and essential supplies, including vaccines, masks, gloves, fuel, and other items, will require maintaining regional and local supply chains. Different vaccines, of which some 80% are manufactured outside the United States, are being stockpiled, but there are questions related to the shelf life of some vaccines. Participants noted that assistance from the federal government will be important in obtaining needed medical supplies.

- **Employee relations and union rules in the planning process:** The advantages of discussing pandemic event planning issues with unions and other labor groups were noted, as compared to doing so in the middle of an event. For example, drafting contract clauses relating to a pandemic event might be appropriate. Flight attendants, ticket agents, and other personnel regularly interact with passengers. Ensuring they are aware of planned activities and potential responses through ongoing communication was noted as important.

- **Modifying operating standards during a pandemic event:** Regulatory agencies may not be able to give advance notice of modifying some operating requirements, but a pandemic event is not a normal situation and changes in operation may be necessary as long as safety is not compromised. The lessons learned from the situation in New Orleans during and after Hurricane Katrina indicate that it could be helpful to establish minimum standards that could be put in place for short periods of time when there is a “safety-of-life” situation. The federal government, however, would have to make the decision about changes in normal requirements and standards.

- **Importance of open and ongoing communication with employees in all segments of the aviation industry:** Developing protocols for providing critical information could help address the spread of misinformation during a pandemic event. It was suggested that sharing information now on the various planning activities currently under way would be beneficial for airport and airline employees and would support the maintenance of open

lines of communication that are critical during a pandemic event.

- **Staffing levels during and after an event:** In addition to possible reductions in staffing levels during a pandemic event, there could be a need to increase staff after an event. The provisions of labor contracts, benefit packages, and other employee agreements may need to be considered during and after a pandemic event to attract employees back to the aviation industry. More thought could be given now to what these efforts might entail.

Mitigating Economic Impacts and Preserving Air Service

Rich Golaszewski, Discussion Facilitator

Various topics were discussed related to mitigating the economic impacts of a pandemic event and preserving air service. These topics included maintaining the financial viability of the air industry, reducing operating levels that place airlines and airports at risk financially, and communicating with the public and other groups to maintain confidence in the aviation industry.

- **Financial health of the aviation industry:** Aviation is a global industry and its financial health is based on numerous factors. The aviation industry is generally in a better financial position than it was shortly after 9/11, but it is still vulnerable and a pandemic event that lasts 6 months or more could have greater financial ramifications for the aviation sector. There are questions about whether there would be a viable aviation sector left after a major pandemic event. Some airlines trimmed to the basics after 9/11, with the result that not much more can be reduced. Dealing with the anticipated absenteeism, the ability to obtain fuel and other supplies, responding to possible requests for quarantining passengers, and the potential fear of the public to return to flying after a pandemic event combine to paint a grim picture for the economic viability of air carriers.

- **Industry revenue effects:** Airports operate based on revenues from numerous sources. In addition to the income generated by actual flight operations, airports receive significant revenues from parking and in-terminal restaurants, shops, and other businesses. A pandemic event would negatively affect all these revenue-generating sources.

- **Example of the local economic impact of the aviation industry:** The closure of Ronald Reagan Washington National Airport for some 23 days after 9/11 provides an example of the important role airports play in the economy of an area and what might happen during a pandemic event. With no air traffic, most businesses in the airport closed temporarily or reduced

hours. Cleaning and support services were reduced. With no air travel, rental car companies had very little business. Some people in the community came to the airport for lunch to help businesses and to show support. The closing had a ripple effect on the tourism industry in the Washington, D.C., area.

- **Impacts of different scenarios on the air industry:** It was suggested that the duration of a pandemic event will be the key to determining the extent of the impact to the industry. Even if airlines are able to increase cargo to offset declines in passengers, or provide contract service for the government, an event that lasts multiple months will likely have a significant negative effect on the industry. A need could conceivably arise for the federal government to take action and provide financial assistance to airlines and airports.

- **Attracting customers after a pandemic event:** Many airlines used promotional fares to attract people back to flying after 9/11. There were mixed comments on whether this strategy would be effective after a pandemic event. It may be more difficult to attract travelers who have other options, such as driving or taking a train, back to flying. The impacts, however, would likely be felt differently by different air carriers and airports. For example, smaller airports could be hurt more. Government could play an important role in helping to reestablish the feeling that it is safe to fly and helping to build the public's confidence in traveling by air.

- **Funding sources available to airports:** Many airports have bonding authority and use Airport Improvement Program funds for capital projects. Additional financing measures to assist airports were implemented after 9/11 and Hurricane Katrina, including flexibility in the use of passenger facility charges. During a pandemic event, funding would likely be needed for ongoing operations and maintenance. Most airports do not have large cash reserves to draw on during a long-term event, especially airports—including those in the Washington, D.C., region—that have major capital projects under way.

- **Use of aircraft in emergency response:** Most airlines have contingency plans for weather, natural disasters, and major incidents and aircraft can be relocated to other airports in response to changing conditions. Air carriers, air ambulances, and other emergency response air services may be called on to assist with emergency evacuations or other relief services. During these situations, coordinating with existing emergency response efforts is important. For example, the Helicopter Association International's first responder's network is composed of operators who have agreed to share information and other resources.

