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Crisis Communication: Sensemaking and Decision-making by the CDC Under Conditions of Uncertainty and Ambiguity During the 2009-2010 H1N1 Pandemic

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Crisis Communication: Sensemaking and Decision-Making by the CDC

Under Conditions of Uncertainty and Ambiguity

During the 2009-2010 H1N1 Pandemic

by

Barbara Bennington

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Communication
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Finally, I would like to thank Dr. Eric Eisenberg for his thoughtful guidance, brilliant advice, and unending patience. Without his support this dissertation would most certainly not have been written. I am very fortunate and so grateful to have had the privilege of working with him.
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Abstract

This study focuses on the process of communication between government agencies and the public during crisis situations, and the development of an effective response strategy when a significant threat to public health and/or safety is believed to exist. My specific research interests are (1) the nature of the decision-making process that influences the communicative choices made during such events, and (2) how decision-makers make sense of an evolving, ambiguous, and unpredictable situation, in order to establish credibility with the public, determine the appropriate response strategy, and gain the public’s trust in order to influence its behavior. This is a qualitative research study based on a series of in-depth interviews conducted with key staff members of the Centers for Disease Control and Prevention (CDC) regarding the CDC’s organizational response to the 2009-2010 H1N1 influenza pandemic. As global public health threats have the potential to significantly affect critical areas of the U.S. economy, national security policies are evolving to include strategic planning for issues related to global public health threats. However, despite having faced several serious public health threats during the past decade, governments worldwide and the global public health community continue to struggle with developing sufficient contingency plans and effective response strategies to meet the challenges of unexpected, highly unpredictable, and potentially devastating public health crises. My research addresses gaps identified in exploring the experience of crisis response participants in order to understand the process of response development. Additionally, I identify practices, processes, and recommendations that will be useful for future response teams confronted with equally challenging emerging threat and/or crisis scenarios.
Chapter One: Introduction and Statement of the Problem

Extreme threats to public health, such as infectious disease epidemics, bioterrorist attacks, or contaminated food or water supplies, have the potential to cause massive disruptions in highly developed and economically interdependent globalized countries. For countries such as the United States, with numerous dense population centers, frequent international travelers, and vulnerable yet crucial infrastructures for food and water supply, these kinds of public health threats are particularly perilous. Global economic interdependencies have increased as a result of expanded international trade, especially in food, clothing, and other basic commodities. Many large U.S. corporations and industries related to international travel (i.e., international shipping, airline and cruise industries) depend heavily on uninterrupted access to worldwide multi-national markets and transportation facilities such as airports and seaports. Losing access to these key infrastructure networks would have substantial and possibly devastating economic consequences.

Since global public health threats have the potential to significantly affect these critical areas of the U.S. economy, national security policies are evolving to include strategic planning for issues related to global public health threats. However, despite having faced several serious public health threats during the past decade, governments worldwide and the global public health community continue to struggle with developing sufficient contingency plans and effective response strategies to meet the challenges of unexpected, highly unpredictable, and potentially devastating public health crises (Gibbons, 2007; Kahn, 2009; Koplan et al., 2009).
The experiences of the 2001 anthrax attacks in the United States, the 2003 Sudden Acute Respiratory Syndrome (SARS) international epidemic, and the 2009-2010 H1N1/A\(^1\) influenza global pandemic are examples of highly disruptive and serious threats to public health with the potential for worldwide social and economic consequences.

The SARS and H1N1 cases also illustrate how the complexity of a public health threat increases dramatically when it involves a communicable infectious disease outbreak, as the interconnectedness of our contemporary globalized societies significantly increases the risk of an event in one country quickly becoming a worldwide disaster. Additionally, as a senior official at the Centers for Disease Control and Prevention points out, with the ease of mobility that has evolved from the influence of globalization public health threats and disease outbreaks are less likely to remain confined to one geographic area- whether a city, state, or country (Khan, 2011). Public health security is a new priority for public health officials and a rapidly expanding area of concern for government officials concerned with national security threats.

Non-communicable diseases, such as anthrax (although deadly with the potential to cause severe illness and death) are easier to contain and control once the source of the disease infection is identified, as the infected person is not contagious. Conversely, communicable diseases, such as smallpox or influenza, are not easily contained because every person infected becomes a potential disease transmitter, and is theoretically capable of infecting anyone with whom they have contact (Bryant, Vertinsky, & Smart, 2007).

As a result of the experience with the U.S. domestic anthrax attacks in 2001, the Federal government’s response and the roles and responsibilities of the U. S. government agencies

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\(^1\) The H1N1 virus strain first identified by the CDC in April 2009 was designated officially as H1N1/A to denote its status as a novel virus. Adding novel to the virus label indicated a combination of flu virus genes and a flu strain not previously seen together and not previously identified in humans. In the literature H1N1/A is usually referred to as H1N1. In this paper, the H1N1/A influenza virus will be referred to simply as H1N1 and the 2009-2010 H1N1 pandemic (Centers for Disease Control & Prevention, 2009).
involved in managing public health threats changed significantly. For instance, the public health organizations of the Federal government, specifically the Department of Health and Human Services (HHS) and its subordinate agency, the Centers for Disease Control and Prevention (CDC), which traditionally functioned primarily as disease prevention and health advisory organizations, became the focal point for all national public health crisis response. As these organizations assumed the primary roles in responding to public health crises, their leadership and the organizational processes for developing and implementing crisis response strategies were closely scrutinized, and often criticized; by the media, elected officials at the Federal, State, and local government levels, other Government agencies, the medical community, and the general public. Suddenly, the actions of the leaders of these key Government agencies and especially their public communication during each crisis received national and international attention.

When a public health crisis arose, or as unexpected and complex health-related threats emerged, these organizations were expected to quickly develop a crisis response strategy that would appropriately manage the effects of the threat. At the same time, they were also expected to keep the public health community informed and communicate clearly and effectively with the public, often without specific or complete information, in a rapidly changing highly unpredictable crisis environment characterized by extreme ambiguity and uncertainty (Bryant, Vertinsky, & Smart, 2007; Freimuth, 2006; Kahn, 2009; Leonard & Howitt, 2007; Vanderford, 2003).

In describing the importance of public communication, particularly during infectious disease outbreaks, several authors have noted that few studies focus on exploring the personal experience and specific actions of the public health officials who were directly involved in the response to a public health crisis (Frewer et al., 2003; Glik, 2007; Holmes, Henreich, Hancock,
& Lestou, 2009; Shore, 2003). Also noted was the lack of research focused specifically on the evaluation (rather than a description) of official public communication, especially the communication of uncertainty, during crisis events (Frewer et al., 2003; Glik, 2007; Holmes et al., 2009; Shore, 2003). My research intends to address these two gaps and in so doing contribute to the existing literature on crisis response and the role of communication.

Focus and Rationale of the Study

This study focuses on the process of communication between government agencies and the public during crisis situations, and the development of an effective response strategy when a significant threat to public health and/or safety is believed to exist. My specific interests are in understanding (1) the nature of the decision-making process that influences the communicative choices made during such events, and (2) how decision-makers make sense of an evolving, ambiguous, and unpredictable situation, in order to establish credibility with the public, determine the appropriate response strategy, and gain the public’s trust in order to influence its behavior.

To accomplish these objectives, I explore the processes of and relationship between sensemaking and decision-making by members of the Centers for Disease Control and Prevention’s (CDC) senior leadership response team during a specific public health crisis; the 2009/2010 H1N1 influenza pandemic. Using data collected during a series of in-depth interviews with key response participants, I examine how the CDC’s senior leadership and crisis response team made sense of the developing H1N1 crisis from its first point of identification and how their decision-making process(s) influenced the development of the CDC’s official organizational response and public communication. Particular emphasis is given to two areas:
1) Challenges posed by the need to address multiple organizational goals during a crisis response and

2) The diverse communication needs of different audience groups that constitute what is broadly defined as “the public.”

Different audience groups that would have to be considered would include for example; the general population, other government officials or organizations (e.g., Congress, the Federal Emergency Management Agency (FEMA), the Department of Health and Human Services (HHS), and the broader medical and public health communities, including the international health community, specifically the World Health Organization (WHO).

From a close examination of this case, I hope to learn how the CDC leadership team initially made sense of H1N1 as a public health threat, how they recognized it as a developing crisis, and how/what they decided to do in response. I also hope to gain an understanding of their decision-making processes and the factors that influenced their decisions as they developed and implemented a response strategy, in order to better understand the process of organizational crisis response.

Additionally, because the overall response to the H1N1 pandemic is generally regarded as a success by the CDC and the Federal agencies that were involved, especially in the area of public communication (Schuchat, 2009, November 10), I anticipate identifying practices and processes that will be useful for other/future crisis response teams confronted with equally challenging scenarios. Speaking at a press briefing in August 2010 regarding the overall response to H1N1, the CDC Director, Dr. Thomas Frieden stated, “Looking back over the past year and a half, I think many things went very well” (Frieden, 2010, August 23, p. 1). According to surveys conducted by the CDC and the Harvard School of Public Health (HSPH), it appears that the
American public\(^2\) also evaluated the Government’s response favorably (SteelFisher, Blendon, Bekheit, and Lubell, 2010). Additionally, senior U.S. Government officials such as the Secretaries of the Department of Homeland Security and the Department of Health and Human Services regarded the H1N1 response as a success and in public statements recognized the CDC and the other government agencies for their contributions (Napolitano, 2009, October 21; Sebelius, 2009, October 21).

Senior U.S. government officials also recognized the overall H1N1 response as an example of effective coordination between multiple government agencies. This public recognition and praise was particularly important considering the strong criticism that the Federal government received for their performance in this area during the 9/11 response, especially during the anthrax attacks. Mr. Arne Duncan, Secretary of the Department of Education stated in his testimony to the U.S. Senate Committee on Homeland Security and Governmental Affairs that “interagency coordination and cooperation in the Federal H1N1 effort- from top to bottom- has been extraordinary” (Duncan, 2009, Oct 21, p. 90). During her Congressional testimony on that same day, Janet Napolitano (then) Secretary of the Department of Homeland Security, described the H1N1 response in this way,

> Close coordination among Federal departments dealing with H1N1 flu has facilitated a strong response. Our partnerships with HHS, including the Centers for Disease Control and Prevention (CDC), with the Department of Education, and with other Federal departments and agencies continue to play a critical role in

---

\(^2\) Throughout the H1N1 pandemic, surveys showed that more than half the U.S. population appeared to have a positive impression of the government's response. In the early days of the pandemic, 54% believed the response of the federal government was appropriate and 39% believed the government had overreacted (Collins, 2009, May 19). In January 2010, 59% of those surveyed believed that public health officials did an excellent or good job in their overall response to the pandemic, whereas 39% believed they did a fair or poor job (SteelFisher, Blendon, Bekheit, & Lubell, 2010, p. 65).
our efforts. Our other partners – from State officials to private sector leaders – have consistently noted that the level of collaboration across the Federal government is unprecedented (Napolitano, 2009, October 21, p. 3).

Organization of the Study

This study is organized in five chapters; Chapter One provides the topic introduction, problem statement, and the study’s focus, rationale, and organization. Chapter Two provides my review of the literature and past research. Chapter Three describes my approach to gathering the data, an overview of my data sources, organization of the data, and method of analysis. Chapter Four provides the results I obtained from my data analysis in response to my primary research questions (RQ1) and (RQ2). Key themes emerged from my analysis based on reviewing the data against specific analytic categories and are highlighted. Chapter Five concludes with a summary of my findings, implications, limitations, and recommendations.

Statement of the Problem

Developing public communication messages during an emerging crisis presents a number of unique challenges for any government agency. In the context of a public health and safety crisis or threat, an immediate concern is the establishment of public trust and affirming organizational credibility in a rapidly changing and uncertain environment where either action or lack of action may have serious consequences.

The type of information provided by the responsible government agency and perhaps most important, the way (mode/manner) that it is communicated will largely influence how the public understands the crisis and their response(s). Additionally, the degree of trust in the accuracy of this information provided and the public’s perception of the organization’s ability to ‘manage’ the crisis is critical to influencing public behavior. In the early stages of an influenza
pandemic, when a vaccine will not be available, controlling the spread of the disease will depend heavily on specific preventive actions taken by individuals and communities. The level of trust and the public’s perception of the responsible organization will depend to a large degree on how well the organization develops its public communication strategy and how effective the organization’s leaders and spokespersons are in explaining the crisis and what will be done to address/resolve it. Having the public’s confidence and trust will be critical to achieving any goals of influencing or changing behavior (Kahn, 2009; Reynolds, 2007, 2008).

Considering these critical needs, how do decision-makers construct a crisis response narrative that (1) meets the organization’s goals of informing, reassuring, and protecting the public and (2) instills sufficient confidence in the organization to insure the public will be influenced to take the actions deemed necessary to manage the threat?

**Government Responsibilities**

During times of crisis, one of the responsibilities of government agencies (“the government”) is to provide timely and accurate information to the public about the current emergency or threat. This is in keeping with a fundamental responsibility of government to provide for and maintain the welfare of its citizens, a responsibility inherent in the 10th Amendment to the U.S. Constitution where “authority over the welfare, safety, health, and morals of the public” is outlined (Lister, 2005, p.4).

Natural disasters such as wildfires, earthquakes or weather related emergencies (floods, hurricanes, and tornadoes) occur with some seasonal regularity, and the public is accustomed to receiving emergency warnings, instructions, situation updates, and other emergency communication from the local municipal or State disaster response authorities when they do occur. Federal authorities tend to become involved in these kinds of events only if, or after, the
crisis has developed beyond the capabilities and capacity of the local responders, or has become a national level threat to public health or safety. However, other crisis events such as acts/threats of terrorism, bioterrorism, or widespread infectious disease pandemics (which fortunately happen far less frequently) have the potential to affect large, often geographically dispersed segments of the population. These extreme circumstances require a crisis response at the national rather than the State or local government level and will likely involve emergency response authorities and organizations of the Federal government (e.g. the Federal Emergency Management Agency (FEMA), the Department of Homeland Security (DHS), and/or the Federal Bureau of Investigation (FBI)) typically from the outset of the threat or crisis event.

Severe public health emergencies such as widespread deadly infectious disease pandemics also clearly threaten public safety and welfare, yet they may not receive the same degree of media attention or public focus as acts or threats of terrorism. While these infectious disease outbreaks may be initially localized in one State or municipality the potential for rapid and widespread contagion due to frequent international and domestic travel patterns in our contemporary globalized society puts them in a unique public health threat category.

Worldwide, the threat to public health from infectious diseases is complicated not only by this increased mobility but also by the widely varying standards of living and the level of public health protection measures in certain geographic areas, particularly overcrowded cities. In these areas, where major international corporations previously had only a small presence, there are now large permanent business centers, such as factories and manufacturing plants. As these business centers continue to develop and expand, the public health problems associated with generally poor public sanitation practices and unsafe food production and preparation methods that may be commonplace in those areas will put the workers (especially foreign workers who
may not be used to living and working in this kind of environment) at significant risk for contracting a variety of infectious diseases (Holmes, 2008).

Additionally, the nearly instantaneous communication channels available today to a large percentage of the global population via the Internet, social media, and satellite television complicate information management by public health authorities. Misinformation, inaccurate reporting, and rumors about a health threat or disease outbreak will be impossible to entirely prevent and difficult to correct once made public.

Serious public health threats such as communicable disease outbreaks which may have the potential for nation-wide impact in the U.S. will require emergency response at the Federal government level and will directly involve the Centers for Disease Control and Prevention (CDC), and its parent organization the Department of Health and Human Services (HHS). Depending on the severity of the situation, these events may even warrant direct response and public communication from government authorities at higher levels, including organizations/agencies traditionally expected to respond to national security threats and/or the Executive Branch of the Federal Government; as was the case with Sudden Acute Respiratory Syndrome (SARS) in 2003 and H1N1 in 2009 (Kahn, 2009; Seeger, et al., 2008; Reynolds, 2007, 2012).

Defining Public Health

In a study published by the Institute of Medicine (IOM), which is part of the National Academies of Sciences, public health was defined as, “the efforts, science, art, and approaches used by all sectors of society to assure, maintain, protect, promote, and improve the health of the people” (Committee on Assuring the Health of the Public in the 21st Century, 2002, p. 20). However, in practice, the responsibility for public health falls primarily to Federal, State, and
local governments. This is not only because existing public health laws and Federal mandates require it, but also because serious public health threats that arise from infectious disease pandemics, food-borne illnesses, or deliberate acts of bioterrorism, are not problems that face only one segment of a population. Their impact is more widespread- in fact, these kinds of threats truly “do not discriminate” and may potentially cross all occupational, gender, generational, and geographic boundaries. This potential to affect, and potentially debilitate, a large percentage of the population in a short amount of time would seriously disrupt the ‘normal’ functioning of society- affecting businesses, forcing school closings, and overburden (if not overwhelm) emergency response and medical treatment facilities. Health care providers and emergency responders would also not be immune to these public health/infectious disease threats and the resulting (potential) loss of their much-needed services will have to be taken into account when planning for a public health emergency response. During these kinds of national crises, government authorities will (theoretically) have additional means and resources available to them to address these potentially widespread problems and issues, for example by mobilizing National Guard forces or other military reserve support. Public health is therefore differentiated from general “healthcare” because it is focused on large population groups, not on individuals. Also, public health officials may have the ability to access additional government resources to provide assistance in crisis and/or emergency response support (Kahn, 2009, Lister, 2005).

One of the earliest definitions of public health comes from C. E. Winslow, who describes it as ‘both a science and an art” and as a ‘community effort’ aimed at preventing disease infection and transmission, educating the populace on good health and sanitation practices, and organizing medical services to ensure early diagnosis and treatment (Winslow, 1920, pp. 6-7). Public health, as it is understood today, evolved from social and medical practices developed
primarily in the UK, Europe, and the US beginning in the mid-1800s with efforts to control
deadly outbreaks of infectious diseases such as cholera and the plague (Last & Wallace, 1992).

Among the fundamental tenets of contemporary public health practices, three are
particularly relevant to this study:

(1) Decision-making based on data and evidence, such as statistics, surveillance, outbreak
investigations, and laboratory science;

(2) a focus on the general population rather than individuals; and

(3) an emphasis on disease prevention (Koplan et al., 2009, p. 1993).

Public health is described as being “situated at the intersection between disease systems
and dynamic social systems, structures, and institutions” (Seeger et al., 2008, p. 7) where a
system must be capable of rapid change and recovery after significant impact on normal order or
processes, such as immediately following a crisis. One way complex systems re-establish order
during and/or after a crisis is with effective communication, whether it is with internal
organizational communication or by (external) public communication. Depending on the nature
of the emergency or crisis event, especially in the case of a large government organization, both
types of communication may be required.

**Mission and Organization of the U.S. Public Health System**

In the United States, Federal, State, and local laws mandate public health activity. Most
of the legal authority for making and implementing public health policies exists at the State
government level, with the individual State governments have the primary leadership role
especially in public health emergencies and first responder situations (Lister, 2005).

According to the U.S. Department of Health and Human Services (HHS),
“The mission of the public health system is to promote the physical and mental health of
To accomplish this mission, the U.S. Public Health system is organized in a multi-layered hierarchical structure of numerous government agencies ranging from local municipal health departments to the Department of Health and Human Services (HHS) at the national level. In addition to these government organizations, within the overall domestic U.S. public health structure there are also many non-government health agencies and resources such as the Red Cross, public and private hospitals, pharmacies, volunteer organizations, and government, academic, and private medical research centers and laboratories.

In a report prepared for Congress by the Congressional Research Service, the U.S. domestic public health system is described as a complex, generally decentralized, yet highly interdependent system of public and private sector organizations (Lister, 2005). Within this system there are the lead public health agencies and organizations of the Federal government; HHS and all of its subordinate agencies, including the Centers for Disease Control and Prevention (CDC); fifty-nine State and territorial health departments, and more than three thousand county and city health departments (Lister, 2005).

The Department of Health and Human Services has the primary responsibility for public health at the Federal level, but there are other Federal agencies with separate areas of responsibility related to public health. These include the Department of Agriculture (USDA), the Environmental Protection Agency (EPA), the Occupational Health and Safety Administration (OSHA), and the Departments of Defense, Veteran’s Affairs, and Homeland Security. Depending on the nature of a public health crisis any one, or all of these agencies working collaboratively, could have a role in the overall response (Shore, 2007).
Public Health Law

The Public Health Service Act, originally enacted into law in July 1944 by the 78th Congress and amended numerous times since, gives the Secretary of Health and Human Services significant emergency powers, including the authority to declare a situation a public health emergency. The declaration of an emergency situation allows the Federal agencies to take charge of a particular situation or event, and greatly expands the scope of Federal authority. While it has seldom been used, this authority was enacted on September 11, 2001 to allow the Federal Government to assume control of coordinating the response to the terrorist attacks in New York City and Washington DC.

As a result of the gaps and failures in operational response, planning, and coordination for national emergencies and disasters that were identified in the aftermath of the 9/11 attacks (including the subsequent anthrax attacks), Congress passed a number of other laws to further improve preparedness and the response capabilities for national emergencies. The existing law, The Public Health Threats and Emergencies Act (P.L. 106-505), which Congress had passed prior to 2001, was replaced by The Public Health Security and Bioterrorism Preparedness and Response Act (P.L. 107-188), and became law in 2002. This new law was written to specifically address many of the vulnerabilities and weaknesses of the public health and national emergency response systems and capabilities that became evident during the government’s response to the 9/11 attacks. To clarify the roles and responsibilities of Federal agencies and authorities during national security emergencies Congress also mandated the development of an entirely new Federal agency, the Department of Homeland Security (DHS). The Homeland Security Act (P.L. 107-296) created the DHS and chartered it to address the significant Federal,
State and local government collaboration, coordination, and other inter-agency operating issues that became evident during and after the 9/11 attacks (Lister, 2005).

**Department of Health and Human Services (HHS)**

HHS stands at the top of the hierarchy in the large network of Federal agencies and organizations with public health responsibilities. The Secretary of Health and Human Services is a Cabinet level position and serves as the principal advisor to the President on matters related to public health. However, there are numerous subordinate agencies chartered to support the public health mission and to work in coordination with the Department of Health and Human Services. The primary agency for disease prevention and response to disease outbreaks (or other health related events) under the HHS Departmental structure is the Centers for Disease Control and Prevention (CDC). Other important subordinate organizations include: the Health Resources and Services Administration (HRSA), the National Institutes of Health (NIH), the Food and Drug Administration (FDA), and the Agency for Healthcare Research and Quality (AHRQ). However, within the HHS organizational structure, the U.S. Surgeon General (Head of the U.S. Public Health Service) and the CDC have the principal leadership responsibilities for defining and developing public health policies (Lister, 2005). The HHS organizational structure is provided in Figure 1.

**Centers for Disease Control and Prevention (CDC)**

The CDC was originally established in 1942 as a small organization within the U.S. Public Health Service (PHS) known as the MCWA (Malaria Control in War Areas) (Karnes, 2008). Headquartered in Atlanta, Georgia, its primary mission was to control malaria in the Southern parts of the United States and in the Caribbean. This mission later expanded to address control of other infectious diseases posing threats to military personnel stationed overseas and/or

*Figure 1. DHHS Organizational Chart.*
returning to the U.S. from overseas duty. In 1946 the MCWA was renamed the Communicable Disease Center (CDC) and during the next decade significantly expanded its role and areas of expertise. Throughout the 1960’s, the CDC continued the expansion of its role in public health, adding issues of quarantine and occupational safety to its portfolio along with other infectious diseases, such as tuberculosis and polio (Karnes, 2008).

During the 1960’s, the CDC also began publishing the *Morbidity and Mortality Weekly Report (MMWR)*, which eventually became one of the pre-eminent journals in the public health community and today serves as a primary vehicle for official public health communication on a wide range of topics. In 1970, the organization was renamed as “the Center for Disease Control” and subsequently in October 1992, it became the Centers for Disease Control and Prevention. This was done to highlight the role of the CDC in disease prevention as well as detection and control ("Historical perspectives: History of CDC," 1996, June 28).

From its modest beginnings with a small staff and limited budget, the CDC is recognized today as the principal agency in the U.S. public health structure. It employs more than fifteen thousand doctors, scientists, epidemiologists, laboratory researchers, and other public health administrators assigned in more than fifty countries with a total reported operating budget for FY 2013 of $11.2 billion (USDHHS, 2014; CDC, 2013).

**CDC Organization**

The CDC is organized in a complex network of offices and centers. The Office of the Director, the National Institute for Occupational Safety and Health, the Center for Global Health, and seven other separate offices; Public Health and Preparedness (OPHP), State and Local Support, Surveillance, Epidemiology and Laboratory Services, Non-communicable Diseases,
Injury and Environmental Health, and Infectious Diseases. Figure 2 provides the current CDC organizational structure.

According to the National Strategic Plan for Public Health Preparedness and Response (2011), CDC’s primary operational roles are: domestic and global surveillance, maintaining laboratory research capability and facilities, providing occupational health and epidemiology functions, and responding to public health threats such as anthrax, smallpox, influenza, and outbreaks of other infectious diseases. In addition, complications from food-borne illnesses, contamination of food and/or water supplies, and radiation contamination would fall within the CDC responsibilities. However, CDC’s primary role remains disease prevention and it accomplishes this by providing subject matter experts and assistance to State and local health communities in support of public health preparedness, and emergency response. CDC also reaches out to international public health partners for disease prevention assistance worldwide, and in response efforts to global public health threats, doing so through coordination with the World Health Organization (WHO).

*Figure 2. Centers for Disease Control and Prevention Organizational Chart*
The Center for Surveillance, Epidemiology, and Laboratory Services (CSELS) is the CDC division where three of the agency’s primary missions are centered. These key functions within CDC are fundamental to the agency’s overall mission of protecting public health. According to the CDC the goals of this center are to:

…provide scientific services, expertise, skills, and tools in support of CDC’s national efforts to promote health; prevent disease, injury and disability; and prepare for emerging health threats (CDC, 2014, February 24).

**Surveillance.**

Surveillance is one of the key missions of the CDC and plays a critical role in effectively identifying and tracking disease outbreaks. As such, surveillance is particularly important to the overall public health mission. Surveillance is critical to the early detection of communicable disease outbreaks that will provide the public health community with valuable early warning of outbreaks that could be potential pandemics. CDC defines surveillance as “the on-going, systematic collection, analysis, interpretation, and dissemination of data about a health-related event for use in public health action to reduce morbidity and mortality and for outbreak detection” (Buehler, Hopkins, Overhage, Sosin, & Tong, 2004, May 7, p. 2).

According to the CDC (2013, November 15, para.1), surveillance activities are “the foundation of public health practice” and the CDC’s Surveillance Resource Center serves as the primary coordinating office for the public health surveillance community. This community is comprised of the CDC surveillance resources plus the extensive national network of State and local surveillance agencies, field offices, and organizations.

Effective surveillance also depends on the capabilities of the public health infrastructure to “track and forecast important health events including the detection of
any changes in the disease patterns in the community” (Moore, Mawju, Shiell, & Noseworthy, 2007, p. 284). This capability for change detection requires a flexible and adaptive surveillance system- one that makes use of advanced technology for not only data gathering but also for communication. The CDC explains the importance of this capability in this way,

A surveillance system must be flexible enough to adjust to expanding health information needs and to use the best technology to deliver the data when and where they are needed. Surveillance systems that are not easily adapted to changing information needs might not be able to evaluate the impact of new prevention interventions in different population subgroups. Surveillance systems that are not efficient (e.g., the delivery of needed information demands more resources than are available) will not be useful (CDC, 2012, July 27, p. 10). 3

Closely related to surveillance is epidemiology, another key role for the CDC in public health preparedness. Epidemiology has been defined as ‘the study of the factors that determine the frequency and distribution of disease in populations’ and a science that involves the identification of patterns in disease transmission. Coupled with surveillance activities, this allows public health officials to determine and measure both incidence and prevalence of a particular disease in a community or population and to search for underlying causes of the outbreak (Hanson & Levin, 2013, pp. 8-9, 172).

**Epidemiology.**

The Epidemiology and Analytic Methods Program Office (EAPO) is the primary staff office at CDC that is engaged in epidemiologic activities. According to the CDC,

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3 “In 2001, the intentional dissemination of Bacillus Anthracis spores and subsequent cases of anthrax in the United States provided an impetus for automating surveillance to enable early detection, rapid characterization, and timely continuous monitoring of urgent public health threats” (CDC, 2012, July 27, p. 1).
EAPO supports public health decision making by advancing epidemiologic methods, analytic techniques, library sciences, health equity, information dissemination and systematic literature reviews (CDC, 2014, February 24). EAPO accomplishes these activities through analysis and modeling of potential or actual disasters and with key publications for the public health community. EAPO is responsible for publishing the Morbidity and Mortality Weekly Report (MMWR) and the Guide to Community Preventive Services. Both of these publications are highly respected and have a wide circulation within the global public health community. The motto of the EAPO, according to their webpage is; “Good science, well translated, protects people, conserves resources, and mitigates disasters.”

**Laboratory Research Services.**

Another key public health responsibility for the CDC is to provide Laboratory Research Services. The Division of Laboratory Programs, Standards and Services (DLPSS) is the principal organization within CDC focused on the laboratory science and services mission of the CDC. Laboratory services are key to disease identification and infection confirmation. This mission charges CDC with leadership responsibilities as well as support responsibilities for conducting laboratory science, establishing policy and providing guidance and support to laboratory research services at CDC and at the State and local levels. The DLPSS describes its mission in this way,

To strengthen state and local public health laboratories' ability
To perform their critical role in protecting the public’s health through:

(1) fostering connectivity and collaboration across the laboratory community;

(2) enhancing integration of laboratory science practice and informatics into public health and patient care;
(3) developing standards to enhance the performance of public health laboratory systems;

(4) increasing opportunities for the improving the quality of public health laboratory practices and services;

(5) increasing the capacity of the laboratory workforce; and

(6) fostering a culture of efficiency and excellence (CDC, 2014, February 24).

**Response Capability.**

Perhaps one of the most important roles CDC plays in the public health community is as the national coordinating center for emergency/crisis preparedness and response. The Office of Public Health Preparedness and Response (OPHPR) is the lead organization within the CDC focused on public health crisis/threat preparedness and response. According to their website, OPHPR provides “strategic direction, support and coordination for activities across the CDC organization and with local, State, tribal, territorial, national and international public health partners” (OPHPR, 2012, March 27).

**Public Health Crises**

Public health crises are described as “severe threats to the physical and psychological security, stability, health, and well-being of the public resulting from complex, nonlinear, and unanticipated interactions” (Seeger et al., 2008, p. 6). Public health crises can arise from a variety of causes and differ significantly in terms of severity and potential for causing widespread harm. Examples include after-effects from naturally occurring disasters such as earthquakes, hurricanes, floods; intentional acts of bioterrorism (e.g., Sarin gas exposure, anthrax infection), or the threat of nuclear contamination whether intentional or accidental. Public health crises can also result from naturally occurring outbreaks of infectious diseases such
as typhoid, cholera, or seasonal influenza; salmonella, \textit{E. coli} bacterial infections, or other types of poisoning from contaminated food and/or water.

The diversity of causes, effects, and varying degrees of severity in public health threats create many different kinds of situations requiring a wide range of response strategies. As such, public health crisis events and possible threat scenarios present unique challenges to government agencies, organizations, and officials tasked with responding to them. Contemporary public health threats are expected to be complex with the potential to affect widely dispersed population groups, potentially on a global scale. Traditional response strategies, which focused on planning and training to contain and manage a localized/single threat or crisis- and one that was clearly understood and positively identified- are not adequate to meet the challenges of complicated and emergent public health threats where considerable degrees of uncertainty and ambiguity prevail. Successfully managing these kinds of threats will require the public health community to:

1) have the ability to engage in ‘a flexible and adaptive manner’

2) be able to apply the principles of organizational learning to meet the challenges posed by dynamic and unpredictable threats, and

3) strengthen the response capability for future similar or unanticipated crisis events (Seeger et al., 2008, pp. 16-17).

\textbf{Pandemic Flu}

\textit{A severe influenza pandemic may be one of the most complex communication challenges we face} (Reynolds, 2007, p. 37).

The CDC defines a pandemic as ‘a global disease outbreak’ and an influenza pandemic as a ‘new influenza A virus for which there is little or no immunity in the human population and which spreads easily from person-to-person’. Another characteristic of pandemic flu is an
atypical number of infections (illnesses) and deaths occurring in a short amount of time (Reynolds, 2007, p. 22, 56). Pandemic flu represents a unique public health threat because influenza outbreaks are unpredictable and highly contagious, often moving from instances of single case confirmations to widespread infections within a matter of days or weeks.

Pandemic flu is significantly different from seasonal flu outbreaks. Seasonal flu is a regular (annual) illness that is also contagious and communicable, but unlike pandemic influenza- a seasonal flu vaccine is available and a segment of the population will have some degree of immunity to the virus either from previous infection(s) or from regular vaccinations. Despite this, the CDC estimates that in the United States every year there are 36,000 deaths from seasonal influenza and 226,000 hospitalizations. However, there is no comparable immunity for pandemic influenza and public health officials know that a vaccine will not be available for many months after the new virus strain is identified (Reynolds, 2007, pp 35-37).

In testimony presented to the U.S. House of Representatives Committee on Energy and Commerce’s Subcommittee on Health, Ms. Marcia Crosse, the Director for Health Care at the United States Government Accounting Office (GAO), defined an influenza pandemic as

The emergence of a novel influenza virus, to which much or all of the population is susceptible, that is readily transmitted person-to-person and causes outbreaks in multiple countries (Cross, 2005, May 2).

Four years later, in November 2009, in the midst of the H1N1 pandemic, the Director of Strategic Issues for the GAO provided a detailed report to the Chairman of the House of Representatives Committee on Homeland Security addressing key concerns about the potential dangers of a flu pandemic. The report stated,
… an influenza pandemic remains a real threat to our nation and to the world. An influenza pandemic is not a singular event but is likely to come in waves, each lasting weeks or months, and pass through communities of all sizes across the nation and the world simultaneously … While a pandemic will not directly damage physical infrastructure, such as power lines or computer systems, it threatens the operations of critical systems by potentially removing essential personnel needed to operate them from the workplace for weeks or months (Steinhardt, 2009, July 29).

Despite advances in vaccines and other prevention measures, Dr. Eric Toner, a Senior Associate in the Center for Biosecurity at the University of Pittsburgh Medical Center (UPMC), argues that the threat from pandemic influenza is still seriously undervalued in terms of its bioterrorism potential (Staff, 2007, March 1). While there are many similarities in pandemic flu and bioterrorist event response requirements, in a traditional bioterrorist threat scenario the threat is expected to be confined to a specific or defined geographic area, such as one city or a key transportation node (e.g., subway or airport), and would likely affect only one or a possibly a few populations centers at the same time. Pandemic flu, however, could potentially infect the entire country simultaneously, or certainly within a short period of time, thereby completely overwhelming U.S. medical facilities and treatment infrastructure (Staff, 2007, March 1).

Monica Schoch-Spana, PhD, a medical anthropologist at the UPMC Center for Biosecurity, states that the decision of the U.S. Government to begin ranking flu pandemics with the same type of scale currently used for ranking hurricanes is an attempt to raise public awareness of the severity of the threat posed by influenza. She says,
Americans, even those who don’t live in hurricane prone regions, came to understand just how strong an effect a hurricane could have through [Hurricane] Katrina. I believe that they were trying to find a way to define the range of possibilities to an American public most of whom have not lived through even a moderate pandemic flu. Conversations about influenza mostly turn on it being a naturally occurring outbreak, simply because pandemic flu is a regular occurrence, but the origin doesn’t really matter. The management challenges are extreme if it is a novel strain and pandemic flu is a great example of an extreme public health emergency (Staff, 2007, March 1, p. 10).

Research has shown that the majority of the population does not take potential or possible threats from disasters or emergencies of all types very seriously. The Red Cross estimates that approximately twenty-five percent of the U.S. population has taken or is likely to take any definite steps to prepare themselves for possible emergencies, regardless of the type of potential threat. Most disaster or emergency preparation (typically weather related events) happens only a short time before the disaster is predicted to occur. Early preparation for a “possible” emergency does not appear to be a popular activity in American culture. Interestingly, the Red Cross also says that within the remaining seventy-five percent of the population some will be “interested in obtaining information about the threat, but will still not take any action to prepare early” however, the majority will do nothing even when provided with clear threat information (Reynolds, 2007, p. 24).

On April 11, 2013 in testimony before the House Permanent Select Committee on Intelligence, the Director of National Intelligence (DNI) James R. Clapper discussed the national security implications of pandemic influenza threats. He noted that the World Health
Organization described one previous influenza pandemic as “the epidemiological equivalent of a flash flood” and warned

An easily transmissible, novel respiratory pathogen that kills or incapacitates more than one percent of its victims is among the most disruptive events possible. Such an outbreak would result in a global pandemic that causes suffering and death in every corner of the world, probably in fewer than six months (Clapper, 2013, April 11, p. 13).
Chapter Two: Review of the Literature

To address my specific research interests in the sensemaking and decision-making processes that influence the development of an appropriate response strategy and the organizational communication practices employed during crisis situations, I reviewed literature concerning: (1) Crisis communication, specifically in the context of the U.S. Public Health system; (2) Sensemaking and decision-making including the influencing factors of framing and transparency; and (3) Major components of organizational crisis response: (a) processes, (b) practices, and (c) organizational culture/climate and its effects on organizational and individual behavior.

This review focuses on and is limited to crisis communication practices of government organizations and does not include literature pertaining to corporate organizational crises and/or public communication with a stronger public relations and reputation management context. I have also limited this review to literature primarily concerning public health-related crises, excluding other serious crisis events such as natural disasters resulting from wildfires, floods, and/or weather related events such as hurricanes or tornadoes.

Crisis Communication

According to one definition the word crisis derives from “krisis”, a Greek word meaning ‘to separate or to judge’ (American heritage dictionary, 2009). Another interpretation provides a somewhat more complex understanding of krisis as a specific point in time, an event- a ‘moment of decision, judgment, or choice’ (Muhren & Van de Walle, 2010, p.1). However, the specific meaning of the term depends on the context of the situation being evaluated and who is defining
a particular situation or event as a crisis (Preble, 1997). The framing of specific events and circumstances as crises is significant in the eventual determination of which organization or agency is responsible for developing and communicating the official response strategy. Who determines that (1) there is a crisis and (2) the severity of the crisis and how it is presented (framed) and/or will be addressed is extremely important to asserting responsibility for and/or maintaining ‘control’ of the situation.

In literature pertaining to organizations, crises are defined as “low probability, high-impact events that threaten the viability of the organization, are characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly” (Pearson & Clair, 1998, p. 60). To facilitate resolution of these threatening events and to implement response strategies organizations engage in a practice known as crisis communication. Crisis communication is therefore one of the means by which government authorities gain/sustain control of a situation, mitigate social disruption, and manage the public’s reaction to a developing crisis, public emergency, or disaster event (Reynolds, 2007; Reynolds & Seeger, 2005).

**Defining Crisis Communication**

Crisis communication is a complex form of public communication that occurs during (and after) unexpected and highly disruptive events. Crises can result from natural disasters, such as hurricanes, floods, or earthquakes, and from man-made events, such as acts of war, terrorist/bioterrorist attacks, toxic chemical contamination, epidemics/pandemics of infectious diseases, and other disasters similar in magnitude, effect, and importance. In a report prepared for the Department of Homeland Security, effective crisis communication is defined as,
An effort by experts to provide information to allow an individual, stakeholder, or an entire community to make the best possible decisions about their well-being within nearly impossible time constraints and help people ultimately to accept the imperfect nature of choices during the crisis (Meredith et al., 2008, p. ix).

Crisis communication encompasses literature from a wide range of academic disciplines and within this very sizeable body of literature, there tends to be a division between two categories of disasters and crises: natural and anthropogenic. There is also a second divide based on a significant historical event, the terrorist attacks in the U.S. on September 11, 2001. The crisis communication literature reflects distinct differences between works authored “pre-9/11” and “post-9/11”, particularly in the context of public health crises and government response. This divide can be directly attributed to the impact of the unprecedented (and unanticipated) domestic anthrax attacks in 2001 that followed the September 11th terrorist strikes in New York and Washington D.C. While the anthrax attacks were not localized or contained solely in either of these two cities and occurred several weeks after the physical attacks on 9/11, they are considered part of the 9/11 history and have had significant influence in determining how the Federal government (now) responds to public health crises (Freimuth, 2003, 2006).

**Differences between Risk and Crisis Communication**

Risk communication in the public health context has traditionally referred to public warnings about threats to some aspect of an individual’s health, either from specific behaviors (e.g. smoking, drug abuse, unsafe sexual contact) or from an identified environmental hazard (e.g. potential release of a dangerous substance or toxic chemicals). Risk communication is the basis of public health messages and information campaigns designed to influence/change health-
related behaviors. It is defined as, “the intentional effort to inform the public about risks and persuade individuals to modify their behavior to reduce risk” (Seeger et al., 2008, p. 9).

Risk communication traditionally refers to an “exchange of information among interested parties about the nature, significance, or control of a risk”. Risk communication is most often a component of the pre-crisis stage or planning initiatives in anticipation of crisis situations (Covello, 2003; Seeger, Sellnow, & Ulmer, 2003). Although risk communication occurs in a variety of sectors, (e.g. financial markets, consumer product safety, the insurance industry), in this study, I limit the discussion of both risk and crisis communication specifically to the area of public health.

Risk communication and crisis communication, while often inter-connected; differ significantly in definition and scope. Although risk and crisis communication have some common characteristics and share certain operational features, such as delivery methods (notably mass media) and a basic objective (inform the public), their fundamental goals differ. Risk communication addresses probabilities and potential situations of harm or danger, while crisis communication focuses on a specific event or action that has already occurred or will almost certainly occur in the near future. Risk communication is based on what is already known about a situation (or at least thought to be true) and typically claims a basis in scientific or technical evidence. There is no emphasis, or consideration, on what is not known about a situation, condition, or event. Risk communication messages almost always address likely (future) consequences, are based on some form of persuasive or very compelling ‘evidence’, and are intended to prevent or modify specific behaviors or practices. For example, ‘smoking will cause cancer and heart disease’, or ‘drinking alcoholic beverages during pregnancy may cause birth defects’ (Reynolds & Seeger, 2005, Reynolds, 2007).
Conversely, crisis communication is an on-going process that occurs during the actual crisis event, operating continuously as the crisis unfolds and evolves, until there is some kind of resolution. During crisis events that occur within an organization or situations that affect a single organization, established, effective and well-practiced contingency plans and emergency communication processes can help the organization to respond appropriately, preserve (or regain) order, and maintain a consistent organizational message or position. Research has shown that, during crisis situations, public trust and the government’s credibility is strongly influenced by the consistency of messages from the various organizations and a perception of consensus from the leaders directly involved in the crisis response (Freimuth, Hilyard, Barge, & Stokler, 2008; Hilyard, Freimuth, Musa, Kumar, & Quinn, 2010; Holmes et al., 2009; Seeger et al., 2008; Shore, 2003).

For example, in the event of a natural disaster, such as a flood or earthquake, rapid and effective communication is essential to facilitating and coordinating recovery and maintaining an accurate understanding of the situation. Once the immediate crisis event has ended or subsided, a post-crisis communication phase begins and continues until there is consensus that the situation is under control. Crisis communication, as a responsibility of government agencies, in this context is defined as the need to “protect health, safety, and the environment by keeping the public informed” and “to restore public confidence in the [government] organization’s ability to manage an incident” (Seeger et al., 2003). In a broader context where the crisis does not involve an official government response (although it could), crisis communication is employed to “prevent or lessen the negative outcomes of a crisis and thereby protect the organization, stakeholders, and/or industry from damage” (Seeger et al., 2008).
Crisis communication addresses both what is known and what is not known about a specific situation. Uncertainty and ambiguity are integral components of crisis communication, which add to its challenging, complicated, and complex nature. One other significant difference between the two concepts relates to the influence of time. Crisis communications (and situations) are characterized by significant time pressure and (often) lack of complete information. Nonetheless, organizations/leaders are expected to provide immediate information and guidance to the public and not to wait until the situation becomes clearer or is ‘under control’. For example, in April 2009 during a press briefing in the early days of the emerging H1N1 pandemic, Dr. Richard Besser, Acting CDC Director, made the following public statement:

I want to acknowledge the importance of uncertainty. At the early stages of an outbreak, there’s much uncertainty, and probably more than everyone would like. Our guidelines and advice are likely to be interim and fluid, subject to change as we learn more (Reynolds, 2007, p. 14).

Practicing Crisis Communication

The literature I reviewed is limited to crisis communication as practiced by U.S. Government agencies, specifically government agencies within the U.S. public health community (mainly the CDC) and their responses to major public health threats. Primarily this involves literature published post 9/11, focusing on the CDC’s response as a public health agency to the 2001 anthrax attacks and the 2009-2010 H1N1 pandemic. Irrespective of the specific cause of the public health threat or emergency, the basic principles of effective crisis communication are generally applicable to most, if not all health related crisis situations. These principles are summarized by the CDC in their official crisis communication
publications as, “Be first. Be right. Be credible.” and tie directly to the main goals of effective public communication in a developing crisis situation, which are:

1. Prevent further illness, injury, or death
2. Restore or maintain calm

Crisis Communication Models and Approaches

In reviewing the literature on models used in the field of crisis communication I discovered one model and one innovative approach that are of particular use for this study’s purpose. These are the Crisis and Emergency Risk Communication (CERC) model, developed by the CDC, and the concept of the Emerging Infectious Disease Communication (EIDC) as a method or approach to communication during an infectious disease threat or outbreak.

**The CERC Model.** One of the most significant changes made to previous models and processes for risk and crisis communication was the merger of the two concepts, Risk and Crisis Communication, into a combined model (Crisis and Emergency Risk Communication) known today by the acronym CERC. Dr. Barbara Reynolds, Crisis Communication Specialist at the CDC, and Dr. Matthew Seeger, Professor in the Department of Communication at Wayne State University, developed this model as a direct response to the many problems and communication failures identified in the response to the 2001 anthrax attacks. The CERC model has been widely accepted in the field of emergency response and crisis communication and is currently the standard operating model for crisis communication at the CDC (Reynolds, 2007, Reynolds & Seeger 2005).

According to one of the developers of the original CERC model, the fundamental concept is fairly simple and straightforward:
CERC is a way to talk to people, a set of principles that allows us, in the heat of a crisis when the unthinkable happens, to be able to get a message through to people in a way that they can actually understand it and act on it. (Reynolds, 2012, p.1)

As an integrated model, CERC “builds on the existing literature in the fields of health and risk communication and synthesizes those with crisis communication” (Reynolds & Seeger, 2005, p. 24).

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Figure 3. Crisis and Emergency Risk Communication (CERC) Lifecycle


EIDC. Another important perspective in the field of crisis communication in public health is the concept of Emerging Infectious Disease Communication (EIDC). The threat of a global pandemic and the challenges that governments and health organizations will face in communicating during a pandemic demands new concepts and plans for effective crisis communication to ensure speed and accuracy during an infectious disease outbreak where
uncertainty is a dominant factor. The ability of the government, or other official organizations, to communicate uncertainty to a highly diverse audience with varying levels of education, health literacy, and risk appreciation without sacrificing public trust is crucial to effectively countering and containing the threat. Additionally, consideration of other influencing factors such as public trust, perceptions of power and authority, and cultural biases have to be taken into account by crisis/emergency response planners (Holmes, 2008).

EIDC as an approach is relatively new within the fields of risk and crisis communication and targets potential challenges to public trust and organizational credibility by focusing on communicating throughout the emerging crisis constantly providing new information, as it becomes known to decision-makers. The emphasis is on clearly defining risk and developing a communication strategy that will raise public awareness of individual risk and the need to follow official guidance, without creating widespread panic or fear. However it is different from traditional health communication campaigns or health messaging in that it is intended to be fluid, changeable, and responsive to an emergent threat conditions or an unpredictable threat environment. EIDC proponents argue that the best method for accomplishing these objectives is to develop a communication strategy that adapts to changing information as the threat emerges and evolves, and recognizes the ethical responsibility of keeping the public fully informed throughout so that individuals can/will make appropriate decisions to take the recommended actions.