- **Effects of hot zones in certain parts of the country:** As no area wants to be identified as unsafe, addressing hot spots would likely be a public policy issue. The potential for international flights to be funneled to specific airports outside of a hot zone might limit the indus-

try's ability to service some markets. A government limitation on service to some areas due to public health needs would likely be temporary, participants suggested, although the duration would depend on the nature of the disease.

- **Ability of airports and airlines to share information, coordinate, and cooperate during a pandemic event:** Many airports have formal and informal agreements with other airports to share information and resources. These networks would probably be strained if a pandemic event lasted 6 to 12 months or longer. Antitrust legislation and a competitive environment may also limit the ability of airlines to work together. The National Response Plan, however, provides some flexibility during a pandemic event and there are possible roles the different airline alliances, associations, unions, and other groups could play to help promote information sharing and communication in addition to the coordination roles of the FAA and state and local governments.

- **Possible scenarios during the recovery phase of a pandemic event:** With regard to how quickly people will return to flying, it was noted that various market segments would probably respond differently; business and government travel would probably return first, followed by leisure travel. The ability of airlines to communicate and cooperate during the recovery phase based on antitrust laws and the competitive nature of air service could influence recovery. Government agencies at the federal, state, and local levels, as well as trade associations, airlines, airports, and other groups, each would have a role to play during the recovery phase. It was suggested that the development of a “toolkit” to contain measures that can be implemented to aid in recovery could be helpful.

- **Impact of a pandemic event on general aviation:** There are mixed views on the effects to general aviation, but it was recognized that there is a potential for an increase in general aviation activity, with some travelers switching from commercial airlines to charter services. The available capacity of general aviation is a limiting factor to significant increases, however, and general aviation could experience the same absenteeism rates as commercial airlines.

- **Long-term viability of the airline industry:** Airlines and airports are cash-intensive operations. As a result, the scope and duration of a pandemic event was noted as key to the long-term viability of the airline industry. The ability to maintain basic levels of service, the ability to return to normal operations, and the potential need for financial assistance from the federal government during a lengthy pandemic event could affect the long-term outcome.

- **Assessing the current financial situation of the various airlines:** There are differences among the airlines and, as a result, each airline could experience different short- and long-term effects from a pandemic event. The various elements of the aviation industry will respond according to their own self-interest. Having better information on the current status of different sectors of the aviation industry would be beneficial. Currently, most airlines and airport recovery plans are more short term; some participants noted a need for longer-term plans.

- **Plans to return to normal operations:** There are concerns related to clearly defining the roles and responsibilities of different groups, maintaining open and ongoing communication, and coordinating efforts. Specifically identifying the agency, individual, or group with the most credibility with the public to promote the return to normal operations was noted as important to the planning process.

Stakeholder Comments on Workshop Discussions and Next Steps

Francisco Averhoff, *Centers for Disease Control and Prevention*
 Susan McDermott, *U.S. Department of Transportation*
 Kate Lang, *Federal Aviation Administration*
 Jim White, *Federal Aviation Administration*
 Scott Middlekauff, *Department of Homeland Security*
 Megan Walket-Tighe, *U.S. Department of State*
 Tara Foley, *Department of Homeland Security*
 Debby McElroy, *Airports Council International–North America*
 Lydia T. Kellogg, *Airports Council International–North America*
 Steven Brown, *National Business Aviation Association*
 Dinkar Mokadam, *Association of Flight Attendants, CWA, AFL-CIO*
 Katherine Andrus, *Air Transport Association, Moderator*

At the conclusion of the workshop, an overview of the session discussions was presented and senior-level officials from the federal agencies and industry associations had an opportunity to comment on these discussions. Their comments are provided in this section. Using information gathered throughout the workshop and in these summary discussions, several follow-up steps were noted for future consideration.

STAKEHOLDER COMMENTS ON WORKSHOP DISCUSSIONS

Centers for Disease Control and Prevention

Francisco Averhoff

Thank you very much for the opportunity to participate in this session. I am sorry I was not able to attend other parts of the workshop. From the summary this morning, it appears you had a very productive 3 days. You have covered the major issues.

Our group, the Quarantine Branch of the Division of Global Migration and Quarantine, is committed to participating in these types of discussions and in coordinat-

ing with other agencies and organizations. Our group is still relatively new and most of our staff are located at quarantine stations throughout the country. Historically, the various stations have worked somewhat independently and the approaches to illness response have been station specific. We are expanding our capabilities and focusing on a national approach to illness-response preparedness.

As in many agencies, it is easy for different divisions and groups to focus on specific topics or areas of expertise. We need to ensure that these groups do not become “silos” but rather coordinate and cooperate with other parts of the agency as well as with other agencies and groups.

We have an air investigation team and a port preparedness team. We have been working with airports, local communities, states, and other groups on response planning issues. To date, we have not worked as closely with airlines and the airline industry. The discussion this morning points out the need to include these groups in our ongoing activities.

Enhancing communications among all groups would also be of benefit. Workshops, such as this one, provide opportunities for dialogue across agencies and industry groups. I am glad there was discussion of scaling

responses to the nature and severity of a pandemic event. This concept is important, as pandemic events will be different. We have learned from recent experiences with airline passengers displaying flu-like symptoms. We can build on these experiences as we move forward with more detailed planning.