EIDC also recognizes a clear need to engage the public in the process, both in preparing for emergencies and during a response, making this process participatory and dialogic. While these factors are regularly discussed as needs in the crisis communication literature and the EIDC is often used as an example of how they could be effectively addressed (Reynolds, 2007,
2012, Seeger & Sellnow, 2008), there is not as yet a formally articulated communication model engaging the EIDC concept, reflecting a need for one.

Traditional health communication models center on the transmission of information (from a recognized ‘authority’) as the primary means of influencing behavior and encouraging or discouraging a specific action. These kinds of health message campaigns and messages rely principally on what is called the “rational actor” model, which is based on the assumption that simply providing clear guidance based on factual information to the public will be sufficient to change attitudes or behaviors. Research has shown, especially in the case of the anti-smoking health campaigns, that this approach will be effective with some population groups but not with others, even when the message and guidance is clearly understood. Using the EIDC approach, the goal becomes “informed decision-making rather than specific behavior change” which may actually result in the desired behavior change (Holmes et al., 2009, pp. 353-354).

Crisis Communication and Public Health: The CDC’s Response to the Anthrax Attacks

During the anthrax attacks of 2001, the CDC was suddenly thrust into a primary role in national crisis response as the public’s focal point for medical and scientific information. The CDC also became the principal Federal agency responsible for all official public communication during this public health crisis. Consequently, studies and analyses of the CDC and its actions during and after the 2011 anthrax events constitute a significant portion of the contemporary literature related to crisis communication and public health threats published in the last decade. Many of these academic studies and analyses of various aspects of the H1N1/A pandemic were authored by current or former CDC employees, or were based on interviews with CDC employees, which provides a unique perspective from an insider’s point of view (Chess & Clarke,
The 2001 Anthrax Attacks

*The condition most conducive to panic isn’t bad news – it’s conflicting messages from those in authority* (Reynolds, 2013. p.39).

The Federal government was strongly criticized for its response to the domestic U.S. anthrax attacks in 2001, particularly with regard to public communication. Responsibility for the government’s response to this unexpected and unfamiliar threat fell to the Department of Health and Human Services (HHS) and most directly, to the CDC. At the time, anthrax was not well known in the broader public health community, as infections of the disease were extremely rare in the United States and anthrax infection had not been identified as a potential or likely public health or security threat. Most public health officials at the State and local levels quickly looked to HHS and the CDC for guidance on how to address the developing public health crisis as instances of contamination were confirmed in their areas. Unfortunately, contingency plans for dealing with anthrax outbreaks, especially at the local levels, were generally nonexistent. Also, due to its rarity, many health care providers were not familiar with anthrax diagnosis, prevention methods, and treatment protocols. At a minimum the possibility of anthrax infection as the source of a patient’s symptoms would have been considered remote and probably would not have been investigated until many other more likely diseases had been ruled out. Also, at the time the CDC had never planned or prepared to respond to this kind of public health threat - multiple intentional anthrax infections in geographically dispersed areas (GAO, 2003, October).

Unlike the direct attacks on the World Trade Center Buildings and the Pentagon, the anthrax attacks did not result in a high number of human casualties or cause extensive physical
destruction. There were a total of twenty-one U.S. postal facilities located in widely dispersed areas and one private business facility, a publishing office, located in Boca Raton, Florida where anthrax contamination was confirmed. Disease outbreaks were reported in five separate geographic areas: Florida (1st), New York, New Jersey, the Washington DC metro area, and Connecticut. All of the confirmed disease infections were caused by direct contact with active anthrax spores transmitted in pieces of contaminated mail. This resulted in twenty-two confirmed cases of anthrax infection; eleven cases of cutaneous (skin) infection and eleven cases of inhalation (respiratory) infection. These infections ultimately resulted in five deaths, all from inhalation anthrax4 (GAO, 2003).

While these infection and fatality numbers may appear small and perhaps insignificant in comparison with the casualty numbers at the World Trade Center and the Pentagon, their psychological effect on the American public, particularly with regard to the public’s confidence in the Federal government, was substantial. As a result of the generally negative public perception of the Government’s ability to manage such events, and as public fears of future similar attacks continued to grow, there was a significant shift in thinking by the response organizations about the concepts of risk and crisis communication and their relationship to each other during extreme emergencies (Freimuth, 2003, 2006; Kahn, 2009; Reynolds & Seeger, 2005). The response to the anthrax attacks also revealed many weaknesses in the government’s ability to respond effectively to an unexpected public health crisis; especially one with the potential to affect widely dispersed segments of the population. The use of the U.S. mail delivery

4 Anthrax infections can be cutaneous, gastrointestinal, or inhalation. Cutaneous (skin infection through some form of tactile contact with anthrax spores) and gastrointestinal (acquired from consuming meat from contaminated animals) are the most common type of anthrax and are usually survivable. With proper treatment likely survival rates are 60% for gastrointestinal and 80% for cutaneous anthrax. Inhalation anthrax, which is acquired by breathing airborne anthrax spores, is most often fatal with an estimated survivability rate of 10-15% without treatment. Early and aggressive treatment may improve the likely survivability rate to 55% (www.cdc.gov/anthrax).
system as a means of disease transmission not only involved Federal government authorities from the beginning, but also greatly increased the urgency and pressure to develop an effective response strategy as suddenly nearly all of the U.S. population was potentially at risk. The degree of uncertainty that arose as a result of what appeared to be random targets combined with the potential to reach anyone who might receive deliveries from the U.S. Postal Service, resulted in high levels of public anxiety and fear. The developing public reaction to the growing number of suspected or confirmed anthrax infections and the extensive media coverage of these incidents (some of which included false, inaccurate, or misleading information) put considerable pressure on the leadership of the national response agencies, especially HHS and the CDC, to provide immediate and detailed information to the public. This prompted Government agencies and leaders at the national level to make frequent public statements about the situation, in hopes of averting widespread panic. Unfortunately, this resulted in some (now infamous) public statements by high-level government authorities that were factually incorrect, inaccurate from a medical perspective, or highly implausible. For example, during a White House press briefing on October 4, 2001, Mr. Tommy Thompson, (then) the Secretary of Health and Human Services, publicly stated [regarding the (1st) confirmed case of anthrax in Florida] “It appears that this is just an isolated case. There is no evidence of terrorism.” In response to a question about how the first victim might have become infected, he answered, “We don't know that at this point in time. We do know that he drank water out of a stream when he was traveling to North Carolina last week” 5 (Thompson, 2001, October 4, p.2).

5 According to the CDC, Anthrax infections occur naturally in wild and unvaccinated domestic animals in many countries including the U.S. Workers can be infected if they are exposed to infected animals or to meat or products (such as wool or hides) from infected animals. Exposure can also occur from contact with water supplies (rivers, streams, ponds) or ground areas that have been contaminated by infected animals. Infection can occur if the individual has a cut, scrape or open wound and comes in contact with anthrax spores which can persist in the environment, particularly soil, for years or decades (www.cdc.gov/anthrax).
Mr. Thompson’s public statements were problematic for several reasons, not the least of which was the official medical report from Dr. Larry Bush, the physician who treated the first anthrax victim. In his report, Dr. Bush strongly suggested that the anthrax contamination of the facility was very likely a deliberate act of bioterrorism and that the infection of this individual, because of the type of anthrax contracted, had to be intentional. Additionally, at the time of Mr. Thompson’s statements it had already been widely reported in the media that the victim died from inhalation anthrax, a form of the disease that is not acquired ‘naturally’, i.e. from animals, animal products, or contaminated water.

This obvious disparity about the source of the victim’s infection generated extensive discussion (and much speculation) by the media that the Government was intentionally misleading the public in order to hide the seriousness of the situation and/or threat to the American people. The Government’s credibility with the public suffered substantially as a result of these conflicting statements and what appeared to be deliberate misinformation. These statements also created considerable confusion and contributed to increasing the level of public paranoia about the anthrax threat rather than diminishing it (Freimuth, 2003, 2006; Kahn, 2009; Mebane, Temin, & Parvanta, 2003).

In another example, in New Jersey (where anthrax infections had been confirmed in postal facilities), State public health authorities were actively trying to convince postal workers there was no real threat to their safety, despite specific evidence to the contrary. In fact, news reports had already confirmed anthrax contamination in postal facilities in the Washington DC area. One New Jersey postal union official described the obvious disparity between the government’s public statements and their actions in this way:
The [health department official] called everyone into the cafeteria and told us how safe we were. Then four days later the SWAT teams were running in…in their decontamination uniforms…. and the FBI was ordering us out of the building within 30 minutes or they would put us under arrest…[I]t was like something out of a movie (Chess & Clarke, 2007, p.1580).

**Impact of the Anthrax Response: A Paradigm Shift.**

The Government’s flawed response to the anthrax attacks had major and lasting impact on the practice of crisis communication, by all levels of government, from local municipalities to the highest levels of the Federal government. In terms of affecting government response to risk and the practice of crisis communication, the impact and influence of the entire 9/11 crisis is unprecedented but specifically regarding a public health crisis response, the anthrax attacks were the impetus for major change. The issues identified as shortcomings and/or failures in communication by the government authorities became catalysts for fundamentally rethinking the way government organizations interact with the public during a crisis.

The Federal government’s response to these events also highlighted serious problems with the ability of the many layers of government response organizations to respond in a coordinated manner with each other and particularly highlighted problems with effective inter-organizational communication during public health crises. This perception was reinforced by the emerging allegations of multiple failures in coordination and information sharing among the 9/11 first responders and the Federal government’s response organizations. Recognition of these problems prompted comprehensive reviews of (and changes to) official emergency response procedures and the public communication practices of the Federal government. Put simply, there was one concept and practice of emergency crisis communication by government officials and
organizations prior to these events and a very different concept and practice of crisis communication post 9/11 and post anthrax (Chess & Clarke, 2007; Freimuth, 2006; Mebane, Temin, & Parvanata, 2003; Reynolds, 2007; Vanderford, 2003; Wise, 2003).

**Evaluating Organizational Crisis Response**

In thinking about how to investigate the process of crisis response development, and draw conclusions about its effectiveness, I identified three analytic frameworks to use in evaluating an organization’s response. These are Sensemaking, Decision-making, and Communication. Each of these frameworks provides a unique lens to use in observing and analyzing how a crisis response is developed. Additionally, I have identified three thematic categories; Processes, Practices, and Organizational Culture/Climate that may be useful in analyzing an organization’s strengths and weaknesses regarding its ability to develop and implement effective response strategies.

**Sensemaking**

Sensemaking is an effort by an individual or a group to develop an understanding in a confusing or unfamiliar situation. According to one definition, “a process of how people try to find out the story, the deliberate effort to understand events and how they give meaning to what is happening in order to reduce the equivocality and ambiguity that surrounds them” (Muhren & Van de Walle, 2010, p. 30). The words *process* and *deliberate* are important to consider in any definition of sensemaking that relates to what happens in an emergency or crisis situation where the pressure of timeliness and immediacy of response are critical to success. Effective crisis response demands (of an individual or organization) an ability to (1) quickly determine what is going on, (2) determine what the risks are, and (3) make decisions about what action(s) must be taken. “Deliberate” in this context refers to the concentrated effort to fully ascertain the severity
of the crisis and the risk factors, in order to provide clear and useful information to the decision-makers based on the information available at the time. These decision-makers will then determine the appropriate response based on what they understand, or think they understand, of the situation.

Sensemaking, according to Karl Weick, ‘is about sizing up a situation, about trying to discover what you have while you simultaneously act and have some effect on what you discover’, and ‘usually an attempt to grasp a developing situation in which the observer affects the trajectory of that development’ (Weick, 2001, p. 460). He also contends that participants in a crisis construct/create meaning (enact sensemaking) by reflecting on past (perhaps similar) events and personal experiences. He also argues that through the process of social interaction, participants work to achieve a consensus view of the crisis event or environment thereby establishing a common understanding of the situation (Weick, Sutcliffe, & Obstfeld, 2005).

**Sensemaking Properties.**

Weick identifies seven properties of sensemaking which he believes have a direct effect on an individual’s capacity for sensemaking and ability to “size up what they face.” He describes these properties as:

1. **Social context**: the actual, implied, or imagined presence of others.
2. **Personal identity**: a person’s sense of who he or she is in a setting.
3. **Retrospect**: things are seen before they are conceptualized – people know what they have done only after they do it.
4. **Salient cues**: individuals have preferences for certain cues and they actively select them – affecting their sense of what is happening around them. When cues
become equivocal, contradictory, or unstable, people begin to lose their grasp of what is happening.

(5) **Ongoing projects:** Experience is a continuous flow. Sensemaking is constrained not only by past events, but also by the speed with which events flow into the past and interpretations become outdated.

(6) **Plausibility:** Sensemaking is about coherence, certainty that is sufficient for present purposes and credibility. Plausible sense is constrained by agreements with others, consistency with one’s own stake in events, the recent past, visible cues, projects that are demonstrably underway, scenarios that are familiar, and actions that have tangible effects.

(7) **Enactment:** Action is a means to gains some sense of what one is up against. To stay detached and passive is not to improve one’s grasp, because much of what any situation means lies in the manner of its response. (Weick, 2001, pp. 461-463).

To support my exploration of the “communicative dimensions of crisis,” I draw primarily on Karl Weick’s concepts of sensemaking and retrospective sensemaking in organizations. He describes sensemaking as a means of ‘organizing to reduce ambiguity’, a process that ‘involves on-going efforts to transform general recipes into actions and structures’ (Weick, 2001, p. 34).

Weick’s idea of retrospective sensemaking is useful in exploring how the CDC decision-makers and key response directors used their past experiences with other infectious disease outbreaks and other public health emergencies to guide the development of their response strategy to the novel H1N1 virus. Understanding how the CDC decision-makers enacted
retrospective sensemaking is particularly important in the interpretation of the interview data from participants who were asked to remember and reflect on their actions, thoughts, and feelings as the H1N1 crisis evolved over the period of more than one year. Working with the data I collected in my interviews, I use Weick’s seven categories and the related concepts identified by Muhren and Van de Walle (2010) to analyze the sensemaking and decision-making processes of the CDC response team during the 2009/2010 H1N1 pandemic.

**Framing.**

Erving Goffman believed that understanding an individual’s primary frameworks is critical to understanding how they organize experience. He states, “We tend to perceive events in terms of primary frameworks, and the type of framework we employ provides a way of describing the event to which it is applied” (Goffman, 1974, p. 24). Framing, in the context of sensemaking in crisis situations, is about perceptions of risk and uncertainty and understanding the influence of these primary frameworks. Goffman argued that people infer significance in a situation based on primary frameworks developed from their past experiences. Key to influencing their current perception is understanding these past experience frames- and being able to address them effectively- by either confirming or disconfirming the perceptions. He also contends that the less structure and transparency there is during an event, the greater the possibility for distortion; while more structure and greater transparency will lessen the possibility of distortion (Goffman, 1972). In communicating with the public during times of crisis or emergency where health, safety, or survival is at stake this concept of transparency by the government will be key to having credibility and in obtaining the public’s trust and cooperation.

In order for the public to recognize a specific situation or threat as a “crisis”, a responsible/credible individual or organization must first declare it as such. Framing strategy is
significant in terms of the degree to which public behavior can or will be influenced, the perception of the severity of the threat, and the resources that will be made available to assist in managing the situation. To be responsible and accountable leaders, decision-makers must consider the ethical dimensions of framing a particular event or threat as a crisis. What must decision-makers consider in making the choice to identify an event or threat as an emergency or public health crisis?

In rapidly evolving and emerging novel crisis/threat situations, decision-makers face the difficult problem of communicating the nature of an unknown and uncertain situation to the public in familiar and unambiguous language. They must find a way to ‘normalize’ an abnormal situation and to define an unconventional threat in conventional terms so that a large public audience with a very wide range of education levels, language expertise, and/or familiarity with the immediate threat (such as a specific disease outbreak) can understand the threat/crisis and will be motivated to take the desired action(s). How the threat/crisis is framed (both for and by) the public is crucial to achieving these goals.

Additionally, in the case of national emergencies or disasters the authority of the Federal or State government (usually the President or the Governor) to declare a situation an emergency/crisis also provides the affected area(s) i.e. States or cities access to critical emergency funding and support from national level disaster response capabilities. The Robert T. Stafford Disaster Relief and Emergency Assistance Act (2007) gives the President of the United States the power to invoke a state of emergency, upon the request of the governor, where such an emergency has arisen. The language in the law states:

Any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save

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lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States (P.L.93-288, as amended, 42 U.S.C. 5121-5207).

**Transparency.**

Closely related to the issues of decision-making and information release, particularly in the case of government agencies, is the concept of transparency. Warren Bennis describes transparency as a principle of organizational communication “encompassing candor, integrity, honesty, ethics, clarity, full disclosure, legal compliance and a host of other things that allow us to deal fairly with each other” (Bennis, Goleman, & Biederman, 2008, p. vii). As a factor in a decision making process, transparency can be defined more narrowly as “the degree to which information is available to outsiders that enables them to have an informed voice in decisions and/or to assess the decisions made by insiders” (Florini, 2007, p. 5).

How the transparency ideal influences decision-making processes involving the release of potentially harmful or frightening information -- such as warnings to the public of a developing global pandemic, or of a possible bioterrorist attack is important to consider. In examining the H1N1 case study, the following questions seem relevant:

- What is the role of transparency in EIDC?
- What are the structural, cultural, or organizational constraints influencing the situation and the decision-makers?
- What is the public’s right to know, and what is the Government’s responsibility to manage or control the release of information to prevent panic in the midst of a complex, chaotic, and evolving threat situation?
- Is withholding some information ever justifiable?
• Who has the authority to make these kinds of decisions when public health and safety is at stake?

In looking at this issue, I consider whether there are nuanced interpretations of transparency that are more pragmatic and/or appropriate in responding to certain types of crisis situations. Is the concept of ‘targeted transparency’ (Fung, Graham, & Weil, 2007), where specific organizations responsible for particular aspects of public risk, safety, or behavior, make decisions about the type, scope, and timing of information release, a legitimate and ethical practice?

In the area of public health communication, transparency has a somewhat different definition and role. The following principles and guidelines illustrate these differences;

• Acknowledge uncertainty
• Provide follow-up information as quickly as possible
• Advise patience and flexibility
• Admit mistakes and move on
• Provide advice that fits the context and can realistically be acted upon (Jennings & Arras, p. 18).

In reviewing literature related to transparency it was apparent that despite their stated commitments to transparency goals, many Government organizations and agencies are struggling with the challenges of incorporating the principles of transparency into their operational practices, particularly in the area of crisis communication. All agree that there is a need to inform the public of impending threats and danger, but there is also a felt responsibility to avoid unnecessary alarm and maintain social order and this often presents a significant ethical dilemma (Florini, 2007; Mitchell 2010).
Transparency policies have frequently been in conflict with “right-to-know” policies and
the government’s attitude toward becoming more transparent has been slowly evolving ever
since Congress passed the Freedom of Information Act in 1966. This tension between openness
in government (visibility of practices and procedures) and a desire for secrecy to protect
government operations has a long history in American government bureaucratic politics. What is
referred to as “a 1st generation of legislated transparency” or “the right-to-know policies”
emerged from the 1946 Administrative Procedure Act that mandated public disclosure of
Executive Branch proceedings. These policies and mandates for government disclosure of
information to the public have continued to evolve with each successive administration and
Congress. However, there have been both successes and setbacks in expanding these “right to
know” policies, notably the success of the Freedom of Information Act in the 1970’s and
conversely the Bush Administration’s efforts to increase the scope of “official secrecy”
regulations and policies (information control) beginning in early 2001. These efforts continued
and were expanded after the 9/11 attacks with the passage of the Patriot Act and other
government measures designed to increase the government’s capability for monitoring actions
and/or individuals thought to be of concern from a national security perspective (Fung, Graham,

The recent (June 2013) incident, involving the release of highly sensitive information by
Edward Snowden concerning a “secret” U.S. Government technical surveillance program, and
the continuing debate about the legality of his actions has brought this issue of the Government’s
‘right’ to collect certain information on its citizens and political allies and to withhold
information about these programs to the forefront of public debate once again. In an article titled
NSA Management Directive #424: Secrecy and Privacy in the Aftermath of Edward Snowden,
the author quotes from Snowden’s published statement in which he defends his decision to reveal the NSA surveillance program:

So long as there’s broad support amongst a people it can be argued there’s a level of legitimacy even to the most invasive and morally wrong program, as it was an informed and willing decision …. However, programs are implemented in secret, out of public oversight, lack that legitimacy, and that’s a problem. It also represents a dangerous normalization of “governing in the dark” where decisions with enormous public impact occur without any public input (Lucas, Jr., 2014, p.1).

Components of Organizational Crisis Response

In reviewing literature related to how organizations respond in crisis situations, I discovered a number of significant issues directly related to the official response to the 2001 anthrax crisis. These issues generally fall within the three thematic categories I identified; processes, practices, and organizational behavior/culture.

Organizational processes

In the category of organizational process, reports and studies of CDC’s response during the anthrax crisis highlighted many systemic organizational issues such as problems associated with information ‘flows’ (both internal and external). These were attributed to complicated hierarchical organizational structures and the existence of policies and regulations that impeded effective internal coordination and complicated the inter-organizational coordination process (Chess & Clarke, 2007; Freimuth, 2003, 2006). Issues concerning the inadequate size and equipment of the physical space allocated to crisis teams and emergency response centers were also noted and cited as factors contributing to a lack of timely and effective staff coordination.
that affected the overall response process (Vanderford, 2003). In addition to the physical workspace problems, the lack of sufficient (IT) communication technology (e.g. laptops, desktop computers, mobile phones) allocated to the response staff to support the response operations led to delayed information transmission or resulted in missed information altogether (Arpan & Roskos-Ewoldsen, 2005). Also noted as problematic was the smooth and effective integration of highly technical information in the planning process (Jederberg, 2005).

Other studies cited the lack of any pre-prepared guidance for the organization’s communication staff to assist in managing the large volume of media inquiries, and poorly defined or nonexistent procedures for official coordination and collaboration with the media (Freimuth, 2006; Robinson & Newstetter, 2003). Also noted was the insufficiency of readily accessible and useful subject matter specific information resources to respond to what should have been anticipated media and public inquiries, such as ‘What is anthrax?’ ‘How is it contracted?’ ‘Are all forms fatal?’ Unfortunately, due to this lack of prepared/approved guidance (i.e., Frequently Asked Questions) what appeared to be conflicting and sometimes even contradictory information was provided. For example, confusion and outrage resulted when the CDC recommended that postal workers in mail handling facilities identified with anthrax contamination be given the antibiotic Doxycycline as a preventative measure. This was problematic because only a short time prior, the CDC had recommended the employees at the Senate Hart Office building in Washington DC and the NBC television studios in New York (where the presence of anthrax spores had also been confirmed) take the antibiotic Ciprofloxacin (Cipro) to protect against possible anthrax infection. The CDC knew that both drugs were equally effective and that Doxycycline was perhaps even preferred as a preventative treatment due to its fewer potential side effects. However, this information on the differences between the
two drugs was never fully communicated to the postal workers or the public. The medical facts contradicted what the postal workers believed to be true, that Cipro was somehow a “better” drug. Consequently, the postal workers alleged that they were being given “a less effective medication” and were being treated as “second class citizens” (Vanderford, 2003, p. 11).

The public information resources on anthrax that were available were also frequently criticized for being “too scientific” or “too complicated” for the health literacy levels of the general public, sometimes resulting in misinformation due to misinterpretation (Mebane et al., 2003; Prue, Lackey, Swenarski, & Gantt, 2003; Robinson & Newstetter, 2003).

The CDC’s cumbersome clearance (release) process for official statements and information updates was also identified as one of the problematic organizational issues. This process frequently resulted in delays for providing new information to the media, which created the perception (paranoia) that important information was being deliberately withheld from the public. Also cited as a problem was the failure of the CDC leadership to designate a single or “official” spokesperson(s) for the agency, which sometimes resulted in conflicting and contradictory public messages as the media would interview several different “official spokespersons”, often on the same day, whose information and messages were not only not coordinated internally for consistency but were also not reviewed for currency and accuracy. Officials of the government agencies were also criticized for their apparent failure to adequately anticipate the extreme time pressure that the crisis situation imposed on the media staff for rapid response to public inquiries and the volume of media demands for information updates (Chess & Clarke, 2007; Holmes et al., 2009; Prue et al., 2003; Robinson & Newstetter, 2003; Seeger et al., 2008; Vanderford, 2003).
Organizational practices

There are a number of studies that recognize the need for and implementation of certain organizational practices that would contribute to the likelihood of a successful response. Specific recommendations included the use of clear, readable and understandable (e.g. non-scientific) language both in printed materials and from official spokesperson(s), broad dissemination of all available information (both in print and visual media), and timeliness, accuracy, and consistency of messaging (Arpan & Roskos-Ewoldsen, 2005; Covello, 2003; Glik, 2007; Schuchat & Vanderford, 2010).

One practice used to enhance communication between communities or groups with significant differences in culture, language, or other social barriers is the use of boundary objects. Boundary objects facilitate interaction between different communities by “enabling knowledge exchange across organizational and professional borders” and “establish a joint language for representing knowledge” (Carlile, 2002). In this way, boundary objects can be useful to organizations struggling with the challenge of communicating critical information to an audience that includes the public and other professional organizations with different interests, priorities, or agendas (Carlile, 2004).

The concept of boundary objects is used in studies of organizations facing this complex problem of communicating with diverse audiences and/or participant groups involved in solution development. This analytic concept originated in the field of scientific inquiry and derives from studies of specific scientific objects that occupy ‘intersecting social worlds’. These objects often will have different meanings within these individual social worlds but will still be understood well enough to allow them to function as a ‘means of translation’ within and across disparate social and/or professional groups (Star & Griesemer, 1989, p. 393).
In my study of a government agency facing an emerging crisis, I investigated how the organization developed and used boundary objects in developing an effective crisis communication strategy. A key role for boundary objects in this process is to establish some common ground or common understanding of the problem. During its response to the H1N1 pandemic, the CDC created a number of boundary objects to facilitate communication with population groups identified as being at high risk for contracting H1N1. Because these groups differed in age (significantly), gender, and reasons for resisting the idea of vaccination, the boundary objects developed and used to facilitate communication with each ‘at risk’ group were necessarily different and customized to each group. For example, with the highest risk group, teenagers and college age young adults, the CDC used social media (Facebook and YouTube) as well as web podcasts, widgets, and eCards to communicate their prevention and vaccine campaign messages. Additionally, a concerted effort was made to reach the public via the Internet with a dedicated webpage (www.flu.gov) where daily flu updates were posted as well as short informational videos about how to avoid getting/spreading the flu and the importance of flu vaccinations (Schuchat & Vanderford, 2010, p.479). While these methods of communication may seem commonplace today, providing important information via a website using podcasts and video clips and the use of a social media platform to reach target audiences during a public health crisis was a significant and completely new communication initiative for the CDC.

In order to address (perceived) concerns about the H1N1 vaccine for the next highest risk group, pregnant women, in addition to the electronic media, the CDC developed specialized health message campaigns using printed information (pamphlets, posters, information sheets) that were distributed to community health care providers such as obstetricians, pediatricians, and
primary care physicians where the CDC believed this population group would most likely seek out information on H1N1 risks and answers to concerns about the vaccine.

The CDC’s *Morbidity and Mortality Weekly Report (MMWR)* series is also an example of a unique inter-organizational boundary object. While the *MMWR* series are primarily directed toward the scientific and medical communities, these documents are available to the public through the CDC website and can also be accessed via electronic subscriptions from public and/or academic libraries. These publications are often referred to as “the voice of the CDC” and provide an important, easily accessible information resource for the public as well as the global public health community (CDC, 2010, January 15).

It has also been argued that in situations where the immediate problem requires radical innovation for resolution, the use of boundary objects can be extended to facilitate the decision-making process. In a rapidly changing and unpredictable environment where the consequences of the decisions made may have significant repercussions on public safety, the use of boundary objects may help the decision-makers in their process of integrating different or competing perspectives and/or proposed solutions (Dodgson, Gann, & Salter, 2007).

**Organizational Culture**

In his analysis of The Mann Gulch Disaster, Weick (1993) poses two fundamental questions about organizational response during crises: (1) why do organizations unravel, and (2) how can organizations be made more resilient? In my study, I consider the latter question of organizational resilience and, in particular, investigate the role of communication in developing this critical organizational quality.

How best to determine the organizational process of developing an effective response to an emerging and evolving threat? Karl Weick (2007) refers to this as “managing the
unexpected,” an ability to create ‘resilient performance’ through the creation of ‘mindful infrastructures’ and an organizational culture that encourages a mentality of *mindfulness*. He defines this as,

A mental orientation toward continually refining and differentiating categories, an ongoing willingness and capability to invent new categories that carve events into more meaningful sequences and a more nuanced appreciation of context and ways to deal with it (Weick & Sutcliffe, 2007, p. 88).

How does this concept of mindfulness help an organization adapt to a dynamic crisis environment characterized by high degrees of uncertainty and ambiguity?

According to one definition, organizational culture is “a set of shared mental assumptions that guide interpretation and action in organizations by defining appropriate behavior for various situations (Ravasi & Schultz, 2006, p. 437). An organization’s culture can therefore be viewed as a key determining factor in how the members of the organization will respond during times of crisis. How they understand or perceive the acceptable behavioral norms, leadership’s expectations, the organization’s history, and the perception of the organization’s public reputation all contribute to the understanding of an organization’s culture and what would constitute an appropriate response.

In crisis situations, experience with previous and/or similar situations will be a significant influencing factor in how the crisis is addressed. If the organization is accustomed to frequent crisis response and the members have had experience with either simulated or actual crisis situations, the response process will likely be much smoother and cause far less internal stress and anxiety. The degree of familiarity with crisis response practices and the organization’s member’s level of comfort with each other in a crisis environment is an important aspect of
organizational culture. One definition that takes into account the many and diverse elements that come together under the label of ‘organizational culture’ describes it in this way,

Culture would include the system of values, symbols, and shared meaning of a group including the embodiment of these values, symbols and meaning into material objects and ritualized practices…the ‘stuff’ of culture includes customs and traditions, historical accounts be they mythical or actual, tacit understandings, habits, norms and expectations (Sergiovanni & Corbally, 1984, p. viii).

Another significant hindrance in the overall response effort was failing to take into account important but unrecognized aspects of organizational culture, as it affected organizational behavior and as an influencing factor in determining and defining critical response strategies. For example, evidence of conflict or lack of trust among different response agencies, differing organizational objectives, weak or non-existent inter-organizational relationships, and competition for ‘authority’ in making decisions or public statements (Chess & Clarke, 2007; Vanderford, 2003; Wise, 2003; Zarcadoolas, Pleasant, & Greer, 2005).

The majority of the studies I reviewed are sharply critical of the practices of government organizations, especially the CDC, in these areas. They also emphasize the need to develop more effective crisis communication plans and processes, or to refine and adjust existing plans/processes to current circumstances and conditions. Several studies cite the need to develop an adaptive response strategy with a substantial degree of flexibility that would be successful in situations of emerging and evolving threat scenarios where high levels of uncertainty, ambiguity, and unpredictability exist (Freimuth, 2006; Kahn, 2009; Reynolds & Seeger, 2005).

In addition to the criticisms of the impediments in the communication processes and issues related to organizational structures used by government agencies (particularly with
engaging the news media), there appears to be a consensus in the literature that a critical area for further study and research in crisis communication regarding public health threats is with the quality of interagency and/or inter-organizational collaboration, coordination, and communication (Chess & Clarke, 2007; Freimuth, 2006; Karwa, Currie, & Kvetan, 2005; Millar & Heath, 2004).

Other issues related to the general concept of organizational ‘culture’ or behavior identified as having a negative impact ranged from leadership’s unwillingness (or inability) to diverge from traditional ways of doing business and issues affecting organizational behavior stemming from the public’s perceived general lack of trust in ‘the Government’ (Holmes et al., 2009; Pollard, 2003; Shore, 2003; Vanderford, 2003). One issue clearly related to the concept of an organization’s culture is the perceived ability of the organization to cope with uncertainty in a crisis situation. This was highlighted as a one of the most critical issues in developing trust with the public and for maintaining a public perception of having the situation under control. (Chess & Clarke, 2007; Freimuth, 2006; Mebane et al., 2003; Reynolds & Quinn, 2008; Robinson & Newstetter, 2003; Shore, 2003).

**Research Goals and Questions**

The primary goal of my research is to gain an understanding of the relationship between two separate but interconnected processes-- sensemaking and decision-making during a crisis situation -- and how these two processes influence an organization’s response to the crisis situation.

My secondary research goal is to explore the role of communication in shaping and developing the crisis response. My research focus is specifically on a large, complex government
agency confronting an unpredictable, ambiguous, and uncertain threat and its process of developing a response to that threat.

Given my interest in these two areas, I have developed the following primary research questions to guide my data gathering and analysis:

**RQ1.** How do government decision-makers make sense of an emerging threat or crisis situation in order to develop an appropriate response?

**RQ2.** When confronted with an uncertain and ambiguous threat, how does a government agency effectively communicate this response strategy?

To address these research questions, I focus on what has been called the “communicative dimensions of crisis” (Seeger et al., 2003); how participants facing an evolving crisis situation make sense of and construct meaning in a climate of extreme uncertainty, where ambiguity and chaos override ‘normal’ or predictable organizational response processes.

Within this context, I ask a number of additional questions:

- What are the organizational processes that determine the dissemination of information to the public during the emerging threat or crisis situation?
- Who makes the decisions about whether and what information is released to the public?
- What factors (i.e., a decision-maker’s personal experience, dominant organizational culture constraints and practices, or the interpretation of the threat context/environment) affect this decision process?
- How are the content, format, and timing of the information dissemination determined?
• How and with whom do government decision-makers collaborate in this process and how do they choose to communicate with the public?

These questions guide my exploration of the CDC’s organizational response to the 2009/2010 H1N1 pandemic. I explore these questions using the following conceptual frameworks: sensemaking, framing, transparency, boundary objects, and mindfulness.

In Chapter Three, I provide a discussion of my research methods and a description of my research data.
Chapter Three: Methods and Data

The primary method I use in my data analysis is the concept of the Case Study. Case studies are used in a variety of disciplines and can be valuable research tools providing a specific context or event for study. One definition of case studies and how they are structured in social science research comes from Robert Stake’s work. He says,

… in the social science literature, most case studies feature: descriptions that are complex, holistic, and involving a myriad of not highly isolated variables; data that are likely to be gathered at least partly by personalistic observation; and a writing style that is informal, perhaps narrative, possibly with verbatim quotation, illustration, and even allusion and metaphor. Comparisons are implicit rather than explicit. Themes and hypotheses may be important, but they remain subordinate to the understanding of the case (Stake, 1978, p.7).

The case I use for my research is the Centers for Disease Control and Prevention’s organizational response to the novel H1N1 influenza pandemic during the period from April 2009- June 2010. It is important to note that the data used in my case study and analysis of the H1N1 pandemic was drawn from more than one kind of source. In addition to published literature on H1N1, CDC press briefing transcripts, and transcripts of Congressional testimony from senior Government officials, I also used transcripts from interviews done in support of the CDC’s H1N1 Oral History Project. While I conducted the interviews that I used in my analysis this data should be considered a secondary data source as I did not independently develop and select the interview questions that were used. I submitted approximately several drafts of proposed questions and
CDC officials made additions, changes, and deletions to the list. Thus, the final determination of which questions would be used in the interviews was made by the CDC. These interviews were done for one purpose- creating the CDC Oral History- and I am using them for another, as data for my research and analysis of the organizational response to the H1N1 pandemic.

**Case Study: The 2009-2010 H1N1 Virus Pandemic**

In mid-April 2009 a previously unknown strain of influenza virus, Type A Novel H1N1 (H1N1/A) suddenly appeared in the United States and raised concerns within the international public health community that a potentially devastating worldwide flu pandemic was imminent. The CDC identified this particular influenza strain as a combination of several different types of flu virus genes not previously seen together and one not previously identified in humans (Centers for Disease Control & Prevention, 2009). This outbreak of an H1N1 strain was of great concern to the CDC and HHS because of the history of the H1N1 virus beginning at the start of the 20th century and the expectation in the public health community that another flu pandemic would likely occur.

**The 1918 Flu Pandemic**

The 1918 flu pandemic, also known as the Spanish Flu, was a significant event in the history of public health and an important influence in how public health policies and practices developed. Current estimates of the impact of the 1918 pandemic include the following statistics:

- Approximately 20% of the worldwide population became ill
- An estimated 50 million people died
- At least 675,000 people died in the United States
- In one year the average life expectancy in the United States dropped by twelve years
Unlike previous disease pandemics and other flu outbreaks the 1918 flu pandemic (which was determined to be a strain of the H1N1 virus) resulted in very high mortality rates among what were considered “healthy young adults.” Illness and death rates were actually higher in adults aged 20-50 years than they were in adults over the age of 50, traditionally a higher risk population group for death due to influenza. The reasons for this unusual disease infection pattern have still not been determined and remain a mystery (Reynolds, 2007, pp. 21-23).

**The H1N1 Threat Significance**

To underscore the significance of the threat posed by a new (or returning) H1N1 flu virus and the potentially devastating consequences of another H1N1 influenza pandemic, CDC points out that more people died from the 1918 influenza pandemic than were killed in World War 1. It is estimated that approximately 16 million people died in World War 1, while approximately 50 million deaths (worldwide) are attributed to the 1918 flu pandemic. Due to the nature of record keeping at the time, precise records of deaths caused directly by the pandemic flu virus are not available, however, it is generally agreed that somewhere between 675,000 and 700,000 of the deaths attributed to the 1918 H1N1 pandemic occurred in the United States (CDC, 2007, October).

Yet, the 1918 H1N1 virus outbreak, while the most severe, was not the only influenza pandemic in recent history. Other flu pandemics occurred in 1957 (70,000 U.S. deaths and 1-2 million deaths worldwide), and in 1968 a flu pandemic resulted in 34,000 U.S. deaths and more than 700,000 deaths worldwide. However, because the 1918 flu pandemic was caused by the H1N1 virus, the 2009 confirmation of an H1N1 variant in the United States raised fears that this devastating virus may have returned and could potentially have similar, or perhaps worse, consequences for infection and fatalities (Reynolds, 2007, 2012; Kahn, 2009).
Confirming H1N1/A

The H1N1/A virus was positively identified initially in a 10 year-old patient in California on 15 April 2009 (CDC, 2010, June 16). Although there had been several reports of confirmed cases of a novel influenza strain in Mexico prior to this date, this was the first official confirmation of the H1N1/A virus in the United States. On 17 April, a second patient living in California but located more than 100 miles away and without any apparent connection to the first patient also tested positive for the H1N1 virus. One day later on 18 April 2009, following the established protocols, the United States International Health Regulations Program notified the World Health Organization (WHO) of the positive identifications of the H1N1 virus in the United States (CDC, 2010, June 16).

On Saturday, April 25, 2009, the Director General of the World Health Organization, Dr. Margaret Chen, declared that the H1N1 outbreak was a “Public Health Emergency of International Concern” (Chen, 2009, April 25). She recommended that surveillance activities be increased and instances of any flu like symptoms immediately reported to the World Health Organization.

Also on April 25, 2009, New York City officials reported influenza-like illnesses in a high school, and CDC testing confirmed two new cases of the 2009 H1N1 influenza infection in Kansas. Subsequently, another H1N1 infection was confirmed in Ohio, making it evident that the disease was spreading rapidly to widely dispersed geographical areas. On 26 April 2009, based on the recommendation from the CDC following additional confirmations of H1N1 the Acting Secretary of Health and Human Services, Mr. Charles E. Johnson, declared a National Public Health Emergency. A public statement released by HHS explained this action:
The Acting Secretary of HHS determined, as a consequence of confirmed cases of Swine Influenza A (now called “2009—H1N1 Influenza”) in California, Texas, Kansas, and New York, and after consultation with public health officials, as necessary, that a public health emergency exists nationwide involving 2009 H1N1 Influenza that affects or has significant potential to affect national security (USDHHS, 2009).

Two months later on June 11, 2009, the WHO Director General, Dr. Chen, issued a press statement officially declaring H1N1 a global pandemic, stating that “nearly 30,000 confirmed cases [of H1N1] have been reported (to date) in 74 countries”. She also issued a warning about the future progress of the disease saying, “Although the pandemic appears to have moderate severity in relatively well-off countries, it is prudent to anticipate a bleaker picture as the virus spreads to areas with limited resources, poor health care, and a high prevalence of underlying medical conditions”. In her statement to the press, she explained the reasoning that led the WHO to decide to raise the worldwide influenza pandemic alert status from Phase 5 to Phase 6 stating, “On the basis of available evidence and expert assessments of the evidence, the scientific criteria for an influenza pandemic have been met. The world is now at the start of the 2009 influenza pandemic” (Chen, 2009, June 1). Figure 4 describes the WHO pandemic alert levels and recommended actions for each.
### NEW PHASES

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<tr>
<th>Interpandemic period</th>
<th>OVERARCHING PUBLIC HEALTH GOALS</th>
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<tr>
<td><strong>Phase 1.</strong> No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.</td>
<td>Strengthen influenza pandemic preparedness at the global, regional, national and subnational levels. Minimize the risk of transmission to humans; detect and report such transmission rapidly if it occurs.</td>
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<td><strong>Phase 2.</strong> No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.</td>
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<th>Pandemic alert period</th>
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<td><strong>Phase 3.</strong> Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.</td>
<td>Ensure rapid characterization of the new virus subtype and early detection, notification and response to additional cases. Contain the new virus within limited foci or delay spread to gain time to implement preparedness measures, including vaccine development. Maximize efforts to contain or delay spread, to possibly avert a pandemic, and to gain time to implement pandemic response measures.</td>
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<td><strong>Phase 4.</strong> Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.</td>
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<td><strong>Phase 5.</strong> Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).</td>
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<th>Pandemic period</th>
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<td><strong>Phase 6.</strong> Pandemic: increased and sustained transmission in general population.</td>
<td>Minimize the impact of the pandemic.</td>
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* The distinction between *phase 1* and *phase 2* is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localized or widespread, and/or other scientific parameters.

* The distinction between *phase 3*, *phase 4* and *phase 5* is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains (if derived from an animal strain), and/or other scientific parameters.


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**Figure 4.** WHO Pandemic Levels and Recommended Actions
CDC’s Response to the H1N1 Pandemic

The CDC’s response to the 2009/2010 H1N1 pandemic provides an excellent opportunity to explore the relationship between sensemaking and decision-making in public communication when a public health organization responds to an unknown, unfamiliar, and unpredictable crisis. Under the existing federal government structure, the Department of Health and Human Services (HHS) and the Department of Homeland Security (DHS) share the responsibility for coordinating a national response to an influenza pandemic, however, as the 2009 H1N1 pandemic evolved and public health threats became the focus over national security concerns, HHS assumed the primary directing and coordinating role in the response (Steinhardt & Crosse, 2011, June 27).

Within the HHS organizational structure, the CDC is recognized as the agency with primary responsibility for developing and implementing the response strategy and communicating with the public about an infectious disease epidemic and/or pandemic (Kanof & Anderson, 2004, January 30). In developing the official government response to the emerging H1N1 pandemic, the CDC faced many complicated and complex challenges. The issues of communicating effectively with multiple and diverse audiences (publics), balancing multiple organizational goals, the critical need to establish and maintain credibility and gain public trust, and the unprecedented demand for immediate and accurate information from the 24/7 media news cycle were all factors affecting how the CDC developed its crisis response strategy.

This unique infectious disease outbreak, which developed very quickly from a few localized and seemingly unrelated and cases of influenza in the United States into a global pandemic, provides an excellent opportunity to explore and analyze the difficult and complicated
challenges facing government decision-makers who are confronted with a complex, unanticipated, emergent, and highly unpredictable public health threat. 6

**The H1N1 Oral History Project**

In January 2010, Dr. Marsha Vanderford, Associate Director for Communications in the CDC Center for Global Health, proposed the development of an official oral history of the organization’s response to the 2009/2010 H1N1 pandemic. The objective would be to capture unique insights and observations from the CDC response participants and to create a permanent record of their thoughts, recollections, and reflections as a resource for participants facing similar challenges in the future. The CDC Director, Dr. Thomas Frieden, supported her proposal and approved the H1N1 Oral History project. Dr. David Sencer, a former (and the longest serving) CDC Director (1966-1977) who also assisted the CDC during the H1N1 response as an emeritus advisor, was named as overall project coordinator for the H1N1 Oral History. As a special advisor to the CDC Director during the H1N1 pandemic period, Dr. Sencer participated actively in the development of the CDC’s H1N1 response attending high-level decision briefings and meetings as part of the Director’s “Team B”, and working alongside the senior leadership staff. His personal involvement in the development of the CDC’s response strategy, plus his previous long tenure (and popularity) as a CDC Director gave him unique access to CDC staff members whose experiences and recollections were key to creating the H1N1 Oral History record. The strong personal and long-term professional relationships he enjoyed with these CDC members as

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6 The 2009-2010 H1N1 pandemic affected more than 214 countries (WHO, 2010, August 6). The CDC (2010, May 14) estimates between 14 million and 34 million cases of 2009 H1N1 occurred between April and October 17, 2009 in the United States. In the U.S. 41,914 laboratory-confirmed, influenza-associated hospitalizations were reported to CDC and U.S. deaths estimated to be between 8,717– 18,046 (CDC, 2010, July 30). Worldwide, the death total attributed to H1N1 (by the CDC) during the pandemic period is 284,500. Notably, 80% of the deaths attributed to H1N1 were in people younger than 65 years old (Dawood et al., 2009).
well as their deep respect for him contributed significantly to the successful completion of the Oral History project.

Once the CDC Director approved the project, Dr. Sencer identified and selected specific CDC employees for the oral history project interviews. He based his selection on his knowledge of each individual’s current and/or past positions at CDC and the degree of their involvement in the CDC’s H1N1 response. Dr. Vanderford subsequently offered me the opportunity to conduct the oral history interviews with these selected employees and she and Dr. Sencer became my principal points of contact at the CDC.

**Oral History Project Interviews**

An oral history, according to Donald Ritchie (2003, p. 19), “collects memories and personal commentaries of historical significance through recorded interviews. An oral history interview generally consists of a well-prepared interviewer questioning an interviewee and recording their exchange in audio or video format.”

The H1N1 Oral History was developed through a series of in-depth interviews conducted with these key CDC staff members and office directors during the period from January 2010 to June 2010. Planning sessions for the project were held in January 2010 and the first Oral History interviews began in early February 2010 following receipt of final IRB approval for the study from the University of South Florida. The planned timeframe for conducting these initial interviews was approximately six months. During this six-month period I traveled to the CDC Headquarters in Atlanta, GA on four occasions. Three visits were devoted to conducting the in-person recorded interviews and one visit focused on separate (not recorded) follow-up interviews. During the final visit I also reviewed the videotape footage for final editing with the
media department technicians and the project coordinator, Dr. Sencer. Each visit was approximately one week in length for a total of four weeks on site at the CDC.

The Oral History Project included twenty-eight interviews, each of which were conducted and videotaped in the television studios located in the CDC Headquarters Building, Clifton Road Campus, in Atlanta, GA. Approximately nineteen hours of High Definition (HD) videotape recordings resulted from these interviews, with each interview averaging 35 minutes in length. The interview video recordings were technically edited by the CDC electronic media department and then copied onto DVDs in individual files. These DVDs and the original video recordings were subsequently archived by the CDC library and are now part of the CDC’s permanent document collection. All of the interview recordings are available for review as public records in the CDC library, also located in the CDC Headquarters Building at 1600 Clifton Road, Atlanta, GA. The CDC provided me with DVD copies of each of the interview video recordings, which I used as my primary source material in my data analysis.

Selection of Data.

The videotapes, transcripts of these interviews, and the follow-up interviews I conducted with selected CDC staff members became the primary data sources for my research. I converted the HD video recordings of the interviews to audio only format using a commercial software program (Audio Hijack) and then had the recordings professionally transcribed. This resulted in 147 pages of interview transcripts that I used in conjunction with the copies of the video recordings to conduct my analysis. I reviewed the interview recordings and transcripts and coded them for examples pertaining to; (1) the participants’ sensemaking process(s), (2) the internal decision-making process/structure within CDC, (3) the response development, and (4)
description of the communication practices, both internal and external, during the crisis response period.

I reviewed each of the transcripts of the sixteen Oral History interviews I selected for my study and compared the participants’ recollections of events and their answers to the interview questions. In this thematic-oriented analysis, I looked for differences, similarities, and insight into their personal sensemaking and the organizational process(s) of decision-making that appeared to have influenced the development of the CDC’s response to H1N1.

As part of my literature review for the study of the CDC’s organizational response to H1N1, I searched for publications describing and evaluating CDC’s actions and public communication during the 2001 anthrax attacks to compare it with the CDC’s response to H1N1 during 2009-2010. As the anthrax attacks were the genesis of the current emergency and crisis communication response processes and practices at CDC, reviewing the organization’s response during the 2001 anthrax crisis provides an excellent means of evaluating certain aspects of the organization’s response to the 2009/2010 H1N1 crisis. In particular I looked for instances where specific response actions during the anthrax crisis were noted as insufficient or problematic and searched for examples of these (or similar) actions during H1N1 to determine if changes had been made to address these shortcomings.

This review of the organization’s response to the anthrax crisis also helped to contextualize the decision-making process and the CDC’s ability to respond to an emerging threat under conditions of extreme uncertainty. I believe this comparison provides useful insight into how the organization’s response during the H1N1 crisis differed from the anthrax response and how the H1N1 “story” was constructed to meet the organization’s revised crisis communication goals and practices.
Many of the key CDC decision-makers and response participants involved in H1N1 were also directly involved in the response to the anthrax crisis and that experience very likely influenced their behavior and thought processes in developing the response to the H1N1 threat. The significant level of public and official criticism that was directed at the CDC for the way the 2001 anthrax events were handled, overall, had an impact on the organization’s reputation and also provided strong incentive for the CDC leadership to develop different and more effective crisis response strategies and capabilities.

**Data Gathering.**

This is a qualitative study with primary research based on semi-structured, in-depth, personal interviews conducted with CDC employees who either were previously involved in the CDC’s response to the H1N1 pandemic, or were in positions with ongoing responsibilities related to H1N1 during the period April 2009 thru June 2010. A specific position description of each interview participants’ role in H1N1 is included in the biographical detail of the interview participants and is provided in Appendix B.

**Research Site.**

The main campus and headquarters of the Centers for Disease Control and Prevention (CDC) is located at 1600 Clifton Road in Atlanta, Georgia. This was the primary research site for the H1N1 interviews. The CDC has an established position category for Guest Researchers, which allows outside (non-employee) researchers to gain access to CDC offices and employees, as well as internal library holdings, and provides an official organization sponsor. I obtained formal organizational support for my on-site research and interviews at CDC with the assistance of Dr. Marsha Vanderford, (then) Director of the CDC Emergency Communications Division in the Emergency Operations Center, and my official CDC research sponsor.
Interviews

Interviews with twenty-eight CDC employees were conducted and recorded for the H1N1 Oral History Project. Dr. David Sencer, a senior advisor at CDC and member of the Director’s H1N1 response team and the Oral History project coordinator, selected these individuals based on his personal knowledge of their positions and official responsibilities during the H1N1 pandemic as well as their background and experience at CDC. This may be considered a limitation of the study as not every individual with key responsibilities during the 2009-2010 H1N1 response participants was included in the Oral History interview process. The individuals who were selected for interviews were chosen based solely on Dr. Sencer’s personal judgment and independent decision.

Dr. Sencer conducted three of the Oral History project interviews; I conducted all of the others. Of the twenty-eight total interviews, I selected sixteen to use as primary data sources for this study. The sixteen interviews were selected based on the specific role each participant played in the CDC’s H1N1 response and his/her involvement in either (or both) the decision-making process or public communication strategy. A complete list of the sixteen interview participants and their position in the CDC organization during the H1N1 response is provided in Appendix A. Biographic details of the sixteen selected interviewees, including descriptions of their background and experience at CDC and areas of professional expertise are provided in Appendix B.

Interview format

The formal interview process included asking several standard introductory questions of all respondents, designed primarily to initiate conversation and build rapport. However, the interview process was designed to be sufficiently flexible to allow for (and encourage)
considerable extemporaneous response. I intentionally sought detailed narrative accounts of individual experiences for those CDC staff members who were directly involved in developing CDC’s H1N1 response strategy.

Open-ended interviews where participants are encouraged to offer personal recollections and observations are ideal for obtaining a variety of perspectives and interpretations of events from those directly involved in the decision-making and communication processes surrounding a specific crisis situation. From these individuals’ firsthand experience detailed descriptions of the ‘atmospherics’ and other important context related information (data) can be obtained as well as information about the organizational and operational processes that were followed or enacted. These personal interviews were useful for comparing different individual accounts, interpretations, and perceptions of the same events as the crisis evolved. Based on the gap identified in my literature review in the area of interagency and intra-organizational collaboration and communication, I was also interested in investigating how this aspect of organizational crisis response affected the CDC’s operational practices during the response to the H1N1 pandemic.

From the interview data I obtained detailed accounts by individuals directly involved in the response that provided unique insight into the CDC’s decision-making process. I was particularly interested in learning about the perceived influences and/or constraints on the decision-makers from organizational structures and/or established processes in place at the time. Information that I sought included answers to questions such as:

- What were these established processes, if any, that CDC enacted during the H1N1 crisis to facilitate decision-making?
- Were decisions made by a group or were they made by a single individual, and if so, at what level in the organization?
• What was the coordination and collaboration process (and methods) for interagency/intra-organization communication?

• How was information shared, both internally and externally?

• If the organization determined that a single spokesperson should be identified for the release of all information, how was this individual selected?

Interview questions

I prepared a set of thirty-five questions to use as a guide during the interviews; however, the focus of each interview (topic focus) shifted somewhat depending on the interviewee’s position in the organization and specific responsibilities during the H1N1 response. For example, questions related to the preparation of messages for release to the public or participation in decision-making forums were not applicable to all interviewees. The questions were designed primarily to be a conversation guide, to prompt personal reflection and to elicit personal narratives, thus the direction of the interviews depended to some extent on the individual participants’ responses and was adjusted accordingly.

Final interview questions.

My draft interview questions were reviewed and approved by the Oral History project leader, Dr. David Sencer, and the project sponsor, Dr. Marsha Vanderford, prior to beginning the interview process. Both Dr. Sencer and Dr. Vanderford provided input (and added specific content or additional questions) to my original set of questions. The CDC leadership had specific interests in learning about how certain aspects of the response affected each agency division or office- especially in terms of allocating staffing and budget resources- so questions addressing these areas were included.

The interview participants were not provided with advance copies of the questions prior to their interviews, as one of the goals of the project was to obtain extemporaneous responses.
They were, however, told that one purpose of the interviews would be to capture personal recollections and anecdotal accounts of their individual experiences during the response that might not be included in formal after action reports and that this kind of information was of particular interest. They were also advised that another purpose for making the video records was to document their experiences as reference for use by other responders in future pandemics or other crisis events. Each of the participants signed a release form acknowledging that their interview recordings would be maintained in archive by the CDC and would become part of an official organizational Oral History on H1N1 and would also become public records.

I prepared an additional set of questions for follow-up interviews with selected individuals to allow for any new topics or issues raised during the interviews and/or an interest specifically related to my study related to their role during the H1N1 response that was not of specific interest to the Oral History project. Primarily this focused on the specifics of the decision-making process and practices of one of the Director’s advisory groups known as “Team B”, which was chaired by Dr. Sencer.

The following list of interview questions were used in the Oral History interviews and reflect both the interest of the CDC in creating a detailed record of the CDC’s organizational response to the H1N1 pandemic, and my specific research interests in the relationship between sensemaking and decision-making during a crisis event response. While it was not possible to ask each interview participant every one of the thirty-five questions, I selected questions from each topic area based on what each participant identified as their specific duties and responsibilities in the H1N1 response. For example, I refrained from asking specific questions about interacting with the media when the participant stated that they had not been involved in developing public communication messages and/or interacting with the media.
The initial questions were designed to begin the conversation, build rapport, and encourage the interviewee to remember (relive) the early days of the H1N1 response. As most of the participants participated in the crisis response from the very beginning (April 2009), and nearly a year had passed from the start of their initial involvement, these questions were designed to prompt memories of the events of the early days and weeks of the crisis. They are also designed to determine the degree to which the first notifications raised concerns about a possible or potential crisis.

Q1. When did you first hear about H1N1?
Q2. Do you recall how it was presented? Did it strike you as a potential crisis?
Q3. How/why, did you become involved in the preparedness/response to H1N1?
Q4. Were you directly involved in day-to-day planning and response strategy development?

Response Process - Personal/Organizational.

As the interviewee begins to remember the details surrounding the early days of the crisis, the next set of questions targets their emotional reaction and immediate response to the unfolding events. Subsequent questions focus on the more concrete procedural aspects of the response as they began to actively develop and implement a strategy to cope with the quickly developing crisis situation.

Q5. When you first heard about H1N1 what did you think/do?
Q6. Whom did you notify and how did you contact them?
Q7. Can you describe the first few days of the initial response period?
Q8. Were the existing plans activated? Did they work?
Q9. How much of your time initially was devoted to the H1N1 issue? Did this change as the crisis developed?

Q10. What modifications did you need to make to processes or staff organization to respond more effectively to the threat as it emerged/developed?

Q11. How did you go about making these changes?

**Decision-Making.**

The questions about decision-making were posed to all interviewees, even if they were not in what they might consider a formal ‘decision-making role’. I believe that comparing different perceptions and opinions about key decisions made, and the way they were made, will provide significant insight into the organizational decision-making process during the response and the perception of the organizational culture/environment.

Q12. What do you think were the key decisions that needed to be made in the first few month/months of the response?

Q13. How were these decisions made? Who were the key decision-makers?

Q14. How were these decisions communicated internally and publicly?

**Internal communication processes.**

For those interviewees who were not involved in the dissemination of information internally, questions in this section focused on how well they felt they were informed of what was going on at the organizational level as the crisis developed, how decisions were communicated within the organization, and how well these communication processes worked. They had the opportunity to provide insight into specific problems or obstacles if they felt they were not kept sufficiently well informed by the CDC leadership and to explain how they obtained information from different sources, if they felt it necessary.
Q15. Can you describe the internal communication processes/means that were used to keep CDC employees informed about the organization’s response?

Q16. How well do you think these internal processes worked?

Q17. What were the challenges you faced in getting information to or from CDC staff members?

Demand for information from the media/public.

These questions involving media contact and public communication were asked only of the participants whose duties required them to engage with the media. However, those employees who were not directly involved in providing information to the media were asked for their opinion on how well the CDC did in communicating with the public, based on their observation of the television and press reporting.

Q17. In times of public health emergencies there are often heavy demands placed on organizations for immediate and detailed information about the threat situation. Did you find this to be the case with H1N1?

Q18. How did you manage these demands for information?

Q19. Did you experience (or perceive) any instances of ‘media sensationalism’? (inaccurate reports, misleading information, etc.) How did you respond to these?

Q20. What were the communication systems in place at CDC to respond?

Q21. How well did they work?

Q22. Did you find it necessary to modify these systems? If so, how/why?

Time commitment for H1N1 response.

The questions about time commitment and organizational resources are designed to capture information about the kinds of organizational structure and process issues that may have
impeded, or affected individual directorates and office’s capability to respond in the most effective way. [Note: The CDC project sponsors had a particular interest in gathering this kind of anecdotal information from participants who were working the staffing and organizational structure issues on a daily basis.]

Q23. How much of your workday was/is devoted to the H1N1 issue?

Q24. Has this changed since the beginning of your involvement?

Q25. Did the H1N1 response require redeployment of organizational resources in your area or in areas that directly affected your operations?

Q26. What changes in organization or personnel did you make?

Q27. How were these change needs identified? Did you collaborate with managers in other parts of CDC or in partner organizations outside of CDC?

Collaboration.

My review of the literature identified a significant criticism of the ability of government agencies to effectively conduct inter/intra organizational collaboration and effectively coordinate across multiple agencies during crisis events. The following questions are designed to elicit personal stories about how internal collaboration was conducted in CDC and to explore any efforts of external coordination and collaboration with colleagues in other government agencies or other organizations.

Q28. Did you engage in active collaboration with other parts/divisions of CDC?

Q29. Can you describe this process? What worked well, what didn’t? Why?

Q30. Who were your primary contacts within the organization or outside of CDC?
Reflection, retrospection, recommendations.

With almost a year of time having elapsed since the H1N1 crisis emerged, participants were asked to reflect on their experience and offer suggestions for different approaches or strategies, as well as to evaluate the overall response effort. One of my research goals is to be able to provide recommendations for improving an organization’s ability to respond effectively to an emerging and evolving crisis situation and I believe these reflections and suggestions from the participants will provide important context for future response strategists and decision makers and examples in developing those ideas.

Q31. Looking back over the past year, what would you have done differently?

Q32. What could the organization have done differently?

Q33. Overall, how would you evaluate the CDC’s response to the H1N1 threat?

Q34. What were/are the strong points? Weak points?

Q35. What recommendations would you offer to someone faced with a similar situation in the future?
Chapter Four: Results

The following chapter outlines the results of my research. I begin by restating my research goals and my primary research questions that guided the analysis of my data. I also provide a demographic description and analysis of the sixteen interview participants I selected for my study including their education, experience, and tenure at the CDC. Following this, I explain the thematic categories I chose to use in analyzing my data and provide selected quotes and excerpts directly from the interview transcripts to illustrate findings in each of the categories.

Research Questions

The primary goal of my research was to gain an understanding of the relationship between two separate but interconnected processes, sensemaking and decision-making during a crisis situation -- and how these two processes influence an organization’s response to the crisis. My secondary research goal was to explore the role of communication as an integral part of developing the organization’s crisis response. To guide my data gathering and data analysis, I developed the following primary research questions:

**RQ1.** How do government decision-makers make sense of an emerging threat or crisis situation in order to develop an appropriate response?

**RQ2.** When confronted with an uncertain and ambiguous threat, how does a government agency effectively communicate this response strategy?
Interview Participants Demographic Profile

CDC employs a highly educated and exceptionally skilled professional workforce. CDC is unique among U.S. Federal Government agencies with the concentration of (and combination of) medical expertise and academic credentials among its professional staff. The majority of CDC professional staff members have advanced degrees and many hold more than one. Most are board certified medical doctors in addition to having strong academic credentials in public health, public policy, or other public health related fields. The sixteen interview participants I selected for my analysis reflect this rather unusual organizational demographic. (Appendix B provides specific details on their individual credentials and professional experience).

These sixteen individuals have all been publicly recognized as experts in their respective fields and have established impressive professional credentials. They have, individually and collectively, received a wide variety of national and international awards and commendations and have contributed substantially to research in their areas of expertise with years of field experience as well as numerous academic publications. Scientific and scholarly publications from individual members within this group often total more than one hundred, per individual.

**Education.** Within the selected interviewee group, nine of the sixteen participants are Medical Doctors (MD) and three of these individuals also hold Master of Public Health (MPH) degrees. Five of the sixteen have PhDs and one individual in this group also holds an MPH degree. Two of the sixteen interviewees hold MA degrees and one has an MBA. This educational and professional background will influence each participant’s perspective on the situation and establish ‘frames’ or pre-conceived ideas and points of view that each will bring to the discussion. It is important to recognize how these different frames can potentially influence
sensemaking and decision-making in order to fully understand this multi-faceted process of constructing a shared or cohesive understanding among the group members.

**Work Experience at CDC.** The selected interviewee group also has significant long-term work experience at CDC. Of the sixteen interviewees, the shortest length of time for anyone in the group to have been employed directly by the CDC (at the time of the H1N1 response) was seven years. There are two individuals in this category and for both their prior professional experience was with organizations related to the CDC, or with organizations directly related to the CDC’s mission, providing them with considerable working knowledge of the CDC and an established professional network of contacts within the CDC. The degree of professional familiarity and level of trust all of these interview participants have with each other as colleagues is an important influencing factor in the organizational response development process.

Collectively the interview participants have an impressive number of years of experience working directly for the CDC. Their years of experience range from 7-24, with an average of 15 years. Most of these individuals have spent the majority of their professional lives within the CDC organization working closely with many of the same colleagues for their entire careers. There are also a number of tandem couples working in the senior levels of the CDC. This along with the many other long-standing personal friendships and professional relationships that have developed is an important dynamic in an organization’s culture. As a result of this extensive shared experience and the strong relationships it has helped to nurture, they have come to depend and rely on each other and a significant level of trust and confidence has developed among these individuals. Because these strong relationships exist, in any crisis situation that occurs it is most likely that they will reach out first to members of this community for information, validation/confirmation of information, and direction or guidance on what to do next. It is also
less likely that they will make independent decisions- and more likely that they will seek a consensus based approach to decision-making. Their shared experiences, including experiencing multiple crisis situations together, and their personal connections have created a highly cohesive professional community and a strong sense of affiliation to the organization, creating a distinct CDC identity.

There are also several other significant factors related to this depth of experience and tenure at the CDC to consider as potentially influencing factors in the response development process. First, because of the length of time they had been employed all but three of the participants had worked at the CDC during the anthrax crisis in 2001. Five of the thirteen interviewees who were at CDC during the anthrax crisis were directly involved in that response and the other eight members were either peripherally involved or at least fully cognizant of the anthrax crisis and the CDC’s responsibilities. Only two of the sixteen interview group members were not part of CDC in any capacity during the anthrax response. However, one of these two individuals was part of a State public health organization, separate from but connected to, the CDC during the anthrax crisis and was thereby involved indirectly.

Over these many years of working together these participants have developed not only strong professional relationships but also strong personal friendships. This creates a group that has shared considerable day-to-day work experience and professional expertise but also has developed social relationships outside of work that have contributed to their understanding of the CDC’s unique organizational culture. It has also shaped the organization’s culture in that personal relationships, including marriages, among the senior staff members are more the norm than they are atypical as tends to be the case in other large government organizations. Establishing this sense of cohesion requires a certain commonality of perspectives among the
participants. Fundamental to this process will be sharing similar past experiences, a certain degree of familiarity and professional expertise with the specific issue/threat/problem in question, and a high level of trust and confidence in the qualifications and capabilities of the individuals within the group. The CDC is also unique among government agencies in that its members share similar professional backgrounds and expertise as members of the medical and public health communities. This is another important and atypical characteristic when compared to other large Federal government agencies or organizations where there is likely to be more diversity in background and expertise especially among the senior leadership. At the CDC these top tier leaders are primarily physicians and/or health scientists. The CDC is focused on one mission- public health- and therefore the CDC workforce is predominantly comprised of people with skills in that field. These various factors contribute to a high degree of solidarity among the members of the organization, which supports a strong sense of organizational cohesion and loyalty to the CDC.

**Categories for Data Analysis**

To begin the process of analyzing the data in my interview transcripts, I first developed the following categories for analysis that tie directly to my primary research questions. These are; Sensemaking, Decision-making, Response, and Communication. Within each of these major categories I created sub-categories to further separate the particular aspects of each of these actions and map them to each research question. Creating these separate sub- categories allowed me to review and analyze the transcript data looking for examples of each of these specific activities. I looked for these examples in the experience(s) of the interview participants as they recollected the steps they took and the procedures they used while moving through their individual sensemaking and the organization’s decision-making processes. It was my hope that
by carefully examining specific examples from the recollections of the response participants, especially after they had time to reflect on their actions, I would find useful data and insights regarding the evolution of the organization’s response.

**Data Analysis for Research Question #1**

*How do government decision-makers make sense of an emerging threat or crisis situation in order to develop an appropriate response?*

To respond to my first research question concerning the process of sensemaking in an emerging threat or crisis, I used three frameworks for data analysis focused specifically on understanding how sensemaking happens. These are frameworks are based on (1) Karl Weick’s seven properties of sensemaking (Weick, 2001), and (2) an analytic approach to sensemaking derived from them (Muhren & Van de Walle, 2010) that targets three specific actions that take place during sensemaking. They identify these as *noticing, interacting, and enacting*. Using these specific categories, I analyzed the interview data to determine how the participants’ sensemaking processes were reflected in their responses to specific interview questions.

I also included the concept of *framing* as an analytic lens looking for examples in the interviews (explicit or implied) where framing could be clearly identified as an influencing factor in the sensemaking process. Framing is a unique category as it is an underlying (pervasive) influence in each of the specific sensemaking activities- individuals filter and sort information based on their pre-existing ‘frames’ of experience, expectations, or biases.

I provide direct quotes from the participants’ interviews as specific examples of how each of these concepts was demonstrated as the participants recalled their reactions to various events, the actions they took, and provided their observations about the emerging crisis situation as they became engaged in the CDC’s H1N1 response.
Noticing

Noticing is probably the very first action an individual takes in sensemaking. The sensemaking process is one of gradual realization and understanding— as events and actions begin to shape a recognition pattern for the observer. Noticing relates to the observer’s growing awareness of how a situation is developing and evolving— as certain indicators and signals are recognized. This aspect of sensemaking is directly related to two of Weick’s seven sensemaking properties, Salient Cues and Personal Identity. Weick (2001) says that individuals have preferences or predispositions for certain cues and will actively select these from their environment. Many factors such as past experience, assumptions, and established beliefs can influence which cue an individual will respond to, i.e. what they will notice. Choosing to focus on specific actions or activities will affect their sense (understanding) of what is happening around them by either confirming preconceived ideas and expectations or causing others to be missed altogether. Cues or signals that are dismissed or overlooked can also be significant influences on the sensemaking process by skewing the observer’s perception or by “confirming” false assumptions based on expectation not on observation. Dr. Marsha Vanderford, Director of CDC’s Emergency Communication System during the 2009 H1N1 pandemic, described her initial reaction and that of the people working around her to becoming aware of (noticing) the potentiality of a new H1N1 virus in this way:

You know, it took, I think, a couple of hours [for us] to really get a sense that this was new, this was novel, this was not seen in people before— and then sort of the awareness that this could be— this could be the pandemic that we were so concerned about (Dr. Marsha Vanderford, Director, Emergency Risk
Muhren and Van de Walle (2010) believe that sensemaking is “grounded in identity construction” and this aligns with Weick’s category of Personal Identity. Using identity as a filter can affect the interpretation of what is happening—individuals with certain defined roles/positions (especially leadership) will most likely notice different things in (or about) a situation, or they may interpret them differently than will individuals with non-leadership roles. They may also be concerned with the organization’s identity and notice aspects of a situation that could potentially affect the organization’s public reputation or challenge the perception of its identity (role).

In the first set of interview questions, I asked each participant the question, “Do you recall when you first heard about H1N1?” This question directly relates to the sensemaking concepts of noticing and salient cues and perhaps also provides insight into the personal identity filters of the interviewee. Every one of the interview participants answered this question affirmatively—and most in very specific detail as to their exact whereabouts and activities when they were first made aware of the H1N1 outbreak. Words used most often in response to the questions included: ‘absolutely’, ‘most certainly can’, and ‘yes, very specifically’. Considering that these interviews were being conducted nearly a year after the first surveillance notice/early warning period for H1N1, I found the level of detail in their responses quite amazing. For example, Dr. Beth Bell answered this question by saying,

I most certainly can [recall] because I was the Acting Director of the Center, NCIRD, [National Center for Immunization and Respiratory Diseases] at that time, in April, and I was actually performing in a choir
concert that Friday night, and had turned off my phone. I turned it back on after the concert and found I had a call from someone in the Flu Division saying they had detected two of these [cases] over the past couple of days and they were concerned. So, I got a, you know, a very comprehensive update about what people were doing about it- sitting there in my car in the parking lot, after the choir concert. It’s quite – quite a clear memory of the first time I heard about this (Dr. Beth Bell, Acting Director, National Center for Immunization and Respiratory Diseases (NCIRD), Interview #2, lines 18-28, 32-33, Appendix C).

Another example of a very detailed and vivid memory of the initial recognition that there could be something significant developing came from Dr. Jay Butler, Director of the H1N1 Vaccine Task Force. In response to this question he said,

I can recall the moment very clearly actually because I was not at CDC in Atlanta at the time. I was actually attending the American College of Physicians’ Conference in Philadelphia finishing my term as governor of the Alaska State chapter. In sitting in the convocation ceremony and being a little bit ADD, I was getting restless and I pulled out my Blackberry and saw some emails about a new swine flu strain that had been isolated in children in Texas and California. And remember thinking at the time, this does not sound good and particularly with two separate geographic locations. It raised some concerns. And as I was leaving the convocation call, I ran into Greg Poland who is well known as a – someone who’s done quite a bit of research and promotion of vaccines and we were talking
about it and both had the same impression that this did not sound – sound good at all. (Dr. Jay Butler, Director, H1N1 Vaccine Task Force, Interview # 4, lines 26-37, Appendix C).

Dr. Stephanie ZaZa also recalled her initial notification of the developing H1N1 threat with specific location and situation details.

I do. I was actually in Washington, DC on a three month assignment. And I was at a meeting of the Institute of Medicine in their building and I received an email from Phil Navin who is the director of our emergency operations center asking me to participate in a call of the Department and CDC regarding some cases of an unusual flu in California. And because the Institute of Medicine building is – I don’t know what it’s made of, it’s Kryptonite or something, and I had to go stand out on the sidewalk to take the phone call because I couldn’t get a signal otherwise (Dr. Stephanie ZaZa, Deputy Director for Strategy in the Office of Public Health Preparedness and Response (OPHPR), Interview #16, lines 24-31, Appendix C).

In Karl Weick’s seven properties of sensemaking (Weick, 2001) he identifies one as ‘Plausibility’ – or ‘Plausible Sense’- a process of developing coherence, something constrained by agreements with others and consistency with the recent past, visible cues, and familiar scenarios. When asked if she could remember her initial notification concerning the developing cases of an unknown flu (identified later as H1N1), Dr. Anne Schuchat, (then) Acting Deputy Director of the CDC, responded;
Sure. Friday, April 17th, I opened my door at home and my cell phone went off and my colleague Beth Bell was on the phone. Beth was serving as the Acting Director of the Center while I was on this detail to the Office of the (CDC) Director. She was calling to let me know that our lab had found two different children with a new influenza virus that had swine origin. We had been following unusual influenza cases that had swine origin; we’d had one here and one there- over the past two years or so. But these were two children with no contact with each other, or with pigs or any animals apparently, who had a new [flu] strain that wasn’t one we’d already seen. So that was when I first knew about it and I, in turn, called [Dr.] Rich Besser who was the Acting [CDC] Director to let him know as well (Dr. Anne Schuchat, Director, National Center for Immunization and Respiratory Diseases, Interview # 13, lines 20-32, Appendix C).

These detailed recollections clearly show that the initial notifications and the initial cues were recognized immediately by each of these individuals as important and significant. Additionally, in reviewing the interview transcripts I realized that six of these sixteen key personnel were not physically located at the CDC, or in Atlanta, when they were first notified of a potential problem or at least a concern about the developing H1N1 threat. Several of them were traveling, including being out of the country, on vacation, or on temporary assignments in other locations. Yet each of them was notified almost immediately and directly- either by a phone call or an email- from a colleague or a supervisor and were made aware that something important was developing. This indicates the senior leaders in the CDC organization have established a strong informal communication network to keep themselves aware of and informed on unusual
or developing situations and significant events- and that it works. For those senior staff members who were at the CDC headquarters when these reports surfaced many reported that they quickly initiated face-to-face meetings to discuss what they knew and to try to determine what was actually happening, or thought likely to happen, based on the information that had been received so far. An example of this kind of response came from Dr. Lyn Finelli. She recalled,

It was April 15th, I was in my office, and one of my colleagues came into the room and said she had just gotten a call from the laboratory saying they had a novel Influenza A isolate and that it was an H1. But we didn’t know the type. She thought we should do an investigation. So I gathered my team and we decided to call California to find out about the case. …

Yeah, in the next few hours, I – I called my Branch Chief, [Dr.] Joe Bresee, and he came down. I called my husband, [Dr.] David Swerdlow, he was then the Associate Director of Science in our Center, and asked them all to join the conference call with California. I thought that as many good heads as we could get in the room was important because this seemed to be a pretty unusual event

(Dr. Lyn Finelli, Lead for Surveillance and Outbreak Response Team, CDC Influenza Division, Interview # 7, lines 14-18, 52-56, Appendix C).

An important influencing factor that might determine what individuals notice about a new situation, or how quickly they are able to make sense of what appear to be random and unrelated facts or events has to do with their experience with other (perhaps similar) situations in the past. In the case of disease outbreaks or other serious public health crises this would relate directly to the type and extent of response planning that had been done, the kinds of training exercises that individuals had participated in, or just their general level of awareness concerning warning signs
of potential threats. All of these factors would affect not only the specific details that an individual would notice but will also affect the degree of significance that they would attach to them and therefore not dismiss them as random or unrelated events.

Prior to 9/11, very few U.S. Government or CDC staff members had participated in disaster/crisis planning and response scenarios that involved a domestic bioterrorist threat centered on the intentional (yet random) infection of U.S. citizens. The idea of an anthrax attack, although acknowledged by the U.S. military as a possibility, was considered unlikely and far more likely to occur as an attack on U.S. military forces in a foreign country. The disaster/crisis scenario planning and exercises that were conducted tended to practice responding to what were considered more traditional bioterrorist threats, such as nerve gas exposure or nuclear radiation contamination.

One large-scale tabletop disaster planning exercise involving a critical infectious disease threat did precede 9/11 and took place in June 2001. This exercise, known as “Dark Winter”, presented a hypothetical situation of the intentional release of the smallpox virus in three major cities in the United States. The exercise primarily involved senior government policymakers and members of the media as the response participants. Notably, it did not involve operational level first responders or medical/public health specialists and the response centered on the actions required of senior policymakers and government leaders. Eerily foreshadowing the assessment of the Federal Government’s role in the 9/11 response the exercise was criticized as a complete failure of coordination and collaboration among government agencies and the response was evaluated as ineffective (Kahn, pp 4-5, 179, 2009).

Conversely, the CDC had been engaged in influenza pandemic planning and exercises for many years and regularly practiced responding to pandemic flu threats. Many of the interview
participants commented on how valuable the planning and practice exercises had been as preparation for responding to H1N1. The following two quotes, from Dr. Jay Butler and Dr. Marty Cetron, provide examples of how the participants found their prior planning and exercise experience important and how it helped them as they developed the H1N1 response.

The planning was very beneficial. But the plan is not a protocol. It helped to think through the issues that we needed to deal with but the pandemic that was arriving was little different than the pandemic we had planned for in that a lot of plans were built around a worst case scenario of either of either a 1918 type pandemic or an H5N1 type pandemic with a very high mortality rate. As it turned out, of course, this was a different kind of epidemiology (Dr. Jay Butler, Director, H1N1 Vaccine Task Force, Interview # 4, lines 94-100, Appendix C).

I think the fact that we had been planning for a pandemic for three years or more and had been exercising intensively, sometimes there or four times a year with live fire- real life simulations- really helped us all get comfortable in that environment. In fact, the level of comfort of the interactions, understanding lanes, roles and responsibilities, ways of evaluating and patterns of responding were made much, much better because of all our preparedness, probably in ways that we will never fully appreciate, but to fully emphasize how important it is to go through that preparedness, the planning the development, even if you modify your plans extensively, being familiar with the key decision points, the places where you want more information, the structures in which you’re going to share information along the cascade of partners, the systems, was – was really very,
very valuable (Dr. Marty Cetron, Director of Global Migration and Quarantine Division, Interview # 5, lines 203-217, Appendix C).

In both of these quotations it is easy to see that the concept of familiarity, of ‘comfort’ with a/the crisis environment is one that the participants recognize as key to successfully managing and responding in a crisis. This idea reinforces Weick’s idea of Plausible Sense – an outcome of sensemaking based in part on recognizing visible cues, and familiar scenarios. This would also influence their ability to more quickly determine what was happening because their frames (and therefore signals/cues) would be set or at least influenced by the practice exercises they had experienced. They would already be primed to look for specific ‘salient cues’ in the situation. In real life situations this would likely prevent them from missing or dismissing critical indicators due to ‘perceptual blinders’ that would assess certain important cues as too improbable (i.e. 9/11, anthrax) and thereby cause them to misinterpret the situation early on in the crisis.

**Interacting**

Interaction is key to staying informed in a rapidly changing and evolving situation such as a crisis. Muhren and Van de Walle (2010) position this capability for interaction as a “means to reduce ambiguity and equivocality” as well as a point of verification for information sources and information accuracy. They contend that this process includes such activities as “information exchanges with colleagues, partner organizations and friends, formal exchanges through meetings and informal exchanges through chats over coffee” (p. 31). Having an established network of contacts and resources within the organization is critical to being able to effectively engage in this practice when a crisis occurs. As Dr. Jay Butler (Director of the H1N1 Vaccine Task Force) stated, “An emergency is a terrible time to be exchanging business cards” (Interview #4, lines 111-112, Appendix C).
Several of the interview questions prompted answers that reflected this process of interaction among the response participants. These questions included:

1. Can you describe the first few days of the response period?
2. When you first heard about H1N1 what did you do?
3. Did you engage in active collaboration with other parts/divisions of CDC?

Examples of the kinds of responses that addressed how this process of interaction actually worked during the H1N1 crisis include the following:

And so I would be phoning back and forth and saying, when do I come back and what can I do? I got off the plane and walked the halls – and asked how can I be of use? What do you need to know? And this was like the very early days just when they’re trying to figure out what does the virus do, who gets it, how many get it and what happens to them when they get it? (Dr. Martin Meltzer, Sr. Health Economist, Division of Emerging Infections and Surveillance, Interview # 10, lines 46-50, Appendix C).

Participants also reported that they made conscious efforts to get information from contacts and colleagues located outside of the CDC headquarters- in an effort to be as comprehensive as possible, to get as much information as possible, to add to the discussion of what was/was not known at the time. An example of this kind of outreach came from Steven Boedigheimer, Deputy Director, Division of State and Local Readiness,

I think another useful tool that a few of us utilized which may not be captured in an after action report was simply pick up the phone and contact somebody, in a State health department, or a local health department, that we knew or had worked with in the past that was in the epicenter of the response, and validate the
information, maybe gain some insight that we hadn’t had. For example, I would pick up the phone and call the Deputy Director in Delaware, Dr. Paul Silverman, and ask him his perspective. Or pick up the phone and call the health officer or the chief operating officer in the Arkansas Department of Health and say, “What are you hearing? How’s it working? What do we need to know that maybe we’re not getting at?” (Steven Boedigheimer, Deputy Director, Division of State and Local Readiness, Office of Public Health Preparedness and Response, Interview #3, lines 161-171, Appendix C).

In Karl Weick’s concept of sensemaking, this process of interaction among the response participants would also support the idea that ‘the process of group communication is where participants achieve a consensus view of the event or the environment’ (Weick, Sutcliffe, & Obstfeld, 2005). The following three examples given by interview participants reflect an effort to establish a sense of common understanding – through this process of group communication and interaction.

I think we did continue to rely on, you know, our science to figure out what indeed was going on and I- as you probably heard, or have seen, we are all a bunch of people who, you know, believe in trying to actually figure out what is going on to the best of our abilities and use that to guide our policies, our recommendations, and our actions (Dr. Beth Bell, Acting Director, National Center for Immunization and Respiratory Diseases, Interview # 2, lines 231-236, Appendix C).

I did participate in the meetings with Dr. Frieden [CDC Director] and there were, you know, daily or twice daily briefings with him –every morning and every
afternoon at the beginning. First looking at the surveillance data, you know, where is the outbreak was found. We already, at that point, were beginning to identify what it was and isolate what it was- then determining from all the locations and all the reporting was this the same- the same virus. (Dr. Lynn Austin, Deputy Director for Operations, OPHPR, Interview #1, 164-170, Appendix C).

With the State health departments, I think we worked with some partner organizations like ASTO and NACHO and they were absolutely key to our being able to facilitate those conversations and communication with the State and local health departments. They really came through. We had meetings with them. We even detailed a representative from their organization to be part of our team and to be in on the briefings so that they could turn and relay the information to their organizations- the State and local governments (Dr. Lynn Austin, Deputy Director for Operations, Office of Public Health Preparedness and Response, Interview #1, lines 99-105, Appendix C).

Enacting

Muhren and Van de Walle (2010) define ‘Enacting’ primarily as a communication activity- ‘when people communicate to enable action’. Weick would characterize this as part of the sensemaking process where “Action is a means to gains some sense of what one is up against”. Muhren and Van de Walle argue that this practice is extremely important in crisis response as a lack of action at a critical time, or a delay in action (responding) may result in a complete response failure, even if it is only perceived as such and not a failure, in fact. Examples of these kinds of tragic events regularly make news headlines and often cause permanent damage
to the public reputation of the responsible agency or organization that is blamed for the inaction.
For example, the (local) city and State government response organizations and the Federal
government response agencies were all severely criticized for the perceived lack of effective
action during the 2005 Hurricane Katrina response.

According to Muhren & Van de Walle (2010), communication is the foundation for
enacting- they contend that communication is what will ‘enable action’. In the interview
questions, none of the pre-planned questions were specifically designed to elicit responses to
describe how this process of enactment actually worked during the H1N1 response. However,
spontaneous responses and responses to other questions did provide interesting insight into how
the participants engaged in this process of ‘enacting’. Examples of these responses include the
following:

… I didn’t spend more than about 30 minutes in the meeting because the news
about Mexico had just come out that morning. That was a Friday morning. And I
was pretty much in and out of conference calls the rest of the day…. 
I remember we were saying, ‘well, what’s next’? And finally I said, I’ve got to
go home. I’ve got a State that I need to be in during what sure sounds like is going
to be an influenza pandemic (Dr. Jay Butler,7 Director, H1N1 Vaccine Task

In another example that shows clearly how communication can ‘enable action,’ Dr. Lyn Finelli
recalled how her Outbreak and Response Team quickly moved to position reporting assets close
to the first confirmed H1N1 infection locations,

7 Jay Butler was the State Medical Officer in Alaska during the initial phase of the H1N1 outbreak. However, he
moved to CDC to become the Director of the H1N1 Vaccine Task Force, which was his position when interviewed.
Well, during the week, that week of the 20th [April 2009], we decided to send a couple of teams out to the field. So we sent a team to San Diego and a team to Imperial County- a team of EIS Officers and some supervisors to oversee the investigations. When we sent those teams, we were still looking for a swine connection. Then when we heard about the Texas cases, we decided to dispatch a team to Texas, which we did (Dr. Lyn Finelli, Lead for Surveillance and Outbreak Response Team, Influenza Division, Interview # 7, lines 162-167, Appendix C).

**Framing**

An important component of the sensemaking process is determining and understanding the frames used by decision-makers in responding to an ambiguous threat scenario with very high levels of uncertainty in critical areas, a rapidly changing understanding of the disease, and a continuously evolving definition of risk. This aspect of sensemaking is more difficult to specifically identify as it tends to be a more subconscious activity- often not recognized by the individual attempting to make sense of a complicated situation. Framing in this sense contributes to a mindset that influences the selection and processing of information (cues and signals).

Goffman (1974) argued that people infer significance in a situation based on the primary frameworks developed from past experiences. Key to influencing an individual’s perception is in understanding what these past experience frames are- and being able to address them effectively- by either confirming or disconfirming the perceptions. These kinds of frames are (can be) developed from a variety of experiences, such as direct personal involvement in a similar situation or knowledge of another individual’s personal experience that is deemed credible. Also having participated in training exercises for similar situations or having engaged in developing plans for possible emergency or crisis scenarios- especially similar situations- will affect how the
(crisis) information presented to the individual is received and perceived. These experiences will construct frames – preconceived ideas and expectations- that may affect the perception of the information being presented or may influence the degree of significance attached to specific events.

Throughout the interviews I found many instances of the participants’ reporting there were general expectations or presumptions about what the “next” flu pandemic would be. These would certainly be considered framing influences. Many participants discussed the extensive planning sessions and practice training exercises that the CDC holds in hopes of preparing for the next influenza pandemic. Their responses indicate that there was indeed a pre-conceived idea (frame) for what the next influenza pandemic would be like and where and how it would manifest. I think it is important to recognize that these expectations had become part of what might be termed ‘conventional wisdom’ within the CDC community- and were not being challenged as false assumptions. The following four examples from the interviews provide insight into what they thought most likely (next) flu scenario would be and exactly what the CDC response team was expecting,

We had been preparing for years for pandemic influenza and I think our – our assumptions were that it would be very likely be Avian Influenza (Dr. Marsha Vanderford, Director, Emergency Risk Communication System, Emergency Operations Center, Interview #14, lines 19-21, Appendix C).

I would say most people were thinking about a pandemic that would emerge in South East Asia that may emerge as a combination of the H5N1 virus and not necessarily a pandemic that would emerge directly in North America or would be
from this specific type of swine-derived virus (Dr. Marty Cetron, Director, Global Migration and Quarantine Division, Interview #5, lines 80-83, Appendix C).

There was a lot of pandemic planning that had gone on, most of which I wasn’t very involved in. But there was a whole, you know, infrastructure, and a whole mindset- a whole paradigm in a way- about influenza pandemics and about how to prepare for pandemics that was actually very well developed (Dr. Beth Bell, Acting Director, NCIRD, Interview #2, lines 96-100, Appendix C).

It was more than ironic. I was on- getting on a plane to go to Europe for a conference on influenza and influenza pandemic planning and preparedness- except the pandemic they were talking about was all H5, Avian influenza (Dr. Martin Meltzer, Sr. Health Economist, Division of Emerging Infections and Surveillance, Interview # 10, lines 35-38, Appendix C).

Within the concept of framing is the idea that naming or labeling something (event, situation, person, group) in a particular way is a powerful and significant act- and one that will influence how the event or situation is perceived and/or what an appropriate response would be.

Naming/characterizing a situation as a crisis, or even a potential crisis, brings forward differing views and understandings of that term- and may lead to unintended consequences if the perception becomes that the situation is unmanageable or the authorities lack full control of the situation. The determination of a ‘crisis’ event, at least in the public health community, is a serious decision and is left to the most senior organizational leaders in the highest levels of the Government’s public health structure, i.e., Department of Health and Human Services, the CDC, or the World Health Organization.
One of the interview participants, Dr. Beth Bell, provided an interesting and somewhat different perspective on how framing (labeling) the emerging 2009 H1N1 situation as a crisis was perhaps not the best approach. In her view, not calling it a crisis was a better strategy and one that would allow for a more thoughtful consideration of alternatives and how to define the way forward. When asked if/when she recognized the emerging situation as a crisis, she replied:

The whole question of was it going to be a crisis and how was this all going to be played out, I think is a – another question altogether. I have found in general in dealing with these kinds of responses that it’s better not to think of it that way. And it’s better to just think of what needs to be done, you know, try to think about thinking the most rational science based comprehensive way about what the way forward is, try not to forget things, try to, you know, consider all the considerations and not think about it as a crisis (Dr. Beth Bell, Acting Director, National Center for Immunization and Respiratory Diseases, Interview # 2, lines 60-66, Appendix C).

Another interview participant commented on this same issue, noting that he perceived there was an effort to not label the emerging situation as one thing or another in the earliest days of the investigation, particularly in official (public) communication.

Well, it was very matter of fact- and of course, I was at that time getting it from outside of the Agency [CDC]. I wasn’t getting a lot of inside information and it did strike me – there was- there seemed to be an avoidance of the using the word pandemic – at least in the official communication. Yet, everything that was developing over the next several days certainly gave every indication that this
very well could be the beginning of the next flu pandemic (Dr. Jay Butler, Director, H1N1 Vaccine Task Force, Interview # 4, lines 55-60, Appendix C).

Both of these examples could be evidence of a deliberate attempt to engage in what has been called “strategic ambiguity” (Eisenberg, 1984, 2007) specifically in order to allow for a certain degree of “plausible deniability” should this situation not develop into a full-scale pandemic, as feared. Bearing in mind and anxious not to repeat the mistakes made in public communication during the 1976 Swine Flu pandemic (Kahn, 2009, pp 82-85) one could speculate that the leadership in the Government’s public health organizations were employing a strategy of ambiguity by not identifying the developing situation as a pandemic threat.

Sensemaking Components

These primary sensemaking components; noticing, interacting, enacting and framing comprised the initial period when the response participants struggled to understand what the information they had at the time actually meant and what they needed to do in response. These fundamental sensemaking elements were the basis of their individual and group sensemaking processes– how they comprehended what they were learning and how this information ‘fit’ with expectations and preconceived likely scenarios- their ‘frames’. Despite what they may have been expecting from their experiences and from the past training exercises, the recollections of the participants show that their process of sensemaking was not one of reaching a quick conclusion – even when the data initially appeared to confirm a recognizable or familiar pattern. Instead, it appears that they noticed disparities and anomalies in the data- a testament to their ability to recognize important ‘cues’ and to be open to indications that traditional or conventional (expected) signs or signals were not necessarily going to be found. The participants’ comments show they gradually arrived at their conclusions- in more of a ‘dawning realization’ than a swift
judgment – arrived at by engaging in a deliberate process of thorough data gathering and review, analysis, and extensive group/team communication to consider various possible explanations.

Examples from the participants’ interviews that reflect how they engaged in this sensemaking process include the following comments;

Yeah, I think it was a bit of a – a surreal feeling if you will. We had done so many exercises in preparation for pandemic influenza. And everyone, I think had such a heightened sense that this would be such a severe event it- that the repercussions of it would be so dramatic that in the first several days as we were watching this event and trying to gather information, that sense that “oh my gosh”, this is it…this is what we’ve been preparing for. I think all of those moments of thinking – sometimes it felt like we were still exercising then you realize- no this is real. People are sick, people are- this is spreading. So I think there was a sense- and I can remember several of us that afternoon that we first became aware of it – later it was maybe seven or eight o’clock at night, and there were several of us still in the Joint Information Center, kind of saying to one another…oh my gosh. This is what we’ve been planning for and preparing for” (Dr. Marsha Vanderford, Director, CDC Emergency Risk Communication System, Emergency Operations Center, Interview #15, lines 34-41, Appendix C).

Reflecting on his sensemaking process during the actual H1N1 crisis, Dr. Marty Cetron made the following observations,

I think one of the challenges- and exciting parts of- of this job is to try to filter, sift through, make sense, validate, and evaluate the quality of the information from different sources- you know- what’s more credible, what’s less credible.
But when you’re hungry for data and you want it faster than it’s available- you try to take as many inputs as you can while prioritizing getting first hand information- by having boots on the ground where the action’s going on (Dr. Marty Cetron, Director, Global Migration and Quarantine Division, Interview # 5, lines 177-183, Appendix C).

In addressing the issue of feeling pressure to make a determination of the disease cause and assess or predict the likely severity of the threat, Dr. Toby Merlin stated,

You know, what I remember as the key focus early on was really trying to get a good handle on what was going on in Mexico City because there was a lot of non-scientific information, a lot of non-verifiable information and trying to get as good a grip as we could on what the actual underlying facts were as well as trying to rapidly determine the extent of disease in the U.S. and turning up surveillance systems particularly in the cross-border states where it appeared most of the disease was occurring. … Then on the laboratory side, there was this enormous push to characterize the agent and develop diagnostics for the agent to genetically characterize the agent and develop PCR tests that could be used to detect the agent- that was an enormous full court press that was – that turned out to be quite successful (Dr. Toby Merlin, Deputy Director, Influenza Coordination Division, Interview # 11, lines 56-62, 63-67, Appendix C).