Additional research related to disease transmission on aircraft would be beneficial. Currently, data on influenza transmission on aircraft is lacking. For example, there was an outbreak of mumps this past year. We examined available information on reported passengers with mumps and found little evidence of transmission to other passengers. Understanding more about this issue would assist with refining a risk-based response approach. We would be interested in partnering with other agencies and groups on research in this area. Additional research would enhance evidence-based responses.

Thank you again for the opportunity to provide comments on the workshop. I look forward to continued discussions on these topics and to working with other agencies and groups on the suggested research and other activities.

U.S. Department of Transportation

Susan McDermott

Good morning. Thank you for the opportunity to participate in this session. I commend TRB for organizing this workshop. The discussion has been very interesting and very beneficial. The U.S. Department of Transportation (DOT) is very involved in various pandemic preparedness planning activities. U.S. DOT and FAA are dealing with potential economic impacts to airports and air carriers and the operational aspects of responding to a pandemic event.

Planning has evolved over the past few years. There is a realization that plans need to be flexible and scalable. Risk-based and all-hazards approaches make sense. We need to be able to respond to a variety of scenarios, including those dealing with infectious diseases.

The concept of degree is important. A toolbox approach makes more sense than a cookbook approach. Flexibility is needed to scale up quickly or slowly depending on the nature of an event. The various federal agencies are working together on different pandemic response planning activities.

U.S. DOT is working with the Homeland Security Council, the Department of Homeland Security (DHS), and the Department of Health and Human Services (HHS) on papers related to these different planning activities. These papers will be available soon for review and comment by other agencies and industry groups. Our experience is that we receive better comments and feedback when we provide a draft document for others to review. We look forward to receiving your comments and to continuing dis-

cussions on these topics. We are focusing on the potential impacts to airports, air carriers, and communities.

As a regulatory agency, U.S. DOT deals with airports, air carriers, labor unions, communities, and other sectors of the aviation industry on a regular basis. We also interact on an international level with governments, air carriers, and organizations in other countries. Providing forums such as this workshop is very beneficial. We hope to enhance communication among all groups and look forward to participating in future events.

U.S. DOT will continue to work with DHS, HHS, and other agencies on the various planning activities. We are mindful of the potential financial and economic impacts a pandemic event could have on air carriers, airports, and communities. A toolbox approach that provides flexibility in response to match the nature, scale, and spread of an infectious disease appears to make sense.

Again, thank you for the opportunity to participate in this workshop. I look forward to continuing to work with you on these important topics.

Federal Aviation Administration

Kate Lang

As I noted in the opening session, I would like to thank Katherine and Jim Crites for taking the initiative to develop the concept for this workshop. I would also like to thank TRB for organizing the workshop. It has been very beneficial to bring representatives from the various agencies and organizations together to share information and discuss common concerns. We have much to learn from each other.

There were a number of encouraging points made by speakers, including representatives from the Centers for Disease Control and Prevention discussing a risk-based approach to quarantines. It is a daunting task to think of the response at airports if the passengers on a full plane or multiple planes need to be quarantined. The facility and personnel requirements to quarantine one or multiple airplanes would stress most airports. The concept of a scalable risk-based response appears to be more manageable.

The discussion of potential impacts on airports and airlines from employee absenteeism during a pandemic event was interesting. Airports may be in a slightly better position than airlines in addressing absenteeism. Examining approaches that airports and airlines can use to respond to high levels of employee absenteeism in more detail would be beneficial.

A number of comments were made related to maintaining the financial health of airlines, airports, and the aviation industry as a whole. Ensuring the vitality of the aviation sector is a key concern of the FAA in all emergencies. We are committed to working with all groups to maintain a financially viable aviation system.

It was also interesting to hear the discussion related to essential supplies. Given the experience during Hurricane Katrina, I agree that it is important to ensure that needed supplies are available. Additional conversations on this topic would be useful, as we have good connections with suppliers and can help ensure that essential items are available. Developing a common list of essential supplies would be of help to all groups.

This workshop has been very beneficial. I hope the dialogue will continue among participants and agencies. We in the FAA are committed to participating in ongoing activities, and I look forward to future meetings. Thank you.

Federal Aviation Administration

Jim White

I appreciate the opportunity to participate in this workshop. The discussion on the different topics was very enlightening. Although we have been working on these issues for the past 2 years, there is still much to learn. It is especially beneficial to hear about the activities of other agencies and groups.

The discussion of the uncertainty associated with planning for these types of events was very productive. There is a desire for specific answers on how the various agencies and groups will react, but much will depend on the extent of a specific pandemic event, the illness and fatality rates, and the duration. These factors, as well as other issues, will influence the response from federal agencies. The toolbox approach makes sense, as it allows agencies and groups to match appropriate responses with the nature of an event and the needs of specific areas.

Building on the discussion at this workshop is important. Maintaining open and ongoing communication should certainly be a priority. There are also opportunities to pursue needed research. The suggestion from Centers for Disease Control and Prevention personnel concerning research on disease transmission rates on aircraft and flights of different lengths would be an appropriate topic for the Airport Cooperative Research Program (ACRP). Developing a problem statement and submitting it to ACRP would be a logical next step. Thank you.

Department of Homeland Security

Scott Middlekauff

Thank you for the opportunity to provide a few comments. I am pleased to be able to participate in this session for Til Jolly, who spoke at the opening sessions. The Department of Homeland Security (DHS) is collaborating with other agencies on numerous activities related to planning for pandemic events.