**Decision-Making**

Examples of how decision-making was approached and conducted during the H1N1 crisis show that there were several distinct phases of the decision-making process development. In the earliest days of H1N1, decisions tended to be made quickly and with incomplete or
imperfect information. Later, as the H1N1 threat was more clearly identified and better understood, the CDC’s decision-making process evolved into a more formalized structure within the organization and the decision-makers developed definite steps and organizational procedures. The evolution of this decision-making process and the procedures that the CDC developed to structure decision-making will be discussed in detail in Chapter Five as the approach the CDC took has significant implications for meeting similar challenges in future organizational responses.

Data Analysis for Research Question #2

*When confronted with an uncertain and ambiguous threat, how does a Government agency effectively communicate this response strategy?*

To respond to my second primary research question, which focuses on the role of communication in the development of the response, I developed two analytic sub-categories for Communication- internal and external. Surrounding the communication process and related to my major category of decision-making are the influences of *uncertainty* and *ambiguity*. Interwoven throughout the participants’ responses to questions directed specifically at these central ideas are many obvious references to perceptions of uncertainty and ambiguity, although these terms are not always used by the participant in describing the situation. I have included examples of how these factors were recognized and addressed specifically or how the participants perceived the organization to be responding to them more generally. I found it interesting that some of the interview participants provided clear examples of experiencing a high degree of uncertainty, especially during the early days of the H1N1 crisis, but never actually used the word uncertainty to describe what they were feeling or experiencing. Others, however, were very specific in their use of the term and emphatically stated there was a lot of uncertainty
and ambiguity both in what they were observing and in the decision-making process as they
gathered new information, analyzed the data they had and continued to refine their understanding
of what was developing. Several participants specifically noted the role of communication (both
public and internal to CDC) as critical to diminishing this sense of uncertainty and reducing the
ambiguity surrounding the situation.

**Uncertainty and Ambiguity**

In her analysis of leadership and decision-making during epidemics or other public health
crises, Laura Kahn (2009) points out that all such threats and crises are surrounded by
uncertainty and ambiguity, particularly during the earliest days of the outbreak or crisis event.
She argues that leaders confronting public health threats and disease outbreaks are particularly
challenged by these conditions as they also face an immediate demand from the public for
action/response and detailed information about the situation from the news media which is
operating on a 24/7 schedule. The nature of these kinds of threats—health, bioterrorism, disease
outbreak—are uniquely unsuited to the demands of immediate response. They often require
extensive scientific research and periods of testing to determine their exact cause and true
potential for harm. The experts who will likely investigate these threats or crisis events are also
by nature and training not prone to making immediate determinations or coming to conclusions
precipitously. They are primarily scientists and accustomed to conducting careful research and
testing before coming to conclusions. All of these factors are in tension with each other and yet
the pressure (and necessity) to provide a credible and immediate response is real.

Further, public health threats and public awareness of them are communicated in near
real time with the open availability of the Internet, email, text messaging, and social media
conversation forums such as blogs and chat sites. These horizontal and global communication
channels plus the predominance of the television new media as an information source seriously complicate crisis communication and “official” response. The following examples from the interviews provide interesting insight into how these factors of uncertainty and ambiguity were recognized by the CDC H1N1 response team. Addressing the issue of uncertainty specifically Dr. Steve Redd, Dr. Stephanie ZaZa, and Dr. Beth Bell made the following comments,

I think what actually happened is that we learned that we knew less and less about what the situation was- than we thought- and that was a bit unnerving- but keeping a grip on the uncertainty became an important way of navigating; and also, identifying some practical actions to take to find out more (Dr. Steve Redd, H1N1 Incident Commander, Interview #12, lines 84-88, Appendix C).

And so the first I heard about it was on that call and really wasn’t quite sure at that point what, if any, role I would have or if this would even really materialize into anything important or major. And at that point, there were I think only a couple of cases and it was an usual virus but nobody really had a very good sense, at least I certainly didn’t have a good sense, of what this would turn into. (Dr. Stephanie ZaZa, Deputy Director for Strategy, Office of Public Health Preparedness and Response, Interview # 16, lines 32-36, Appendix C).

Early on we really were trying to figure out how – what was this, what was the, you know, how severe was this, what was the clinical spectrum of illness, how much had it spread, what was this virus, a lot of those very fundamental questions.…

And so a lot of the first questions had to do with, you know, why was that; were we missing things; was there something different in Mexico; was it the same
virus, even, and what could, you know, sort of like especially was what our surveillance was telling us about this country accurate, or was there something else that, you know, was missing or that we hadn’t really understood or detected (Dr. Beth Bell, Acting Director, National Center for Immunization and Respiratory Diseases, Interview # 2, lines 70-73, 79-84, Appendix C)?

Speaking of how ambiguity affected decision-making in the early days of the H1N1 response Dr. Beth Bell- part of the senior leadership team and one of the decision-makers- made the following observation;

So I think the way we managed the ambiguity in the response was hopefully to recognize it and then usually somebody made a decision. And usually, it meant that, you know, somebody was pushed out of their comfort level one way or the other (Dr. Beth Bell, Acting Director, National Center for Immunization and Respiratory Diseases, Interview #2, lines 258-261, Appendix C).

It is apparent from these comments that ambiguity and uncertainty were not conditions that inhibited action by the response participants. In fact, it could be said that these were not entirely unexpected conditions- and that the CDC responders just accepted them as part of the problem set. The ability of an organization to function under these conditions indicates that there was a high degree of trust- a culture of trust- among the response participants. This is a characteristic of a cohesive organization- one where the members feel confident enough to make changes, or make decisions, that challenge the existing structures or processes but will not fundamentally challenge the unity of the organization. This kind of organizational culture will thrive in crisis environments because it is likely to lead the participants to new ways of thinking or doing.
Communication

Communication plays a critical role in crisis situations as a mitigating influence on the inherent uncertainty and ambiguity that surrounds crises—especially in the very early stages when information is scarce and sometimes conflicting and the known ‘facts’ are often contradictory. In addressing how the CDC response team recognized the specific role communication played in helping to diminish or alleviate uncertainty and ambiguity in the H1N1 situation, these next two quotes provide excellent examples;

I think the appreciation of communicating what we know, what we don’t know, what we’re doing to learn more and committing in our communications to telling people on a regular basis – updating the information in the news- is probably an important component of helping to ease the uncertainty (Dr. Marty Cetron, Director, Global Migration and Quarantine Division, lines 100-103, Appendix C).

Risk communication deals with what is known about a situation and is described as “the intentional effort to inform the public about risks and persuade individuals to modify their behavior to reduce risk” (Seeger et al., 2008, p. 9). Crisis communication, on the other hand, deals with what is known and what is not known about a given situation. In the following example, Risk Communication is cited as being the basis for the CDC communications about H1N1—however, it is important to note that with the emphasis placed on sharing the uncertainties of the situation and the likelihood that the situation (and guidance) would change there was a distinct commitment to the principles and tenets of Crisis Communication. This is important to note as the CDC has pioneered a new approach that combines both Risk and Crisis Communication practices - the CERC model- and this example provides an excellent rationale for why this was done.
In his interview Dr. Glen Nowak, Director for CDC’s Media Relations, commented on how they had consciously incorporated the fundamental principles of Risk Communication and also how uncertainty was addressed;

I think- I hope- that when people look at this they realize that one of the reasons it went so well was because the communications were very good. I think they will see that we followed the tenets of Risk Communication early and often. We shared- and we were comfortable sharing dilemmas with people, acknowledging the uncertainty, telling people what the uncertainty would mean. We were comfortable in telling people that the course would change and when the course changed. You know, we acknowledged that it was going to be disruptive for some” (Dr. Glen Nowak, Director of Media Relations for CDC, Interview # 11, lines 564-570, Appendix C).

The key role of communication in the response development was recognized and acknowledged by almost every one of the interview participants. Overall, the participants were highly complimentary to the CDC’s communication staff and of the official communication about H1N1, particularly noting the designated Agency spokespersons, the primary media spokesperson, Dr. Anne Schuchat, and the personal involvement of the CDC Director in the public communication process. One example from the interview transcripts that highlights these sentiments comes from Dr. Lynn Austin who stated,

We also found that communications are absolutely critical. Most of us who are not directly involved in the communications ourselves were glued to the TV sets, you know, waiting, watching the media trucks outside; but we were glued to see
Dr. Besser [Acting CDC Director], and Dr. Schuchat and then later Dr. Frieden [CDC Director] on television and what they were saying. And coming out of some of the daily briefings, knowing about what, you know, planning on what was going to be said, what – what the status was for the day, and then seeing it on the nightly news was pretty amazing in some ways. But it also showed me that CDC – this is one area I think CDC really excels is trying to share that information with the public (Dr. Lynn Austin, Deputy Director for Operations, Office of Public Health Preparedness and Response, Interview # 1, lines 62-70, Appendix C).

And in that afternoon of discussion about the next steps, one of the things that was abundantly clear was that this was going to probably be of media and public interest for awhile and that we, CDC, had to be prepared to be in front of cameras answering media and policy-maker questions quite frequently and be ready to go and assume that for the next few days, next few weeks, we were going to be having to update people on a regular basis ...

And so one of the systems we did was we instituted daily press briefings. And if we needed, we – we did a couple of additional smaller press briefings each day. So for the first five, four or five weeks of this, we did a press briefing every single day, including weekends, including holidays, to bring people up to speed. Every day, we got together with the people who were going to be serving as the spokespeople for those press conferences, whether it was Dr. Besser and most of them were -Dr. Besser, sometimes he was joined by Dr. Schuchat, sometimes he was joined by Dr. Cox, [Dr.
Nancy Cox, Director of the Influenza Division] depending on, you know, what the specific issues were, and we looked at what had been reported as of that morning. We looked at what we knew as an agency that was different from the previous day. We looked at how things were playing out and we – we tried to anticipate where the stories might be going, where the media and reporter interest might be going. And we factored all that into trying to figure out what our key messages were going to be that day.

(Dr. Glen Nowak, Director, CDC Media Relations, Interview # 11, lines 170-175, 256-269, Appendix C).

In Chapter Five I provide a summary of my findings based on my data analysis and provide additional detail as to how these key factors I have identified were influential in the development of the CDC’s response to H1N1. I also provide my analysis of the likely implications of these findings in terms of addressing threats and crisis situations, discuss the limitations that I have recognized in my study and findings, and offer recommendations for conducting additional research in this area and for organizations or leaders faced with responding to future emergent threats or crises.
Chapter Five: Findings, Limitations, Implications, and Recommendations

Ultimately, disease response is about human behavior, and human behavior is about what people understand and how they think about something. The more-the better-informed people are, we feel, the better choices they can make for themselves to protect themselves and their communities (Dr. Thomas Frieden, Director, CDC, August 23, 2010).

Summary of Findings

CDC’s response to the 2009/2010 H1N1 pandemic is recognized as a major success in numerous traditional aspects of organizational crisis response- but the CDC demonstrated particular skill and proficiency in two key areas- public communication during a crisis and the ability to adapt the response to a rapidly changing situation. This adaptive response capability is one of the most notable and important findings from this study of how the CDC navigated the H1N1 crisis and has potential implications for organizations of all kinds that are confronted with emerging, uncertain, and ambiguous threats or crisis events. In my analysis of the interview data/results I have identified numerous significant actions taken by the CDC response participants that directly contributed to both the overall success of the response effort but also to developing and implementing this important quality of organizational adaptability- or, in Weick’s terms, the qualities of organizational resilience and mindfulness. Words used frequently by the participants during the interviews to characterize the response development included; flexibility, adapt, revise, adjust, evolve, and navigating.
I identified several major categories of action that take place in the first/early stages of sensemaking—*noticing, framing, interacting, and enacting*. These actions are clearly reflected in the response participants’ interviews and confirm that they are fundamental components of an individual’s or group’s ability to make sense of what is happening around them even as the ‘facts’ change and the crisis situation evolves in a completely unexpected direction.

**Specific Findings**

In reviewing how the CDC response participants engaged in the process of developing an effective response the following observations can be made:

1) *Noticing and Interacting occurred almost simultaneously*

These two activities were most often joined together by the participants—noticing (recognition of salient cues) was almost immediately followed by some form of interaction—either a form of communication (phone call, meeting, email) or by initiating a specific action or procedure—often as had been practiced in the training exercises and response drills. The participants who reported these kinds of actions did not distinguish between these two activities and tended to view them as a seamless process of response to a known (or expected) cue or signal. It was very apparent that the response participants quickly noticed and understood that a serious threat was emerging just from the initial fragmentary (and disparate) cues they received—although the specific cause of the threat was not yet known. This simultaneous process also speaks to the culture that existed within the CDC organization—the strong relationships between the members—indicating a high level of trust existed between them. A seamless process of noticing and interaction results from this sense of shared trust but also from a point of familiarity with each other’s expertise, capabilities, and experience—creating an environment where group members almost instinctively reach out to one another when alerted to a potential threat.
2) *Interaction was on-going from the beginning to the end of the pandemic.*

This was noted by almost every interview participant - the involvement of so many people for such a long period of time – the longest crisis response in their history. Close interaction among the offices, divisions, and staff members was frequently commented on and participants recognized that its effectiveness was enhanced by the close working relationships and strong sense of organizational cohesion that exists at the CDC. This pattern of interaction extended to inter-agency collaboration and coordination and was recognized as highly effective by senior government officials (Duncan, 2009, Oct 21, p. 90; Napolitano, 2009, October 21, p. 3). This was particularly noteworthy as the CDC had been severely criticized for not collaborating or coordinating with other Federal agencies during the anthrax crisis of 2001 (Chess & Clarke, 2007; Freimuth, 2006).

3) *Influence of Frames was evident from participants’ responses.*

Three primary frames were evident from the participants’ responses to the interview questions. These were;

a. 1976 Swine Flu Outbreak

b. 2001 Anthrax Experience

c. Prior Influenza Pandemic Exercises/Expectations

In the case of the Swine Flu outbreak that occurred in January 1976 and lasted for almost one year, it is important to note that Dr. David Sencer was the CDC Director at that time. The Federal government’s 1976 Swine Flu response is generally considered a failure on multiple levels and the CDC and the Department of Health and Human Services were strongly criticized over their actions during the outbreak. The entire incident generated considerable
negative publicity for both the CDC and the Federal government and ultimately Dr. Sencer was asked to resign his position as CDC Director as a result (Kahn, 2009, pp. 82-85).

However, in 2009 during the H1N1 crisis Dr. Sencer was again part of the CDC response to a potential flu pandemic, this time in a key role as a special advisor to the Director and senior leadership staff and Chair of the Director’s outside advisory group known as Team B. Dr. Sencer’s personal experience, and the history of CDC’s experience during the 1976 Swine Flu outbreak, was undoubtedly a framing influence on the 2009 H1N1 response development.

Similarly, the generally negative perception of the CDC’s response during the anthrax crisis of 2001 influenced the CDC’s leadership and their approach to developing a response to H1N1. While neither the anthrax attacks or the 1976 Swine Flu were directly mentioned (other than an occasional reference to anthrax) by the interview participants, both of these events and their history within the organization clearly influenced the H1N1 response team. Most of the H1N1 response participants had lived through one of these events- anthrax- and in any case all were well aware of the severe criticism that the CDC had endured as a result of the Agency’s response to both. It seemed to me that both of these events were a kind of shadow influence on the H1N1 participants, not directly acknowledged or spoken of, but always present in the background and indirectly- almost subconsciously- influencing actions and decisions. Interview participants noted how they consciously reminded themselves of ‘how not to do it’ in considering various response actions.

The number, frequency, and type of planning and practice exercises for influenza pandemics was also mentioned by almost every interview participant. Even though they acknowledged that they had practiced and prepared for a completely different disease (flu)
scenario than the one presented by H1N1, all agreed that extensive practice and planning had made a significant difference in their ability to develop an effective response to H1N1. The participants noted that merely having had the experience of working together as a team had been tremendously beneficial, and credited this experience as having made the difference in how quickly they were able to determine the actual threat and adjust their plans accordingly.

4) *Uncertainty was recognized and publicly acknowledged.*

From the CDC Director to the Media Relations staff to the individual response participants- everyone acknowledged uncertainty as a significant component of the H1N1 pandemic. Many interview participants stated that they felt challenged by the degree of uncertainty that was confronting them- and as scientists often felt the need to be exact and to find definite answers before stating any possible conclusions. They mentioned feeling somewhat pressured to draw conclusions with imperfect and/or incomplete information and noted that this made them uncomfortable- even though they understood the need to be transparent and to provide information to the public as quickly as possible.

Most participants specifically noted that uncertainty was publicly acknowledged by the leadership from the very beginning of the H1N1 crisis and the CDC spokespersons were very open about it in public communication. They were also careful to state that the information being released was always qualified as ‘subject to change’ as new information became known and that the CDC would revise their guidance to the public when it did. The CDC Director(s) [both Dr. Besser who was the Acting Director at the onset of H1N1 and Dr. Frieden who later became the permanent Director] were very clear in the initial public briefings on H1N1 that the CDC was working with a high degree of uncertainty about the disease outbreak and that the public should anticipate that official guidance might change as new information was discovered and the actual...
threat from the disease was better understood. This practice of admitting uncertainty and having incomplete information stood in stark contrast to the public information releases from the early days of the 2001 anthrax incidents where misinformation and erroneous information was presented as fact by senior government officials.

5) Communication was viewed as critical and a means to reduce uncertainty.

Communication was mentioned by every interview participant as being one of -if not the most- critical aspects of the response. The majority of the participants rated the CDC’s communication practices, both internal and external, as extremely effective and as having contributed significantly to the overall success of the response effort. Many commented specifically on the priority placed on communication (and transparency) by the CDC Director.

6) There was an organizational commitment to Transparency.

This commitment was stated repeatedly by numerous interview participants, including those not directly involved in media relations and public communication. The chief media spokespersons frequently mentioned this as a priority for the Agency, as did the CDC Media Relations staff. Other staff members also mentioned this during their interviews citing the importance of keeping the public informed even when the information was not certain or was likely to change. Several interview participants remarked that they believed this had been one of the Agency’s strongest points during the response. This commitment to transparency was almost certainly a result of the previous experience during the anthrax crisis where the Agency, the Department of Health and Human Services (HHS), and the Federal government in general was accused of deliberately hiding and withholding information from the public.
7) The CDC response was pro-active and adaptive with numerous examples of innovative thinking and willingness to revise/change practices evident in key areas of the response.

Planning.

Well, I think it’s sufficient to say that- that the pandemic that emerged upon us was not necessarily the pandemic that we had anticipated with the greatest probability. However, I think it’s also fair to say that all along in our exercises and our planning, we appreciated that any pre-event planning would need to have inherent flexibility to adjust the reality on the ground. And so I think there were many decision points along the way in which we recognized that we would choose options based on how things were unfolding (Dr. Marty Cetron, Director, Global Migration and Quarantine Division, Interview # 5, lines 66-72, Appendix C).

The ability to make adjustments to plans and expectations.

The biggest issue was- ok- this is not H5N1. It doesn’t- we don’t know what the mortalities are- there’s just a lot of thing we don’t know and it’s also not on the other side of the world. It’s in our country now. What- what do we do? And so a lot of the work was adapting the plan to the situation that was actually evolving (Dr. Jay Butler, Director H1N1 Vaccine task Force, Interview # 4, lines 70-73, Appendix C).

Disease/outbreak modeling.

One of the areas where CDC was particularly innovative was in developing new models to predict the spread of the H1N1 outbreak. Since the H1N1 virus was not behaving like a ‘normal’ flu virus and its transmission patterns did not match the existing models, the CDC had to come up with a new approach. Dr. Martin Meltzer, an economist and specialist in modeling, described how complicated this modeling process was and how they had to think about a
different way to use the data they had in order to make useful predictions about where the disease (likely) would go next and what part of the population was at highest risk for infection.

So we started to produce some early models giving some estimates and the word guesstimate is probably more accurate because at that time, we had not ideas really of the true number of people that were falling ill and even the rates of hospitalization and death were somewhat of a guess. I was using a lot of 1968 type data. I said if this was a 1968 type data pandemic, this is what it might look like -knowing full well it probably wasn’t and saying this is an initial estimate.

And as we worked on that, we were waiting for better data to come along which it did fortunately and it was a very rare event that we got the better data.

So I started using that. And then we did what’s never been done as far as I know in influenza, we used what we called the pyramid model in which you start off at the top with the known lab confirmed reported cases and hospitalizations, and work your way back by going out into the field and doing surveys and getting a sense of who gets tested if they go to the doctor. ‘Cause not everybody that goes to the doctor gets tested. So what percentage of people who go to the doctor get tested? And even the step before that-not everybody who’s ill goes to the doctor so we did surveys in particular in Detroit and Chicago, but there were other similar surveys in New York and Minneapolis asking people and doctors, if you’re ill, do you go to the doctor? And if you’re at the doctor, does the doctor test you? And if the doctor tests you, do they send the sample forward to a State epidemiological lab for testing? And if the lab tests, do they send us the report?

And again the same with hospitalization. This sort of protocol has actually been
used for a while in food borne diseases, but it’s never been used, that I know of prior to this, for influenza or any respiratory disease (Dr. Martin Meltzer, Senior Health Economist and Distinguished Consultant, Division of Emerging Infections and Surveillance, Interview # 9, lines 82-89, 99-11, 112-114, Appendix C).

Decision Making Process

The decision-making processes during the H1N1 response deserve special recognition for being unconventional and innovative and for contributing to the adaptive nature of the CDC response. Participants reported that decision-making could be split into two timeframes or phases- the very early days of the crisis – lasting approximately ten days- and then the second phase that began after the pandemic had been officially declared.

- Decision-making was participatory and unconventional

One of the novel approaches that CDC took in structuring their decision-making process was in creating a staff organization known as the Plans Decision Unit (PDU). Dr. Steve Redd, the H1N1 Incident Commander praised this approach and described the way it operated,

We actually used a method of decision-making that was called the Plans Decision Unit so we’d identify a decision that needed to be made, there’d be a group that would sequester, come up with a briefing in a very structured way, including options, pros and cons for options, and a developing criteria for evaluating the options and then recommendations- and we’d talk about that and come up with a- all the important things were actually recommendations even though we called them decisions but we’d come up with a CDC recommendation (Dr. Stephen Redd, H1N1 Incident Commander, Interview # 12, Lines Appendix C).
Dr. Stephanie ZaZa, a key leader of the PDU and one of the principal decision strategists, described the way the group approached developing these recommendations,

…And so they were calling on us to try and run through these processes with the subject matter experts who could provide the data, and could provide some of the reality checks on what those options were. So it was a relatively small cadre of people who were actually in the Plans Unit. If I was given an assignment, so for example, the assignment to do the school closure recommendation, I would then pull in people from the epidemiology unit, from the group of people who thought about school closures in the past and who’d one some of the original planning for that, and I - you know- I can’t remember, but for each one, it was generally a slightly different group of people based on their expertise. We always tried to bring in an ethicist to help us think through the issues. …My feeling is that it is an extremely systematic but rapid method for looking at a lot of information very quickly and bringing it forward to a leader. So it’s a very effective method and one that I use all the time because it suits my style, and it suits my need to move very quickly. I do think it will be something that we’ll be able to very easily translate to other types of responses  (Dr. Stephanie ZaZa, Deputy Director for Strategy, Office of Public Health Preparedness and Response, Interview # 16, Lines 88-98,183-186, Appendix C).

- Use of outside advisors (Team B) was a significant advantage

Team B was a special advisory group formed by Dr. Besser [Acting Director] and chaired by Dr. David Sencer. In his capacity as a special advisor to the Director, Dr. Sencer had considerable influence on the leadership team and facilitated a number of working groups and strategy sessions to assist in the H1N1 response. Team B was a small group of highly
qualified, often highly specialized subject matter experts from outside the CDC. Using his extensive personal and professional network or contacts, Dr. Sencer was able to personally reach out to these individuals and ask for their support and advice during the H1N1 response period. Dr. Stephanie ZaZa who had a key leadership role in strategy development during H1N1 described Team B in this way,

…there was a group that Dr. Besser had initiated that they called Team B, which was a group of outside experts from around the country who could weigh in on certain issues and help us think through them from a more practice, or academic, or policy perspective. And a couple of times, in doing decision briefs, we would bring a specific question to them and ask for their input, and then we would take that input and bring it into the decision briefing process itself and use that as a source of information (Dr. Stephanie ZaZa, Deputy Director for Strategy, Office of Public Health Preparedness and Response, Interview # 16, Lines 119-126, Appendix C).

• **Leadership made important decisions about decision-making**
  1) Identify decisions that need to be made and prioritize them
  2) Communicate often
  3) Change when necessary

Examples from transcripts that demonstrate how these were enacted include the following:

And I think in the first few days or maybe a week or so, there was so much activity that the decision making was not very organized and I think that’s an important thing to try to get a grip on- is *what are the decisions that need to be made and just the process of identifying them is really helpful* in- to provide the structure that’s needed.
…Overall I think we wanted to make sure that information that went out was grounded. And so it was grounded in evidence that if we didn’t know the information or, excuse me- didn’t know the certainty of the information, that we communicated that. So we did not wait until we had everything figured out before we would say it (Dr. Stephen Redd, H1N/A Incident Commander and Director, Director CDC Influenza Coordination Unit, Interview # 12, lines 223-227, Appendix C).

Dr. Daniel Jernigan commented on his perception of the focus on being transparent and timely in releasing information to the public. He stated,

And so we always wanted to make sure that what we provided was something they could use to prevent illness themselves, or to act on. But, in general, it was the transparency, getting it out very quickly, and making sure that we were presenting it in a way that they could understand our concern about it, but in a way that would induce panic unnecessarily but we want people to understand the potential problems (Dr. Daniel Jernigan, Deputy Director, Influenza Division, Interview #8, lines 113-117, 123-128, Appendix C).

Commenting on how guidance and decisions were revised based on finding new information or just by gaining a better appreciation of the severity of the threat, Dr. Marty Cetron said,

So these were very difficult decisions [school closings, school dismissal] and I think what we saw was an appreciation of how difficult the decisions were, what CDC’s role would be in laying out the risk analysis, laying out some of the options, communicating those challenges directly to senior decision makers both
inside the Agency [CDC] and above – above us in the – in the thinking. And you
saw an evolution of CDC’s recommendations around school dismissals based on
learning more information about the virus (Dr. Marty Cetron, Director, Global
Migration and Quarantine Division, Interview # 5, lines 126-132, Appendix C).

Additional Observations and Areas for Further Research

An interesting factor that affected some aspects of the early phase of the H1N1 response
development was the absence of permanent leadership at both the Department of Health and
Human Services and the CDC. The appointment of Kathleen Sebelius as Secretary of Health and
Human Services had been delayed repeatedly in Congress and she was not finally confirmed
until April 28, 2009. The CDC had announced the H1N1 outbreak publicly 10 days earlier and
there had been considerable media attention since the initial announcement. All official
communication regarding H1N1 was coming directly from the CDC, primarily in the form of
daily press briefings with the Acting Director and Dr. Anne Schuchat, who assumed the role of
primary media spokesperson for the Agency.

Response participants, particularly members of the media relations staff mentioned that
obtaining Departmental (HHS) clearance for public statements was a difficult and complicated
process- and was exacerbated by the lack of a permanent Secretary and a resulting reluctance on
the part of the staff to make decisions. On 26 April 2009 the Acting Secretary made a statement
declaring H1N1 a national health emergency. This had the effect of making the CDC the single
point and authority for information on H1N1 and this shift away from the HHS as the focal point
persisted throughout the H1N1 period. CDC participants noted that there was a perception of
greater autonomy as a result. However, the CDC was also without permanent leadership until
June 2009 and experienced its own internal challenges with new leadership coming on board
during a public health crisis that had engaged nearly every office and division of the Agency. Dr. Richard Besser was the Acting CDC Director during the initial phase of H1N1 until Dr. Thomas Frieden was appointed as the permanent Director on 8 June 2009. Addressing this issue specifically, Dr. Stephanie ZaZa made the following remarks;

…I think that there were – that we were operating in an environment of- of either no appointed leadership or brand new appointed leadership throughout the entire Department and – and CDC was looked to – to lead in that situation and I think that our leadership did an excellent job of stepping in, making decisions, moving things forward, and using data to drive decisions, to not letting the expedient or the easy things drive what they did but to make very, very difficult decisions and then move those forward. And then, in the middle of all that, to educate a new group of appointed and elected leadership, and to make sure that they knew what was going on, I think they did a very good job (Dr. Stephanie ZaZa, Deputy Director for Strategy, Office of Public Health Preparedness and Response, Interview # 16, Lines 223-231, Appendix C).

While the impact of senior leadership transition (and absence) at the agency level and at the Federal Departmental level during a crisis of this magnitude was not a focus of this study, it definitely would be an interesting area for further research and study.

Overall the interview participants regarded the CDC’s response to the H1N1 pandemic as very effective and successful. Many stated that they believed the CDC did an excellent job in responding to the H1N1 crisis, under very difficult and challenging circumstances.

Communication, both internal and public, was repeatedly mentioned as a particularly strong area
of the response and one that contributed significantly to its overall success. Addressing this specifically in her interview, Dr. Stephanie ZaZa stated,

The other thing I think CDC did extremely well was laying out a very clear and open and transparent communication process. Making sure that not only were we talking with the people we normally talk to, our State and local health department partners, for example, in frequent- daily- if not multiple times during the day – calls, but also to the public, directly to the public and making sure that our senior leaders were visible and available I don’t know how many press availability sessions they did- and talking points and interviews- but it was constant. And I think that the only way to help leader through that kind of situation is to be very active and proactive in a communication portfolio of activities and I think they did a very good job of that (Dr. Stephanie ZaZa, Deputy Director for Strategy, Office of Public Health Preparedness and Response, Interview # 16, Lines 232-241, Appendix C).

One area that was consistently noted by the interviewees as an exception to this general perception of success, however, was with the vaccine distribution program. The vaccine issue in its entirety was very difficult- perhaps one of the most challenging aspects of the response- as it was quickly determined in the earliest days of the crisis that the existing flu vaccines (stockpiled in millions of doses) would in all likelihood not be effective against H1N1. The CDC was confronted with the problem of immediately having to develop an entirely new vaccine, laboratory test it, receive approval for use, and then deploy it to the general population. The most optimistic estimates at the time put the likely availability date of a new vaccine at more than six months after development began, assuming there were no problems in developing the vaccine. Unfortunately, the public was already experiencing the effects of the disease and expectations
were that the CDC would be able to provide an effective vaccine to control the pandemic.
Additionally, CDC knew that introducing a new vaccine would raise concerns about vaccine
safety and this coupled with the existing public perception problem(s) of who actually needed the
vaccine (who was likely to get sick) and the resistance from the highest risk groups- pregnant
women, infants (parents), and young adults (primarily ages 18-23) who were not traditionally
high risk candidates for contracting seasonal flu - presented the CDC with significant
communication challenges. Many interview participants stated that they felt the communication
around the vaccine program was the problem- that the Agency had not done as good a job as
possible of communicating infection risk, vaccine safety, and most importantly had failed to
manage expectations concerning vaccine availability. This aspect of the response was also not a
focus of this study, which may be considered a limitation. However, the vaccine program is
clearly an area deserving of additional research and study as these same issues will (likely) be
recurring challenges in future influenza pandemics and it may be possible to provide
recommendations for improving practices and procedures, and especially in managing
expectations through effective crisis communication.

Limitations

The Case study approach used in this research may make it difficult to generalize the
results and findings as well as the recommendations to other situations and scenarios.
Specifically, the public health focus of this case study, the CDC and the H1N1 pandemic, may
persuade other researchers that the context limits the study’s applicability and may create a
perception that the observations and findings are not valid in other crisis contexts. Additionally,
the unusual and unique CDC organizational demographic with its highly educated and closely
bonded leadership/response team may mean that other organizations may not be able to adopt the
CDC’s approach to crisis response and may not be able to implement the recommendations. Qualitative research and studies are sometimes limited with regard to predictive ability due to unique situations and circumstances – thus the in-depth personal interviews and the Oral History project format may also not be applicable to other large government organizations. In fact, this Oral History project was a first for the CDC and the informal and conversational approach used during the interviews may not work as well in other organizations and with different interview participant groups.

A further limitation tied to the interviews concerns the interview data and the Oral History project. As mentioned previously, one individual- Dr. David Sencer, personally selected each interview participant and their selection was based solely on his judgment and decision. This may reflect a personal bias on his part due to friendship and/or a professional relationship history. Although Dr. Sencer had an active role in the H1N1 response effort as a special advisor to the Director and Chair of the Director’s advisory group Team B, it is possible that individuals with important roles in the H1N1 response but not as well known to Dr. Sencer may have been excluded from the Oral History interview process. His choices may also have been influenced by his perspective as a former CDC Director where he likely interacted primarily with the most senior CDC staff members. All of the Oral History interview participants that he ultimately selected had many years of experience at CDC and would certainly be considered senior staff, with the majority holding key leadership positions within the organization. This selection of primarily senior staff members to provide accounts of the response process would certainly influence both the overall assessment of the response effort and the specific details of how the response was developed. It is possible that if more junior staff members had been interviewed
their observations and recollections would have provided a very different perspective and perhaps even a different assessment of the overall response effort.

Additionally, it must be considered that due to their seniority, a strong sense of organizational identity, and their leadership roles within the CDC, the interview participants’ comments and observations were likely influenced, or at least tempered, by their desire to maintain and/or protect the organization’s public reputation. Particularly in light of their shared experience with the 2001 anthrax attacks and the resulting negative perceptions of the Federal government’s response capability to address public health crises, these CDC veterans were undoubtedly determined to not repeat the mistakes that were made during that crisis and to present the organization positively. Other constraints or influences that may be important to consider in the responses and conclusions of the interview participants are their background, specific professional area expertise, education, and their language choice(s) specifically relating to threat characterizations, disease severity and potential, and perspectives as medical doctors. Each participant was also made aware that their interview recording would become public record and would be viewed internally at CDC by their colleagues. This factor may also have influenced or tempered their remarks, particularly in cases where their comments might be construed as critical or negative.

There may also be a bias or error in the selection of the data from the individual interviews I used as examples of the designated analytic categories—these interview quotes and excerpts were selected solely by me, based on my understanding of the intent of the question and my interpretation of the participant’s response. The interview participants did not review this study so the accuracy of their individual interview transcripts and their agreement or disagreement with the use of their comments to reinforce or demonstrate certain points cannot be
determined or assumed. Additionally, the interview questions focused primarily on specific process and procedural aspects of the response effort and how the response participants managed uncertainty and ambiguity in making decisions during the emerging H1N1 crisis. Other important parts of the response such as details of the vaccine production and distribution problems were not explored in-depth. As many participants highlighted this as an area where they felt the response had not been as good as it could have been and where there was definitely room for improvement, I would recommend this as a topic for future research and analysis.

Implications

The findings from this study have implications for organizations and their leaders that are confronted with emerging and unpredictable threats- or are facing crisis situations where traditional or conventional response actions and plans do not appear adequate. The CDC response participants identified many ‘lessons learned’ and made a number of specific recommendations in terms of organizational processes and procedures for future crisis responders to consider. However, the overarching lesson- or message- has more to do with how developing a certain mindset and mentality- an open-minded and flexible approach to problem solving- is more likely to lead to a successful response than will instituting specific procedures.

The quality of ‘adaptive response capability’ as a singular organizational practice and strength is inherent throughout the comments made by the interview participants. The importance and value of being able to develop and implement this kind of response capability is one of the most significant implications for other organizations and leaders.

Process and Procedural Recommendations

The interview participants made a number of specific recommendations for changes in process or procedures, or for organizations planning for potential future crisis situations or threats. These specific recommendations and examples from the interviews include:
1) Staffing

Staffing for the response effort was mentioned by several interview participants as a major challenge area for the CDC leadership—primarily at the mid management level where Division or Office Directors were required to release key staff members to join the response team—with no known return date. As the H1N1 response continued for over a year this became a significant management problem. There were no staffing plans to account for a disaster or emergency of this duration—all the details of adding staff to other teams or to a response team unit were suddenly brought to forefront and there were no plans in place. Issues such as office budgets for pay, plans for time off, vacation schedules, on-going projects, and so on all had to be dealt with as they came up and this resulted in a very uneven application of policies and regulations, which caused separate issues. It was also noted that there was not an existing database of experienced people—experienced in different aspects of emergency response—and that this would have been extremely helpful. Instead, managers reported contacting people they knew directly to see who might have certain skills and experience and also if they were available and for how long. There was no simple way to determine who was deployed to foreign locations, when they would return, and so on. This problem is reflected in a comment made by Dr. Lynn Austin:

I believe the CDC needs to develop a deeper bench. We often, in these kinds of—depending on the type of area—the type of focus—of a response or an event—it’s often many of the same people. And in a short-term response that’s okay because people can usually crash on an—on an activity or event work, you know, many hours, work weekends and be okay—then three weeks later or four weeks later can—can slow down a little bit. This was so much more, so much longer that I’ve found that we
need to – we need to develop more of our junior staff. We need to bring them into the response, have them work side-by-side with the senior people and then give them the opportunity you know over time in an event like this to see- you know, what it’s like and how to respond so that we do develop that deeper bench strength (Dr. Lynn Austin, Deputy Director for Operations, Office of Public Health Preparedness and Response, Interview #1, lines 139-150, Appendix C).

2) Resource Planning

Resources, both personnel and monetary, were frequently mentioned by the interview participants as an area where they would recommend improvement in process. For example, Dr. Anne Schuchat notes,

The other thing that was procedurally difficult was funding. In May- the weekend of May 17th or 18th, a couple of us spent [it] drafting out a budget for a vaccination program and rounds and rounds of policy decisions, emergency funds or Congressional appropriates, you know, but the ability to move money from this part of the Government to another part, from within our Agency to States, to locales to where they can do the vaccinations really took extraordinarily too much time (Dr. Anne Schuchat, Director, National Center for Immunization and Respiratory Diseases, Interview #13, lines 292-298, Appendix C).

3) Identify experienced staff

Being able to identify the right people for certain positions and for the response itself was noted as a challenge by several participants. Steven Boedigheimer commented on this problem stating:
Well, we tried the standard approach of the Emergency Operations Center reaching out across CDC to identify individuals that would be available to come and be part of the task force. But frankly, the most effective was for our own individuals for example myself, to pick up the phone and call people around CDC. The informal approach actually worked faster for us to identify talented people and get them onboard quickly to offer the support (Mr. Steven Boedigheimer, Deputy Director, Division of State and Local Readiness, Office of Public Health Preparedness and Response, Interview # 3, 221-226, Appendix C).

4) Planning and preparedness is critical

The emphasis that the CDC leadership had placed on table-top exercises and scenario response planning was cited frequently by the interview participants as a significant contributing factor for the success of the H1N1 response. Even though many noted that they had been preparing for and planning for a completely different kind of influenza pandemic- all stated that the experience of working on developing response plans or practicing crisis scenarios was invaluable.

Don’t underestimate the huge amount of value in preparedness, and the difference in the ability to confront a crisis, even it it’s totally new or not the pandemic you planned for (Dr. Marty Cetron, Director, Global Migration and Quarantine Division, Interview # 5, lines 269-272 Appendix C).

3) Commit to flexibility and adaptability

And then secondly, don’t ever feel wed to the words on –in the planning book and make sure that there’s a complete open mindedness along the way for surprises, for curve balls, for unintended consequences or unforeseen circumstances, and be sure to build in the flexibility to adjust your response – and the wisdom to have- a
way to get feedback into that response to be able to see new patterns that did- that you might not have thought about in the preparedness phase (Dr. Marty Cetron, Director, Global Migration and Quarantine Division, Interview # 5, lines 274-279, Appendix C).

**Other Recommendations.**

Based on the analysis of my data, one of the recommendations I make is for the development of a formal model to support and engage the principles of Emerging Infectious Disease Communication (EIDC). In my literature review I was not able to find any working models to apply in support of the EIDC approach to crisis communication. The CDC’s CERC model is currently the standard model used for risk and crisis communication in public health, but it is not a model that supports the more emergent and adaptive attributes and characteristics of the EIDC approach, which appears to be the direction that CDC is moving in their approach to crisis response. I would recommend the development of a formal EIDC model, aligned with the CERC model, that would assist crisis response teams in developing communication strategies tailored to specific and immediate situational requirements particularly in the case of an emergent and unfamiliar/unexpected threat or crisis.

**Conclusion**

The purpose of this study was to investigate the relationship between sensemaking and decision-making- in a crisis environment where the situation is unpredictable, emergent, and characterized by uncertainty. Based on the data from the CDC H1N1 case study, I believe that these two activities cannot be separated but must be engaged in concurrently, as one on-going, fluid process where changing direction, revising decisions, and continually incorporating new information is the organizational ‘norm’. Sensemaking must be the goal- not decision-making.
In his book *Making Sense of the Organization*, Karl Weick quotes a firefighting commander who explains that he is most effective in his job when he sees himself as a sensemaker and not a decision-maker. He explains why this is in the following statement,

If I make a decision, it is a possession; I take pride in it, I tend to defend it and not listen to those who question it. If I make sense, then this is more dynamic and I can listen and I can change it. A decision is something you polish. Sensemaking is a direction for the next period. (Weick, 2009, p.5)

Leadership support is not only necessary but critical to develop an organizational culture that encourages this kind of adaptive and flexible response, one that encourages innovative thinking and the ability to look beyond established protocols, to revise and perhaps reverse decisions, to maintain a fluid approach to procedures and decision-making. While none of the interview participants specifically mentioned the principles of organizational learning as described and defined by Peter Senge (Senge, 1990, 1994, 2006) it was clear from their comments that the response participants had engaged in these practices and that CDC is an organization with a ‘learning’ culture, as Senge defines it. In his book *The Fifth Discipline: The Art & Practice of the Learning Organization*, he contends

….in situations of rapid change only those [organizations] that are flexible, adaptive and productive will excel. For this to happen, organizations need to ‘discover how to tap people’s commitment and capacity to learn at all levels’…and further,

While all people have the capacity to learn, the structures in which they have to function are often not conducive to reflection and engagement. Furthermore, people may lack the tools and guiding ideas to make sense of the situations they
face. Organizations that are continually expanding their capacity to create their future require a fundamental shift of mind among their members (Senge, 2006).

Analyzing the CDC’s actions during the H1N1 response as an example of a learning organization in practice is also outside the scope of this study, although this would certainly be an interesting topic for a future study. However, just as one good example of how flexible thinking and an organizational willingness to engage with uncertainty rather than to try to simply get rid of it, or ignore it- was reflected by the interview participants, I think it is worth repeating a quote from Dr. Steve Redd, the H1N1 Incident Commander who said,

I think what actually happened is that *we learned that we knew less and less about what the situation was- than we thought- and that was a bit unnerving- but keeping a grip on the uncertainty became an important way of navigating; and also, identifying some practical actions to take to find out more* (Dr. Steve Redd, H1N1 Incident Commander, Interview #12, lines 84-88, Appendix C).
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Appendix A: List of Selected Interview Participants and Positions Held During the H1N1 Response by the CDC

1. Lynn Austin, PhD
   Deputy Director for Operations, Office of Public Health Preparedness and Response

2. Beth Bell, MD, MPH
   Acting Director, National Center for Immunization and Respiratory Diseases

3. Steven Boedigheimer, MBA
   Deputy Director of the Division of State and Local Readiness, Office of Public Health Preparedness and Response

4. Jay Butler, MD
   Director, H1N1 Vaccine Task Force

5. Marty Cetron, MD
   Director, Global Migration and Quarantine Division

6. Toby Crafton, MA
   Chief of Staff, CDC Director’s H1N1 Response Team

7. Lyn Finelli, DrPH, MS
   Lead for Surveillance and Outbreak Response Team, Influenza Division

8. Daniel Jernigan, MD
   Deputy Director, Influenza Division
9. Martin Meltzer, PhD
   Senior Health Economist and Distinguished Consultant, Division of Emerging Infections and Surveillance

10. Toby Merlin, MD
    Deputy Director, CDC Influenza Coordination Division

11. Glen Nowak, PhD
    Director, CDC Media Relations

12. Stephen Redd, MD (RADM, USPHS)
    H1N1/A Incident Commander and Director, Director CDC Influenza Coordination Unit (ICU)

13. Anne Schuchat, MD (RADM, USPHS)
    Director, National Center for Immunization and Respiratory Diseases; Principal CDC Media Spokesperson for H1N1/A response

14. Michael Shaw, MD
    Associate Director for Laboratory Science, Influenza Division

15. Marsha Vanderford, PhD
    Director, CDC Emergency Risk Communication System, Emergency Operations Center

16. Stephanie ZaZa, MD, MPH (CAPT, USPHS)
    Deputy Director for Strategy, Office of Public Health Preparedness and Response
Appendix B: Biographies of Selected Interview Participants

1. **Lynn Austin, PhD**

   Dr. Lynn Austin is the Deputy Director in the Office of Public Health Preparedness and Response (PHPR) at the Centers for Disease Control and Prevention. Dr. Austin manages the day-to-day activities of the PHPR Office of the Director and management operations for the organization of over 800 staff and budget of $1.3 billion. She ensures that all business services are provided for operations related to the strategic national stockpile, select agents and toxins, state/local readiness operations, and CDC’s emergency operations and response activities. Dr. Austin is responsible for strategic planning and utilization of the use of bioterrorism funds, workforce and career development of organizational staff, organizational budget and financial management, personnel and human resources management, grants and cooperative agreements, facility and space utilization, and information resources. She provides leadership in the resolution of issues that cross organizational lines, aids in determining policy and program objectives, coordinates scientific and program input to the decision-making process, and assists in maintaining a focus on the highest priority public health initiatives. Dr. Austin has been at CDC since 1988, where she has served as the Chief of Staff to the Director, CDC; Deputy Director, Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion; Associate Director, Management Operations, Division of HIV/AIDS Prevention and Health Promotion; Assistant Director, Policy, Planning, and Partnerships. Dr. Austin received a PhD in public policy from the Georgia Institute of Technology, a Master's degree in public administration from Georgia State University, and a Bachelor's degree in education and management from Berry College in Rome, Georgia.

2. **Beth Bell, MD, MPH**

   Dr. Beth Bell is the Director of the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID). Most recently, Dr. Bell has served as the Associate Director for Epidemiologic Science, National Center for Immunization and Respiratory Diseases (NCIRD). Dr. Bell joined CDC in 1992 as an Epidemic Intelligence Service (EIS) officer assigned to the Washington State Department of Health, where she was the lead officer in the seminal investigation of E. coli infections from contaminated hamburgers. After EIS, she joined the Hepatitis Branch in the Division of Viral and Rickettsial Diseases and later served as Chief of the Epidemiology Branch in the Division of Viral Hepatitis. She has made numerous contributions in the epidemiology and prevention of viral hepatitis, including spearheading development of policy for the use of hepatitis A vaccine in the United States, leading the division’s efforts to prevent foodborne Hepatitis A, and assisting in efforts to expand the use of Hepatitis B vaccination globally. Dr. Bell also served in leadership roles during CDC responses to several major public health events, including the 2001 anthrax attacks, Hurricane Katrina, and the 2009 H1N1 influenza...
pandemic. As a member of the senior leadership team for the 2009 H1N1 influenza pandemic response, she provided oversight of policy and scientific direction. Dr. Bell received a BA from Brown University, an MD from Yale University, and an MPH from the University of Rochester School of Medicine. She is a Fellow of the Infectious Diseases Society of America, the American Academy of Family Medicine, and the American Academy of Preventive Medicine, as well as a member of the American Epidemiological Society. She is the author/co-author of more than 125 scientific publications and has received numerous awards for her work including the Alexander Langmuir Prize and the Iain Hardy Award.

3. **Steven Boedigheimer, MBA**

   Steven Boedigheimer joined the Centers for Disease Control and Prevention (CDC) in 2001 as a branch chief in the Public Health Practice Program Office (PHPPO). He was the supervisor of the Health Alert Network during the terrorist attacks on the United States in the Fall of 2001. In 2002 he was named Deputy Division Director for Public Health Systems Development and Research, where he also functioned as the Emergency Coordinator. He was appointed acting Deputy Director of PHPPO in 2003, and in 2005 became the CDC Senior Management Official (SMO) for Arkansas where he supported the Director of the Arkansas Department of Health (Public Health) Emergency Operations Center during hurricanes Katrina and Rita. In 2008 he was assigned to support the Commissioner of the Texas Department of State Health Services during hurricanes Dolly, Gustav, and Ike. In 2009 he was appointed as the Deputy Director of the Division of State and Local Readiness in the CDC Office of Public Health Preparedness and Response. He led the 2009 H1N1 Influenza State Coordination Task Force with the CDC Emergency Operations Center.

   Two Delaware Governors and the Secretary of the U.S. Department of Energy have recognized Mr. Boedigheimer for his public health service. He earned a B.S. in Biology and Chemistry at St. Martin’s University and an MBA from Willamette University with a focus on business-government relations.

4. **Jay Butler, MD, FAAP, FACP**

   Dr. Jay Butler joined the Centers for Disease Control and Prevention (CDC) National Center for Preparedness, Detection and Control of Infectious Diseases (NCPDCID) Division of Emerging Infections and Surveillance Services (DEISS) in June 2009 as a Program Director to assist with the nation’s response to the H1N1 virus (swine flu) outbreak. Before returning to the CDC in Atlanta, Georgia, he served as Chief Medical Officer for the State of Alaska since 2007. Previously, Dr. Butler was the Director of the Alaska State Division of Public Health, and headed the division’s Section of Epidemiology. From 1998 to 2005, he was Director of the CDC’s NCPDCID/DEISS Arctic Investigations Program and also served as an infectious diseases physician at the Alaska Native Medical Center in Anchorage. Prior to Alaskan assignments, Dr. Butler was a CDC epidemic intelligence service officer for the Wisconsin Department of Health. He is board certified in general internal medicine, general pediatrics, and infectious diseases. He was governor of the Alaska chapter of the American College of Physicians from 2005 to 2009 and chair of the Association of State and Territorial Health Officials Infectious Diseases Policy Committee 2008 to 2009. Dr. Butler is a graduate of
the University of North Carolina Medical School, has completed clinical training at
Vanderbilt and Emory Universities, and is board certified in infectious diseases, internal
medical, and pediatrics. He has authored or co-authored over 100 scientific papers and
medical textbook chapters on infectious diseases and emergency preparedness. His varied
professional experiences include working as a physician for two months at a mission
hospital in Kenya, leading the CDC field response to the initial Hantavirus pulmonary
syndrome outbreak in the US in 1993, and serving as the CDC liaison to FBI
Headquarters in Washington, DC during in the investigation of the anthrax attacks in the
fall of 2001. He was a team co-leader during the CDC responses to the SARS outbreak

5. Martin Cetron, MD
Dr. Martin Cetron is the Director for the Division of Global Migration and Quarantine
Division at the U.S. Centers for Disease Control and Prevention (CDC). The Global
Migration and Quarantine Division’s mission is to prevent introduction and spread of
infectious diseases in the U.S. and to prevent morbidity and mortality among immigrants,
refugees, migrant workers, and international travelers. Dr. Cetron has authored or co-
authored more than 100 publications and received numerous awards for his work since
joining CDC in 1992. Dr. Cetron holds faculty appointments in the Division of
Infectious Disease at the Emory University School of Medicine and the Department of
Epidemiology at Rollins School of Public Health. He received his B.A. from Dartmouth
College in 1981, and his M.D. from Tufts University in 1985. He trained in Internal
Medicine at the University of Virginia and Infectious Diseases at the University of
Washington before joining the CDC’s Epidemic Intelligence Service and becoming a
Commissioned Officer in the U.S. Public Health Service (PHS) in 1992. His primary
research interests are international health and global migration with a focus on emerging
infections, tropical diseases, and vaccine-preventable diseases in mobile populations. Dr.
Cetron has also been a leader in public health emergency preparedness and response
activities at CDC and is a graduate of the Harvard School of Public Health & Kennedy
School of Government’s National Preparedness Leadership Institute. Since 1992, he has
led several domestic and international outbreak investigations, conducted epidemiologic
research, and been involved in domestic and international emergency responses. He has
played a leadership role in CDC responses to intentional and naturally-acquired emerging
infectious disease outbreaks including the 2001 anthrax bio-terrorism incident, the 2003
global SARS epidemic, and the 2009 H1N1 influenza pandemic.

6. Toby Crafton, MA
Toby Crafton is acting deputy director of the Division of Health Informatics and
Surveillance (DHIS), formerly the Public Health Surveillance and Informatics Program
Office (PHSIPO). Prior to this position, Mr. Crafton served on detail as a senior advisor
to the PHSIPO director where he provided expertise and advice related to budgets,
spending plans, functional statements, organization charts, and staffing plans for the
organization. In his permanent position, Mr. Crafton serves as the program manager for
the Influenza Coordination Unit (ICU) within the Office of Infectious Diseases. In this
role, he is a member of the ICU’s senior leadership team that develops the plans and
strategies to ensure that CDC is prepared for an influenza pandemic. Mr. Crafton
manages a budget of more than $200 million per year. In addition, he was responsible for leading the efforts to address the lessons learned from the 2009 H1N1 Influenza Pandemic response that deal with budget and administrative preparedness at both the state and federal levels. During his tenure at CDC, he has served as the chief of staff for CDC's response to the 2009 H1N1 pandemic, which required him to coordinate the activities of the command and general staffs (approximately 400–500 people) during the course of the response. Mr. Crafton also was part of the team that organized and started the CDC's Emergency Operations Center and the Division of Emergency Operations. He was the first lead for the logistics support team where he was instrumental in establishing processes and procedures for logistically supporting CDC emergency responses and deployments.

Mr. Crafton's federal service career started in 1980 when he was commissioned a second lieutenant in the U.S. Army. He served in positions of increasing responsibility for more than 20 years and retired in 2001. His assignments included various command and staff positions in Army medical units, including combat nits, deployable hospitals, and medical evacuation units. He also worked on the Army staff in the Pentagon where he formulated Department of Defense and Department of the Army policies on subjects that included re-engineering the Army's medical force, the mobilization of personnel for deployments, and public health support for operations during war and support for natural disasters. He earned a masters degree in management from Webster University in St. Louis, Missouri.

7. Lyn Finelli, DrPH, MS

Dr. Lyn Finelli is the Lead for the Surveillance and Outbreak Response Team, Influenza Division, National Center for Immunization and Respiratory Diseases. Dr. Finelli is a graduate of the Bryn Mawr Hospital School of Nursing and received her Bachelor of Science and Master of Science degrees from Columbia University. From 1983 to 1990, she taught pediatrics and public health at Columbia University and was the director of the Pediatric Primary Care Program (pediatric nurse practitioner program). She received her doctorate in infectious disease epidemiology from Columbia University, School of Public Health in 1990. Dr. Finelli began working with CDC in 1990, providing technical assistance in epidemiology to the New Jersey Department of Health, where she held the positions of epidemiologist and acting State Epidemiologist. Dr. Finelli came to Atlanta in 1997 to work as an epidemiologist in the Division of Sexually Transmitted Diseases. In 2001, she joined the Division of Viral Hepatitis as Chief of the Surveillance Team. Dr. Finelli joined the Influenza Division in 2006. Her research interests include influenza-bacterial co-infection, influenza complications including influenza-related pneumonia, and zoonotic influenza. Dr. Finelli is the co-author of more than 150 scientific publications.

8. Daniel B. Jernigan, MD, MPH

Dr. Daniel Jernigan is a Captain in the United States Public Health Service and serves as the Deputy Director of the Influenza Division in the National Center for Immunization and Respiratory Diseases (NCIRD) at CDC. In his current role, Dr. Jernigan serves as senior medical officer and senior Public Health Service officer for the Influenza Division. In addition, he serves as a principle investigator for influenza research and public health
Dr. Jernigan received an undergraduate degree from Duke University, a Doctor of Medicine from Baylor College of Medicine, and a Master of Public Health at the University of Texas. Dr. Jernigan joined the CDC’s Epidemic Intelligence Service in 1994. In 1996, he began serving on assignment from NCIRD to the Washington State Health Department as a medical epidemiologist and coordinator of national initiatives to improve surveillance for emerging infectious diseases. Dr. Jernigan became the chief of the Epidemiology Section for CDC’s Division of Healthcare Quality Promotion (DHQP) in 2001. In 2006, Dr. Jernigan joined the Influenza Division as deputy director. Dr. Jernigan has authored peer-reviewed articles and book chapters on various emerging infectious diseases topics, and has supervised outbreak investigations of viral, bacterial, and fungal infections associated with emerging and antimicrobial-resistant pathogens. He has led epidemiology and surveillance teams for national and international responses, including bioterrorism-related anthrax, the emergence of West Nile virus, SARS, the 2009 H1N1 pandemic influenza, and public health management following natural disasters. During the 2009 H1N1 influenza pandemic, Dr. Jernigan served as the CDC lead for all domestic and international epidemiology and laboratory activities for the U.S. government’s response.

9. **Martin Meltzer, PhD**

Dr. Martin Meltzer is the senior health economist and distinguished consultant, in the Division of Emerging Infections and Surveillance Services in the coordinating center for Infectious Diseases (Center for Emerging and Zoonotic Infectious Diseases (NCEZID), at the Centers for Disease Control and Prevention (CDC). His research interests include cost-benefit and cost-effectiveness analyses of health interventions and policy guidelines for use of health technologies, such as vaccines. His expertise is in the analysis of empirical data using a wide array of statistical and mathematical modeling methodologies. Much of his work is multidisciplinary and has included modeling of potential responses to smallpox as a bioterrorist weapon; evaluating the cost effectiveness of Lyme disease and Hepatitis/A vaccination; assessing the economic impact of infectious diseases, from pandemic influenza to dengue fever. His involvement in the response to the 2009 influenza pandemic included providing frequent updates of estimates of impact of the pandemic and estimating the effectiveness of a number of different interventions and developing a workable model to predict disease transmission. Dr. Meltzer has authored more than 140 publications, holds two U.S. patents, and has received many honors and awards, including CDC's Charles C. Shepard award and the James H. Nakano citation. He earned his BS in Agriculture at the University of Zimbabwe (1982), and an MS (1987) and PhD (1990) in Economics from Cornell University.

10. **Toby Merlin, MD**

Dr. Toby L. Merlin, MD is a Behavioral Scientist in the Surveillance Branch and the director of the Division of Preparedness and Emerging Infections in the National Center for Emerging and Zoonotic Infectious Disease. He is responsible for the CDC's Laboratory Response Network (LRN), infectious disease emergency response coordination, and Emerging Infections Epidemiology and Laboratory capacity programs, Health Economics and Modeling Unit, and Arctic Investigations Program. He previously
served as deputy director of the Influenza Coordination Unit and served as Deputy Incident Commander of CDC's Response to 2009 H1N1 Influenza. Dr. Merlin has been a member and Chair of the Clinical Laboratory Improvement Advisory Committee (CLIAC). He also served on the editorial boards of *Human Pathology* and the *International Journal of Surgical Pathology*, as well as various test committees on the National Board of Medical Examiners and committees of Clinical and Laboratory Standards Institute. Dr. Merlin joined CDC in 2003 from Lovelace Health Systems in Albuquerque, New Mexico, where he served as senior vice-president, chief medical officer, and an officer of the Board of Directors. Dr. Merlin also served as chair of the Department of Laboratories and an elected member of the Medical Practice Board. Dr. Merlin received his BA in philosophy from Yale College and his MD from the University of Florida. He served an internship at Stanford University Hospital and completed his training in pathology at the University of New Mexico.

**11. Glen Nowak, PhD**

Dr. Glen Nowak is a senior advisor to the Director of CDC's National Center for Immunization and Respiratory Diseases (NCIRD) and a member of NCIRD's senior management team. He provides leadership and expertise in communication science, health communications, risk communication, news media, social marketing and public engagement. He is involved in projects and collaborations designed to increase vaccine confidence and acceptance, address vaccine coverage disparities and to promote adoption of vaccination recommendations. Dr. Nowak directs and collaborates on vaccine and immunization research and evaluation projects. He is also involved in NCIRD and CDC's pandemic influenza preparedness and response efforts. Prior to joining NCIRD's senior management team, Dr. Nowak served six years as the Chief of Media Relations at CDC, including serving as Director of CDC's Division of News and Electronic Media. In this position, he served as the senior media advisor to the CDC director and senior agency managers, and was a senior CDC spokesperson. Prior to joining the Office of Media Relations in June 2004, Dr. Nowak served five years as the associate director for communications at the National Immunization Program at the CDC. Prior to joining CDC in January 1999, Dr. Nowak was an associate professor of advertising and communication at the University of Georgia. In the past twelve years, he has authored or co-authored a number of peer-reviewed journal articles on communications practices, social marketing, and health communications. Dr. Nowak received his BS from the University of Wisconsin-Milwaukee, with majors in both economics and communications. He continued his studies at the University of Wisconsin-Madison, where he subsequently earned an MA degree in journalism (1987) and a PhD in the field of mass communications (1990).

**12. Stephen C. Redd, MD, (RADM, USPHS)**

Dr. Stephen Redd is a Rear Admiral and Assistant Surgeon General in the United States Public Health Service. He is the Director of CDC's Influenza Coordination Unit, the unit was formed in 2006 to provide a central focus for pandemic influenza preparations at CDC. Dr. Redd is responsible for developing plans for pandemic response, exercising those plans, tracking progress in developing specific capabilities needed for an influenza pandemic, and communicating progress in these capabilities. Dr. Redd joined CDC in
1985 as an Epidemic Intelligence Service Officer, following clinical training. In April 2009, shortly after the H1N1 virus was identified, Dr. Redd was appointed Incident Commander of CDC's H1N1 pandemic influenza response, providing daily direction to all of CDC's pandemic response efforts from detecting the virus through the H1N1 vaccination program. More than 3,300 CDC staff participated in the response during the 11-month activation of CDC Emergency Operations Center. Dr. Redd received his undergraduate degree from Princeton University and his medical degree from Emory University. He trained in internal medicine at the Johns Hopkins Hospital and practices internal medicine at Grady Memorial Hospital and the Cherokee Indian Hospital. He has published widely in the control of respiratory diseases, malaria control, measles epidemiology and elimination, environmental health, and asthma. Dr. Redd has received numerous awards including the Public Health Service Distinguished Service Medal for leading CDC's pandemic response and the Charles Sheppard Award, an annual award for the outstanding manuscript published by CDC authors.

13. Anne Schuchat, MD, (RADM, USPHS)
Dr. Anne Schuchat, Rear Admiral and Assistant Surgeon General, United States Public Health Service (USPHS), is the acting director of CDC's Center for Global Health. Prior to this appointment, she served as the director of CDC's National Center for Immunization and Respiratory Diseases and has worked at CDC since 1988 on immunization, respiratory, and other infectious diseases. Previously, she served as the director of CDC's National Immunization Program (NIP); acting director of the National Center for Infectious Diseases (NCID); chief of the Respiratory Diseases Branch, NCID; and as the initial medical director of the Active Bacterial Core surveillance (ABCs)/Emerging Infections Program Network, a multi-state collaboration between CDC, state health departments and academic institutions that tracks invasive bacterial infections, informs vaccine and prevention policy, and monitors program impact. She was named an Assistant Surgeon General of the United States Public Health Service in 2006. Globally, she has worked in West Africa on meningitis vaccine studies, in South Africa on surveillance and prevention projects, and in China on SARS emergency response, where she headed the Beijing City epidemiology team for the WHO’s China Office. Dr. Schuchat graduated with highest honors from Swarthmore College and with honors from Dartmouth Medical School. She served as resident and chief resident in internal medicine at New York University's Manhattan VA Hospital before beginning her public health career at CDC as an Epidemic Intelligence Service (EIS) officer. She has authored or co-authored more than 180 scientific articles, book chapters, and reviews. She has received the USPHS Meritorious Service Medal, the American Public Health Association's Maternal and Child Health Young Investigator Award, the USPHS Physician Research Officer of the Year, and an Honorary Doctorate in Science from Swarthmore College. In 2008, she was elected to the National Academy of Sciences’ Institute of Medicine.

14. Michael Shaw, PhD
Dr. Michael Shaw serves as the Associate Director of Laboratory Science for the CDC’s Influenza Division. Dr. Shaw received a bachelor’s degree in Biology from Birmingham-Southern College and earned a doctoral degree from the University of Alabama at Birmingham in molecular cell biology in 1980. Dr. Shaw began his work in influenza
during his postdoctoral training in virology at the Rockefeller University in New York and later became a faculty member. Dr. Shaw began working at CDC in the mid-1980s as a visiting scientist. In 1993, Dr. Shaw worked in the Influenza Branch (later the Influenza Division) at CDC. He has served as Associate Director for Laboratory Science since January 2006. In his current role, Dr. Shaw oversees influenza laboratory efforts at CDC for influenza diagnostics, surveillance, antiviral resistance, immunology, molecular genetics and vaccine strain selection. He serves as an advisor for public health policy and pandemic response and laboratory support to the Office of the Assistant Secretary for Preparedness and Response (ASPR), the Biomedical and Advanced Research and Development Authority (BARDA), the Association of Public Health Laboratories (APHL) and the WHO. Dr. Shaw also advises domestic and international influenza laboratory response networks for the WHO Global Influenza Surveillance Network as representative of the CDC WHO Collaborating Center for Influenza.

15. Marsha L. Vanderford, PhD
Dr. Marsha L. Vanderford is the Associate Director for Communications for the CDC Center for Global Health (CGH). Dr. Vanderford most recently served as the Chief of the Emergency Risk Communication Branch, Division of Emergency Operations, Office of Public Health Preparedness and Response, providing leadership for CDC’s communication response during public health emergencies, including the 2010 Gulf of Mexico oil spill and the 2009-10 H1N1 Influenza pandemic. Dr. Vanderford earned her B.A. from California Polytechnic State University and her M.A. and Ph.D. from the University of Minnesota. Dr. Vanderford joined CDC in 2000 as Deputy Director of Communication in the National Center for Environmental Health. She has also held positions as Associate Director of Communication Science at the National Center for Injury Prevention and Control, and Acting Associate Director for Communication in CDC’s Office of the Director. Dr. Vanderford has served as a technical advisor to WHO and to China’s Ministry of Health for the development of global emergency risk communication capacity. Prior to 2000, Dr. Vanderford was a Professor at the University of South Florida with joint appointments in the Departments of Communication and Family Medicine.

16. Stephanie Zaza, MD, MPH, (CAPT, USPHS)
Dr. Stephanie Zaza serves as the Director, Epidemiology and Analysis Program Office (EAPO), Office of Surveillance, Epidemiology, and Laboratory Services (OSELS), Centers for Disease Control and Prevention (CDC). EAPO assures the targeted application of public health sciences to improve population health through research, consultation, practice, training, education, technical assistance, development and dissemination of scientific and public health information. Dr. Zaza came to CDC in 1991 as an Epidemic Intelligence Service Officer. From 2006-2010, Dr. Zaza led preparedness strategy, planning, policy and communications for CDC’s emergency preparedness and response activities. In 2009, she developed and led the Community Mitigation Task Force as part of CDC’s response to the novel 2009 H1N1 influenza pandemic. Dr. Zaza received her combined Bachelor of Science and medical degrees from Youngstown State University and the Northeastern Ohio Universities College of Medicine in 1990. She earned a master’s degree in public health from the Johns Hopkins University in 1995, and
is an alumna of CDC’s Epidemic Intelligence Service and Preventive Medicine Residency. Dr. Zaza is board certified in general preventive medicine/public health, and is a Fellow of the American College of Preventive Medicine. In addition, she is a captain in the U.S. Public Health Service and a recipient of numerous Public Health Service and other academic awards.
Appendix C: Transcripts of Interviews 1-16

Interview # 1. Lynn Austin, PhD, Deputy Director for Operations, Office of Public Health Preparedness and Response

Interview # 2. Beth Bell, MD, MPH, Acting Director, National Center for Immunization and Respiratory Diseases

Interview # 3. Steven Boedigheimer, MBA, Deputy Director of the Division of State and Local Readiness, Office of Public Health Preparedness and Response

Interview # 4. Jay Butler, MD, Director, H1N1 Vaccine Task Force

Interview # 5. Marty Cetron, MD, Director, Global Migration and Quarantine Division

Interview # 6. Toby Crafton, MA, Chief of Staff, CDC Director’s H1N1 Response Team

Interview # 7. Lyn Finelli, DrPH, MS, Lead for Surveillance and Outbreak Response Team, Influenza Division

Interview # 8. Daniel Jernigan, MD, Deputy Director, Influenza Division

Interview # 9. Martin Meltzer, PhD, Senior Health Economist and Distinguished Consultant, Division of Emerging Infections and Surveillance

Interview # 10. Toby Merlin, MD, Deputy Director, CDC Influenza Coordination Division (ICU)

Interview # 11. Glen Nowak, PhD, Director, CDC Media Relations

Interview # 12. Stephen Redd, MD (RADM, USPHS), H1N1/A Incident Commander and Director, Director CDC Influenza Coordination Unit (ICU)

Interview # 13. Anne Schuchat, MD (RADM, USPHS), Director, National Center for Immunization and Respiratory Diseases; Principal CDC Media Spokesperson for H1N1/A response
Interview # 14. Michael Shaw, MD, Associate Director for Laboratory Science, Influenza Division

Interview # 15. Marsha Vanderford, PhD, Director, CDC Emergency Risk Communication System, Emergency Operations Center

Interview # 16. Stephanie Zaza, MD, MPH (CAPT, USPHS), Deputy Director for Strategy, Office of Public Health Preparedness and Response
Interview #1 Lynn Austin, PhD, Deputy Director for Operations, Office of Public Health Preparedness & Response

1 Lynn: My name is Lynn Austin. I am currently the Deputy Director for Operations for the Office of Public Health Preparedness and Response. At the time that H1N1 first started, we were called COTPER, the Coordinating Office for Terrorism Preparedness and Emergency Response. And I've been at CDC for 20 – nearly 22 years and I've been with the federal government for 33 years. This was the first time that I've worked up close and personal in – in a response actually while – during my time at CDC.

Barbara: Do you recall when you first heard about H1N1?

Lynn: Yes. I had only been with COTPER for a month and I had just come in to work on management operations and improving some management organization and efficiency. And we started getting the briefings about H1 just within a month after my arrival. Dr. Rich Besser was the Acting CDC Director and he – his permanent job was actually the Director of COTPER. And so we had an Acting Director in our organization also at the time and we both started receiving the briefings about H1 and what was going on, what the situational awareness. Right at the beginning, it was beginning to look at the surveillance data and what state were reporting, what countries were reporting. It was a lot about surveillance in the very early days.

Barbara: And as the response ramped up and as the threat emerged, did you have a sense that this was a potential crisis facing the organization?

Lynn: Absolutely. Even though I had not worked so close to an event before, just looking at the surveillance data alone and looking at the growing increases in number of cases, I knew that this was going – going to go on for some time. I had no idea it would go on as long as it did. But it – it did look like it was going to be a long term. My boss, Dr. Dan Sausen, was pulled in to a lot of meetings about it. He was in three or four meetings a day about the outbreak and even as a new senior leader in the organization, I was designated as Acting Director on many, many days while he – many months actually during the time that he was involved in the H1 directly as well as Dr. Besser serving in the role that he did.

Barbara: Did you find that you needed to make modifications to plans or practices as a result of the way the threat emerged?

Lynn: What I found was that we had to make changes in how we supported a long term strategy for a response. Because, you know, it was – it was very easy for people to burn out because they were working such long hours. People were working, you know, 16 hour days. They were working seven days a week. And as the response geared up to the levels, we were having to, you know, search for staff. We were trying...
to staff the response and so we realized very rapidly that we needed to
develop a very – a much deeper bench of – of individuals who could
work the response.

And that’s not just the scientists, and the surveillance experts, and
the epidemiologists, that, includes all of the – the logisticians, and the
analysts, and the personnel staffers, and financial people. It – that
was what was eye opening to me is that a response is not just about
the scientists although they’re very – they’re the very key part of it.
The whole support network that goes in to supporting an outbreak
and responding to an outbreak like this requires many, many people.
And many people of different job – types of jobs. And that’s what I
found fascinating but also what was very challenging.

Barbara: Did you find that the practices that you implemented for this
particular response are practices that you will institutionalize?

Lynn: We’re actually moving forward to do that because with the H1N1
response, you know, you had people who ended up not just working on
the response for three weeks or 30 days as we might in like the Haiti
response, or with a tsunami, or a tornado or something response. We
had people who had to be detailed for quite a long period of time. That
actually represented changes to people’s performance plans, how they
were evaluated, how – how they might be reimbursed because there
were actually – when someone is detailed to a response, sometimes
they’re funding their – their home funding cannot continue to support
their salary and benefits during a long term response. So we had to
look at alternative ways that we could provide for those salaries and
offset those salaries. So we found that getting additional funding for a
response is often very critical to being able to respond on a long-term
basis.

We also found that communications are absolutely critical. Most of us
who are not directly involved in the communications ourselves were
glued to the TV sets, you know, waiting, watching the media trucks
outside: but we were glued to see Dr. Besser, and Dr. Schuchat and
then later Dr. Frieden on television and what they were saying. And
coming out of some of the daily briefings, knowing about what, you
know, planning on what was going to be said, what – what the status
was for the day, and then seeing it on the nightly news was pretty
amazing in some ways. But it also showed me that CDC – this is one
area I think CDC really excels is trying to share that information with
the public.

I had a lot of people who would call me as well, people who know that
you work at CDC, they – they want to ask questions. They want to
know, can you find out about this, or vaccine or whether it’s
recommended for an immunization if you’re in certain category groups
of people. And I also had two colleague age students and I was, you
know, I was worried. I had one that traveled internationally some and
I was worried about, you know, their own safety as well as looking at
how CDC responds to an outbreak. And I felt very proud of CDC as we
responded to this event. I know that there was some things that took
longer like the vaccine development. But the fact that we could
identify the virus, to have a vaccine developed as quickly as we did,
just shows how well CDC is able to come together and work on a
solution that quickly.

Our support to the states was absolutely critical. My organization was
responsible for getting funding out to the state and local health
departments. And so it was absolutely essential because that was the
frontline of combating this – this disease outbreak. And so not only did
we have to get the antibiotics when states would run out and they
couldn’t get them from pharmaceutical companies, but we also had to
respond with funding so they could do the vaccines once we were able
to – to get those developed and manufactured.

So I think that we worked very, very closely with the state and local
health departments during that time as well in trying to address their
needs on the front line.

Barbara: In terms of practices that you would recommend for going forward
when dealing with these agencies, do you have any specific thoughts
on that?

Lynn: Some of the challenges that we faced probably initially was about the
funding, realizing that this was far more than, you know, what we
could accommodate in a short-term way. That was initially a little bit
of challenge because you’re having to respond, you’re definitely
responding but just not knowing, you know, if the money was going to
be there as we moved – continued forward.

With the state health departments, I think we worked with some
partner organizations like ASTO and NACHO and they were
absolutely key to our being able to facilitate those conversations and
communication with the state and local health departments. They
really came through. We had meetings with them. We even detailed a
representative from their organizations to be a part of our team and to
be in on the briefings so that they could turn and relay the
information to their – their organizations like the state and local
governments.

And we also had conference calls. Our organization, Division of State
and Local Readiness, set up conference calls with the state health
departments. I don’t think at the time they were occurring daily but
they were definitely occurring two to three times a week to keep them
apprised of the activities that we were doing and any issues that they
were having to try to help them meet their needs on the frontline.

Barbara: So have these best practices that you developed been institutionalized
for future situations?
Lynn: There’s actually one of the things that I was mentioned about the personnel and recruiting people to work in an outbreak situation. We found that we – you can’t just do that on the fly as we’ve done with short-term emergencies where people come in. People just kind of collapse on their response and then in 30 days they’re back on their regular job. What we found is that we really do need to have a longer term strategy at CDC for being able to bring people in, be able to work on a response a little bit longer but then have people who can come in behind them when they go back to their job. And so we are trying to look now at establishing a – a personnel resource team within our Division of Emergency Operations. We’ve handled some of this before in the past as part of our operations team; but now, as I mentioned, we have, you know, you have the issues with just who do people report to while they’re on this response, they’re own performance and just the whole issue of recruiting people. And so we’ve set up a personnel response team to be in our Division of Emergency Operation and we’re working to – to staff that to be able to do this on a – a more standard and operational type basis. That’s one area.

Another area is tracking on funding. We’ve begun to institutionalize the way that we capture expenses and approving of expenses. That was something that we found people who needed to be reimbursed. We needed to have a process where their request could be approved so that we were really doing things that specifically related to the response that – that CDC was in – working on.

Barbara: As the – as the year progressed and the threat emerged and the organization was forced to confront an emerging threat rather than one that was winding down, did you feel that there were sufficient resources available to meet the demands?

Lynn: Yes there were. But at the same time, you know, like I – I – I believe that CDC needs to develop a deeper bench. We often in these kinds of, depending on the type of area, the type of focus of a response or an event, its often many of the same people. And in a short-term response, that’s okay because people can usually crash on an – on an activity or event, work, you know, many hours, work weekends and be okay, and then three weeks later, or four weeks later, can – can slow down a little bit. This was so much more, so much longer that I’ve found that we need to – we need to develop more of our junior staff. We need to bring them into the response, have them work side-by-side with the senior people, and then give them an opportunity, you know, over time in an event like this to see, you know, what it’s like and how to respond so that we do develop that deeper bench strength.

Barbara: Was your division involved in exercise planning?

Lynn: Oh absolutely. Actually, I think that was absolutely critical to our success. When I had worked in the Office of the Director at one point before coming to COTPER, that had been a – a big priority for CDC to have these kinds of preparedness, planning and exercises so that we
actually walk through what would happen if it’s a pandemic, or what would happen in environmental. And I think that was absolutely critical. We already from those exercises knew who critical key staff would be, and then those people had walked through an exercise that would be similar. Certainly nothing that would be as long term as this turned out to be or even thinking about it being that long term but yes, I think that absolutely was critical to our success.

Barbara: Thinking back in the early, early response period, what do you feel were the key decisions that needed to be made?

Lynn: That was – that was interesting ‘cause I – I did participate in the meetings with Dr. Frieden and there were, you know, daily or twice daily briefings with him, every morning, every afternoon at the beginning. You know, first looking at the surveillance data, you know, where – where is the outbreak. We already at that point were beginning to identify what it was and isolate what it was, and then determining from all the locations and all the reporting was this the same – the same virus. And, you know, the laboratory reporting was critical. Laboratories in the states were getting overrun with specimens. So it was key as to how much do we do sample testing, do we do all testing, of being able to detect then the trend.

At one point, we had to decide of counting actual cases versus the alternative count where we would look at the – a percentage. And so that was a key decision point, a key turning point of how we counted because then we would – we would not be able to count actual numbers but we – we had to move past that because we couldn’t continue to do, you know, all the laboratory specimens that were coming in anyway.

Another – some other key decisions that had to be looked at were the social distancing. You know, what does CDC recommend? What could we recommend? You know, what we know from a science and evidence based perspective versus what is realistic that could be accomplished and what we could recommend from that. So, you know, our own – our own social distancing, when people were sick and yet were involved in the outbreak, you know, we had to make sure people don’t come to work when you’re sick, even for ourselves and even people on the response team.

But those were recommendations and policy recommendations that we – we had to make. We also certainly with the identification of the manufacturer for the vaccine, what – how much the government would buy of the vaccine and all of those were very critical decisions that – that were made along the way.

Barbara: In terms of information that was used to support this decision making processes, where – where did your information come from?

Lynn: It came from the data. It all had to come from the data of the number of cases. We had to look at what was available – what could be
manufactured, the volume that could be manufactured. We had to look
then also at who was at most at risk and so that the recommendations
could first hit with the – with the earliest vaccines coming out of
production, the immunization of the most at-risk populations. Those
were definitely key decisions that – that were made,
recommendations. But it did look at populations that were affected by
the vaccine, I mean by the virus most. So it – it’s all definitely data
driven.

Barbara: Who were the key people involved in this decision making process?

Lynn: That would be, you know, Dr. Besser when he was first here, Dr.
Frieden, Dr. Schuchat, Dr. Redd, Dr. Bell and many others who were
kind of part those directors briefings and – and mainly providing
policy recommendations. Ultimately, many of these fell to the Director
or later as it progressed in concert maybe with the Director, Dr. Redd
and Dr. Schuchat.

Barbara: In terms of organizational response to staffing needs, did you have any
particular recommendations for the future?

Lynn: Yes. You know, I found this with H1N1 and this is also been true with
our Haiti response that we’re – we’re working on right now. We do –
we do detail people to the team. So even if it’s not something that the
people do in their daily job, so I detailed my financial resource director
to work with the funding for H1N1. So she worked on that for about
three months which left a huge gap with us. We – we couldn’t – we
couldn’t detail people in to fill her job ‘cause we were already detailing
other people for the response. So it mean – it mean other people back,
you know, at the home base or our home organization having to fill in
and – and work overtime to fill the gap.

We detailed someone to work on the personnel recruitment part of it.
And that – we actually had two people on my staff alone that worked
directly in the personnel recruitment on – on two different rotations.

So I found that for us with OPHPR and then it was called COTPER,
that we provided a lot of staff support that are from people who are
not even normally part of the response team. They’re not people who
work in the Division of Emergency Operations, or the Division of
Stockpile. These are people who worked in business services in the OD
and management office. So people who actually served as the Chief of
Staff at – at a point in the very beginning before, you know, it took on
under the influence of coordination unit as having the lead.

So our organization really jumps in as kind of the first response team
and fills some of those key positions. And then over a long-term
response, the strategy has to be to bring in other people and rotate
other people through to be able to continue to support our own
organization but at the same time, give full support to a response.
Looking back over the year of the response so far, are there things that you felt the organization did particularly well?

I would definitely say communication was absolutely critical. I think this – the government had to be transparent in what we were doing and I think we really, really did well with that. I think that we, you know, we got the vaccine out there as quickly as we could. It was still, you know, everybody – you rather it be sooner rather than any later but we got it out there just as soon as it could be identified. I think that we worked with the states very well. We brought them into the process very early on and they were absolutely a full partner. We were actually at the point supporting them because they were on the frontlines with the disease in their state and with responding to the disease by the immunizations in their state.

How about challenges that you feel the organization experienced?

I think the biggest challenge is just the length of time of the response. Prior to H1N1, the longest term response that we have faced was with Katrina, Hurricane Katrina, and the aftermath from that. And that event was maybe four to six months. So this has lasted 11 months by the time it fully closes out. That’s a very long time to be in response mode.

So basically what that means for my organization is that our Division of Emergency Operation and the CDC Operation Center which we operate has never not been on, you know, just – just monitoring for nearly a year. And so that puts a lot of strain on the organization. It’s not impossible, obviously, we’ve done it and we’ve done it very well. But it’s – it’s a long time to be in response mode. So, you know, people put off vacation time, and people put off doing things because we were in a response. We’ve put off some things with our own planning, our own exercising, our own, you know, operations because we have, you know, part of the organization in – in still in response mode.

And so I’m not sure that there’s anything we could do differently about that because that’s our job but the long-term nature of it, you know, is – is a big strain.

Do you have any other specific recommendations that you could make in any area for people who are – organizations that are confronted with similar?

I have been, like I said at the beginning, when I first came to this organization, to COTPER, I was only here a month when the outbreak hit. And I had been incredibly impressed by how organized we were with the response, how people worked so very well together, how even during the response for H1N1 we were able to handle other responses. So if there was a food outbreak, if there was a tsunami in another
country, if there was a flooding, we were still able to assemble a team
to deal with those responses.

So I have been incredibly proud to work in this organization and just see how well they work together and how well they support CDC in responding to an event and one as long-term and as, you know, potentially dangerous as H1N1 was, and yet we were able to mitigate much of what could’ve happened by how we responded to that.

Barbara: Great, well thank you very much.

Lynn: Okay. [audio ends 0:25:53.5]
Sure. I'm a physician by training and I've been working at the CDC since the early 1990s. I started in the EIS program like many of us physicians and was working in Seattle, Washington when the Jack-in-the-Box outbreak associated with contaminated hamburgers happened. So that was sort of my introduction into public health.

Most of my career I spent in the field of hepatitis. I'm an expert in hepatitis vaccines and viral hepatitis in general. And for the past, I guess, maybe three year or so, I've been working at the center level in the National Center for Immunization and Respiratory Diseases.

Great, are you currently involved in some aspect of H1N1?

Yes. I am, at the moment, leading our efforts to transition all of the H1N1 related activities from the emergency response structure back into our center, into the National Center for Immunization and Respiratory Diseases. So that's essentially all of the surveillance, epidemiology lab stuff which is housed in our Influenza division, and all of the vaccine related activities which are housed in our Immunization Services division.

Great. Can you remember when you first heard about H1N1?

I most certainly can because I was the Acting Director of the Center, of NCIRD at that time, in April, and I was actually performing in a choir concert, I believe, on the Friday night and had turned off my telephone because I was performing in a choir concert: and turned it back on after the choir concert and had a telephone call from someone from the Flu division saying well now we’ve kind of detected two of these over the last couple of days. We are concerned about this, the sort of details that I’m sure you’ve heard before, no recognized contact with swine, no recognized contact with each other, a novel strain that hadn’t been seen before, and so I’ve got a, you know, a very comprehensive update about what people were doing about it sitting there in my car in the parking lot after the choir concert.

And so then I, you know, I thanked them and we arranged when we would talk again and then I called Ann Schuchat who at that time was the Deputy – Acting Deputy Director of CDC, and we went through the whole thing and that was sort of – we kind of, you know, went from there basically. So it's quite – quite a clear memory of the first time I heard about this.
weekend that I don’t really remember. But I certainly, you know, remember Rich Besser convening a group of people and us, you know, kind of talking about what the next steps were. But I don’t have – I don’t remember all that clearly exactly what, you know, we did during that next week to tell you the truth.

Barbara: Were you involved in the standup of the EOC at all?

Beth: To the extent, I mean, at the time when we were first standing up the EOC, you know, as the Acting Director of the Center, you know, the way that these – the EOC structure is organized, I think, somewhat depends is varied from response to response and it’s certainly evolved over the course of this response. But at the beginning of all of this, there was a place at the table for the center directors of all the relevant centers in addition to people who might have a role as sort of – official role in the emergency management structure or whatever it’s called, Emergency Command. Anyhow.

So as the Acting Director of the Center, I had a, you know, a recognized role to play, seat at the table, and certainly was involved in all of those early conversations from that perspective.

Barbara: Did you have a sense in the early days that this was going to be a serious crisis?

Beth: Well, crisis is a funny word. I think I certainly had a sense that it was going to be serious. And, you know, I believed our flu experts who said this is worrisome, you know, I think this could be serious and certainly we’d been hearing a lot of reports from Mexico that were concerning and made me think that it was going to be serious.

The whole question of was it going to be a crisis and how was this all going to be played out, I think is a – another question altogether. I have found in general in dealing with these kinds of responses that it’s better not to think of it that way. And it’s better to just think of what needs to be done, you know, try to think about the most rational science based comprehensive way about what the way forward is, try not to forget things, try to, you know, consider all the considerations and not think about it as a crisis. That’s just my own experience. But, you know, that’s generally the way I tend to approach it. It’s serious. We’re public servants. We have to protect the public but not that it’s a crisis.

Barbara: What did you feel were the key decisions that needed to be made early on?

Beth: Well, early on we really were trying to figure out how – what was this, what was the, you know, how severe was this, what was the clinical spectrum of illness, how much had it spread, what was this virus, a lot of those very fundamental questions, once again, I think in form by what we were seeing from Mexico, which was suggesting that, you know, there were a lot of young people who were dying, and, you
know, a fair amount of mayhem in a certain kind of way. And, you
know, we weren’t seeing that here in this country early on. We were
seeing, you know, we were certainly seeing that it was spreading and
that there were a lot of cases but we weren’t seeing that same kind of
spectrum with a lot of very, very serious cases. And so a lot of the first
questions had to do with, you know, why was that: were we missing
things: was there something different in Mexico: was it the same
virus, even, and what could, you know, sort of like especially was what
our surveillance was telling us about this country accurate, or was
there something else that, you know, was missing or that we hadn’t
really understood or detected.

So I think early on, very early on, that was really a large part of the
question. And in addition to some of the, you know, the scientific lab
related questions about figuring out what was this virus, where did it
come from, and some of those kind of very fundamental questions that
were obviously being worked on in parallel.

Barbara: Do you think there was a sense within the organization that this was
going to require an entirely different kind of response?

Beth: Compared with...

Barbara: Previous epidemics.

Beth: Oh, previous flu epidemics.

Barbara: Previous flu epidemics.

Beth: Well, you know, there’s a lot of pandemic planning that had gone on,
most of which I wasn’t very involved in. But there was a whole, you
know, a whole infrastructure, and a whole mindset, and a whole
paradigm in a way about influenza pandemics and about how to
prepare for pandemic that was actually very well developed. And that,
I think, was very different than, you know, previous emergencies even
not to mention influenza pandemics. We had exercised this, we had,
you know, all kinds of activity from the White House, of course a
different administration, from HHS, all, you know, involvement from
all sectors of government feeding into this pandemic plan; which, as I
say, was very well developed with many, many tasks, and many, many
segments of people doing this, and that, and the other thing.

And so some aspects of – of this, I think, early on felt familiar from the
point of view of some of these exercises and I would say that while,
you know, the scenario that people were mostly planning for in these
pandemic planning did not turn out to be the scenario that happened;
and that the fact that the scenarios were different, in fact, as I
imagine you may have already heard, I think caused some difficulties.

But some of the basic, you know, this is what we do, this is how we
start off, this is, you know, these are the questions we need to address,
these are the people that we need to involve, some of that we had exercised and I think that those exercises in fact turned out to be useful. Some of the conclusions of some of the exercises, I think, had already improved the way that we set up the EOC structure. Some of the difficulties that we had identified in the exercises, we had managed to fix already. And I think a lot of that and a lot of that thinking ahead of times, at time, especially in terms of the process kinds of things internally, really did help in terms of having the general flow of things feel somewhat more familiar than it might have otherwise.

Barbara: Within your division, did you feel it was necessary to make modifications to any existing plans or structures that you had in place?

Beth: Well our Center is largely responsible for this response. So we essentially, two of our – we have five divisions, one of them is a global division, five divisions, two of the divisions, one of them was – is the Flu division which is obviously 100 percent involved in this. Another is the Vaccination Program division which clearly was essentially, you know, a lynch pin in all of this. And the other two divisions also deal with respiratory disease and so have many – a lot of expertise both laboratory and epidemiologic expertise directly relevant to the issue and, of course, being all from the same Center, people are used to working together.

So we essentially suspended just about everything that wasn't essential in order to, you know, focus our attention on this.

Barbara: And as the threat emerged and persisted over the long term, how did your division respond to that?

Beth: Well our Center, you know, this has been a difficulty I think all along. Many – there were a lot of things that didn't get done. Many, many, many people from all across our center participated in the response. I think, you know, clearly there are some critical things that had to keep going, and in some ways, I think it was more difficult for the people that weren't involved in the response because I think that, you know, there was generally one had to be careful about not sending the message that the other things were not important and to make the other people feel valued.

It was also, I think, difficult for the people that were not directly involved in the response to feel like they knew what was going on. And that was something that was very important, I think, to the rest of the Center leadership to under – to know what was going on given, you know, the magnitude of this both from a – just sort of a public health point of view and also from a point of – the point of view of the Agency effort. And that whole issue of keeping the rest of the Agency or in my case the rest of our Center abreast of the developments was actually quite difficult. They – I think many of them found it frustrating trying
to figure out who should they talk to, and those of us that were
working in the response probably didn’t do as good a job as we should
have in, you know, kind of going back and going to some of the regular
center meetings and letting people know what was going on.

Barbara: Could you talk a little bit about the internal communication processes
that you used?

Beth: Within the response? Well, you know, I think in general, this
communication issue was very complicated and very difficult. Part of
the reason is that much of the communication, you know, it was a good
thing that lots of people above us were interested in this response in
general. It was a good thing. And was a good thing – I think it’s a good
thing that we as an Agency have recognized the importance of media,
and communication, and partners, and all of those things.

But it makes for having sort of robust communication – it makes it
very difficult and challenging because there are many sources of
information, they – it’s very difficult to get them all channeled through
a – a small number of people. It’s very difficult for those small number
of people to figure out who are all the people that need to know. And –
and then even the people who need to know often times don’t have the
time to – to then sort of spread the word around to all the people who
would like to know.

So I think all of it was quite – is quite – was quite challenging and
quite difficult. I think that, you know, we did a reasonable job of this.
We made some mid-course corrections that I think were helpful. We,
you know, instituted sort of like an every morning report where, you
know, all the task force leads, we would all sit down and just go
through everything that, you know, as a group, everything that
everybody knew and needed to know, that needed to, you know, go up
and, you know, stuff that needed to go down. And I think that that did
help. I think that the sort of incident command structure as sort of
uncomfortable as I think it is for some of us who are not used to
functioning in that sort of very militaristic hierarchical kind of
structure, I think that it definitely has its advantages. Even within
that, there were several kind of mid-course corrections where we tried
to clarify, you know, who was the single person to receive xy
information. That also, I think, helped.

But in general, I think, it – it’s – I don’t know concretely what else we
could have done better. I think that objectively speaking, it’s just very,
very hard when you have so many different inputs. You have many
competing priorities. The priorities of the people above you may not be
the same as the priorities of, you know, the response or of the staff
within the response. And everybody wants to know everything
yesterday. And so I think all of those things were quite difficult.

I think we did a reasonable job especially of the upward
communication, our daily Chief of Staff calls, I think was really
impressive that all of the -- of senior people actually managed to sit
down together every day and I think that that really made a
difference,. The communication people had calls every day. We had
obviously senior people within our response, you know, focusing on
communication. And all of those things, I think, really helped.

I think that, and maybe you'll hear this more from some of the other
people that you're talking to, I think from the point of view of the
people that actually were working in the response, especially the
people who had a lot of data that everybody was interested in. For
example, the – the surveillance and epidemiology people. I think that
in some ways this was extremely difficult for them. They, you know,
were getting requests for data from everybody and their brother, from
all over the place with, you know, and some from people who, you
know, were very high up, people from the White House would be
calling them directly. And it's very difficult for them to say no, not
really in a position where they had the power to prioritize, very, very
overwhelmed with a huge amount – huge number of requests for tell
me this, tell me that, tell me the other thing yesterday; and people
who are very senior scientists, and I think really wanted to be
managing their part of the response, according to what they thought
was most important from a scientific point of view. And I think all of
that was – was quite difficult for them. And I don't know whether
there were ways that the senior people in the response could've
improved upon that.

But I personally, you know, wish that – that those folks could've felt
less put upon than they did which I – I mean I think they did feel
pretty put upon.

Barbara: What were your primary sources of information?

Beth: Well, you know, we – our prime – first – I mean scientifically or what
was going on, our primary resources of information were from our own
people. So, you know, from the people running our surveillance
systems, from the people that were working with our international
partners, from our laboratories, from, you know, those sort of various
parts of our response once we got the vaccination program going, from
the people that were dealing with the states with the vaccination
program. Those really were the primary sources of information. I
think the information from the point of view of what is it that other
people are thinking they need, that probably came from someplace
else, from our media people who are extremely, you know, helpful in
terms of characterizing what the issues were and from, you know, the
people in HHS, and who we would hear from daily about the sorts of
things that they were concerned about and that they were interested
in, you know, kind of managing or helping us manage or that kind of
stuff.

But I think, you know, in the midst of all of this, I think we all did
continue to rely on, you know, our science to figure out what indeed
was going on and I – as you probably already heard, or seen, we are all a bunch of people who, you know, believe in trying to actually figure out what is going on to the best of our abilities and use that to guide our policies, and our recommendations, and our actions.

I mean, we – I mean sometimes you could say to a fault, that’s what we want to do. I mean I think that the whole question of how do you make decisions with imperfect information and how long do you wait to make a decision, how much information should you have is always, I think, something that’s been, you know, hard for us as an agency to kind of figure out about where you come down in all of that: how nimble do we need to be: how correct do we have to be: It's very hard, I think, and I don't think that there's agreement among all of us about, you know, what the answer to that is.