An interagency group is completing the first draft of the federal contingency plan. The plan outlines the response of each federal department during different stages of a pandemic event. As you can imagine, developing one plan that addresses the roles and responsibilities of the major federal agencies is a challenge. All federal departments including the State Department, the Department of Health and Human Services (HHS), the Centers for Disease Control and Prevention (CDC), and the U.S. Department of Transportation (DOT) have been involved in developing the plan. We will be seeking stakeholder review of the draft plan very soon.

The border management plan is also in the final stages of development. It will be incorporated into the contingency plan. Representatives from the State Department, U.S. DOT, CDC, and other departments have been involved in developing the border management plan. It addresses a number of elements, including screening protocols and controlling the borders.

The development of the community mitigation strategies has been another significant activity involving DHS, HHS, CDC, and other agencies. As a public health service office, we typically focus on helping people get well after they become sick. We often do not focus enough attention and resources on preventing an illness to begin with. The main goal of the community mitigation strategies is to delay the onset of a communicable disease and to keep most people from contracting the disease.

Information on the community mitigation strategies will be available soon. A major communication effort will be needed to explain the reasons for the strategies to the public, policy makers, businesses, and other groups. Depending on the characteristics of the disease, possible strategies include dismissing schools and keeping children at home, allowing workers to telecommute, and distributing and using antiviral medications and masks.

Possible response strategies continue to evolve. Some of the assumptions contained in the implementation plan, which was completed a year ago, have changed. These changes reinforce the need for flexible and scalable plans that are responsive to different diseases and levels of severity.

I participated in a meeting yesterday in North Carolina discussing the community mitigation strategies and responses. Topics such as identifying key personnel to receive antiviral vaccines, masks, and other equipment were discussed. Funding issues and financing various response strategies were also topics of discussion.

The National Response Framework permits the Secretary of DHS to designate a National Principal Federal Official (PFO) to coordinate the federal response in an incident of national significance. DHS Secretary Chertoff has designated Coast Guard Vice Admiral Vivien Crea as the National PFO. As the National PFO, Admiral Crea will be responsible for coordinating the federal response to a pandemic event. She will be working with the appro-

appropriate federal agencies to ensure ongoing communication. The interagency response will be based on previously established roles and responsibilities.

The draft screening protocols that have been mentioned during the workshop are currently being reviewed at the Homeland Security Council. After the draft is approved by the Council, it will be released for review by the various stakeholder groups. It is anticipated that the Sector Coordinating Council (SCC) through the National Implementation Protection Plan will lead the stakeholder outreach process to obtain feedback on the screening protocols. Chris Bidwell from the Air Transport Association currently chairs the SCC, which also includes representatives from private-sector organizations.

U.S. Department of State

Megan Walket-Tighe

Thank you. I appreciate the opportunity to participate in this session. The Avian Influenza Action Group at the State Department is dedicated to working on influenza and pandemic planning and related activities. I am with the Office of Transportation Policy, which is working with the Avian Influenza Action Group to ensure that economic interests are considered in developing pandemic event response and recovery plans.

In addition to coordinating with other federal agencies, we are reaching out to our international partners to ensure there is communication and cooperation on a worldwide basis. We want to make sure there is consistency among plans at the international level and that we are not working at cross-purposes. As you can imagine, coordinating pandemic response plans from different countries has been challenging. Ongoing communication with international stakeholders is important.

Numerous efforts related to pandemic planning, aviation security, and response are under way. We have been involved in developing the National Strategy for Aviation Security. The Air Transport System Recovery Plan represents another related activity. We have also been working on the screening protocols. As noted in the summary comments, being sensitive to possible overlap and duplication is important. Continuing conversations at meetings and workshops is very useful for keeping all groups involved as well as for avoiding potential duplication of efforts. Thank you.

Department of Homeland Security

Tara Foley

I wanted to mention that Department of Homeland Security staff have been attending the National Govern-

ment Association Pandemic Workshops that are being held throughout the country. The workshops are being coordinated with the Department of Health and Human Services. There have been representatives from airlines, airports, and related groups at many of the workshops. The workshops provide another good example of the outreach and coordination efforts under way. We need to continue to work together on the numerous planning activities to ensure a coordinated response. Thank you.

Airports Council International–North America

Debby McElroy

Thank you, Katherine. I would like to echo the comments others have made this morning about the value of the discussions at the workshop. I was only able to attend yesterday afternoon and this morning, but Lydia Kellogg participated in the full workshop. I was impressed by both the information provided by participants and by the commitment to continue working together on this important topic. I was also struck by how little we know about the potential magnitude of possible outbreaks and about how much of an airport's response to these situations will be determined by actions at the federal and state levels.

It is critical to continue the involvement of all stakeholders in the planning process for possible pandemic events. Airports are in a unique position in that they have a clear and important role in the national transportation system but are part of state or local governments. This situation imposes additional responsibilities, as well as extra reporting, for most airports.

There are also numerous differences among airports. These differences will influence the response capabilities and approaches to pandemic events. An airport located in a state capital will typically be working closely with the governor and state officials. An airport that is collocated with the National Guard or a military base will have different response capabilities than one that is not. It is important to ensure that the airports have flexibility to craft a pandemic response plan that is appropriate for their unique circumstances.