And obviously it depends on the situation. It depends on what the tradeoffs are and many other things. But it – it’s not, you know, it's not straight-forward. I think, as they say, and people have very different points of view about it and I think in this response, there was a lot of some of us felt like, come on, let's go already. You know, we can’t wait forever. And others would say, wait a minute. You know, this could be wrong. It's hard to know where to come down with all of that.

Barbara: In dealing with this ambiguity, particularly related to the H1N1 threat, within your division, how did you manage this decision making in the face of ambiguity?

Beth: Well this isn’t – I would say – I mean most of this, you know, after sort of the early days I actually sort of became part of this response. So I – I actually have very little to do with my Center after, I don’t know, May or something or other. So I think the way we managed the ambiguity in the response was hopefully to recognize it and then usually somebody made a decision. And usually, it meant that, you know, somebody was pushed out of their comfort level one way or the other.

And I guess, you know, the decision is usually, okay, we are doing something now, or we are waiting. I would say usually the we are waiting people were – there were more of those probably than we are doing something. But it required making a decision. And sometimes it was a decision that was forced upon us by, you know, somebody above us saying the Secretary is going to say – wants to say, blah, blah. Or the Secretary wants to say something about blah, blah, what can she say? And then, you know, well, you just have to kind of, you know, deal with that. And that, often times, I think is – it was some of the issue. Some – sometimes the issues are more policy related issue like, you know, should we issue guidance on this topic right now or should we wait until we have more data.
And, you know, for some things, you know, we have to issue guidance. So then do we issue the guidance – what do we say, you know, do we go with the pieces of science that we know, do we – how much do we consider, practical considerations, how much do we weigh the various – all these various components, could we wait to know a little bit more about the disease spectrum, you know. And – and, you know, as – there were certainly a number of guidance that we revised. And sometimes we revised them just because the situation changed, and we knew they needed to be revised. Sometimes we revised them because I think that our balance between, you know, strictness and feasibility shifted, which, you know, it shifts when you get a better sense of how severe the disease is, or how many people are getting sick, or who the people are that are getting sick, or any number of other – whether there’s going to be a vaccine, any number of considerations like that.

Barbara: In terms of getting clearance for information to be released, how did you feel that process worked?

Beth: Well, I was the final point of contact for clearance -- for clearance, for policy, for guidance, for scientific publications. And I think that you will hear a lot of different opinions about how that worked. For many things, I was the final point of clearance here but they needed to be cleared at HHS. And that was a – a difficult sort of challenge which I think improved somewhat over the course of all of this. But, you know, realize this pandemic happened with a brand new administration, no HHS Secretary, really nobody pretty much at HHS when we started, no full-time – no whatever, permanent CDC Director, lots of people in acting positions all over the place including in Washington. And so this whole question of who needed to see what really changed a lot during the course of the response. And how much control they needed to exercise, and who needed to be exercising control also really changed.

But when things started, you know, I think, you know, it was just not really clear what needed to happen. I mean, so I – I can remember one of – a document that – an early document and may was in June, that I finished working on and sent for HHS to review and it ended up being circulated to every single op div in all of HHS for comment. And I received back a 20-page spreadsheet with, you know, 200 some odd comments from everybody and their brother. I didn't know who they were, that I was supposed to – we were supposed to respond to within some amount of time. And I mean this clearly was not a feasible way to deal with an emergency. And I think everybody sort of realized that and said, oh, that’s not going to work, you know, we have to figure something else out.
But there were a lot of those kinds of things that happened in the course of – of – of this response. There's always the issue of, you know, how long does it take to get things cleared, I think that continued to be an issue which, you know, I don't know that there's a good answer for that. From my own perspective, I think sometimes the staff feel like they've, you know, they spend weeks working on something and they think it's ready to go and unfortunately, it just isn't ready to go. And it's not a matter of, you know, the people take too long to read it, it's that, you know, they did a great job but they didn't actually understand or recognize all of the various policy issues. They, you know – it's not understandable to somebody who's not an expert in the area. Any number of ways that, you know, those were issues and so that, I think is always a, you know, a problem for people and, you know, it's something once again I hope that we improved upon over the course of the response but it's not easy.

Another aspect I think that we always struggled with is we had a lot of people working on this response, and they were all very enthusiastic, and they all thought that their own little zone was really, really important, and they really wanted to write something about it, and they really wanted to have, you know, a guidance to every, you know, to, I don't know, the asthmatics with blond hair. And we didn't have the best method for surfacing all these things early enough so that we could provide some context for the ones that were priorities, and people should work on, and the ones that were not priorities, and people should not spend their time working on.

And so this – this became an issue, especially became an issue for the people who were doing all of the central technical influenza related clearance which is sort of a level below me. I would get the things that they thought – that were kind of, you know, kind of big enough that I would need to read them. But those people sitting in this room, getting all of this stuff to review for technical correctness, were just inundated with these massive things about all kinds of topics, many of which, you know, were not appropriate. We didn't need those things.

And so that was something that we tried several times to do something about, to say, look, for everybody's benefit, for everybody's moral, to respect everybody's time, do not come up with an idea of something that you're going to write something about based on whatever your, you know, group is that you're working with and send it forward. Don't do that. You know, if you have an idea, you know, this is the process to have somebody decide – help you decide if that's a good thing to do or not.

I think we had some success with that. Not 100 percent success. I mean, even, you know, within the last, I don't know, two or three months, I was – I had to say to people, somebody, you know, that gave me something and said, okay, this is ready for you to look at. I'd have
to say, -- I had to say, we're not – this is not – we can't – we're not
doing this. We're stopping it. That's not great. It's not good to have to
do that.

So, you know, as I say, I think that's – that's something that could use
some more fixing although I'm not sure how fixed it can be. I mean,
then the whole issue of the scientific communications, the media
communications and how those fit together is a whole other story. I
think in general, we did reasonably well here because our media
people are so smart, and they are so respectful of the science, and
they're so able to take the science and, you know, make it something
that's understandable. And then our communicators, mostly Tom and
Ann, you know, did a good job of that. And so I think we didn't have
the problems with that aspect of things that, you know, I've seen in
other sectors and certainly, you know, we've had at some time –
sometimes in the past.

Barbara: Besides the media, were there things that come to mind that you felt
were done very well?

Beth: Well, I think in general we, you know, this – this was, you know, I
mean none of these responses are easy. Now this one wasn't – also
wasn't easy. I think this whole business of everything being in
transition was particularly challenging. I think the whole business of
getting the pandemic planning stuff and people in sync with what
actually happened, and the people that are actually dealing with what
was happening, was also very, very challenging. But – and I think
that the question of how the people that really worked day in and day
out in this, how they feel about the response, and were they valued,
and a lot of those kinds of things, I think, are still not completely clear
to me.

But I think in general, in terms of people really trying to, you know,
work together, figure out what's going on as best they could, provide
the best information as quickly as possible, and really, you know, try
to prevent illness and death, and work together to try to do that. I
think in general, the – that sort of unifying spirit was pretty well, you
know, maintained with some, as I say, I think that in some ways it's
easier for people, those of us who at least have some – are able to see
the bigger picture from, you know, talking to people in Washington, or
you know, understanding what's going on all across the response,
some of the people who were very important leaders in a particular
sphere, but maybe, you know, didn't have the opportunity to hear
much of that. That, you know, I think, I'm not sure how well that
worked, and I'm not sure how well the people who were responsible
for, you know, kind of communicating stuff down the chain, as they
say, I'm not sure how well that worked mostly just because nobody
had any time. You know, you just reach a...
Barbara: So looking back over the past year as the organization has responded to this threat, are there any recommendations you would make for future events?

Beth: I certainly think that there’s room for improvement. How to frame that in the context of recommendations, I guess I would say that finding the time to let the rest of the agency know what’s going on in a more, you know, kind of regular kind of a way, I think might’ve been helpful from, you know, just thinking about things within CDC. You know, we – we snapped up a lot of people and we spent a lot of time, you know, detailing people from hither and yon. And I think that that engendered not the most happiest of feelings in some other parts of the agency. And I think if there were a way that we could have had felt that everybody was participating or at least knew what was going on in some kind of way, that perhaps that would’ve helped a little bit.

I think the other thing just once again from the internal CDC point of view, is that I do remain concerned about how all of the people who worked so, so incredibly hard on this, I mean, you know, I think of some of the people in the lab or the surveillance people who probably haven’t had a day off in a year, literally, who, you know, haven’t worked for less than 10 or 12 hours a day for a year, I just wonder how – how they’re going to feel at the end of all of this and I wonder if there was some ways in the course of this – this response that we could have, you know, at least made them feel like, you know, I mean we did try to – we did make them feel, try to make them feel appreciated, go visit the labs and tell – say all the time how much we really appreciated everybody. But I think sometimes the pressure, you know, to want information from people, to want them to be done with whatever the project is or part of this that we’re waiting for the information, and just a lot of sort of inundated with, you know, questions from all over the place. I’m a little con – I think if there were a way that we could control that, if there were a way that we could prioritize so that we could actually give people better guidance about do this but don’t do that, this request you really have to deal with, this other request you really don’t have to deal with, a way that we could have more control over what it is that we have to provide to other people. And I don’t know if that’s feasible. I mean given the course of some of these requests, for providing this to this person and that person, perhaps is not feasible to control that.

But I think from a Agency, people, moral point of view, it would be helpful if we could do that, if we could say, you know, to people above us, do not, you know, ask directly so and so for such and such. And, as I say, perhaps that’s not feasible but I think that there were probably a lot of people within our agency who would’ve been happy to, you know, have somebody be more of a wall than perhaps we were able to be.
So those are some internal things I think that – that I could imagine
that we could’ve improved. I think probably this whole business of who
was responsible exactly for what got better but maybe, you know,
could be – also could be a lot better. And I think this issue of keeping
people who have good intentions on a task which is actually an
important one when you have so many people and so many things
going on at the same time is something else that maybe, you know, we
could’ve done a better job on.

Barbara: Great. Well thank you very much.

Beth: Sure. Thank you. [audio ends
Interview #3. Steven Boedigheimer, MBA
Deputy Director, Division of State and Local Readiness, Office of Public Health Preparedness and Response

Barbara: Good afternoon. We’re here today to begin the development of an oral history on the CDC’s H1N1 response strategy. And we hope this history record will be useful to future leaders by giving them the benefit of your experience with H1N1 as they confront new and possibly similar challenges. So let’s begin with a little background information on you. Could you give us your name and your position?

Steve: My name is Steve Boedigheimer and I’m the Deputy Director of the Division of State and Local Readiness in the Office of Public Health Preparedness and Response.

Barbara: And what brought you to CDC? What is your background?

Steve: Well I spent several years in administrative positions in state health departments from coast to coast, Oregon, Delaware and then CDC.

Barbara: Are you currently involved in some aspect of the H1N1 response?

Steve: Over the last few months, I have co-led and then led the state coordination task force and the H1N1 response and the command structure here at CDC in the Emergency Operations Center.

Barbara: Do you recall when you first heard about H1N1?

Steve: It was in the spring of 2009 and I was in a little different role at that time. I was the CDC Sr. Management Official for the State of Arkansas on the staff of Dr. Paul Halverson the Director of Health in the State of Arkansas. And I functioned in the State Public Health Emergency Operations Center assisting the State in their response to H1N1.

Barbara: Great. Do you recall how it was presented to you, the information about H1N1 and did it strike you as a crisis?

Steve: Well it certainly struck me as an urgent situation. I don’t recall the exact means of communication but between information provided by CDC and the senior leadership at the Arkansas Department of Health, we recognized the urgency of the situation and immediately began to collaborate with CDC on a Arkansas response, if you will, to H1N1.

Barbara: Could you describe generally those first few days of the response period?

Steve: Well, in the spring of 2009, the Arkansas Department of Health established an incident command structure inside its agency and mobilized its Public Health Emergency Operations Center. So the typical components of an incident command structure were...
established and the Arkansas Department of Health linked back to CDC monitoring the initial effort at – CDC’s initial effort at keeping state health officials informed through a national telephone call which was held in the spring to get things started. There were other CDC linkages out that occurred at that time both with epidemiologists and public information officers, and monitoring of email communications that came from CDC and certainly the website that CDC maintained to provide information to state and local health officials.

Barbara: So were you involved directly in the day-to-day response?

Steve: I was involved in the day-to-day response. I had a duty station in the Public Health Emergency Operations Center in Little Rock, Arkansas and helped the state health officials link with the appropriate subject matter experts back at CDC, use whatever means would be available to me to do that.

Barbara: And when you came to CDC, how did your role change?

Steve: Well it was looking at things from the other side of the lens if you will. On the CDC headquarters, I assumed a role here that had me immediately involved in both helping to shape a funding stream that put public health emergency response dollars in the hands of 62 different projects around the country, 50 states, four cities, eight territories. And in the course of a relatively short period of time, from July 31st through the 28th of September, we put $1.35 billion worth of response funds out to our state and local colleagues in that regard, and then began to an enhanced means of keeping them informed and communicating with them.

Barbara: Great. Can you give us any examples of day-to-day activities that you thought were particularly useful?

Steve: Well, I think one of the things that was particularly useful was building on the initial experience in the spring of a national telephone conference call strategy to keep both the state health officials and their employees informed of what CDC was doing as well as a national call to keep local health officials informed of the CDC response and answering questions and so forth. So that was a strategy that was initiated in the spring but was certainly refined and built on in the fall of 2009.

Barbara: And over the course of a year, has anything changed? Or is that still in effect?

Steve: Well, it’s not in effect at this point. We stopped doing that as we transitioned in the nature of the response in January of this year. Over the course, however, from – of time from September through January, there were 23 separate telephone calls held for state health officials and local health officials. On average, probably the state health officials, there were 78 or so callers on those calls and given the number of health officials, that would indicate that more than one call
per state although we didn’t always have every state on the line. For our local health officials, there are a lot of them. I think our peak cal was over 640 individuals had called in from local health authorities on the one call we had in – in October.

Barbara: You mentioned a particular call strategy earlier that you wanted to discuss in more detail.

Steve: Well, if you’d like, what we could do is recreate the first three minutes of what one of these calls was like, and we pick a typical call, perhaps the 19th of January. As we got near the end of the national calls and our listeners can see how that call was handled and the approach we took: just the first three minutes, take us back in time and actually be there and experience that.

Barbara: Great, let’s do that.

Steve: Well let’s do that. If you would like to play the part of the operator, we’ll do a little bit of role play here and we’ll just create that – that call of January 19, 2010.

Barbara: If you need assistance during the call today or you wish to ask a question, please press star one. I will now turn the call over to your moderator, Mr. Steve Boedigheimer.

Steve: Welcome from Atlanta, Georgia, the headquarters for CDC for the weekly conference call with state health officials on the H1N1 response. This call’s being conducted in collaboration with ASTDO and is intended to give you the most current information available on the H1N1 response, and to hear from you about the challenges you face, your questions and most importantly the suggestions you have for us at CDC. We value greatly your participation in these calls. On this January 19th, 2010, we have a full agenda as always. And before I check with our colleagues at ASTDO, Dr. Paul Jarris or Mr. Jim Blumenstock, to see if they have any opening comments, let me run down the agenda for today’s call.

We’re fortunate today in that we have Dr. Dan Sosin, the Acting Director of Public Health Preparedness and Response Office here at CDC with us in the room, and Dr. Steve Redd, the Incident Commander for H1N1. And, as usual, we have a fully packed agenda. We’re going to hear from Ms. Chris Kosmos on the status of the public health emergency response grants particularly the status of [inaudible 0:08:26.6] Phase IV. The vaccine task force will provide us an update. We have Dr. Paschal Wortley and Dr. Tom Shimabukuro here to tell us about the activities of the vaccine task force. We’re going to get an update today from Dr. Greg Armstrong about the MMWR report that was out just recently on vaccine coverage. Also, from Ed Koszwoski, we’re going to have our epidemiology update today. And from Dr. Eugene McCray, from medical care encounter measures, we’re going to hear from them and the latest activities of that task force here at CDC. Probably touch on the N1 95 mask situation while we’re doing
that. Our communications update will be from Nadia Bellins today. And we’re going to spend a few minutes on the Harvard public opinion poll that was in progress just recently. We’ll hear from Kerry LaBelle about that. And as always, we’ll take your questions, and comments and suggestions between speakers as we move ahead with this call.

So again, thank you for participating in today’s call.

And that would be exactly pretty close to what it was like had you been participating on the 19th of January, 2010, as we opened this national call.

Barbara: Great, thank you. This brings us—brings a good question up about inner agency coordination and how effective do you feel the CDC’s ability was to coordinate with other agency?

Steve: Well, the part of the response that I was particularly engaged in had to do with coordinating with state health officials and local health officials. And I think that we had communication mechanisms in place to get a fair idea of some of the challenges that they were facing. The national calls that we held each week, the one we just re-enacted for state health officials, gave us a pretty good idea of the challenges and concerns they had. The weekly call with local health officials also gave us some insight into some of their concerns, and issues and suggestions. The first time, for example, that we heard about a local health jurisdiction that expanded vaccinations beyond the target groups in the fall, the first time we heard about that was on a national call like this from a small jurisdiction in the state of Washington.

In addition to that, we had other means of communication in place, weekly calls with the leadership of the Association of State and Territory Health Officials for example, and the National Association of County City Health Officials. So we were in good connection with leadership. We established this part of the state coordination task force a program where we would bring liaison officers in from those two national associations and they would spend the weekdays with us here in Atlanta in our Emergency Operations Center with the state coordination task force and sit in on the meetings that we were having to discuss policy, and strategy, to carry out a national vaccine campaign.

So we had the ability to communicate directly through national calls, through leadership calls, and actually have representatives of national associations sitting with us in the Emergency Operations Center as part of our state coordination task force. So we’re thinking that we are much further ahead with this national response than perhaps where we might have been in the past with the way this was approached.

Barbara: And have these practices been institutionalized now for future events?

Steve: Well, excellent question. We’re working in that direction. We certainly are trying to capture all the lessons learned through after action
reports, in progress reviews and are in the process of writing that
down into more of a procedure. The state coordination task force, for
example, is capturing an organizational design, the methodologies and
protocols used in the national calls, the way we worked with liaison
officers as we call this, the representatives and national association,
and getting that down in writing so we can use that in the future.

Barbara: Thinking back where you derived your information, where did it
mostly come from? What were your sources of information?

Steve: Well, certainly the examples that I just gave. I think another useful
tool that a few of us utilized which may not be captured in an after
action report was simply pick up the phone and contact somebody, in a
state health department, or a local health department, that we knew
or had worked with in the past that was in the epicenter of the
response, and validate the information, maybe gain some insight that
we hadn’t had. For example, I would pick up the phone and call the
Deputy Director in Delaware, Dr. Paul Silverman, and ask him his
perspective. Or pick up the phone and call the health officer or the
chief operating officer in the Arkansas Department of Health and say,
“What are you hearing? How’s it working? What do we need to know
that maybe we’re not getting at?”

And those little test methods, if you will, to get what one might get
ground truth, I think, were particularly useful.

Barbara: In thinking about decision making over the course of the history of
H1N1, what do you think were the key decisions that needed to be
made early on in the first few months?

Steve: Well, you know, this many faceted response and I’m sure that there
were key decisions most certainly in the vaccine area, in the
epidemiology area, medical care and counter measures, and so forth,
across our command structure. Early on, community mitigation was a
major issue. So we have subject matter experts in all those areas. I
think in the area that I’m most familiar with, in the state coordination
task force, one of the challenges we faced and key decisions was how to
organize ourselves inside of CDC’s incident command structure to
bring to the forefront the concerns and issues of state and local health
officials who were actually carrying out the vaccine campaign, who
were actually making decisions about community mitigation, and were
facing those challenges in epidemiology and surveillance.

And so for us at CDC, early decisions were how to organize a part of
our internal incident command structure, how to design that interface
between CDC and state and local health officials. And particularly one
of the decisions as a – in a challenge is how do we function across
these categorical areas where command structures were set up in the
Emergency Operations Center around community mitigation or
epidemiology and surveillance. How does the state coordination task
force design itself and interface across the command structure so as
not to be a bottleneck or barrier, but can facilitate, leverage the effort, to gain better information from the field as we say at CDC, where our colleagues are state and locals are carrying out this, and how do we make sure that we leverage that effort for good communication. One example might be working with our JIC, our Joint Information Center, to identify a daily – the need for a daily email message that contained H1N1 related information aimed directly at state health officials and local health officials, collaborating with the Joint Information Center to establish that type of communication and put it out there without, in some way, interfering with the activities that were already underway inside the command structure.

So as I think anxious as people might be to hear how we might make decisions impacting the public. In fact, some of our challenges were upstream from that, how to make decisions about our internal operation so that we could achieve the ultimate goal of getting timely accurate information, and hearing what was going on in the field, and putting that information in the right hands of the right people inside our CDC command structure.

Barbara: Great. You’ve mentioned several times the – after the activation of the EOC that you had additional resources deployed to support you. Did you find that this was something that needed to be longer term than you planned on?

Steve: I think one of the challenges is to stand up an internal response structure in a timely way with the right expertise and getting it in the right places at the right time. The state coordination task force inside the incident command structure here was the last task force to stand up. So identifying where the CDC employees were at that could enhance that effort, and to get them in position in a timely way was a challenge that we struggled with, I think, early on.

Barbara: Can you talk a little bit about your process of doing that?

Steve: Well, we tried the standard approach of the Emergency Operations Center reaching out across CDC to identify individuals that would be available to come and be part of the task force. But frankly, the most effective way was for our own individuals, for example, myself, pick up the phone and call people around CDC. The informal approach actually worked faster for us to identify talented people and get them onboard quickly to offer the support. So I think we – we still have some growth to do in that area, finding and getting people placed in a timely way.

We also worked to provide people in our task force in the field as we say. Over the course of this event, the state coordination task force worked with probably 49 different people, CDC employees, to get them placed in 21 different states, or territories or cities to accomplish 37 different missions, if you will, to assist that jurisdiction in the H1N1
response. We have other parts of CDC’s command structure like epidemiology that could provide epi and surveillance support.

But in our task force, we were looking for public health advisors that could assist a jurisdiction like the District of Columbia in ordering vaccine in a timely way; or identifying somebody at CDC that could spend a weekend in the District of Columbia observing a mass vaccination clinic and give them advice on the movement of people and supplies and so forth to enhance their effort to manage a group of people and expedite vaccinations in that mass vaccination setting.

So finding those kinds of people at CDC was also somewhat of an informal process and somewhat of a formal approach with the Emergency Operations Center advertising and looking for the right – right individuals.

Barbara: Thank you. Looking back over the past year, are there any challenges that you recall where you think – wish you would’ve done it differently?

Steve: Well, that’s a good question. I would like to think that we could move a little faster in standing up our response, that in the future we won’t have to re-invent how a state coordination task force would – would function in a broader incident command structure, that we would be able to turn to a boiler plate procedure as at least a starting point for how to manage national calls with the right subject matter experts and manage the timing and so forth. We learned a lot from this experience. And I think we will benefit from that in the future.

Barbara: Do you have any other specific recommendations that you would make for future leaders?

Steve: Experience is always helpful. So I would think that if we can identify people in our organization that have experienced what we have just experienced with the H1N1 response, and turn to the experience perhaps along the lines of something that we’re doing today, recording for history what we have been thorough and drawing from that, or going right to individuals that have been there and done that, and taken what they’ve learned from it, and expanding on that as we face new challenges.

Barbara: Great. Thank you very much.

Steve: Thank you. [audio ends 0:22:37.3]
Interview #4 Jay Butler, MD
Director, H1N1Vaccine Task Force

Jay: Jay Butler. I'm Director of the H1N1 vaccine task force. It is February the 18th, 2010, and we're in the sound stage at the CDC in Atlanta, Georgia.

Barbara: Thank you. We're here today to develop an understanding of the history [inaudible 0:00:17.6] background information on you. Could you tell us a little bit about yourself, your training, your medical specialization and what brought you to CDC?

Jay: Okay. I'm an infectious disease physician, board certified in general internal medicine, general pediatrics and infectious diseases. I've been with CDC a little over 20 years now. While I was a resident at Vanderbilt, a number of my mentors had been through the EIS program. For a couple of years, I kept saying why would I be interested in the CDC? I want to be an infectious disease doctor working in an academic center. But somewhere along the way, I began to -- to cave a little bit and got interested, applied to the EIS program, spent two years with the Wisconsin Division of Public Health, came to CDC as a preventative medicine resident for a year in the respiratory diseases branch, and stayed on as a -- a staff member; spent seven years with the respiratory disease branch in Atlanta including a year that -- in there that I was with the viral special pathogens group during the hantavirus response in 1993. Went to Alaska in 1998 with the Arctic Investigations program and was there until 2005. And then for four years, spent time on a detail to the State of Alaska initially as the state epidemiologist and later as the State Chief Medical Officer serving as the State Health Officer during my last two years with the state.

Barbara: Are you currently involved in some aspect of the H1N1 response?

Jay: Since June, I've been Director of the CDC H1N1 vaccine task force.

Barbara: And when do you -- can you recall when you first heard about H1N1?

Jay: I can recall the moment very clearly actually because I was not at CDC in Atlanta at the time. I was actually attending the American College of Physicians’ Conference in Philadelphia finishing my term as governor of the Alaska state chapter. In sitting in the convocation ceremony and being a little bit ADD, I was getting restless and I pulled out my Blackberry and saw some emails about a new swine flu strain that had been isolated in children in Texas and California. And remember thinking at the time, this does not sound good and particularly with two separate geographic locations. It raised some concerns. And as I was leaving the convocation call, I ran into Greg Poland who is well known as a -- someone who's done quite a bit of research and promotion of vaccines and we were talking about it and...
both had the same impression that this did not sound – sound good at
all.

The next day I had traveled to Washington for a meeting. I was Chair
of the ASTO vaccine and infectious diseases subcommittee at that
time and I think I didn’t spend more than about 30 minutes in the
meeting because the news about Mexico had come out that morning.
That was a Friday morning. And I was pretty much in and out of
conference calls the rest of the day. Was at the meeting with some
ASTO staff and I remember we were saying, well what’s next. And I
said, I’ve got to go home. I’ve got a state that I need to be in during
what sure sounds like is going to be an influenza pandemic.

So I returned to Alaska. The next month and a half was very hectic.
We actually were one of the last states to actually see disease but
certainly being ready for when the virus would eventually get there
was a big part of my job. The time came through both some pushes
and pulls to be leaving the state of Alaska and the opportunity came
up to come to CDC to head up the vaccine task force, and I arrived
here around June 21st of 2009.

Barbara: Do you recall how the information initially was presented when you
first heard about H1N1? Was it – did it give a sense of a potential
crisis? Was it matter of fact? What were kind of your emotional
responses to reading these emails?

Jay: Well it was very matter of a fact – matter of fact. And, of course, I was
at that time getting it from outside of the – the Agency. I wasn’t
getting a lot of inside information. And it did strike me – there was –
seemed to be an avoidance of using the word pandemic, at least in the
official communications yet everything that was developing over the
next several days certainly gave every indication that this very well
could be the beginning of the next flu pandemic.

Barbara: So you mentioned you went back to Alaska. But when – what did you
actually do in terms of making preparations and taking steps to be
prepared?

Jay: Well before I even left Washington that day, had a conference call
with our preparedness director and we have spent a lot of time like
many state over the past four years preparing for the next influenza
pandemic. The concerns about the H5N1 Avian Influenza certainly I
think has been a big driver in that. We had done a number of drills
even full cabinet-level tabletops with the Governor and Lt. Governor
of how we would deal with an influenza pandemic. So in many ways,
we had the drill laid out.

The biggest issue was okay this is not H5N1. It does – we don’t know
what the mortalities – there’s a lot of things we don’t know and it’s
also not on the other side of the world. It’s in our country now. What –
what do we do? And so a lot of the work was adapting the plan to the
situation that was actually evolving.
Beyond that, reaching out to partners in Alaska, there’s only one local health department but we also work with the tribal organization. So getting everybody at the table and then working with other departments within state government and, of course, making sure that the Governor is aware of what’s going as well as the congressional delegation in Washington. And that was — that was actually one big part of my job each day was to provide a briefing in the form of an email to our congressional delegation as well as to the Governor’s office.

Barbara: Did you feel you got enough information? Were you satisfied with the information you were getting?

Jay: Yes. One of the — the best things that happened early on was the daily conference call, and those occurred about midday for us in Alaska. I think it was later in the day on the — the east coast. And those were occurring seven days a week early on. And there were other calls as well. But that provided a great opportunity to get information directly from the subject matter experts at CDC, and then also to have discussion with the other state health officers to find out what were some of the issues they were dealing with. And that was a great way to have a heads up on things that we may not have yet had to deal with.

Barbara: As you were developing your response, did you discover that you needed to make modifications to these existing plans or processes within your organization?

Jay: Yes. The — the planning was very beneficial. But the plan is not a protocol. It helped us to think through the issues that we needed to deal with but the pandemic that was arriving was a little different than the pandemic we had planned for in that a lot of the plans were built around a worst case scenario of either a 1918 type pandemic or an H5N1 type pandemic with a very mortality rate. As it turns out, of course, this was a — a different kind of epidemiology. It was a virus that primarily impacted young people. And if you look at it as a pediatric pandemic, it was a pretty bad one because a lot of kids and young adults died. If you look at it in comparison to seasonal influenza, it may not seem like it was that bad because that’s a bug that normally kills the elderly, yet the elderly were relatively spared by the H1N1, at least so far.

Barbara: In terms of outside coordination with other agencies or even with other parts of CDC in your position in Alaska, how was that communication — how did that work?

Jay: A lot of the communication was built on existing relationships. And that’s probably where the planning that occurred before the pandemic ever developed really helped because, as they say, an emergency is a terrible time to be exchanging business cards. So we also had the advantage of having it being a small state population wise. So the —
having been in the role for a couple of years, you basically knew people
and even people that hadn’t been directly involved in some of the
planning, it was easy to reach out to them.

And a good example was developing policy for school closure. That was
one where some of the – the guidance coming out of CDC didn’t seem
to, at least at that time, fit our situation in Alaska. Very quickly, we
worked with the Commissioner for the Department of Education. He
set up a conference call with all of the – the superintendents in the
state. I was able to provide a briefing to them and talk through some
of the issues surrounding school closures. And more importantly,
listen to them and hear what some of the concerns they had because
while there’s the health aspects of school closure, there’s also social
aspects that we had to think about of people who were in an absolute
panic and concern that we weren’t responding appropriately. There
may – that’s a factor that we had to consider in terms of making
recommendations within the state of what to do about when and for
how long to close schools.

And that was probably – an important role was to help people look
ahead because these superintendents, particularly in the smaller
school districts, really had not been often times as much involved in
the planning. And helping them to think through the issues of well if
you close the schools, what are you going to use as the threshold to
reopen. And when you began asking questions as well as just giving
information, it was – it really created a great dialogue to be able to
work through the problems that were often times unique in each of the
– the school districts which really ranged from multi-cultural urban
school districts like Anchorage to the North Slope School District. I
don’t know the exact population but the land mass is about the size of
the state of California. It’s a very different type of school district than
anywhere else probably in the country.

So it was – it was good interaction. It was good communication. It was
a lot of fun, I’d have to say because none of us knew exactly what we
were doing. We were doing the best, making decisions on the
information as it come in – it came in. And we had a good – good

Barbara: In terms of deciding what information to put out to the public and
balancing the need to inform the public and yet being cautious about
creating a panic, how – how – what was your process of determining
what information should be released?

Jay: Well, I’m going to go with the assumption that this question is still
based on my – my job during the first two months of the pandemic
response as the state health officer. We had worked with our Office of
Public Affairs very closely throughout the planning period. So there
was a certain amount of okay, this is not just a drill. Let’s do what we
– we trained for. And that aspect was – was very good. We had already
planned through who would be spokes people. I – I was the primary
spokesperson. We had some backups as well. And it really became
fairly routine.

We put out daily press briefings although we – we actually pulled back
a little on that because again, we were not one of the states that were
seeing the early disease. And so everybody wanted to know was it here
yet. Is it here yet? And we kept having to say, no, it’s not here yet.
This is what we’re doing to prepare. For instance, when we began to
get anti-virals into the state, we were able to describe that process.
We, at that time, just by chance were also opening a new state
virology lab so we were able to describe the new technology and new
capacity in the state lab that was really remarkable timing that we
had that just in time for the number of specimens that we were going
to see coming in pretty soon.

And then once we actually had a case diagnosed in state, we were able
to have a briefing, and have the – the kind of – provide the
information to the media in the way we wanted. It – we did have some
surprises before then thought. Of course, it was getting into mid-May
and we had the cruise season starting and we had cruise ship
passengers with influenza like illness. Specifically, we had a
passenger that was in Alaska waters in a ship that had already had
ports of call in Alaska that had H1N1 infection diagnosed in
Washington State. And so coordinating that and helping people feel
that particularly given the locals the appropriate guidance of how to
deal with that was a challenge. And that was one of those issues
where working with the – the media was a little more challenging
because it was a weekend, and trying to communicate with some of
the small towns where the ship had stopped was – was a challenge.

But ultimately we planned ahead for some of the milestones we knew
we’d be hitting like the first cases and the first death to be able to be
prepared for how we would reach out to the media, and plan to have a
press conference, and plan who would do the – the talking, realizing
that we had to be flexible with that. For instance, did the Governor
want to make any of the announcements? Or would she defer to the
Chief Medical Officer which is – or other staff in the department
which ultimately is what happened.

Barbara: Okay, if you could talk a little bit about your current position and
involvement with H1N1 at this time.

Jay: Yeah. Well, the H1N1 task force was designed to be the component of
the Emergency Operations Center that would address CDC’s role in
vaccine – the national vaccine program. The goal of the national
vaccine program was to provide the opportunity for immunization to
every American who wished to be vaccinated. So the components of
the task force included an implementation team to work with the
states to develop their state programs, a distribution team that would
really be responsible for the logistics of receiving vaccine from the
manufacturers and then getting it out to states and to providers
around the country, a vaccine safety monitoring team recognizing that
this was a vaccine that had never been used before and because of
some of the experience surrounding the 1976 swine influenza
campaign, there were going to be safety concerns, and that we wanted
to make sure we really had our finger on the pulse of the safety
aspects of this vaccine.

There was a team assigned to assess coverage of vaccinations so that
we can understand better who was being vaccinated and who wasn't
and to get that data as quickly as possible to be able to adjust the
program as needed. And we had a – have a vaccine effectiveness team
to be able to determine what’s the clinical impact as well as the public
health impact of the vaccination – of the vaccine in the clinical setting
as well as the program at the public health level.

Barbara: How did you get the information about who was vaccinated?

Jay: The information on who was vaccinated initially came through the
countermeasures response administration forum which was designed
to collect data primarily on the number of doses administered by age
group. And I'd have to say that was probably something that worked
in very few states because there was so much that was happening at
that time, so much work going on. It was very difficult to get that
information.

Now at the same time, we had started the weekly national H1N1
vaccine survey or – I take that back, NHFS, National H1N1 Flu
Survey, which was a telephone based survey, self-reported data, but it
was a way to quickly get information on the proportion of the
population that had been vaccinated. And then we also had the
BRFSS, the national survey that is done annually and there was a
specific H1N1 component to that to provide monthly data that would
give us more of a – a drill down into risk categories such as pregnant
women or health care providers.

The NHFS data is usually available late the week after the survey is
completed. For instance, today is Thursday and I just, about an hour
ago, received the data for the week ending February 13th.

Barbara: Do you have any recommendations for improving the way that this
information could be gathered and brought to CDC?

Jay: Well, one of the questions that we've been asking ourselves is whether
or not our – our survey techniques are fairly complicated in terms of
the – the sampling methodology and statistical analyses, tell us that
much more than the – the quick and dirty polls. And we actually have
supported some polling data also through the Harvard Opinion
Research group. And then we also – we've – we've sort of compared it
to polling done by some of the media outlets. And we found that the
numbers are very similar. And it's not entirely clear to us if that may
be a way to get this information even more rapidly or not. Certainly I
think it's – it's something for the – the next time around or for future
lessons in studying seasonal influenza vaccine; or it may be even other vaccines. We need to look hard at how we access specific risk groups.

One of the questions we certainly were interested in was whether or not pregnant women were receiving the vaccine or not. It was clear from the epidemiology that pregnant women had a unique risk to severe illness and death from this virus. So that was a very important group to have vaccinated.

At the same time, we had the issues of concerns about vaccine safety. There were all kinds of things on the internet about things that people would claim the – the vaccine did. Obstetricians are not clinicians that are often times that familiar with vaccinating their – their pregnant patients. So it was a learning curve for them. And at least some of the preliminary data suggests that that – that was an area where we may have had actually a major gain, that the coverage rates in pregnant women for H1N1 vaccine, as well as the 2009-2010 seasonal vaccine, were much higher than we've seen in – in any previous influenza season.

Barbara: Can you talk a little bit about the process that you used in educating both the medical community and the public?

Jay: Well actually you just reminded me of an important team in the task force that I forgot to mention earlier. And that’s the communications team. The communication team in the task force worked closely with the media office at CDC as well as the Joint Information Center in the Emergency Operations Center to help develop very specific messages for different target audiences.

There’s a partnership in all of the messaging, specific populations. And an important partnership was the one that was developed with ACOG, the – the obstetricians and gynecologists professional association who are very instrumental in terms of being able to reach out to their members and to provide the most recent information that we had in terms of safety of the vaccine as well as recommendations for use of the vaccine.

Barbara: Were you involved in deciding what information was publicly communicated at all?

Jay: Sometimes I was, sometimes I wasn’t. There certainly was multiple levels of decision making, and often times above the level of CDC even, the decisions about media outreach were done at the department level. There was feedback loops also from our partners in public health, particularly through ASTO, I think, was very useful. An example would be the national influenza vaccination week which normally occurs in late November, early December. We planned to schedule that for early December but out partners in the states were very concerned at that time because we still had demand for exceeding supply. And there was concern about too much of a media push encouraging people...
to seek vaccination may not be well timed at that – at that time. It
would only lead to frustration when people couldn’t find the vaccine.

So the decision was made at the Department of Health and Social
Services level, Human Services level, to delay that into early January.

Barbara: Internally within CDC, the communication processes that were in
place, did they support you in – in providing the information that you
needed? Or did you feel you needed to share information with different
organizations internally?

Jay: Well within CDC, I think the communication was fairly good. And
certainly as we got into the more intense and busier times of the
response, Tom Frieden and Ann Schuchat really became the media
spokes people for the Agency. And I think particularly Ann became
the – the person that became the spokesperson for the vaccine
program and the entire pandemic response as well as Tom. But I think
often times people will – will think of Ann when – when all this is
over.

The – the communications within CDC was pretty good. I think
sometimes there might have been different ideas at the department
level, and how well those communications occurred, I think it’s like
everything. There’s – it looks different from different positions and
there has to be communication to work out the best way forward.

I have to say, I was very impressed with the savvy of some of the
people at the department level who had ideas that I didn’t agree with
at the time, or I may not even agree with now, but they were right in
many – many instances.

Barbara: Could you give some examples?

Jay: One in particular, actually, what is one in particular that comes –
comes to mind? One in particular that – I’m still not sure I’m entirely
sure what was the right way, but having seen how some of the media
played out, I think this was wise. We had some of the early coverage
data in late November. And if we looked at the number of doses of
vaccine that had been shipped, looked at the coverage data, and made
an estimation of how much vaccine had actually been administered, it
suggested that most of the vaccine was being administered within two
weeks after shipping. That doesn’t happen with any other vaccine. To
me, that was just incredible news to go forward with to be able to say,
look, this system is working. This program is working. Even though
the supply of vaccine is much more limited than we might want, we’re
getting it out and people are getting the vaccine very quickly.

The view from HHS was these coverage rates are just horribly low.
And, you know, there’s two sides of the same coin. You know, for us it
was like we can’t give vaccine we don’t have and this is incredibly
quick. I mean people who work in the vaccine field, that actually move
a lot of vaccine, were – were pretty impressed with it. Yet, say less than 10 percent of Americans had actually been vaccinated yet was considered very bad news from the viewpoint of HHS.

So the decision was made not to go forward with making that information part of the – the media update. I’m not sure – that’s one that I’m not sure yet if it’s entirely right but as – that was about the time we were starting to get a lot of criticism about lack of availability of the vaccine. We had the issue come up with a report that vaccine had been provided to Goldman Sacs, for instance. And I think everybody pictured Scrooge McDuck getting vaccinated while the pregnant women were not getting vaccinated. And there was a lot of very, I don’t know if I’d say negative media, but a lot of concern being expressed in the media that the program was not going well.

Barbara: And there was also, I think, certain fear of the vaccine, public fear, rumor of fear? So how – how did you work to counter that?

Jay: Yeah, the – one of the – the tools that I found very useful were – was a serious of three tabletop exercises that were hosted by Forrest Sawyer, that included both members of the media and the public health community. And I participated in the first and the last one of those. The first one was in Washington in September. The second one was in New York City actually on the day we were launching the – the program. Ann and Tom attended that one. And then the third was in November in Minneapolis and I attended that one along with the Assistant Secretary for Preparedness and Response.

Those provided a great venue to have a prolonged conversation with some national – nationally prominent media people who were covering this. And to be able to make some very basic points that – I say basic in that they helped you understand the events once you understood them. For instance, to help everyone understand the concept of background rates of bad events, whether that be spontaneous abortion or Geombre Syndrome, that the vaccine wasn’t going to prevent those. So in the population, if there’s a set number of cases of Geombre that were occurring in 2008, they’re probably going to occur again in 2009 but now you’re going to have a good part of that population that’s been vaccinated and there’s going to be a tendency to attribute that disease on the individual level to vaccine.

And Mr. Sawyer, I think was very good at, you know, really pushing some of the journalists and – in the tabletop, you know, it was a woman who was vaccinated, who the very next day lost her baby, blamed it on the vaccine. He went to the, you know, a journalist from ABC and said, are you going to carry that story? And when she equivocated he said, let me ask you the question again. Are you going to carry that story? And it really provided a good opportunity to discuss the concept of bad things happen every day. And we tend to, at the individual level, associate those bad things with whatever just
preceded it. But in the case of immunization safety, we really do have to look at it at a population level.

The other important part of that communication was to be able to discuss what we were doing for monitoring safety to help people understand that we — we were looking for anything that could happen, particularly through the vaccine safety data link, through review of [inaudible 0:30:17.3] reports, as well as some new tools, new systems to be able to assess vaccine safety.

And as time went on and more and more data accumulated that the vaccine was safe, it seemed like there was a — a collective sigh of relief and a lot less concern about whether or not the vaccine would be causing harm. Certainly in August, September, even in the month of the program itself, there were a lot of concerns, a lot of things out there on the internet. I used to talk about my midnight hate mail. I got very strange messages from people about how I’d be at the new Nuremburg trial, and how could I look myself in the mirror, and now I would be burning in hell for this vaccine program. Those seemed to go away once the – the program had a couple of weeks under its belt.

Barbara: So looking back over the past year or since you’ve been — since June, in your position, how would you characterize the progression of the — of the event, of the threat, and where do we stand now?

Jay: Well, the first three months of the program was really focused on trying to get vaccine into people. And we spent much of the time before October trying to set up a system that we thought could move large quantities of vaccine as quickly as possible. And at that time, my nightmare scenario was we were going to have such a glut of vaccine that our system to move it through was going to be inadequate. And, of course, what ended up playing out is that we had very rapid succession of declines and projections of – of production followed by actual production delays such that we really had a trickle of vaccine never exceeding about 20 million doses a week being available. And so we had to adjust the system to basically push that trickle out as quickly as possible being able to receive vaccine at the depot seven days per week, for example, getting orders from the states and transmitting them to the depots and having same day shipping out for overnight delivery. Doing everything we could to get the vaccine out as quickly as possible.

Despite that, it was very hard. Basically, we could not keep up with the demand for vaccine really until the new year. I’d like to say we had about a 28 minute period where the supply and demand matched exactly. By early January, we started having questions about why did the government order so much vaccine because for the first time we actually had vaccine that was – was in depots and not being ordered.

Barbara: Is there anything that, looking back in hindsight, that you would’ve done differently?
Jay: Well there’s plenty of things that I think I might have done differently in a lot of different levels. I think some things that I probably, at least from my opinion, that it wouldn’t do differently, one is the way we did the allocation of vaccine; that the government purchased vaccine, made it available to states on a pro-rata basis so that it was as fair as possible. I think this was an interesting year because we could compare the H1N1 program to the seasonal flu program. And we heard – there was actually a shortage of seasonal flu vaccine this year. I don’t think it got as much media attention because of the H1N1 vaccine, but we had some pretty concerning reports of price gouging for seasonal vaccine. Some – I know the Connecticut Attorney General was looking into reports of charges of over a hundred dollars a dose for seasonal flu vaccine. And I think we were able to avoid that with some of the planning that went into the H1N1 program back during the – the summer.

In terms of things to do differently, I think in our structure of the task force, it would’ve been good to have had more of the task force physically together. Our distribution team was out at corporate square the whole time and most of the team was based here on the Clifton Road campus in the Emergency Operations Center. Those people were so busy, the hours they were putting in were just amazing. They could not come over here for meetings. So all of our communication was by telephone. And I think as – as good as telephone and even video conferencing is, it’s still not the same as being able to be working alongside people.

Certainly there’s communication issues internally I think we could’ve done better. We had a lot of work go into being able to communicate but I think sometimes it created some – some busy work that, you know, just an offhand comment would turn into a request that suddenly five people were working on that I’m not sure anybody really wanted the ultimate product of all that work. But I think – this is why we’ll have after action reviews. And this is really an ongoing process. In fact, even having this interview now is interesting because it’s still not over. We’re still dealing with issues related to distribution of vaccine, and moving into the new era. We have vaccine that may be expiring in the next two to three months. If it’s not administered, what do we do with it? It needs to be disposed of appropriately and even determining what are the federal regulations for disposal of Thimerosal containing vaccines is, at least on this day, proving to be a bit of a conundrum because there’s some conflicting information out there.

Barbara: Do you have any final thoughts or recommendations for people faced with similar situations in the future?

Jay: Wells, I think where we’re at now is in a situation where we want to make sure that we learn from our experience and I’m – I’m very pleased that Dr. Frieden has set that as a priority for the Agency, that
we don't lose the experience that we've had here. And I think that's
going to be important at several levels. First of all, how do we respond
to the next pandemic which could be five years from now, maybe 50
years from now; but certainly if it's soon, it's going to be important. It’s
important for how we do seasonal flu vaccine programs in the future,
particularly for 2010-2011. This is going to be a flu season unlike any
other because it'll be the first flu season after a pandemic. And if we
look at the history of 1968 and 1957, they're very different. I don't
think we really know quite what H1N1 is going to do, nor what the
2010-2011 flu season is going to look like, when is it going to – when
will we see the peak in disease? Will it even be H1N1? Will H1N1
mutate? Will we – will it be like 57 and we're going to end up having a
B year next year? We – we really don’t know.

And finally, what can we learn from this experience for any emergency
response, particularly one that involves mass administration of
countermeasures. I think there’s things that we’ve learned or – and
are learning from the 2009 pandemic response that combined with the
2001 anthrax response will make us even more able as an agency to
respond appropriately to future threats that require antibiotics, or
vaccines, or other countermeasures.

Barbara: Thank you very much. [audio ends 0:38:23.6]
Interview #5, Marty Cetron, MD
Director, Global Migration and Quarantine Division

Barbara: ...name, your position at CDC, and maybe briefly give us some background on your training and medical specialization.

Marty: Sure. My name is Marty Cetron. I’m the Director of Global Migration and Quarantine at CDC. And I’ve trained in infectious disease and internal medicine and with a focus in international health and tropical medicine. And I also trained in the EIS Program here at CDC in 1992.

Barbara: Great. And how long have you been at CDC?

Marty: Since 1992, 18 years next – next month.

Barbara: Are you currently involved in some aspect related to H1N1?