We recently conducted a survey of our members to obtain information on the status of pandemic planning activities. The responses indicate that many airports have plans in place for responding to pandemic events. In many cases, however, it appears the pandemic response plan is part of a larger emergency response plan. I think it is important to recognize that this approach may not provide the necessary focus on the unique aspects of a pandemic event, including the unknowns related to the length of the disruption or the level of the disruption.

The survey results also indicated that many airport representatives are looking to Airports Council Interna-

tional to provide additional information on the federal response, regulatory relief, and critical issues. We are committed to participating in the various planning activities. Again, I appreciate the opportunity to participate in this workshop and I look forward to continuing to work with you on this important topic.

Airports Council International–North America

Lydia T. Kellogg

I would like to reiterate Debby's comments. We look forward to actively participating in these types of sessions and obtaining critical information for our airport members. Airports will play a key role in responding to pandemic events. Involving airport representatives in the planning process is important. Airports Council International can assist in linking airports with federal and state planning activities. We look forward to working with you in future workshops and other activities.

National Business Aviation Association

Steven Brown

I appreciate the opportunity to participate in this session and I apologize for not being able to attend the full workshop. The National Business Aviation Association (NBAA) is interested in the topics discussed at the workshop. I look forward to working with you on future activities.

By way of background, the NBAA represents some 8,000 businesses and corporations that operate aircraft for business purposes. NBAA members operate a wide range of air services. Most NBAA members focus on air operations in the United States. Only about 20% of our members operate international services. Most of the international air service focuses on destinations in Canada and Mexico. Probably less than 10% of the international air service is to destinations outside of Canada and Mexico. This international service tends to be operated by large companies using larger airplanes.

Most companies that fly internationally have internal policies related to emergency response. Most have thought about the potential of responding to a pandemic event. International business aviation operations tend to be very secure. Planes are attended at all times and are maintained in secure areas. International business flights often carry top company officials, entertainment or sporting industry personnel, or other notable people. This type of travel could possibly be reduced during a pandemic event.

In many regards, business aviation is similar to commercial aviation. There is not a lot of scalability or excess

capacity in business aviation. The number of pilots, attendants, and other personnel is limited. There are flight and duty time limitations. Business aircraft are not designed to fly the number of hours commercial aircraft fly. Business airplanes are designed for 1,000 flight hours a year compared with 4,000 flight hours for commercial aircraft. As a result, the capacity of corporate aviation is limited.

General aviation reflects smaller operations. General aviation is focused almost exclusively within the United States. There is a small amount of general aviation travel to Canada, Mexico, and the Caribbean. The length of stay for these trips is typically only a few days, however. There is some available capacity in general aviation but not enough to accommodate large volumes of passengers.

Again, I appreciate the opportunity to participate in this session and I look forward to future activities.

Association of Flight Attendants, CWA, AFL-CIO

Dinkar Mokadam

I would like to thank Katherine and TRB for the opportunity to participate in this workshop. It has been an excellent learning experience and very beneficial. As the only representative from labor, I do feel somewhat alone, however. It would be good to have more representatives from aviation labor groups participating in workshops such as these. I would be pleased to help identify other labor organizations to include in future workshops.

It is important to remember that flight attendants interact directly with air passengers. They are the face of the airlines and the aviation industry to the public. Flight attendants and other airline and airport personnel should be treated fairly and with respect in developing a pandemic response plan and in reacting to actual situations. Open lines of communication are critical. Flight attendants need to be kept informed about planning activities at all levels as well as their roles in reacting to possible scenarios.

The flow of information to flight attendants and other employees could have been better during the severe acute respiratory syndrome epidemic. We need to learn from that situation and in the future do a better job of keeping all groups informed on the status of outbreaks and the actions being taken.

I appreciate the opportunity to participate in the workshop and look forward to working with you on future activities. I will be happy to help with outreach efforts to other labor groups. Thank you.

NEXT STEPS

The activities described in this section were among those participants identified as opportunities to build on the

dialogue and information sharing initiated at the workshop.

- **Share workshop information with others in an organization or agency:** A number of participants noted that they would share the information from the workshop with other individuals in their agency or organization as well as other groups. Providing updated information to members of associations, trade groups, labor unions, and other organizations was identified as important to help enhance a common understanding of current efforts and activities.

- **Continue dialogue among all groups:** Methods to continue the dialogue started at the workshop were identified and discussed as well as approaches to provide all appropriate groups with the opportunity to review the various plans and programs being developed by federal agencies. Using existing committees and groups, including the TRB Task Force on Aviation Security and Emergency Management and other TRB committees, was suggested as a good method to focus future efforts for sharing information.

- **Promote and conduct additional research:** Participants reviewed some topics for further research identified during the workshop. These topics included assessing the transmission of infectious diseases in aircraft cabins, techniques for cross-training essential airport and local community personnel, defining essential services, and developing communication methods and messages to disseminate information to the public. Participants volunteered to develop problem statements for the Airport Cooperative Research Program (ACRP) and other research programs.

- **Assist with reviewing agency plans and programs:** Participants discussed approaches to provide the various aviation industry groups and organizations with the opportunity to review and comment on the various plans and programs being developed by federal agencies. Participants from different organizations and groups at the workshop volunteered to help with the review process. Federal agency personnel expressed interest in working

with these organizations, as well as other groups, to maximize stakeholder review of the various plans and programs. Participants stressed the importance of providing opportunities for stakeholder review and meaningful and useful comments on the draft documents. Workshops and table-top exercises were also discussed as methods to help disseminate information on the different plans and programs.

- **Conduct additional workshops:** Participants discussed opportunities for future workshops on different topics related to the aviation industry and pandemic events. The ACRP, which sponsored this workshop, represents one potential funding source. Other related TRB committees might also be interested in sponsoring or cosponsoring a workshop or session at a conference. There may also be opportunities for workshops or sessions associated with various aviation industry meetings.

- **Leverage resources and build on existing relationships:** Participants discussed the need to leverage resources among the various groups and agencies. Avoiding duplication of effort and maximizing personnel and financial resources were noted as important, as was using existing organizations and channels of communication to share information. The ability to build on existing relationships was also discussed. Airports typically have strong working relationships with local, regional, and state governments. Air carriers interact more with federal agencies and typically do not have strong relationships at the local, regional, and state levels. It was suggested that the existing working relationships of all these groups could be enhanced by ongoing coordination and cooperation.

- **Use TRB as a catalyst for communication:** Participants discussed using TRB to help promote ongoing communication among all groups and to coordinate future workshops and other activities. The ability to maintain and expand on the conference website, along with other methods to provide updated information of interest to all groups, could be useful. Involving different committees in follow-up activities, organizing annual meeting sessions on key topics, and planning future workshops were also mentioned as possibilities.

Reference Materials

INTERNATIONAL GUIDANCE

- International Civil Aviation Organization (ICAO) Guidelines for States on Communicable Diseases/Avian Influenza
<http://www.icao.int/icao/en/med/guidelines.htm>
- ICAO Amendment 20 to the International Standards and Recommended Practices—Facilitation—Annex 9
<http://www.icao.int/ICDB/HTML/English/Representative%20Bodies/Council/Working%20Papers%20by%20Session/179/C.179.WP.12788.EN/C.179.WP.12788.appa.EN.pdf>

FEDERAL REGULATIONS/INFORMATION

- 14 CFR Part 382: Nondiscrimination on the Basis of Disability in Air Travel—Section 382.51 Communicable Diseases
http://a257.g.akamaitech.net/7/257/2422/26mar20071500/edocket.access.gpo.gov/cfr_2007/janqtr/pdf/14cfr382.51.pdf
- 42 CFR Part 70: Interstate Quarantine
http://www.access.gpo.gov/nara/cfr/waisidx_06/42cfr70_06.html
- 42 CFR Part 71: Foreign Quarantine
http://www.access.gpo.gov/nara/cfr/waisidx_06/42cfr71_06.html
- Executive Order 13295: Revised List of Quarantinable Communicable Diseases
<http://www.cdc.gov/ncidod/sars/pdf/executiveorder040403.pdf>

- Amendment to Executive Order 13295 Relating to Certain Influenza Viruses and Quarantinable Communicable Diseases
<http://www.whitehouse.gov/news/releases/2005/04/print/20050401-6.html>
- National Strategy for Pandemic Influenza: Implementation Plan
http://www.whitehouse.gov/homeland/nspi_implementation.pdf
- The 2007 XDR-TB Incident: A Breakdown at the Intersection of Homeland Security and Public Health
<http://homeland.house.gov/SiteDocuments/tbreport.pdf>
- GAO-07-781—Influenza Pandemic: Further Efforts Are Needed to Ensure Clearer Federal Leadership Roles and an Effective National Strategy
<http://www.gao.gov/new.items/d07781.pdf>
- The Pandemic and All-Hazards Preparedness Act (PAHPA)
http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s3678enr.txt.pdf
- Congressional Research Service Summary of the Pandemic and All-Hazards Preparedness Act (PAHPA)
<http://www.opencrs.com/document/RL33589/>

DEPARTMENT OF HEALTH AND HUMAN SERVICES INFORMATION

- Pandemic Planning Update IV (July 18, 2007)
<http://www.pandemicflu.gov/plan/panflureport4.html>

Travel Industry Pandemic Influenza Planning Checklist
<http://www.pandemicflu.gov/plan/workplaceplanning/travelchecklistpdf.pdf>

Pandemic Influenza Planning Checklist for Businesses
<http://www.pandemicflu.gov/plan/pdf/businesschecklist.pdf>

Community Mitigation Guidance
<http://www.pandemicflu.gov/plan/community/communitymitigation.html>

Summary of Interim Public Health Guidance for the Use of Facemasks and Respirators in Non-Occupational Community Settings During an Influenza Pandemic
<http://pandemicflu.gov/vaccine/maskguidance.html>

Federal Employment Laws—For Employees
http://www.pandemicflu.gov/plan/workplaceplanning/federalemmploymentlaws_employees.html

Federal Employment Laws—For Employers
http://www.pandemicflu.gov/plan/workplaceplanning/federalemmploymentlaws_employers.html

Contacts for Employers and Employees
<http://www.pandemicflu.gov/plan/workplaceplanning/employersandemployeescontacts.html>

Link to Frequently Asked Questions
<http://www.pandemicflu.gov/faq/index.html>

General Link to Workplace Planning for Pandemic Influenza
<http://www.pandemicflu.gov/plan/workplaceplanning/index.html>

CENTERS FOR DISEASE CONTROL AND PREVENTION INFORMATION

Control of Communicable Disease—CDC Notice of Proposed Rulemaking
http://www.cdc.gov/ncidod/dq/nprm/docs/42CFR70_71.pdf