Marty: Yes, we’re still – we’re still involved in H1N1 in a number of different aspects, both the CDC related aspects. We continue to work on and focus on the community infection control issues and how to mitigate the impact particularly with respect to non-pharmaceutical interventions, social distancing, issues around schools and school dismissal, isolation of people at home while they’re ill, those issues on the national scale. Also, a member of the WHO appointed review committee that has been asked over the next several months to review the WHO’s response to the pandemic as well as its overall response to implementing the International Health Regulations over the last five years since their passage in 2005.

Barbara: Great. Can you think back to approximately a year ago or so and recall when you first heard about H1N1?

Marty: I think I first heard about H1N1, you know, early on in the process when there was – as part of the pandemic planning group at CDC for several years prior, we’ve had regular leadership meetings with Dr. Redd and the CDC director. And we were called together, I think, April 22nd perhaps the first time about the possibility of an unusual event in Mexico and certainly were meeting in those early crucial days around April 24th and 25th when the novel H1N1 virus was characterized and the initial cases were emerging.

Barbara: Do you recall whether or not that first notice struck you as something that would become a potential crisis? Or did it seem not as serious?

Marty: No, I think by the nature of the way we were convened in the conference room and by the information that Dr. Nancy Cox, Chief of the Influenza Division, was sharing, I think it struck everybody that this had the potential to be a serious situation although exactly how it would unfold, to what degree of severity, whether it would be efficiently spreading, those were all very important key questions. But I think we all appreciated the potential magnitude of recognizing a
novel virus that was causing disease in humans that also looked like it had been spreading from person to person.

Barbara: Great. And were you involved immediately and in a day-to-day response for [inaudible 0:32:05.4] organizational processes adapt to it slowly? Were you moved somewhere?

Marty: I and – and much of my division was involved right at the outset. As I indicated, we’d been part of pandemic preparedness planning and response and had worked on the national strategy, and the CDC plan, and had drilled and exercised for a number of years, and we stood up into the operational framework and the emergency operation center immediately as things unfolded in April. The kinds of areas of focus for our – our program and divisions expertise really fell into two large categories.

One was what, if any, international border responses might be appropriate, how might they be managed and to look at issues around possible containment of the threats from traveling around the globe; and the second was what specific strategies would be appropriate from a tool kit of interventions before the availability of vaccine in particular. So as I mentioned, the non-pharmaceutical interventions, in particular, the isolation of sick patients, the potential recommendations for family members – exposed family members to stay home or not, decisions around large gatherings, around schools as a place of transmission, around infection control in the home and in the community, those were the large program areas that we were responsible for as well as guidance development for international travelers and the consideration in how people would protect themselves from exposure. So those were the buckets that our program had planned for, exercised in and was called into the response to directly advise the incident commander.

Barbara: And how well do you feel that your existing plans work? Did you need to make modifications or had your plans and your exercise scenarios been sufficient to meet the challenge?

Marty: Well, I think it’s sufficient to say that – that the pandemic that emerged upon us was not necessarily the pandemic that we had anticipated with the greatest probability. However, I think it’s also fair to say that all along in our exercises and our planning, we appreciated that any pre-event planning would need to have inherent flexibility to adjust to the reality on the ground. And so, I think there were many decision points along the way in which we recognized that we would choose options based on how things were unfolding.

Now, as a specific example, I’d point out that the United States had anticipated or developed a pandemic severity index, a framework for appreciating that all – not all pandemics would be of the highly most lethal sort akin to the 1918 virus and that depending on the severity
of the virus, different types of measures may or may not be appropriate.

So to that degree, our planning was appreciative of the need to be flexible. On the other hand, I would say most people were thinking about a pandemic that would emerge in southeast Asia, that may emerge as a combination of the H5N1 virus, and not necessarily a pandemic that would emerge directly in North America or would be of this specific type of swine-derived virus. So there were certainly many curve balls that required us to adapt and learn, you know, frequently especially in the early days with great degrees of uncertainty and having to make decisions early on about which pathways or directions one might take.

Barbara: Great. And how – could you talk a little bit about that process of decision making when you encountered those areas of uncertainty?

Marty: Well, those are always great challenges with the emergent of a new thread or a new virus and that is you don’t know at the beginning how bad is it going to be, how severe, how widespread will it – what will the scope of the outbreak be geographically, in a community containable, or will it spread extensively around the globe. One doesn’t know whether the – the casualty or the fatality rates will be very high, which specific populations will prove to be the most vulnerable, will the treatments be effective. Many, many uncertainties. How bad is it is probably the biggest one. The early news from – from Mexico was of young healthy people getting quite sick, being hospitalized and dying within very short time, within a week of coming to the hospital. So those types of uncertainties are – pose, you know, really strong challenges.

I think the appreciation of communicating what we know, what we don’t know, what we’re doing to learn more and committing in our communications to telling people on a regular basis updating the information in the news is probably an important component of helping to ease the uncertainty. But often decisions have to be made within complete pictures and – and those are just the realities of dealing with public health events and crises.

Barbara: Okay, would you be able to give any participate examples of something that fell into that category where you – you were thrown one of these situations and then ultimately it was addressed or resolved?

Marty: Sure. I think probably the most poignant example of the challenging decisions that had to be made from our perspective in the scope of work that we deal with were issues around schools and school dismissal, and the potential for the schools to serve as big amplifiers of transmission. So we had early news from Mexico – Mexico City about severe disease and young health people dying, and then the first outbreaks into the United States were often returned – people
returning from vacations and spring break and heading back to schools and universities. And so, for example, the first outbreak in New York City in – in a high school in, I believe it was in Queens, posed some really difficult challenges. What should be the appropriate recommendation for whether those schools should stay open, or at what threshold they should consider dismissing students, if they should at all, recognizing the degree of disruption that that would place – that the intervention would place on the community, and balancing that against the risk of having a large scale outbreak of a very severe virus that was propagated in – in a school setting. You know, this was also made very poignant by the – the death of a school official, administrator, principal or assistant principal.

So these were very difficult decisions and I think what we saw was an appreciation of how difficult the decisions were, what CDC’s role would be in laying out the risk analysis, laying out some of the options, communicating those challenges directly to senior decision makers both inside the Agency and above – above us in the – in the thinking. And what you saw was an evolution of CDC’s recommendations around school dismissals based on learning more information about the virus. So as the outbreak progressed in New York City even among school children, it did not appear to our direct observation in New York City to be as lethal as the reports initially coming out of Mexico were. And this helped attenuate the guidance.

So early on, the very last week of April, the guidance was for schools that were having outbreaks to consider in addition to keeping sick people home, to dismissing the other school kids to prevent explosion of the outbreak and spread. But as we learned more about the – the severity and the less severe nature of this virus and those outbreaks, we dialed back that recommendation to be one where schools would not necessarily dismiss wholesale but in fact would – would shift toward sick people staying home and making individual school-based decisions within – at the local level based on the nature of the populations within those schools. So schools that had very vulnerable children living on the margin who’s respiratory systems were compromised by underlying disease, may make one decision but schools in general with health populations may make different decisions.

So CDC recommendations and guidance evolved and was flexible to the new learning that happened over the course of that first week. And so by May 5th, the school decisions and recommendations had been reversed.

Barbara: Great. And how would you evaluate the sources of information in terms of adequacy? Were you getting enough information? Where did it come from? Where you frustrated by not receiving certain kinds of information?
Marty: Well, in these kinds of settings and with a virus that spreads as fast as influenza where an incubation period might be only two days and the number of people infected could double every two days, you could never get as much information as you want, as reliable information as you want, stream or as fast as you want it. So the truth is that in these settings with this type of pathogen, Mother Nature has the hand up on us in terms of speed and in terms of the behavior of the virus is going to outpace our ability to know everything we'd like to know about it.

Even the lag time that we need to make decisions regarding whether to commit to making influenza vaccine against this strain, come with a long lag time, five to six months. And so decisions are always compressed, the making of those decisions is always compressed into that setting of uncertainty.

The kinds of sources that we – we basically tried to cover as many basis as possible and, of course, ground truthing and getting eyes, and ears, and shoe leather epidemiology in the middle of the action where things are going on are the preferred and best approaches to getting information sources rather than relying on second and third hand reports. That’s not always possible and the public health response is in the context of a whole of society, a multi-department, multi-government, multi-level response. And so information flows were coming in from many, many directions including media reports, including rumors, including stories from – from the ground at the local and community level, through state health departments, through partners in – in many different settings, through embassies in foreign governments, through our partners at ports of entry. And what I think one of the challenges and the exciting parts of – of this job is to try to filter, sift through, make sense, validate, evaluate the quality of the information from different sources, you know, what’s more credible, what’s less credible. But we sort of – when you’re hungry for data and you want it faster than its available, you – you try to take as many inputs as you can while prioritizing getting first-hand information on the ground by having boots on the ground where the action’s going on.

Barbara: Great. So thinking back and sort of taking a step back and looking at big picture over the past year, are there – are there things that you think CDC should have done, or could have done differently?

Marty: You know, overall, I’m really proud of the CDC response and that of our leadership and colleagues all the way down to every individual that was working so hard in their specific lane, filling their responsibilities. Clearly as we look back, there’s not only lessons learned in the positive sense of things that were done, I think, very well, but there’s also things that in retrospect you might look at and – and do differently. One of the things that I think that was done particularly well is the early communication that our CDC – acting CDC Director, Dr. Richard Besser, had at the time, was really
tremendous at his ability to provide factual information, particularly
to the media and the public, the right – striking the right tone and
balance between what’s known, what’s unknown, what we’re doing to
resolve the uncertainties, what people can do to empower themselves
to respond to the situation and it’s uncertainty, and communicating in
abundance over and over again on a daily basis and updating that
source of information. I think this is an area where CDC particularly
shined in terms of that response.

I think the fact that we had been planning for a pandemic for three
years or more had been exercising intensively, sometimes three or four
times a year with live fire, real life simulations, really helped us all
get comfortable in that environment and the Emergency Operation
Center. In fact, in those early days, many people commented by day
three or day four when the exercise might have ended, you know, you
pinch yourself and you say, is this real or is this just end of exercise,
time to quit and debrief. And in fact, the level of comfort of the
interactions, understanding lanes, roles and responsibilities, ways of
evaluating and patterns of responding were made much, much better
because of all our preparedness, probably in ways that we will never
fully appreciate, but to fully emphasize how important it is to go
through that preparedness, the planning, the development, even if you
modify your plans extensively, being familiar with the key decision
points, the places where you want more information, the structures in
which you’re going to share information along the cascade of partners,
the systems was – was really very, very valuable.

That said, I think there’s also – it’s also clear that some of the things
we had hoped to have in place when the pandemic would happen some
point in the future, we weren’t – we weren’t ready for, hadn’t fully
matured. So some of our alternative surveillance systems, some more
novel approaches through surveillance, using the internet, or
syndromic reporting from hospital emergency rooms, you know, we –
we probably wished we had been further along in the development of
some of those systems at the time.

Some of the cascading consequences around interventions,
community-based interventions that have both significant benefits but
also high potential for harm, all of the information about those
cascading effects were under, you know, were being evaluated and
researched. But those data weren’t fully matured by the time so we
were still left with – with significant areas of uncertainty.

We hadn’t fully resolved some of the challenges around our mask and
respirator use guidance. And, of course, those, you know, still remain
as – as difficult contentious issues. Understanding fully the – the full
spectrum of how to deliver counter measures from a strategic national
stockpile, not just when to push it to a state but also how to appreciate
the amount of time it takes on a – on a practical basis to get – to go
from pills in a pallet in a warehouse to pills on the pallet in the mouth
of a patient in a timely way to make a difference from a public health prospective are areas that, you know, we had not fully appreciated all the challenges in place in that and some of those issues didn't fully come up in our exercises.

So these were clearly areas of improvement. Logistical and legal obstacles. Although there was an effort in legal preparedness planning, some of the things that came up with emergency use authorizations, or off labeled drug uses and things like that always remain a challenge.

I think we – as much as we always understood how important communications and the partners would be and I think we – you always under estimate the amount of person, hours and time it takes to simply communicate and make sure everyone who needs to know, and wants to know, and is hungry for information is getting that level – the kind of information they want in a timely manner and adjusting the resources of the response to be sure that we pay significant tribute to the importance of that communication, can always be improved on.

That being said, you know, the emergency communication group that Marsha Vanderford led in her team in the [inaudible 0:49:43.8] was really outstanding and stellar.

And then finally, another lesson I think that was important to – to see in real time, this was one of the longest crises responses that I remember being engaged in at CDC over my 18 years. And we have done a lot of them. But even the bigger ones like SARS, you know, went on for three months and not 12 months.

And so finding the right rhythm and pace to sustain a major public health response over that duration of time, having the resources in place in terms of numbers of bodies that were needed, making sure people were spelled to get rest time, I mean, I think that was the marathon nature of this as opposed to the sprint approach to big outbreaks and crises isn’t always appreciated till you – till you get into it. And that too proved particularly challenging.

Barbara: Wow, that’s great. Wonderful. So I guess in – just in closing, I – are there – is there a particular recommendation or any other suggestions that you would – in general, that you would like to offer for the future?

Marty: Well, a couple – I think a couple highlights is don’t underestimate the huge amount of – of value that preparedness and planning, exercises, revisions and iterations, you know, they really, really make a big difference in the ability to confront a crises, even if it’s totally new or not the pandemic you planned for. And then secondly, don’t ever feel wed to the words on – in the planning book and make sure that there’s a complete open mindedness along the way for surprises for curve balls, for unintended consequences or unforeseen circumstances, and be sure to build in the flexibility to adjust your response and the wisdom to have – a way to get feedback into that response to be able to
see new patterns that did – that you might not have thought about in
the preparedness phase.

So Team B is another example of that where there’s an external group
of people that can watch the situation and help provide input to
maintaining sort of broad situational awareness and help keep us on
focus.

And then third, communicate, communicate, communicate and have
your best communication team and tools as a very, very high priority
in how you handle the response particularly in appropriately setting
expectations and forecasting steps to help relieve the anxiety that
comes with uncertainty. I think those would be the – sort of the three
big lessons from my perspective.

Barbara: Oh, that’s terrific. Absolutely great. Thank you so much.

Marty: Thanks very much Barbara. [audio ends 0:52:36.0]
Okay, my name’s Toby Crafton. And as part of the response, I was what they call the Chief of Staff which, pretty much responsible for the command staff, the operations logistic situational awareness. Most – most everything but the scientific folks that responded, I was responsible for coordinating their – their efforts. Budget was a – was a huge part of my role in managing the – ended up being close to $2 billion that we got from the federal government to respond to H1N1. So I was responsible for setting up procedures to manage the money and to make sure that we spent it efficiently.

What brought me to CDC, I started here in 2003. I retired from the Army. I was a medical service corp officer. I stationed here at Atlanta at Fort McPherson and retired from the Army. And actually went to work for myself doing – my own business and that – did that for two years, and then I found out that they were starting an operations center here at CDC. They didn’t – hadn’t had an operations center. We’d gone through the 911 response and the anthrax responses and they didn’t have a cohesive way to respond back then. They did but they didn’t have what we now know as an operations divisions and an operations center.

So they were just starting one up and I found out about it and there was a contractor that was responsible for coming in and setting that up and I actually knew him from the army. So I called him and – and got a job here to help establish the operations center. And so I did – I did that for about 2 ½ years, set up the Division of Emergency – help set up the Division of Emergency Operations. Went through SARS, Hurricane Katrina in that job. And then started looking for something different and found this job over in the influenza coordination unit which was an organization that Dr. Gerberding, the previous Director had set up when the federal government got a little bit concerned about an influenza pandemic and H5N1 was circulating throughout the world. And there was a lot of concern about another pandemic.

And so Dr. Gerberding established this entity called the influenza coordination unit when what was then the center – the Coordinating Center for Infectious Diseases. And so I started over there, and that’s where I have been working ever since when the pandemic started.

Do you remember when you first heard about H1N1?

I do. I was actually in Las Vegas. My wife and I love to go to Las Vegas and we were on vacation in Las Vegas when my Blackberry started going off quite a bit and there was email traffic about this potential influenza outbreak in Mexico, and then, of course, we found it in California. And that’s when it started. And so I was almost at the
end of my vacation out there anyway so we – we came back and that's when it started.

Barbara: Do you recall how it was presented to you and if – did it strike you as a crisis at that time?

Toby: Well, it – it – pandemic start, generally start off small and then grow to be quite large. And so there was – there was this disease outbreak in Mexico and then there was this disease that – outbreak in California, and once the two were linked, and it was determined that it was a novel virus, one that had not been found in human’s before, that it was – it was of concern at that point. And I don’t think it was – I don’t recall that everybody was in a real panic mode at that point but there was certainly a lot of concern and we were doing everything we could to determine what it was and – and how it was spreading, and obviously at that point, we knew that we were into probably the next pandemic.

Barbara: Do you recall when the EOC was activated?

Toby: It was probably officially activated, as I recall, maybe a week after all that. So, and of course, it started off small and grew to be quite large. And so at the end of – when it was all said and done here, there was probably close to 3,000 people that responded at some -- in some way to the – the pandemic, whether – it wasn’t all 3,000 people at the same time but over the course of the – the – what nine months or 10 months that we’ve been involved in it. There’ve been about 3 – a little over 3,000 people that have in some way participated in the response.

Barbara: Were you involved in the day-to-day operations for the response from the beginning?

Toby: Yes, I’ve been operating out of the – we normally are in Building 1 here on [inaudible 0:04:58.1] and we have been operating out of the EOC since I think it was around the 23rd of April, later in April, we officially activated and pretty much the entire influenza coordination unit which is about 17 full-time people, a lot of the flu division, the senior leadership, much of the NCIRD leadership moved over and started occupying space in the Operations Center. And from there, it just – it grew. What – what – what typically the Operations Center does is operate under what we call the National Incident Management System or the Incident Command structure which is a structure that is sort of dictated by the Department of Health and – Department of Homeland Security.

And so we started out using the standard response organizational structure under NIMS, the National Incident Management system. And we did that for a while for realized after a month or so that that really wasn’t working well for us and that we – we needed to reorganize the structure to better meet our needs. And so we sort of took
everything and flipped it upside down and created five task forces aligned with the major functions that we were performing in the pandemic. And those – those five task forces, one was the epi-lab and surveillance task force which was – ended up being the largest task force. And early on in the pandemic, of course, we didn’t have a vaccine but we stood up a vaccine task force because we knew that the development of a vaccine was one of our primary – what was one of our biggest priorities to – I mean that’s the best way to protect people in – in – and reduce mortality, morbidity is to get a vaccine that’s – contains the virus that you’re – you’re talking about. And so we developed a vaccine task force which grew to be quite large and ended up toward the latter part of the response was the biggest – was the biggest task force.

And then there was another one called medical care and countermeasures which dealt primarily with all of our countermeasures. In this particular response, primarily focused around anti-viral medication and protective masks, and protective equipment, and dealt a lot with infection control, guidance and that sort of thing.

Then there was another one called the community measures task force which dealt with all the non-pharmaceutical interventions that we were dealing with which they’re – they’re biggest thing in – in sort of August, September timeframe was dealing with school closures, and whether to recommend school closures, and how we were going to track school closures and everything. So they were sort of responsible for managing everything that we did that – to try to prevent transmission not using pharmaceuticals or anti-virals. So that’s four.

Then the fifth one was we – we realized that since the state and locals – it really was a response at the local level, the state health departments and local health departments were going to be responsible for implementing most of these recommendations that we were putting out that we created a state and local coordination task force to make sure that we were coordinating with the state and local health departments, and the state health officials as much as we possibly could.

So we – we sort of took the standard NIMS structure and turned it all upside down, and created these five task forces which you won’t find in NIMS at all. But it actually worked and it was – it was the way that we will in the future plan to respond to a pandemic.

Barbara: And have you institutionalized these changes somehow?

Toby: Well, we are. We’re, you know, we’re – we’re in the process of doing – we’ve done several in-progress reviews to look at where we – or what we’ve done and how we can improve things, both things that we could improve to make them effective during this response and then things that may take a little bit longer to institution that we couldn’t
probably do in this response that we’ll need to do in the inter-
pandemic period between pandemics. And so now that we – it looks
like this one may be coming to an end, it’s not over yet ‘cause we’re
still – we’re still watching for flu in the spring and in the summer
because in – in the past, we have seen spikes in those time periods,
and another wave if you will.

But – so we’re still monitoring for disease but it’s nothing like it was,
of course. We are going to institutionalize as many of these things and
we’re – we’re going to end up doing a final after action review, an after
action report, and a corrective action plan that will institutionalize a
lot of these things that we’ve learned.

But one of the things that we will definitely institutionalize is this
organizational structure.

Barbara: And – did you find your other existing plans were adequate for your
needs? Or did you make modifications to those?

Toby: No, we had to make huge modifications because I mean the
assumptions in our planning process were based around an H5N1
kind of response, and it starting somewhere else. And so basically
what happened was it was not an H5N1 and it started here, actually
in Mexico but we, you know, it came here real quick.

And what we were – what we were expecting was that it would start
somewhere in – in Asia and we would have several weeks before it
came to the United States, and that’s not what happened at all. And,
of course, most of our planning was around a real severe pandemic, an
H5N1, where the mortality rate is up around 60 percent for that virus.
And in this – this particular pandemic was not anywhere near that
severe. So we – we need to do more planning around general scenarios
and general principles as opposed to specific viruses. And a lot of our
planning in the past was done around a specific virus.

Barbara: You mentioned that there was a – a great deal of planning that went
on. Did you create a planning team or how – how were the decisions
arrived at?

Toby: Yea, that’s a good question. We started several years ago. Of course,
when it was the Bushy administration at the time, got concerned
about a pandemic because of the H5N1 virus circulating, they created
a – a couple of plans and those plans cascading down to us. And in one
of the things called the implementation plan, the implementation plan
gave all of the different departments taskings, things that we had to
do to be prepared, or what we thought we would need to do to be
prepared for a pandemic. And so a lot of our activities in 2006, 2007,
2008, were based around this implementation plan and things that –
that the federal government and the White House were telling us that
we needed to do.
So one of the things that we did at that point in time was we – we – we hired a contractor and the contractor is MPRI, is – and I don’t know what that stands for, we just call it MPRI, which are basically they – they hire a lot of retired military officers that come in and know how to do planning, that they’d been planners in the military and, of course, the military’s real good at planning. So we hired them to come in and write our – write the CDC’s pandemic influenza operations plan. And, of course, it was a good plan but it was again a lot of the assumptions were like I described earlier around H5 starting somewhere else and having time to do some of these things when in fact that didn’t occur. So nobody rushed to their bookshelf, and pulled off the plan and opened it when the thing started. 

Barbara: …oh, the existing plans. Right.

Toby: Yeah, I was talking about MPRI and our existing plans, and nobody ran to the...

Barbara: Right, so I’ll go back to existing plans that were in place and did you need to modify any of those. You mention that there were existing plans in place. Did you find you needed to modify any of those?

Toby: Yeah, it was – there was a lot of modifications required because as I said earlier, we had our – some of our basic assumptions in the early planning process was around an H5 kind of an outbreak which would’ve been much more severe starting somewhere else in the world specifically in Asia which would’ve given us several weeks to prepare and do things when in fact, that didn’t occur. And so we had – we had a nice plan but nobody ran to the bookshelf and pulled it off when the pandemic started to see what we were supposed to do. I think the – the benefit of having the plan was all of the work that went into building it, and all of the collaboration, and coordination, and the thinking, and the discussions that took place to build the plan, is really allowed us to be very flexible when we realized that the pandemic that was unfolding had nothing – didn’t look anything like the pandemic that was planned for in the plan.

There was a lot of stuff that was still valuable and we could use but there was much of it that we couldn’t use because of the way it unfolded.

Barbara: Can you recall any specific challenges that were new in this case?

Toby: Well, of course, the fact that it started here and it – it – I mean one of the things that we did early on was – was invest quite a bit of money in the planning process on developing new diagnostic tools to be able to – to determine what – what kind of flu it is and actually the – that test was used in California to determine that it was a novel strain of influenza that we were dealing with. And so that – there was a real beauty behind and we could see that our investments had really paid
off there because without that, it may have been another few weeks
before we realized what we were dealing with.

Of course, the earlier – and the benefit of it starting somewhere else is
that you get a seed strain of the virus that’s – that’s causing the
pandemic, and you can start making a vaccine. And so – and hopefully
if it starts somewhere else, you have three, four, five weeks to get the
vaccine process rolling before it gets to our borders. But in this case,
we didn’t have that time at all. So trying to – to make sure that our
surveillance systems were functioning, and that we – be able to get
information in a timely manner, that was part of the – that was a real
challenge for us was getting information in – in a timely manner.

Of course, understand that most of the responses that we’d dealt with
here at CDC are very local responses. They are in one place or two
places. I mean Katrina domestically the response was probably as – as
big as any response we’ve ever dealt with, maybe with the exception of
9-11. But, I mean, we were real, real involved in the Katrina response.
But when you think about it, that was in one place, well two places if
you count Mississippi and – but, so, it – getting information from a
small area, you’re dealing with one or two health departments, or one
state, getting information is not nearly as hard as it is dealing with 62
project areas, 50 states, territories, in – in the big cities that we deal
with.

The good news is that have they’re seasonal flu every year, not that
that’s good news, but in this case, having surveillance systems in place
that – that – that do that surveillance every year is helpful. The
problem is with our current surveillance systems that we had in place
when it started, was they don’t provide real timely information.
There’s a lag of – of several weeks and the information that we get for
seasonal flu and – and that was not adequate to maintain pace, or
keep up with the pace of the spread of the pandemic.

So that was a real challenge for us as well. What we – we did was –
there was – there are other systems out there that – that you can buy
or lease or – or not lease but you purchase the data from retail
pharmacy, companies out there that that’s what they do is generate
data like this and it’s –it’s –it’s a little more timely than the
information that we were getting. And so Dr. Frieden, when he came
in as the new Director, having come from New York, he was – he was
real interested in timely data.

And so we ended up leasing – not lease – purchasing through
contractual mechanisms some of this more timely data. Whether or
not it – in the end it made a difference is hard to say and I think the
jury’s still out on that. We are – we are looking to potentially keep
some of these more timely data systems in place for the long term for
seasonal flu to see if we can make them better for our needs in the
next pandemic.
Barbara: Could you describe the internal communication processes that you use to keep the leadership of CDC informed?

Toby: Yeah, sure. It was – it was a real challenge as you can imagine. There are – there’s a lot of moving parts. There’s a lot of different organizations that respond. And the part of the biggest problem here at CDC in my opinion is for these kinds of activities. And again, I’m going to kind of revert back to my – my past which is the military. And in the military, we do a thing called we train as we’re going to fight. And almost everything we do in the military, even day to day, has some relation to how we’re going to do things when we go to war. And even the – the reporting procedures, and the SOP’s, and how we maintain equipment, is all – so everyday we’re doing things like we’re going to do it when we go to war. And that helps build discipline, and builds communication systems, and even the structure that you’re at in peace time, typically when you go to war, that same structure just moves to the theater of operations and continues to operate.

So you’re boss’s, boss’s boss, is probably the same when you’re in Iraq that it would be if you were at Fort Bragg for example.

What we do here at CDC is that when we have a response, we don’t – we don’t operate during a response like we do day to day. So during a response, there is no NCIRD, and there’s no CCID, and there’s no ICU. It’s all – all that goes out the window and we come into this response structure that unless you are a part of the division of Emergency Operations or the Office of Public Health Preparedness and Response, you don’t do this day to day.

And so learning how to communicate, and keep people informed, and report and all that is all brand new to people when they leave Building 1 and they come over here to the EOC. And so one of the things that we did starting in, I don’t know, 2007 maybe, was we started an exercise program where we – we, and people got really tired of doing it, but Dr. Redd, our – our Director, saw the value in exercising, training as we’re going to fight. And so we would – we would do these three and four day exercises where we would pretend like and MPRI would help facilitate these exercises where we would be in the middle of a pandemic and we would have to develop our structure and all that. And, of course, the exercises were based around that – that NIM structure I told you about that didn’t work.

But learning how to communicate and to report was – what was one of the biggest benefits of doing these exercises. So to get back to your original question, communications and keep people informed is very hard. And we established a series of regular meetings where the task force leaders, and the other leadership of the response, came together on a routine basis, usually a couple of times a day, maybe three times a day, to share information and to get guidance from the director, and from the – from the incident manager, and that sort of thing.
But even with that, it – there was a lot of holes in our – in our
communication. And I honestly don’t know how to fix that. I mean, it’s
– unless we’re going to do our day-to-day jobs like we’re going to do
when we respond, or we’re going to respond like we do our day-to-day
jobs which is not very functional either, I think we’re going to have to
just do the best we can and when the – when an event occurs, we hope
that the people that are in those leadership positions have done it
before, they’ve been through this one, or they’ve been through the
exercise program. And so going forward, our exercise program, which
we’re going to continue for pan flu, probably not going to do one this
year but we’ll probably start up again in 2011, we will do those
exercises based on the task force structure that I talked about and not
the NIM structure. So we’ll at least have a good starting point to – to
help with that.

But – and every day, we were kind of modifying things. If something
wasn’t working, we changed it. And so people have to be – have to be
open to change and to – and to – I think the other thing is – is the
culture at CDC is one where people want to have hundred present
solution. They want to have I exact. They want it to be perfect and
again, from my previous experience, it – in a response, it’s very seldom
is it going to be 100 percent and you have got to be comfortable
making decisions with less than a hundred percent of the information,
and knowing – knowing that it may not be exactly 100 percent correct.

And early on, there was a lot of apprehension of doing that. And then
as things go on, and went on, I think people became a little more
comfortable with operating in that zone where they weren’t 100
percent sure that they had the right answer.

Barbara: So in dealing with this ambiguity, what – did you have any particular
strategies you employed to increase the level of comfort?

Toby: Not really. No. We just – we just – we forced people to – to make
decisions. And I think, you know, HHS was more involved in this
response than any I’ve ever seen and I’ve been through several here at
CDC starting with SARS. And HHS’s involvement in this was
unprecedented which, I don’t think was a bad thing. and every day the
Chief of Staff at HHS had a teleconference with our incident manager,
often times the CDC Director and other senior leadership, the Chief
Health Officer, to talk about strategy and to try to make decisions
about going ahead. And so I think that helps somewhat. But it’s still
cultural, it’s still engrained that, you know, we’ve talked about
physicians earlier and, you know, physicians like to have, for the most
part, scientists like to be exact. And – and response is not an exact
science. And our surveillance systems don’t provide exact information.

And so, its – it is by nature, ambiguous and it’s just – I think the more
people were doing it, the more comfortable they got with it but they’re
still not totally comfortable.
Barbara: You mentioned earlier challenges you encountered with appropriating the funding that you received. Could you elaborate on that?

Toby: Yeah, it – it was – that was a real challenge. We – when the pandemic first started, we had carry over funds that we had – in 2006, congress – in 2006 and 2007, congress appropriated about $470 million to CDC through a supplemental appropriation that was no year funds that we could carry over from year to year to help us continue to prepare for a pandemic. And then in 2008, we got an annual appropriation in – instead of the supplemental, we got an annual appropriation and we still are getting an annual. It’s part of the CDC’s budget authority now aligned for pandemic influenza.

But that carry over money, we used and were using, and had some carry over in 2009, when – and so when the pandemic started in April, we still had carry over funds that were available. And we didn’t have any money – congress had not appropriated any money yet for the – for the pandemic. So the only money CDC really had to start our response was this carry over funds. And so we – we used a lot of our carry over money that we had from 2006, 2007, initially to start the response.

And mainly, early on, a lot of that was travel and deployments of teams. So we did a lot of that. We did a lot of buying of equipment for the labs ‘cause they were – their work load significantly increased. And then congress appropriated money for – for the response and CDC, when it was all said and done, got about $671 million out of that appropriation. It was about $2 billion total for CDC. A lot of that, most of that, went out through a new grant to the states called the Public Health Emergency Response Grant, or cooperative agreement. There is – the – Well, PHPR manages a huge cooperative agreement now it’s called the Public Health Emergency Preparedness Cooperative Agreement and they send out millions of dollars to the states every year.

And so we got money to go out to the states and locals to prepare for the vaccine campaign primarily. But so imagine this influx of, you know, close to $2 billion coming in – in a matter of a few months. It came in in – not all at once but several different segments. But when we got the first segment, it was about $200 million. And we realized that there was no real procedures in place in the Operations Center to – to manage that kind of money.

And so what we did basically was identify the activity areas to epi and surveillance, vaccine, medical care and countermeasures, sort of align with the – we didn’t have the task forces then but we created these budget categories that actually ended up – the task forces sort of aligned to those. And I’d like to say we planned it that way but we didn’t.
So we created these budget activities and each one of the people that were responsible for these sort of activity areas, told us that they needed to – to respond in terms of projects, and how much money it was going to take. And then we just – we got all of their information together, and created a purchase request process where they would have to – and we allocated a certain amount of this $2 million to each one of those project areas. And then there were certain people in those project areas that could approve the use of those funds. And we just started processing these purchase requests through the Operations Center.

So we created a whole new infrastructure that had never been there before basically to manage all of this money. And we’re still – we still have some money that we’re figuring – trying to – actually this week, we’re – we’re working with the – and the hard part now is we’re working with task forces then, but now that the response is kind of tapering off, we’ve got a start now working with the programs not – ‘cause the task forces are not permanent organizations.

And so we’re now having to take the money that we have left and some money that we haven’t allocated and start working with the programs to allocate the remaining money. So it’s – it’s been a huge challenge and the concern that I have quite frankly is going forward in the next year or two when the IG, and the GAO, and others come in to do audits that we’re able to show where all this money went. And I’m – I’m confident that we are – are probably 98, 99 percent, we can – we can show what – where it went. So we got a real good trail of what we spent it on. Probably some of the things, you look back, probably we shouldn’t have spent money on. But at the time, in the middle of the response, you didn’t have a lot of time to think, you know, long term, is this really the best long term kind of investment when we could’ve been doing this, but instead we did that. But considering the time frame, and what was going on around us, and the fact that we just got all this money sort of appropriated and dumped on us, if you will, at one time, I thought we did a pretty good job of managing it.

**Barbara:** Do you, in looking back over the past year, have any specific recommendations you’d like to make for future challenges like this?

**Toby:** Yeah. I mean, well one thing we got to do is – it was so – it was so rewarding actually to see, you know, ‘cause again, I – and I hope I don’t bore everybody, but going back to my previous life, training was extremely important. I mean you cannot go to war unless you were trained to do so. And so instituting these exercise programs was probably the best thing we ever did. And it was fun to watch people from CDC who don’t under – who didn’t at the time understand exercises and the importance and they would come to these exercises kicking, and screaming, and complaining, and all mad, and huffy, like I don’t have time to do this. This is crazy. And – but then, after about the first month or two of the response, the pandemic, you hear them
say, boy it’s a good thing we did those exercises ‘cause it really, really helped.

So I think, to – to train and to prepare yourself for the unknown, and for – what you think maybe – now again, the exercises we did were against a completely different scenario, but it didn’t matter. It was – it’s the processes, and the procedures, and the things that you learn, and how you interact and communicate during those exercises that I think was real important.

And it doesn’t matter what the disease is. It could be any disease that we’re responding to but the – the exercise program, and the federal government’s picked up on this, and they’re doing the same thing. There are those national level exercises and all that, so exercising I think is critical and I say we’re going to continue doing that for pandemic preparedness even though we’ve just gone through one. There’s a lot of things that we’re going to do different and we learned that we’ve got to continue to do.

And a lot of these procedures, staffing was a huge problem. Getting people, you know, you never – CDC never has a problem getting people to respond to an event, or to a catastrophe for about a month. And then after a month, people like – I got another job I have to do, and you know, my boss is telling me I’ve got these reports to do, or that I’ve got this to do, or that to do. And so getting people to dedicate two, or three, or four months of their time to come over to respond, if it’s not their job, you know, the flu division, flu is their job. So none of them are – are – are, you know, saying anything about being here. But folks that are in chronic or in some other area, HIV or anything, that this flu is not their job, to get them to give up what they’re doing for three or four months, is really asking a lot.

But you can’t respond to something for a year without those people coming and doing that. And one of the – the other thing that we learned early on was we were having people rotate for two weeks. And to get an epidemiologist or somebody that works in HIV or in chronic to come in, they may be a totally capable epidemiologist, but they don’t understand flu. And so to get up to speed with what’s been going on, may take a week, 10 days, and then they’re rotating out because you’ve got them in for two weeks. And so we – we learned early on that – and that’s pretty typical for most responses, two weeks. That unless you got them for two months, they’re – you’re wasting their time and our time as well: ‘cause by the time they get up to speed to what’s going on, they’re –they’re rotating off again unless they’re there for a while.

So we’ve had – we’ve had people that have been here for the whole nine months, 10 months, now I guess it is, that weren’t part of flu, that came over on a detail and they’re bosses just said, this is important, go do it. Other bosses said, you can go for two weeks but you can’t go for longer. So we’ve got to figure that out at CDC. We just
have to. I mean we’re going through the Haiti response right now. They’re having the same – exact same problems with staffing that we had in H1N1.

The other thing we did was we created a staffing team, a staffing task force, brought in folks from HRC to staff that and we did a term hires, FTE hires, and we brought in PGO. PGO’s always a part of the responses and they’re wonderful, but they – we brought in folks to help us figure out how to bring in staff on contracts as well to help add some continuity to the response because there was – there was all this turnover that was just killing us. So I think that’s important as well.

Barbara: Great. Thank you very much. [audio ends 0:34:53.9]
Lyn: My name is Lyn Finelli. I work in the Influenza Division in the epidemiology branch and I am the team lead for surveillance and outbreak response.

Barbara: Could you tell us a little bit about your background at CDC? How long you’ve been here?

Lyn: Sure. I’ve worked with CDC for 19 years. I was first located in a state health department as an assistant to the state epidemiologist. And then for two years, I was a state epidemiologist in the State of New Jersey. I came down to CDC in 1997 and worked in the division of sexually transmitted diseases, spent about two years there and then worked in the division of viral hepatitis for six years, and I’ve worked in influenza for three years.

Barbara: Are you currently involved in some aspect of the H1N1 response?

Lyn: Yes, I am the lead for epidemiology and surveillance for the response.

Barbara: Do you recall when you first heard about H1N1?

Lyn: I first heard about H1N1, I was in my office on April 15th and one of my colleagues came into the room and said that she’d just gotten a call from the laboratory saying that they had a novel Influenza A isolate, and that it was an H1. We didn’t know the [inaudible 0:01:17.2] type. She thought that maybe we should do an investigation.

Now, a little bit of background on this, in 2007, 2008, the Council of State and Territorial Epidemiologists made novel Influenza A virus infection, a nationally reportable condition. So since that time, we’d had sporadic reports of novel Influenza A infection. They were all swine, at that time, and up until that time, there were 13 cases and we’d done fairly routine investigations. Almost all of the people who had novel Influenza A H1N1 infection had contact with swine.

And so on that first day, we thought this would be a typical swine flu investigation.

So I gathered around my team and we decided to call California and find out about the case.

Barbara: Did it strike you at that time that it might be a potential crisis or were you thinking it was more routine?

Lyn: Absolutely not. I mean I had just done, over the last two or three years, 13 of these investigations and we were almost always able to link the case with swine exposure. And so I thought that it was going to be a routine swine flu investigation. They’re all fine, and they’re all interesting, so I was looking forward to it. But I didn’t – it was not
within the realm of possibility to me at that moment that it would be
as unusual as it turned out to be. It wasn’t until two days later, on
Friday the 17th, that I realized that this might be very different from
what we’d experienced before.

Barbara: And what brought you to that realization?

Lyn: On Friday the 17th, I myself got a call from the laboratory saying that
they had a second novel Influenza A virus infection case from a county
which is next to adjacent San Diego County where the first case was
from. The second case was from Imperial County. Like the first case, it
was a child and we – we decided to, at that moment, muster as many
people as we could in California to talk to them about the two cases
and likely exposures. It still – I still thought since it was two children
and most of these cases had been children, I still thought that it was
likely that they had a common link or swine exposure. But we – we
were very concerned at that point, not because – not because both kids
were from California, but because they were from California but from
different counties. Our alarm was raised just a little bit.

Barbara: Can you recall the activities and what took place in the next few days?

Lyn: Yeah, in the next few hours, I – I called my Branch Chief, Joe Bresee,
and he came down. I called my husband, David Swerdlow, he was then
the Associate Director of Science in our center, and asked them all to
join the conference call with California. I thought that as many good
heads as we could get in the room was important because this seemed
to be a pretty unusual event. We arranged a conference call with
California and it took place about 9 PM on the 17th. They had all of
their important folks on the call, and they had San Diego County and
Imperial County on the call with them. And so we looked back and
tried to figure out where both of these children might have been
exposed. We had already interviewed the family of the first case and –
and there was no recollection of swine exposure in that first little boy.
This is often sometimes the case where people need to be prompted
about events that took place in their environs in order to remember
the swine exposure.

The second – the second little girl was not interviewed yet. And so the
weekend, over the weekend on Saturday and Sunday, we had a series
of conference calls, both days, many, many hours, and we worked
directly with the nurse who went to the family’s houses of those two
cases. Now one red herring which was not a red herring at first ‘cause
we didn’t know what happened, but in – in the first part of the
investigation of the little girl, she had gone to a county fair and she
had not – not had direct contact with swine but visited the swine area.

And so we thought, aha, this is it. We just have to find out how the
little boy has contact with the Imperial County Fair. Did he go
himself? Did a classmate go? And so we really sat down – we sat down
the road at that point of trying to dig up as much swine exposure on
these two kids as possible. By Sunday night, both parents had been interviewed many times and we just could not link the San Diego boy to any swine exposure. We were looking forward to interviewing the kids in his classroom and we did find, on Monday, that they had visited the zoo and there was a pig at the zoo which they had some contact with. So we, again, were down the path of looking for swine exposure among these two kids.

By Tuesday or Wednesday, let’s see that would be the 21st or 22nd, it looked like we weren’t going to be able to connect him with swine. And that was right about the time that we heard about two cases in Texas. When we heard about these two cases in Texas on Tuesday or Wednesday, I was really alarmed. I – I was willing to think that maybe we could have a source of this first little girl in Imperial County with contact with swine, and the boy with no contact – I was willing to accept that there might have been somebody in his classroom that’d visited the fair and that he’d gotten sick from them. But once I heard about the two cases in Texas, I was very concerned.

One of the reasons that I was so concerned was I made the connection between these Texas cases, these California cases and rumors from Mexico that I’d been hearing for the last three weeks. About three weeks before this event, about the first of April or last week of March, we started to hear about outbreaks, small outbreaks in villages and small towns of severe respiratory disease where some people were hospitalized, and we had a couple of conference calls within CDC and with our colleagues in Mexico to figure out what were – what the – what the origin of these outbreaks were. The influenza division along with the respiratory diseases branch and the division of viral diseases has an unknown respiratory outbreak working group. And so when we hear about respiratory outbreaks and there’s no obvious pathogen, then we do a joint investigation.

So we’d had a number of working group conference calls over the last couple of weeks, and then we’d also heard rumors of a large outbreak in Veracruz and smaller outbreaks in adjacent places or nearby places.

Now when we talked to Mexico and talked amongst ourselves, there always seemed to be some sort of reason for these outbreaks. In one case, they said they did viral culture and got some Influenza B viruses; in another case, they said that they had adenovirus infection; and in another case, they said there was RSV. But – and – and so initially when I heard about the cases in San Diego and Imperial County, I didn’t connect them to Mexico.

But here I was, on Tuesday or Wednesday, hearing about cases in Texas also adjacent to Mexico, and hearing about cases in San Diego also adjacent to Mexico with many people who go back and forth across the border in both places. And I – I became really alarmed.
At that point, you know, we were meeting as a group every day, meeting with our Branch Chief, Joe Bresee, and the people in our division. At that point, I would not say that we thought that it would be widespread. I think we thought that this was potentially a big outbreak but we weren't quite sure whether it was the pandemic or not. And in fact, for about a week after that, we – we very sincerely asked each other many times during the day, do you think this could be the pandemic? We – we really didn't know and one kind of ironic thing was we did five pan influenza planning exercises, functional exercises in the EOC and we all hated them. And although we recognized the value of them, especially after the third or fourth one where we were started to pull ourselves together, this event and the way that it unfolded just reminded us all so much of those pan flu exercises that it started to creep into our consciousness that this in fact could be the pandemic.

And then I think on Wednesday – Wednesday the 22nd, we heard about a potential outbreak in New York City. And then it seemed like this was extremely widespread. And so we were – we had had – we had submitted an IHR on Friday night the 17th and – to let WHO and [inaudible 0:10:42.8] know. And so we started to engage with our international colleagues because it was too much of a coincidence that we'd heard about the rumors in Mexico, that we'd had cases adjacent to Mexico, and that the outbreak may have been initiated in New York City from kids who had traveled to Mexico during their spring break.

So at this point on Wednesday or so, the pieces started to fit together. In addition, Mexico was still having outbreaks and they had sent some viruses for identification, for characterization, to Canada. And we knew this on Wednesday night. And we – we knew that we would know the results on Friday, and the results were going to be kept quiet until they were absolutely certain. But we were very much looking forward to the characterization of those viruses.

We, at this point, I asked – I have a number of EIS officers in my group and I asked Fatimah Dawood who's now a second year and was a first year officer and an extremely stellar one, to write – start to write up these cases for the New England Journal of Medicine, and that we would help her but we wanted to publish these cases as quickly as possible. I also asked another EIS officer of mine, [inaudible 0:12:03.3], to write up for the same companion – companion journal – companion piece for the journal, an article about the 13 sporadic cases that we'd seen and the degrees of person-to-person transmission that we saw among those cases. And so we got started on our academic work.

By this time, it was Thursday. We decided that Fatimah should do a late breaker at the EIS conference which was taking place this week, the first week of the outbreak, and that she would make a public announcement about the cases. And so we worked all night with her
on Thursday night to prepare her presentation, myself and Tony Fiore, another person in my group. And she announced to the world about the investigation about the cases in Texas and New York and in San Diego and in Imperial County. And in one – and in one hour later, at 12 noon our time, Mexico made the announcement that they had H1N1 virus identified from those outbreaks in Mexico. And so we knew that if not a pandemic, this was a multi-country outbreak.

Barbara: So as it was becoming clear to you that this may be, in fact, a pandemic event, what were the key decisions that you felt needed to be made at this time?

Lyn: Well, during the week, that week of the 20th, we decided to send a couple of teams out to the field. So we sent a team to San Diego and a team to Imperial County of EIS officers and some supervisors to oversee the investigations. When we sent those teams, we were still looking for a swine connection. Then when we heard about the Texas cases, we decided to dispatch a team to Texas which we did. And in addition, the – another sort of interesting and complicating factor was the little boy in San Diego had traveled to Texas himself, to a different city, while he was ill on an airplane. And once we knew that we were dealing with something that looked fairly wide spread, we worked with our colleagues in Global Migration and Quarantine to do a trace back to the plane and to the passengers of the plane to make sure that no staff or passengers were ill post-flight with that little boy who was still ill.

And so we – we set up some field investigations. We also set up but did not execute right away an investigation to the New York City Department of Health to look into the Queens school outbreak. And we – we really needed to do something about surveillance. So we, over that week on – on Thursday, let’s see, like the 23rd or 24th, I forget which – what the date was, we started to work in the EOC and started to set up some teams there. And one of our ideas which was something that we did during the pandemic exercises, was have this thing called a regional team. And the regional team consists of 10 people who are each assigned five states and who call the states once or twice a day, or less than that if necessary, to get situation awareness.

And so we stood up the regional team on Thursday so that we could get reconnaissance from states. We called all the state laboratories and asked them to immediately type and subtype their viruses, and if they had an unsubtypable virus, to send it to CDC right away.

We initiated, although it took a little bit longer than this, initiated daily surveillance from our influenza like illness network providers. We have about 4,000 providers in the U.S. who provide weekly data to us and we reached out to them to see if they could provide daily data. We also reached out to laboratories to see if they could provide daily data from their laboratories.
In addition, we reached out to our 122 cities vital statistic offices and asked them for daily data as well. And so, we tried to tune up and enhance and make more timely all of our surveillance systems so we'd have the best information that we could get as quickly as we could get it.