Outbreak Notice: Human Infection with Avian Influenza A (H5N1) Virus: Advice for Travelers
<http://www.cdc.gov/print.do?url=http%3A%2F%2Fwwwn.cdc.gov%2Ftravel%2FcontentAvianFluAsia.aspx>

Interim Guidance for Airline Flight Crews and Persons Meeting Passengers Arriving from Areas with Avian Influenza (Updated)
<http://www.cdc.gov/print.do?url=http%3A%2F%2Fwwwn.cdc.gov%2Ftravel%2FcontentAvianFluArrivingFromAreas.aspx>

Interim Guidance for Airline Cleaning Crew, Maintenance Crew, and Baggage/Package and Cargo Handlers for Airlines Returning from Areas Affected by Avian Influenza A (H5N1)
<http://www.cdc.gov/print.do?url=http%3A%2F%2Fwwwn.cdc.gov%2Ftravel%2FcontentAvianFluAirlinesCleaning.aspx>

Notification to Public Health Authorities of Ill Passengers and Crew on Flights Destined for the United States
http://www.cdc.gov/travel/ill_reporting_aviation.pdf

Notification to Public Health Authorities of Ill Passengers and Crew on Flights Destined for the United States: Guidance for Flight Attendants
http://www.cdc.gov/travel/ill_reporting_flight_attendants.pdf

Cockpit Card: Notifying Public Health About Ill Passengers or Crew on Flights Arriving in the United States
http://www.cdc.gov/travel/cockpit_card.pdf

List/Map of CDC Quarantine Stations
http://www.cdc.gov/ncidod/dq/resources/Quarantine_Station_Contact_List.pdf

Fact Sheet
http://www.cdc.gov/ncidod/dq/resources/Quarantine_Stations_Fact_Sheet.pdf

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION INFORMATION

Guidance for Protecting Employees Against Avian Flu (pp. 26–29)
http://www.osha.gov/OshDoc/data_AvianFlu/avian_flu_guidance_english.pdf

Guidance on Preparing Workplaces for an Influenza Pandemic
http://www.osha.gov/Publications/influenza_pandemic.html

DEPARTMENT OF HOMELAND SECURITY INFORMATION

Guide for Critical Infrastructure and Key Resources
<http://www.pandemicflu.gov/plan/pdf/cikrpanemicinfluenzaguide.pdf>

DEPARTMENT OF TRANSPORTATION

National Aviation Resource Manual for Quarantinable Diseases
<http://isddc.dot.gov/OLPFiles/OST/013334.pdf>

OTHER RELATED LINKS

U.S. Chamber of Commerce Information About Business Planning for Pandemic Flu
http://www.uschamber.com/issues/index/defense/pandemic_influenza.htm

The Global Economic and Financial Impact of an Avian Flu Pandemic and the Role of the International Monetary Fund

<http://www.imf.org/external/pubs/ft/afp/2006/eng/022806.pdf>

Business Roundtable Pandemic Flu Preparedness Recommendations

<http://www.businessroundtable.org//taskforces/taskforce/document.aspx?qs=68A5BF159FC49514481138A6DBE7A7A19BB6487B96C39B1>

International Air Transport Association Guidance on Air Transport and Communicable Diseases

http://www.iata.org/whatwedo/safety_security/safety/health_safety/aviation_communicable_diseases.htm

Workshop Agenda

WEDNESDAY, SEPTEMBER 5, 2007

11:00 a.m.–12:30 p.m. **Session 1: Aviation’s Role in Preparing for and Responding to a Pandemic**

Welcome and Background Discussion

Katherine Andrus, Air Transport Association
Christine Gerencher, TRB Staff

Status of Pandemic Planning Activities Relevant to Aviation

Department of Transportation
Federal Aviation Administration
Centers for Disease Control and Prevention
Department of Homeland Security
Homeland Security Council
Airline Perspective
Airport Perspective

12:30–1:00 p.m. *Break*

1:00–3:00 p.m. **Session 2: Minimizing the Spread of Disease via Air Travel**
Laura Valero, Federal Aviation Administration, *Discussion Facilitator*

Risk-Based Screening at Airports

- Responsibility and authority to conduct screening, deny boarding, and allow entry to individuals with symptoms in the United States and other countries
- Identifying symptoms
- Efficacy/impact on operations of thermal scanners, passive surveillance, and active surveillance
- Compliance with Department of Transportation nondiscrimination regulations

In-Flight Measures

- Identifying and responding to communicable disease incidents
- Airline reporting protocols
- Infection control
- Transmission of contaminants in aircraft cabin (e.g., ventilation, surface contamination)
- Interagency concept of operations for managing a flight with ill passengers

3:00–3:30 p.m. *Break*

3:30–5:00 p.m. **Session 2: Minimizing the Spread of Disease via Air Travel** (*continued*)
Alan Black, Dallas–Ft. Worth International Airport, *Discussion Facilitator*

Airport Response

- Quarantine/isolation of passengers and crew
- Disinfection of aircraft/airport
- Passenger and crew contact tracing when disease is not identified until after the flight is completed and passengers have dispersed
- Keeping the airport operational (e.g., modifying use of runways, terminals, gates)
- Communication with the public; federal, state, and local agencies; and airport personnel and tenants

5:00 p.m.

*Adjourn***THURSDAY, SEPTEMBER 6, 2007**

8:00–10:00 a.m.

Session 3: Maintaining Air Service as Critical Infrastructure During a Pandemic EventJack Wells, U.S. Department of Transportation, *Discussion Facilitator***Economic Impact of a Pandemic Event on the Aviation Sector**

- Drastic drop of air service demand (i.e., demand shock)
- Supply chain disruptions
- Travel restrictions and airport closures
- Airline bankruptcies and liquidation

10:00–10:30 a.m.

Break

10:30 a.m.–noon

Session 3: Maintaining Air Service as Critical Infrastructure During a Pandemic Event (continued)Kathie McCracken, Department of Homeland Security, *Discussion Facilitator***Air Transportation as Critical Infrastructure**

- Identification of essential components of the aviation system (e.g., routes, airports, air traffic control, safety functions)
- Critical needs: individuals returning home, medical personnel, medical supplies, other cargo, general commerce
- Types of air service needs: cargo, passenger, general aviation, charter, Civil Reserve Air Fleet program
- Fuel availability
- Cargo capacity

Noon–12:30 p.m.

Break

12:30–2:30 p.m.

Session 3: Maintaining Air Service as Critical Infrastructure During a Pandemic Event (continued)Bonnie Wilson, Jackson Municipal Airport Authority, *Discussion Facilitator***Workforce Issues in the Aviation Industry**

- Absenteeism, cross-training, mutual aid, and security/drug clearance (Federal Aviation Administration, airline, airport)
- Immunization/antiviral priorities
- Maintaining safety certifications in light of staffing shortages
- Dealing with human response to traumatic events
- Protecting employee health (e.g., personal protective equipment, hand washing, self-imposed isolation, sick leave policies)

- 2:30–3:00 p.m. *Break*
- 3:00–5:00 p.m. **Session 3: Maintaining Air Service as a Critical Infrastructure During a Pandemic Event** (*continued*)
Rich Golaszewski, GRA, Inc., *Discussion Facilitator*
- Mitigating Economic Impacts and Preserving Air Service**
- Communications
 - Regulatory relief
 - Financial stabilization
- 5:00 p.m. *Adjourn*

FRIDAY, SEPTEMBER 7, 2007

- 8:30–10:30 a.m. **Summary, Comments, and Next Steps**
Katherine Andrus, Air Transport Association, *Discussion Facilitator*
- Summary of Workshop Discussions**
Moderators from the sessions during the workshop will provide brief summaries of the discussions that took place on all session topics.
- Agency Comments**
Decision makers from various federal agencies will provide their perspective on the topics under discussion at this workshop.
- 10:00–10:30 a.m. *Break*
- 10:30 a.m.–noon **Summary, Comments, and Next Steps** (*continued*)
Katherine Andrus, Air Transport Association, *Discussion Facilitator*
Christine Gerencher, TRB
- Discussion of Next Steps**
Comments from all invited guests will be solicited for their views on what topics would benefit from further discussion or review. A brief report on the process of developing and disseminating a summary of proceedings from this workshop will also be provided.
- Noon *Adjourn*

Workshop Participants

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Air Transport Association

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Captain
Centers for Disease Control and Prevention, U.S. Public Health Service

Mark Baldy
Airport Security Coordinator
Metropolitan Washington Airports Authority

Alan Black
Vice President, Director of Public Safety
Dallas–Ft. Worth International Airport

James Briggs
Assistant General Counsel
Airports Council International–North America

Dale Brown
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Steven Brown
Senior Vice President, Operations
National Business Aviation Association, Inc.

Melanie Carlsen
Manager of Emergency Response
American Eagle Airlines

Charles Chambers
Senior Vice President, Security & Economic Affairs
Airports Council International–North America

Patrick DeMarco
Psychologist
Colorado Mountain Psychological Services

Eileen Denne
Senior Vice President, Communications and Marketing
Airports Council International–North America

Paul Doell
Director of Government Affairs
National Air Carrier Association

Myles Druckman
International SOS Assistance, Inc.

Amanda Edens
Occupational Safety and Health Administration

Bart Elias
Specialist in Aviation Safety and Security
Congressional Research Service, Library of Congress

John Fernandez-Miranda
Acting Corporate Medical Director
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Tara Foley
PI Primary Liaison
Department of Homeland Security

Stephen Formanski
Office of the Secretary for Preparedness and Response, Department of Health and Human Services

Thomas Galassi
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Christine Gerencher
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Rich Golaszewski
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Tara Hamilton
Public Affairs Manager
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Hooper Harris
Manager, Accident Investigation Division
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Ken Jenkins
Manager, Emergency Response
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Til Jolly
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Lydia T. Kellogg
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Jeff Loftus
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Terry Lowe
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Rose Marie Martinez
Senior Board Director
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Kathie McCracken
Department of Homeland Security

Susan McDermott
Deputy Assistant Secretary for Aviation and International Affairs
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James McDevitt
Instructor
Harvard School of Public Health

Debby McElroy
Senior Vice President, Government Affairs
Airports Council
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Scott Middlekauff
Senior Analyst Pandemic Influenza
Office of Health Affairs, Department of Homeland Security

Regis Milan
Associate Director
Office of Aviation Analysis, U.S. Department of Transportation

Dinkar Mokadam
Occupational Safety and Health Administration Specialist
Association of Flight Attendants, CWA, AFL-CIO

C. Craig Morris
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ISBN 978-0-309-11311-3