By – all during this week, I was attending the EIS conference while talking on cell phones with my teams. And we were in the process of recruiting new fellows for the following year so I felt like it was really essential that I be there. On Saturday, the day of interviews of the fellows, you can imagine that our positions got a lot of interest because the rumor was about – about a potential pandemic. We had a lot, a lot of people to interview and I – I believe it was on that day, on Saturday, that we found out about cases in Kansas.

So by the end of the first week or week and a half, we knew about cases in six states. We had 10 confirmed cases and we had ongoing evaluations in six more states. So it just unfolded very quickly. Most people in the early days of case identification had some connection with Mexico and there was not yet wide spread outbreaks. It took about another week for that to happen.

Barbara: In terms of the plans that you had in place within your division to respond to such an event, did those meet this challenge or did you need to make modifications?

Lyn: As I said before, we had done five pandemic influenza exercises and I think we sort of invoked that model and I think that model was 80% good. The – the area in which we didn’t do so well was information technology. We did not have a way to convey information about cases from states to CDC electronically. And we only had fax and telephone, and we could attach an attachment of a case – scanned case report to an email, but we didn’t have an electronic conduit. We’d been trying to work that out for a couple of years with our IT colleagues but it just never really came to fruition. But it was a huge gap.

So, my husband, David Swerdlow, had worked for almost 20 years in food borne diseases and on Saturday and Sunday he brought over a team from foodborne and we set up an FTP site where we could convey electronic data from states in the form of spreadsheets transmitted that way. And that was our first line list to find out about cases. And so he brought over about six or seven people who stayed with us for about two weeks to make sure that that way, that conveyance of data, was working.

In addition, the following Monday, the 27th or so, we reached out to our IT colleagues here in the former NICV and they started developing web based applications for us to convey our information. Those applications weren’t up and running until May 6th. So from the 20s of April until May 6th, we used the – the system that foodborne had set up for us.
Barbara: Did you find you needed to make staffing or other organizational changes within your own division?

Lyn: Well, you know, I was so absolutely preoccupied with my team that I – I don’t know what went on in the Division as a whole, but I normally supervise about 30 people. And my team grew to about a hundred in the first week and to 170 by the second or third week. And so I had to make a cohesive organizational unit out of those 170 people with team leads for different discrete teams. And so we, you know, this – this is not a very interesting part of what we do but we’ve really had to work very hard to carve out teams with specific responsibilities, find people in the Agency to lead those teams and to supervise the folks under them. And so we went from 30 to 170 pretty quickly.

Barbara: In terms of internal communication processes, what means did you use to keep CDC informed of what you were doing?

Lyn: Well, from the 24th of April, which I think was Wednesday or Thursday, I did my first director briefing and I briefed the director every single day, seven days a week, for about six weeks when the director briefing went to three days a week and stayed at three days a week until two weeks ago. And so, I – I personally prepared and briefed the CDC Director over a hundred times over the last 10 months.

Barbara: And were there any other communications internally coming out of your office other than those briefings?

Lyn: There were a million, yeah. There – there were daily situation reports. There were slide sets that came out of my office. You know, my office is surveillance. And so almost all of the data from this outbreak came from my group, came from this group of 170 people. And we did – we did this report called the POTUS report. It’s the President of the United States report where by 9 PM, we sent to HHS a report for the President to read upon arising the morning. The last POTUS report is tomorrow and we’re very glad to be finished with that.

We did a number of contemporaneous briefings to HHS and inside the agency. And we received internally about 15 data requests per day and externally about 30. So we did have to prioritize and triage those requests but the team was very busy creating packages of information both for, you know, internal CDC leadership, HHS leadership, DAH leadership and the media.

Barbara: In those processes, were there any particular challenges that you would like to highlight?

Lyn: I think for me, a necessary but very, very difficult challenge was the 24 hour news cycle. We have surveillance systems which are good and they have a lot of people who submit data to them. The sample sizes are very good. But daily data are very difficult. And the signal-to-noise ratio needs to be taken into account because you can get information
and misinterpret it if it's just a single snapshot, or the sample is not so
large, or biased in a way. And we were, you know, Rich Besser when
he was Director, was required to do a news briefing every day at, I
think, one o'clock. And so we would give the director briefing in the
morning and then from 11 to 12, or 10 to 12, go through all the data
and try and think about what was safe and stable to present for Rich's
press conference.

And that was extremely challenging. I think had there been a press
conference once a week, we would've had this really neat tied up
package, this very stable information. But that – that was particularly
challenging to create a stable package, new information every single
day without making a mistake.

Barbara: Did you have any involvement in clearing information that would then
be presented publicly?

Lyn: Well, I – I created and cleared information for the – the Director's
press conferences every day, if that counts.

Barbara: Could you talk a little bit about the process you used in determining
what information should be released?

Lyn: It was no structured process. My day consisted of going to meetings
most of the day, having the data cranked – we – we were running
three shifts of the team. So having the data cranked out on evenings, I
would get a look at the data about 10 PM and I would work until
about 12:30 AM packaging that for both accuracy and for just validity.
And then that would go into the director briefing the next day where
the data would be discussed, and then we would decide, as a group,
what we should present at the press conference.

Barbara: Did you feel that you were getting sufficient information to adequately
inform the public?

Lyn: I think so. I think, you know, not – not because of any of my good work
but because of the good work of people who came before me in
surveillance and especially Lynette Brammer who was is the Domestic
Surveillance Chief and the architect of flu surveillance as it is at CDC.
We had very good systems and we, for what they were worth, they
performed beautifully and I feel – I feel really good about the
information that was presented and I feel like we didn't make too
many mistakes.

Barbara: In thinking back over your involvement over the past year, are there
areas where you felt the organization responded particularly well?

Lyn: I think we did a really nice job with communications in general. I
think much to the credit of the flu communications team, Erin Burns,
Doug Jordan, Nicole Richardson, they were – and Carolyn Bridges
who's the ADS in our group, they were busy the entire day, and
evening and night crafting messages. And I think the work that they
did was really superb and I think that one of the reasons that the
Agency looked so good during the response was because they have flu subject matter expertise, they'd been working with flu for many years, some of them, Erin I think, over 10 years and they knew how to take the stuff that my team – the data and the technical information that my team cranked out and make it into a digestible message for the public.

And so I think communications wise, we did really well. I think CDC as an Agency did extremely well in terms of – and this again is a technical thing and maybe not so interesting for this interview or for the public, but we did particularly well defining the epidemiologic parameters of the outbreak very early on. We identified and defined the reproductive rate. We identified the attack rate both household and community. We knew what the generation time was and the incubation period really early on from those teams that we sent out to the field. And I think CDC as an Agency made a real – a really – a really excellent scientific contribution through defining these epi-perimeters by, you know, our New England Journal article was published on May 5th and had 600 cases contained; and in that article were these epi-perimeters defined.

So if you just count the days from April 15th when I got the first call, it was only about 20 days before – between the first call and the publication of our New England Journal paper which really described the outbreak in a very expansive way given the time.

Barbara: Do you feel or can you think of any particular areas where you might have wanted things to be done differently?

Lyn: Yeah. I mean, many; and some remediable and some not so remediable. We in the influenza division, despite the fact that we have a fairly big division and a really nice and very senior epidemiology branch. Our bench was not deep enough. And we worked way too hard. We needed some relief and one of the things that the agency did not provide was support for that. You know, the H1N1 response was an – “an” Agency priority, not “the” Agency priority. And it’s up to people like the Director of the Agency to decide that. But that meant that all of the people that came to help us on our teams were there because they were volunteers and they weren’t bound to us.

And we, at times, had extremely spotty coverage and many of us slept less than five hours a night for the first four weeks because we just didn’t have the relief that we needed to go home.

Barbara: Do you have any final thoughts or recommendations you’d like to make for anyone who might find themselves in a similar situation?

Lyn: Well, I think one thing that the agency could do to get ready for the next emergency response was work – is to work very hard on the information technology piece. I think there’s a way for us to create a shell data transmission message and that specifics of the pathogen or whatever could be stick in at the end. But for us as an Agency not to
have a way to convey electronic data, in the beginning of the response was not good. But I think we have a breather and we can create that and I think there can be some sort of generic IT piece created.

I also think that the Agency needs to think carefully about staffing this kind of response. In the beginning, people were here as volunteers because of their own goodwill. They sometimes showed up, they sometimes didn't and they left us in the main influenza division without help some of the time. And I think the Agency needs to come out with a strong message to volunteers that they have to come, and they have to be there for a certain number of weeks which is fixed, and they have to prioritize making sure that people who are in the core area of the response get the kind of rest that they need because I think many of us were really very exhausted.

Barbara: Great, thank you very much.

Lyn: You’re welcome.[audio ends]
My name is Dan Jernigan. I'm the Deputy Director of the Influenza Division at CDC.

And can you tell us a little bit about yourself, your background, what brought you to CDC, how long you've been here?

I trained as an internist in internal medicine in 1991 to 1994. And then came from internal medicine residency training to the Epidemic Intelligence Service, the EIS, in 1994 in the respiratory diseases group at CDC from 94 to 96. And then after that, worked in the Office of Surveillance on emerging infectious disease surveillance in Seattle for three years; and then came back, worked in that same office in the National Center for Infectious Diseases; and then transferred to the Division of Healthcare Quality Promotion which is hospital infections. And then after that, worked for awhile in the NCID Office of the Director as the Associate Director for Science, and then took the Deputy Director position in 2006 in the influenza division.

So clearly you are involved in H1N1.

Uh huh (yes).

Do you remember, can you recall when you first heard about H1N1?

About the novel H1N1...

...that we identified? It turns out actually that a part of our pandemic planning was to develop better diagnostic tests. And so those were in two sort of ends of the testing spectrum. They were the – the side that was the surveillance side where referenced laboratories would be testing with the more complex PCR type tests. And for that, we helped develop a new test for that.

The other end of the spectrum is at the clinician's side at the point of care. And so working with HHS, we actually had a diagnostic test that was a – an experimental device that was in clinical trials in San Diego. And so this device by a company called Meso Scale, was able to detect Influenza A, Influenza B, the subtypes Seasonal A H1 and Seasonal A H3, and also two types of – of H5.

And so this device was actually in use in a clinical trial in San Diego County and picked up what's called an unsubtypable. And that unsubtypable means that if this device found it was Influenza A but it didn't match any of the seasonal subtypes, and so it was an automatic flag for further testing.
And so the further testing eventually landed that specimen at CDC where we found out that it was this novel swine origin Influenza A. And so that device actually, by chance, really happened to pick up the first recognized case.

The second case that was picked up was also in – in southern California that was picked up through a CDC surveillance system called the Border Infectious Disease Surveillance system where we were working with the naval health research center for doing testing and so that one was picked up the same way, an unsubtypable result.

And so within a couple of days, we had two cases from two different place: one picked up by chance with this experimental device; the other picked up because of a CDC surveillance system. And so those really pointed to a problem with swine flu. And up unto that point, whenever we had swine flu cases, we looked very closely for swine exposure. And so for both of these cases, we looked very hard and could not find any exposures.

The case in Imperial County which is just on the other side of – of Mexico, had gone to the Imperial County Fair where there were lots of swine but the swine had all been slaughtered and so we weren’t able to do any testing of those – of those pigs to see if by chance they were carrying the same of the H1N1.

The other case from San Diego County, the 10 year old boy, had been to the San Diego Zoo where he had actually had some contact with a pig that was on a leash that was led around the San Diego Zoo so people could pet it. And so that one we actually were able to swab. We had to get legal consent to do that. The – I guess the pig had to give consent but we were able to swab that pig but only after they had anesthetized it. And a nasal [inaudible 0:04:24.5] swab of that pig turned out to not have the H1N1.

So we ended up not finding any link with the swine. This was all within several days of the first recognition but very soon after the determination that this was the same set of sequences, the gene sequences matched some sequences that had been done from patients in Mexico where there was a very different characteristic of – of influenza disease down there. And so that – once that happened and the whole complete character of it changed, and luckily there were a lot of things in place that allowed us to move very rapidly. But I think we were lucky to be able to pick up those two cases when we did and give us that amount of time to get prepared, and to get things going in terms of assisting with a lot of diagnostics.

Barbara: So in this earlier period, did this strike you as a potential crises?

Dan: With the first two cases, we had had over the five years or so, prior or so cases of H1N1 where there were people that were picked up that had the swine type H1 or other types of swine flu that did not have
any further transmission. So you might have one or two family
members, but not any forward transmission. And so with the first two
cases when we started looking, we did not see any other unsubtypable
Influenza A’s in the community; we didn’t see a lot of problems with
increased ICU visits, or hospitalizations, or deaths associated with the
flu. And so things did not point toward the type of pandemic that
everyone had been preparing for and that was a very severe pandemic.

And so we were assured, reassured in terms of the – the kind of
severity we were seeing or not seeing, but once we saw the connection
with Mexico, we had to figure out exactly what was going on ’cause we
– we were seeing something very different than what they were
seeing.

But early on, we had been – we had learned through a lot of
experiences with the Avian Flu and with some other swine flues that
we’d had some media coverage of, but it was important to get out there
very early. And so we prepared the information in an MMWR very
quickly. Tom Skinner from the Division of Media Relations was very
instrumental in making sure that we were quick to put out something
so that people could hear about it; ’cause his concern and our concern
was that we don’t want to appear to have information that we’re
withholding from the community if there’s something that they can do
about it.

And so we felt that it would be important to find other cases by
announcing it, but also, it would allow clinicians to know that perhaps
they should treat different or test more in order to find these cases. So
even before we knew any connection with Mexico or the – even the
potential that there was a pandemic that had emerged, we had
already put that information out through an MMWR, we had a press
conference, we were available for press availability, but then also, we
put onto the web the sequences of the genes. And so that was done
very early not only because we wanted to be transparent, but also
because there was a growing movement, if you want to call that,
among a number of countries to think of influenza viruses as
intellectual property.

And so by putting the sequences out there, we essentially made the
statement that we’re not going to try and make money off this, we’re
not going to try and say that this is CDC’s material. We wanted to be
sure that everyone had as much access to the sequences and to the
subsequent vaccines, and drugs, and things that would be made from
knowing that information. So that was a trend that was started very
early in terms of transparency, getting information out, translating it
to the community, and giving the tools to the community so that they
could make appropriate prevention measures.

Barbara: Can you talk a little bit about the process involved in determining
what information to release to the public?
Dan: Yeah, I think overall we wanted to make sure that the information that went out was grounded. And so it was grounded in evidence that if we didn’t know the information or, excuse me, didn’t know the certainty of the information, that we communicated that. So we did not wait until we had everything figured out before we would say it. We also wanted to make sure that the way we said it was hitting at least two audiences, one, the clinical and public health audience that needed to have it at a certain technical level, but also the general community. And so for that, there was lots of work with plain language and other approaches to make sure that people – the right people were getting the right information to have action with.

And so we always wanted to make sure that what we provided was something they could use to prevent illness themselves or to act on. But in general, it was the transparency, getting out very quickly, and making sure that we were presenting it in a way that they could understand our concern about it, but not in a way that would induce panic unnecessarily, but we did want people to understand the potential problems.

One other thing that I think was very helpful that Dr. Schuchat did very well was to foreshadow certain things and so we would have a series of press conferences set up. And so we would try and anticipate what information would be at each press conference. And periodically, we would have information that was emerging that was not ready to be presented simply because we were still collecting that data. But the trend that that information was saying, that is maybe cases were increasing, or pregnant women are more – having more problems with the disease, she was able to foreshadow that so that when that information was finally presented in its more formed manner, that people were ready for it. We were – they were already beginning to talk about. And so I think that was very helpful for there not being surprises of information but also of a sense that we were always letting them know at the level that we knew when we knew it.

Barbara: In terms of the Influenza Division’s organizational structure, did you make modifications or changes to your staffing?

Dan: Well, our Influenza Division was set up in a traditional manner and that is there’s an epidemiology group that has a domestic and an international component to it, and a lab side of the house that has three branches that focus on different parts of the virus. And so we were structured essentially to pick up our entire division and move it into the response. And so, as you know, when there’s a major response, we initiate the incident command structure. And so the leadership within our division became leadership within the response, but that overall response hierarchy was separate from the CDC bureaucracy, and that’s for a number of reasons but its mainly to make sure the decisions can be made quickly, that resources can be
accessed quickly, people can go out and the kinds of things that need
to happen quickly can happen quickly without having to go through a
lot of bureaucracy.

But that also means that the people that are participating in it
have to recognize a different structure. For us, our laboratories
functioned almost within their normal structure. Our epidemiology
group was greatly enhanced with a lot of folks that came in but the
overall structure in the second half of the pandemic was a much bigger
enterprise than certainly our division and much bigger than what we
had in the initial wave of the pandemic.

Barbara: And how – how was that structured?

Dan: The second part?

Barbara: Yes.

Dan: The – the first part was actually structured more typically in terms of
having an incident commander. I was serving as the Senior Science
Officer and we have what was called a technical specialty unit that
had oversight of most of the technical aspects, the intelligence
gathering surveillance and so forth.

When we moved to the second half, we needed to get into a much more
robust larger enterprise and that had a vaccine task force, it had an
epi and lab task force that had the laboratory informatics and a whole
lot of other parts of it, the surveillance, but also we had a medical care
countermeasures task force. We had a community mitigation task
force. And the – the largest and perhaps the most critical at that point
was the vaccine task force. And so that’s one that took care of all the
distribution issues, monitoring coverage, monitoring vaccine
effectiveness and so forth.

Barbara: So was that structure already in place, or something that you
developed?

Dan: That had to be developed. And so the vaccine task force was the one
that really did not have a home in the previous structures. And I think
that reflected something that we had learned because of the response,
the pandemic respond, and something we hadn’t appreciated in our
earlier exercises.

As a part of pandemic preparedness, we would have exercises two or
three times a year, you know, two 48 hour duration exercises where
we had hundreds of people playing as if the pandemic was happening.
And in those, we got a lot of time spent on the beginning, and borders,
and airports, and mayhem in the streets, that kind of thing in terms of
scenarios, but we never adequately got to the issues of vaccine
delivery.

And so the – the decisions before the pandemic were more of having
pods of vaccine that would get shipped somewhere, and they’d open
up, and people would start vaccinating. People would line up. And that just didn’t make sense in the current environment.

And so we ended up going through vaccine delivery approaches that were much more similar to have vaccine is normally delivered, you know, outside of a pandemic, and so utilizing existing structures. And so if we had a little more time or if we had focused more on that part of the – the response, I think we might’ve had a better idea of what we would need in terms of delivering vaccine and making sure that we had all the right connections with the appropriate state agencies that do that kind of work.

Barbara: Were you involved in the policy decision unit?

Dan: Uh huh (yes).

Barbara: Could you talk about your involvement?

Dan: Yeah. That actually came out of some of the exercises. Early on, we were using the traditional incident command structure and that has a plans unit. It has a logistics unit, a finance unit and an operations unit. And the work that CDC does in outbreaks is almost all intelligence gathering, its surveillance. It’s information that leads to decision making and recommendations.

Incident command in the traditional sense is something to respond to wildfires, to earthquakes, to hurricanes, where there’s a defined event. There’s usually a defined location where it occurs and you have a bunch of people who are doing things. And so the plans unit says what’s the weather, how many places are on fire now, and then says, I need these units to go over there and cut down trees, and clean the roads up. That’s a different need than what we had for the – for a pandemic, for any large outbreak really.

And so over a series of really almost years, we rearranged that incident command approach to be much heavier in the gathering of information, development of recommendations, implementation of policy because while we weren’t cutting down trees, and cleaning roads, our products were the recommendations that we put out and to get implemented through other people that are actually doing the operations.

And so what we found was that there needs to be a time and a space where people can think, where it’s not so noisy, that it’s not complete mayhem happening all the time. The – the urgency of the moment can always prevent you from thinking ahead. And so we knew that we needed to have that. And so Toby Crafton who served as the Chief of Staff during the – the response, and I, and a few others, came up with this notion of the plans decision unit which we envisioned as a separate place, with people assigned to do thinking and planning so that they could not be picked up and put on TV, they wouldn’t be picked up to go to some meeting that was urgency needed, they would
be there to think, and they would have access to the subject matter
experts, and they would have access to resources that they could ask
questions, how many children are in school every day; and how many,
you know, whatever question needed to be answered.

And so that through exercises became a really helpful thing because
we actually would cue up policy decisions that needed to be figured out
for pandemic preparedness so that they could get figured out during
the exercise which was really pretty helpful.

And so when the pandemic actually hit, we just simply continued that
process where people were brought in, they were educated on decision
making, there were, you know, a set science to that that was followed,
they would identify the facts, the assumptions, they could come up
with three courses, four courses of action. They would weigh each of
those with criteria and then present that to leadership where a
decision then could be made.

And so it helps us to have a record of what we did in terms of big
policy decisions. It also is a – a way to demonstrate confidence, I think,
to people outside of us that we were thinking clearly about expensive
disruptive types of interventions and making sure that all of the sides
were weighed and that the evidence was helping us to make the best
decisions.

Barbara: In terms of getting information to support decision making, can you
talk about that process?

Dan: About how we got that information? It comes from different places.
And I think some of our experience in anthrax, the response in 2001,
was there were very few people that were subject matter experts. And
some of the information was based on data from a long, long time
earlier. And so I think we in the division had a number of subject
matter experts that had been working on flu for awhile. But we also
had people from throughout the agency that have expertise in
different aspects of things, vaccine delivery, vaccine adverse events
and things like that. And so we were able, because of that approach, to
pull from those subject matters within the – the agency.

We also had a thing called Team B which is a group that was set up of
outside individuals who met frequently, sometimes twice a week
sometimes more, to have questions cued up to them and they would
provide that information to us. And so sitting on that group were
people that had managed the swine flu outbreak, people that had done
a lot of enormous interventions with small pox, people from
academics, people from public health, even people with skills in – in
communication. And so we were able to access their, you know, smart
brains through that approach but also we brought in people as well.

We had liaisons from other federal agencies here. We had liaisons
from the Association of State and Territorial Health Officers and the –
the National Association of County and City Health Officers, the
Association of Public Health Labs, Council of State and Territorial Epidemiologists, all of those folks at different times we either had on site or we had routine communication with. And so as decisions were developing, they could be piloted with those individuals and they could help refine them.

Barbara: And once – once the decisions were – were arrived at, how was this communicated internally within CDC?

Dan: Well, the plans decision unit would cue up, they would present it to the leadership, generally the incident commander, and those decisions then would either be made on the spot or they would be thought about and then a – a follow up would be given to the director at the next director’s update which at that point was every morning. And so we would communicate it to the director, the director would then determine whether or not that was the right decision, and then given that, it would be communicated through various means. If it was a policy decision, it would have to be sent out through all of our channels. If it was to clinicians, we would use our COCO calls which are clinician outreach calls. If it were to the public health departments, we had routine calls where those would be sent out. We had mechanisms for sending out health alert network advisories which are documents that get sent out through fax or through web. We would post it on the web. We would do press releases. There were a number of different ways that we were able to do it and to send out that information but also to target it to the specific groups that needed to hear it.

In terms of communicating it within the response, that was done through basically live broadcast of all the director’s updates that anyone could access from various different places around the Agency.

Barbara: Were you involved at all in communication with the public?

Dan: Yes. We had to do a number of on-camera interviews, and media interviews, tele-briefings and things like that.

Barbara: In terms of getting information cleared for presentation to the public, what was that process?

Dan: I think there was a core group of maybe 10 or 20 individuals who were having that kind of external interaction – the external interaction where if you screwed up, people would know about it. And so that group, I think, was fairly tightly connected by space. We were close to one another and often were able to hear each other give those updates. And so, through the process of discussing it in the plans decision unit, through the process of discussing it at updates, people were able to know what the right language was, what the approach was, but then also there was a regular approach to having talking points developed almost daily where those talking points were in plain language, what
the major issues of the day were, what the policy decisions were, and
what our plans and communications to the public were.

Those were made available to anybody but we sent those out also
through all the professional societies so that state health officers and
state epidemiologists who were also doing media interviews were
using the same language and saying the same thing at the same time.
So we tried not to get out of sync either in terms of the content or in
terms of the timing.

Barbara: Thinking back to the early days of the response, what do you feel were
the key decisions that had to be made?

Dan: A number of them, I mean, very early on we had to decide are we
going to stand this thing up because it’s – it’s really the – the thing
we’ve been thinking about, or are we going to try and manage this as a
smaller operation. And so that became pretty clear that it was in our
best interest to get way out in front of the problem and not try and be
building up too late. And so we did lean forward and stand up the
Emergency Operations Center and so forth.

So that was a key decision. A lot of other key decisions are whether or
not we would begin to produce all of the reagents that we ended up
sending out. We elected to do that very quickly and were able to send
out the kits to all the state health departments that do the testing
almost in real time with the demand for the testing which was – that
was a good decision to make that happen quickly.

We also did have some resources, financial resources, available that
we could access quickly. But I think people were wise to delineate
what they needed early for a big response and then get that request
for resources into the pipelines ’cause that’s not something that
happens immediately. And so by doing that, we were able to have
resources at the right time to do the right size of response and not
have to scale back because we simply didn’t have the resources.

Barbara: In terms of organizational resources, did you make changes to staffing
or procedures in any way?

Dan: Yeah. We changed to the structure of the way we were doing the EOC
hierarchy halfway through in the summer when we did have a time
where it was a little bit slower and we knew that we were likely to
have a lot of disease in the fall. That was a change that we did.

We changed periodically some of the – the ways that information was
flowing up to the director. I think that helped out a lot. But also, there
were a few individuals that stayed on through the whole response
which was key, I think, and to make sure that they didn’t get too tired
and not able to continue, we did have a number of people that were
helping to support them and could step in at any point and do their job
for them.
Plus, we did have human resources set up in cycles so every three weeks or so, people would be in and out of the response and that’s a lot of logistics. And so I think that’s some kudos to the folks in the Division of Bioterrorism at Preparedness and Response for really helping out to try and figure out how many people were needed, when they were needed, and start cuing them up because the response would’ve just ground to a halt if we’d not been able to do that.

Barbara: And have those organizational practices been institutionalized for future events?

Dan: It’s hard to say ’cause we’re – we’re still – the Emergency Operations Center’s still active right now. It’s not that much going on but I’m sure it will be. And these are things that we had practices but never had to actually put into a real response of this size and this duration. And so clearly, the things that we’ve done now would get implemented in any large response. And there are things that we had an idea that we needed, there were people that were assigned to do it, but the – the formal home of it, I think is much clearer now than it was before.

Barbara: So in thinking back over the past year, are there things that stand out to you that were done particularly well in the response?

Dan: Well personally I think the – the diagnostic testing was done very well. And so this is something where we had devices that were in the field for clinical trials that detected the first case. Once we knew there was something unusual, the machines that were in the public health labs had been put there only three or four months earlier, the reagents that those machines used to do the testing, we had a mechanism that had just gotten in place the fall prior that we were able to send out all of those through a contract lab. We were able to match the demand pretty well. We had very few public health labs that actually got really overwhelmed. We knew how many people they might need for each public health lab, how many machines they would need for different amounts of specimens that needed to be tested. There was a lot of planning there that really paid off. The first case was actually detected at CDC using a PCR test that they had just finished validating or had been working on. And so that made it easy for us to be able to take that, put it into a kit and be able to send it out once FDA had given us the approval to do that.

So that’s something that I think went very well and it’s really important too because if you know with certainty cases that are occurring in multiple places in the US, and you can begin to count those, and you can begin to say, you know, who is this in, is it in pregnant women, obese patients, etc., when is it occurring, what’s the transmission dynamics. If you have a really good test for that, it makes the rest of the – the work a lot easier because it takes a lot of the guess work out of it.
Barbara: ...of information that you received or felt you should have, did you feel comfortable with what you got or feel there were areas where you didn’t get the information you needed?

Dan: Well, I think the – there were a couple of things before the pandemic actually started from the – the agricultural side. The surveillance among swine for what influenza viruses are circulating, that information we just were not getting. And in part, because it wasn’t being done. They really did not have a – a formal way of collecting specimens from swine. There are a lot of reasons why people don’t want to do that. I think they’re dis-incentives for the farmers. There’s dis-incentives for the large manufacturers. But I think had we had better surveillance, not just in the US but in other places, we would’ve maybe picked this up. We would’ve at least had an idea about what the spectrum of different kinds of influenza viruses were out there. We might’ve had tests that had already been validated with these unusual influenza viruses so that we would be even that more prepared to detect it and to ramp up if we needed to.

And so those are things I think that we will be doing better hopefully through some collaborations with other federal agencies and other state agricultural agencies. The other part is information about what was happening in Mexico. And so there’s – there’s a really difficult job that people that try and monitor these disruptions in other countries have. And so they need to try and determine is some problem of increased pneumonias in a country far away, is that something I need to worry about, how do I get more information about that? You know, I’ve got 20 of those a week. Which one is the one that really is the one that matters?

And so that’s a science that needs to be developed better, monitoring open source data, understanding of what these kinds of problems that are occurring, these disruptions, which of those do we need to follow up on and which ones are something that we actually have to begin responding to.

So those two things I think would’ve helped us with a little earlier detection. There were some regulatory things that needed to be fixed as well. Our –our country has very good regulations for making sure that things that get done on people, tests, and things that go into people, vaccines, that those are safe, and that they’re giving accurate results.

However, in an emergency, those regulations don’t do very well. And so we got around that with some new things called the Emergency use Authorization that FDA had but there’s a real need for there to be a more nimble approach to regulation that would’ve – would’ve helped us out and would’ve made our response, I think, a little bit quicker.

In addition, when it came to doing the vaccine campaigns and getting vaccine delivered, we had some ways of getting vaccine out but we
hadn't completely figured that part out. And so I think there's a lot more to learn about that. And even maybe setting up things like school located vaccinations to do each fall that essentially become almost a – a dry run for a pandemic or for some other large response that requires vaccination.

So getting the – the pillars at a state that do preparedness, and the pillars that do vaccines, and the pillar that does communicable disease, or the stove pipes, if you want to call them that, getting ways that they're working together on a routine basis, I think, will help out for future responses. And that's something we thought about for a long time but we just haven't had the ability to make that happen before.

Barbara: So do you have any final thoughts or recommendations you'd like to make?

Dan: I think one thing that was pretty clear is that in terms of pandemic preparedness, that having multi-use platforms were very helpful. There are platforms for surveillance like the emerging infections program or other kinds of programs like the vaccine safety data link that are used currently but when the pandemic hit, we could just ramp up the work they were doing, or target what they were – the kinds of questions they were asking, or the cases that they were trying to find. And so that's a real important lesson that we keep platforms for surveillance like that running and ready, and then when we have problems, we can turn them on.

Another multi-use platform is the devices that we do our testing on. And that if we have a device that can do flu, we should have that same device be one that can do anthrax and respiratory [inaudible 0:04:41.6] virus and other kinds of emerging pathogens so that it can be rapidly used and we don't have to think about shipping devices, or training people, or anything like that. So a multi – multiple use platform makes a lot of sense both from a surveillance platform and from the devices themselves, but also, having a warm base. That's a term that the manufacturing industry uses for having a level of manufacturing capacity that can be rapidly increased. And so for diagnostic test manufacturing, we had that at CDC through a contract. We were able to increase it. That's a – that was a very useful thing that that notion of having a warm base, like having a warm base of people that vaccinate each year in schools. That's a warm base of activity that can be ramped up quickly but it requires you to figure out how that can be used normally, how you're going to routinely have it apart of public health, and then how that can be ramped up using the same people, same interactions and same collaborations that are necessary for routine use.

Barbara: Great. Thank you very much.

Dan: Thanks. [audio ends]
Interview #9. Martin Meltzer, PhD  
Senior Health Economist and Distinguished Consultant, Division of Emerging Infections and Surveillance Systems.

Martin: My name is Martin Meltzer. I'm a senior health economist and a distinguished consultant in the division of Emerging Infections and Surveillance Systems.

Barbara: Thank you. We'd like to begin with just a little background information. Could you tell us a little bit about yourself, your training, your specialization and what brought you to CDC?

Martin: Certainly. My three degrees are all in applied economics, in fact, agricultural economics. And for the first five years after my PhD, I worked at the University of Florida in Animal Health Economics. And then in 1995, CDC started the – what they called the Prevention Effectiveness Program which is a post-doctoral program for health economists. So we arrived, five of us, and just about the first economists that CDC had integrated into their system full time. So that was just under 16 years ago.

And one of the first projects actually I started working on then was in pandemic influenza program. Dr. Nancy Cox who was and still is Division Chief of the influenza, asked me could I work on some model, some estimates of the next potential pandemic. And being green, I said, sure, not realizing how difficult it was.

But that resulted in a paper in 1999 that presented some estimates of what would happen if a 1968 type pandemic would occur again in the U.S. And that paper and the numbers became the basis of a lot of planning, programs and planning tools that we produced and put on the internet and were used by federal governments, state, local and even international and other national organizations and governments around the world for planning back then. But that was some years ago already when we first started thinking about pandemic.

When you first started with pandemic planning, the national pandemic plan was something like 40 pages long if you counted each page very carefully.

Barbara: Are you currently involved in some aspect of H1N1?

Martin: Absolutely. I was involved in the response itself. And right now, involved in a lot of the writing up and analysis of the data that we've collected, and writing out explaining full and peer review journals, and other formats exactly how we calculated the numbers that I was part of the team that calculated numbers for decision making and what we did over time.

Barbara: Do you recall when you first heard about H1N1?
Martin: Oh absolutely. It was more than ironic. I was on – getting on a plane to go to Europe for a conference on influenza and influenza pandemic planning and preparedness except the pandemic they were talking about was all H5, Avian Influenza. And all though the conference, there were these papers, presentations about what might happen if H5 based pandemic were to occur. And every day, in fact, every hour, do get reports and updates about this pandemic that was beginning to evolve based on H1. And, of course, it had greatly different characteristics than anything anybody had assumed for H5. So whilst the papers, and all the planning and comments for H5 were very interesting, and indeed they’re still pertinent, they didn’t have very much to do with H1N1 that was circulating.

And so I would be phoning back and saying, when do I come back and what can I do? And I got off the plane and walked around the halls and say, how could I be of use? What do you need to know? And this was like the very early days just when they’re trying to figure out what does the virus do, who gets it, how may get it and what happens to them when they get it.

Barbara: Did you have a feeling that this was a potential crisis looming?

Martin: Yeah, I think the word we can drop is potential. This was a genuine crisis at – it was obvious to me from the very beginning that this met all the criteria of a pandemic strain. It was human adapted, it was a strain that nobody had seen before, at least, at that time we thought so until we got confirmation of the people over 60 later on. It did spread, and it did cause illness, and it did cause health outcomes – adverse health outcomes such as death, and hospitalization amongst those who had contracted disease from it. So there was no doubt in my mind that this was it.

Barbara: So how did you become involved in the actual response to H1N1?

Martin: Well, as I said before, I’ve actually spent the past 15 years been involved in influenza pandemic planning producing simple models. And I do emphasis that, simple math models, to put on the web to help people plan and prepare. And literally when I returned from that conference, I went to the Incident Response – the Emergency Operations Center here at CDC and basically said, what can I do to help? What do you need to know? How can I help? And essentially I’d take the approach with modeling. It’s not what can I do and why this should be useful. I try to go the other way and say, what do you need? And if you need something, an estimate, or an idea, or a decision analysis, let me think about it and see if I can come up with something that would help you.

So the first couple of weeks was literally walking around talking to people trying to understand what it was that they thought was their biggest problems, and what they needed most help with in terms of decision making.
Barbara: So how did you then begin to work on your models and your decision trees?

Martin: Well, the first part was the simple obvious questions which were, you know, who should we vaccinate. We have some ideas. They had a straw list which was, in fact, eventually the list pretty much adopted by the ACIP. But did it make sense? Were they missing somebody? Did it – was it worthwhile to vaccinate these people once we began to get a better idea of how many people were sick, and what was happening to them, what would likely to be the value of vaccinating those groups.

So we started to produce some early models giving some estimates and the word guestimate is probably more accurate because at that time, we had no idea really of the true number of people that were falling ill and even the rates of hospitalization and death were somewhat of a guess. And I was using a lot of 1968 type data. I said if this was a 1968 type data – pandemic, this is what it might look like knowing full well it probably wasn’t and saying this is initial estimates. And as we worked on that, was waiting for better data to come along which it did fortunately and it was a very rare event that we got the better data.

Barbara: Where did you get your information?

Martin: Well originally, as I said, we had to use 1968 because when you start off, although you might have some initial field data, you really don’t have any population size data. So we – we knew this wasn’t as bad as 1918, thank goodness, and for that we should be eternally thankful and grateful. But we did know that it was spreading. Some of the initial data that I saw reminded me of the lower limits of 1968 in terms of risk of going to the hospital, the risk of dying given that you were ill. And I said, this looks a lot like 1968, the very mildest portions of it.

So I started using that. And then we did what’s never been done as far as I know in influenza, we used what we called the pyramid model in which you start off at the top with the known lab confirmed reported cases and hospitalizations, and you work your way back by going out into the field and doing surveys, and getting a sense of who gets tested if they go to the doctor. ‘Cause not everybody that goes to the doctor gets tested. So what percentage of people who go to the doctor get tested? And even the step before that. Not everybody who’s ill goes to the doctor so we did surveys at particularly Detroit and Chicago, but there were other similar surveys in New York and Minneapolis asking people and doctors, if you’re ill, do you go to the doctor? And if you’re at the doctor, does the doctor test you? And if the doctor tests you, do they send the sample forward to a state epidemiological lab for testing? And if the lab tests, do they send us the report? And same again with hospitalization.
This sort of protocol has actually been used for a while in food born disease, but it’s never been used, that I know of, prior to this, before for influenza or any respiratory disease. But it allowed us to calculate multipliers that is for every hospitalization, I could now assume, at least from the early days in April, May and June, that approximately 2.7 persons were hospitalized for every person that we got recorded. And this allowed me therefore to draw up estimates and have a better idea of what actually H1N1 was doing as opposed to trying to guess based on data from 1968.

Barbara: What do you think were the key decisions that needed to be made in these first few weeks and months?

Martin: I – I think to me, as an economist and modeler, some of the most interesting things when I got off the plane, the decision of how much vaccine to buy had already been made. And so they separated out the decision between buying vaccine and using vaccine. So the first decision had already been made very quickly and I think very appropriately.

The second decision was who gets it, who’s to the front of the line because we knew even back in the 90’s that no matter how much vaccine was ordered, vaccine production takes time and there’s going to be a production line. And who gets the first doses off the production line? Who goes to the front of the line? And we’d been discussing this for a number of years, various scenarios, various options, various benefits and downsides of who goes to the front and who goes to the back. And so one of the most critical decisions was the ACIP recommendations about who should be vaccinated first. And the ACIP, as you know, gave a list of people who should be vaccinated first. But they also had another list within that list of what if there’s a shortage of vaccine? Who’s the most important to vaccinate first? And that was the most critical decision in our response as far as I’m concerned because that then defined the whole nature of the vaccine related responses.

The other critical decision was the use of anti-virals. One of the key decisions was no large scale use of anti-virals for prophylaxis because of a number of reasons, one of them, they were concerned that we’d use too much of the anti-virals up front and probably have very little impact overall in stopping the spread of the disease fast enough. And also, the great concern that wide spread use of anti-virals early on might generate drug resistant strains of the drug – of the flu making the use of the drug later on when you need it for serious cases almost ineffective.

So there was some very careful considered thought about who should get anti-virals and why and under what conditions. And again, it was decided that for most people, since this was a mild form of illness if you have no serious sequela and you were not needing hospitalization, a lot of people would become ill but they could recover very well
without the aid of any anti-viral drugs. There was recommendations, as you know, for people with high risk conditions to get it to prevent them from going to hospitalization because we also knew fairly early on that a large proportion, a majority of people in hospital, were those with pre-existing medical conditions. And so those were the people that were targeted for use with the drugs.

So those basic decisions up front about what to do with the response resources in terms of vaccine and anti-virals, who should get it, clearly defined the rest of the response. Everything about the response from them on led from those primary decisions.

Barbara: Can you talk a little bit about how these decisions were arrived at and who were the decision makers?

Martin: Well, the – the decision was talked back and forwards. I don’t think there’s a central office that made the single decision and then told everybody else. From what I saw, was that people here at CDC in the Incidence Response Command took an input from the subject matter experts here, they conveyed it up to Washington and Department of Health & Human Services; people at Health & Human Services provided input and a collective, as far as I’m concerned, a collective decision came about. Of course, obviously it had to be agreed upon and vetted by the very highest levels within HHS, but it wasn’t a decision, or any of these decisions, were not made in the absence of input. And indeed, for example, the ACIP recommendations were led mostly by the ACIP. And HHS later basically endorsed them, said we will go with them. There was no argument. There was no saying can you get the ACIP to revise the recommendations significantly. That did not happen as far as I could see.

So the main point there was a lot of this was done by committee and input from a variety of experts who knew a lot about influenza and were able to read what little data we had in the early days very accurately and build on with their knowledge, a great deal of knowledge, of what influenza was and how it moved through society.

Barbara: Could you talk a little bit more about the types of models that you used?

Martin: Okay, I, personally based on a lot of experience, I emphasized simple models that are reduced very often to a spreadsheet. There is a difference between simple and simplistic models. The simple models, you strip down to just the essential. Simplistic, is when you leave out an important element. There’s a fine line sometimes between the two which is a simple model and which is simplistic and sometimes it’s a matter of subjective opinion as to whether a model is simple but okay versus simplistic and versus bad.

The reason however I emphasized simple models in this response was because several factors, one, the incident response command here at CDC often wanted answers in a very short turnaround time. I’d get a
call at six in the evening and can they have something by ten in the
morning. So you don’t have time to do a whole lot of programming and
fancy. And two, there’s that I wanted to and I did, able to share the
models around to people who were not modeling experts but could sit
down and pretty much most of the time open a spreadsheet on a
computer and click away and see what if’s. What if I change this
number here? What if I change that number here? And many times we
didn’t even have a few hours. It would be can we come back with an
answer within half an hour of what if we change this. Not a problem if
you build a simple model.

If you have large scale models running on supercomputers, that is a
challenge. Also, you then have to have large teams of people
constantly programming and re-programming. So this – this was a
decision based on over a decade of experience of using these. They’re
not the exact limit of modeling. They’re not the end all and be all, but
they do have value and use, particularly when people are in tight
corners, they don’t have time and the – always the pressure to think
about all the nuances and they want just the basics and what’s the
essential elements going into that I need to concentrate on to make a
decision.

Barbara: Can you talk a little bit about the Policy Decision Unit?

Martin: Yeah, the Policy Decision Unit to my mind was a unique feature of the
response down here at CDC. And I think it was – I think it was an
absolutely tremendous idea and a good, very, very good addition to
how CDC responds to these crises. I – I’ve worked on the ones for
SARS, small pox, for anthrax and decision making was – is and still –
was and still is, made around a table with a group of experts, and as a
committee essentially or a group of people around the table that make
input information, absorb it, digest it and come out with
recommendations. The thing is, it’s not particularly formal.

The Policy Decision Unit follows a very formal methodology which I
think is a good way for several reasons. One is it makes sure that
there’s a group of people who know something about this, they put in a
set of expertise opinions and data into the initial set of data that you
use to answer the question. You also spend a lot of time asking what is
the question. And in fact, there’s a very, very rigorous well-set protocol
that they follow, and part of it is that we discuss it, we talk about the
data, and then there’s a break where you go back to the leadership.
Somebody goes back to the leadership and says this is what we think
is the objective, the question you asked. Do you agree with it? Do you
want a change with it? If we answer it, is this of help to you? And they
get – the leadership can then say well, no, since we last talked to you,
we’ve changed our mind or when you put it like that, I realize that’s
not quite what I want to know. So can you please alter the question
somewhat and come back to us?
Again, very formal in that the question is very directed, people that
might wish to go off on other topics, not allowed to because you’re
going to just answer the single question. Also, you come down with
three, maybe five at the most, particular courses of action, options,
how do you answer this. You go through the pros and cons. And what’s
most interesting to me as an economist is then you have three to five
particular courses of action. How do you choose? How do you weigh
them against each other? Because the one thing about public health
that most mathematical models, including in economics, don’t account
for is in fact there are many objective functions that you’re trying to
simultaneously meet in public health. Mathematically, models meet
one objective function at a time. Here at public health, you’re trying to
perhaps meet three, four, five. One is, will this get the maximum
number of people vaccinated? But also, will this make people retain
their faith in public health?

Well, those are perhaps sometimes even diametrically opposed
objective functions. But you can, in this process, list out all those
important objective functions that you – that the group thinks must be
addressed, and you can weigh each [inaudible 0:18:34:1] then say
okay, we agree with you and your recommendation; or no, we want
option one although you recommended option two. We can see why you
picked option two but there’s a couple of other things that we want to
take into account that you didn’t discuss or has occurred since we –
you started this and we want option one. And sometimes they even
pick, well, you’ve got three courses of action. We want course of action
four.

Although this might seem a failure then when the policy makers pick
a recommendation that the rest of the group, the Policy Decision Unit,
didn’t pick or recommend, I would say, in fact, no. The point of the
Policy Decision Unit was to collect all the available data, digest it,
distill it, quickly, come up with some courses of action, look at the pros
and cons, think of it in depth, and again, very important, think of the
various means about which you’d measure the value of each of those,
the objective function, does it meet this objective function? Yes or no.
Does it meet it well? Yes or no. And then present that result. And in
doing so, that focuses the attention of the Incident Command to what’s
really important. A

And if they come up with a different recommendation, or indeed they
come up with another option, that, in fact, indicates success because
you’ve got them to the point where they say, now I understand what’s
really important. And the Policy Decision Unit really was helping the
policy makers decide what’s most important. And it was unique. We’ve
never done this before at CDC. And if ever – when this next happens, I
hope to see another unit like that again run. Flexibility, people at the
top, it takes a certain talent, special kind of person to run one of those.
They’ve got to be very flexible. They’ve got to deal with a lot of high
strung personalities. Got to be able to realize that at some point you’ve
got to get to the answer and that you've still got to brief the leadership. And indeed, the leadership up here has to take your recommendations or thoughts from the – further up the chain of command and explain to them why it is.

The other important thing was that following, you had two pieces of writing from it. You had the slide sets with your comments on, and there's also a memo. And even if the memo was basically said we don't agree with the recommendation, there's still a record of how we reached that – the recommendations, how the data were taken, and the information distilled. And again, I think that's far more formal process than we've ever done before in all the years I've been here at CDC and I've been involved in a number of these responses now.

Barbara: How are these decisions then communicated internally and publicly?

Martin: Well internally, the – within the EOC, the Emergency Operation Center within CDC, the way it's set up with constant frequent meetings and a very well organized structure, organization structure, it's very easy to set out once a decision’s been made, let it flow down the organizational chart. And that’s one of the aspects as well is that an organizational chart of who was responsible for whom was set up right at the beginning. So everybody had a good idea of their role and what was expected. But it also allowed for information to at least flow down most of the time and flow back up most of the time. And so most of us would know and understand what decisions have been made. And then the big issue was communicating it up to Washington and the media, which I fed information to. I didn't actually go up to Washington too often. Sometimes I did. Or on the phone more often. But – and also to the media.

And again, from the very beginning, we had a very carefully designed plan about who was going to tell the media. And essentially, from – as far as I'm concerned at down here at CDC, we had one or two spokes persons who addressed the media directly, and then, of course, we had our media communications team that deal with, you know, the written emails. And we always worked through them. In other words, there would be a technical question for me might be some question on the estimate of the number of cases, hospitalizations and deaths which is fine. I deal with that all the time. But it would go through the media people and they would act as intermediary between – between us and the media. And there’s a couple of very good reasons. One is if we just were to take every single question ourselves openly, it would be an never ending stream of people at our door and questions. And two is that if we do that, then after a while, we don’t know what’s going on elsewhere because we’re so busy and we can’t always link this, what
we're talking about, into the main message that we're trying to get across. And public health, very often, is all about the messaging.

I found it fascinating many times. I'd present the numbers to the incident command team and they would say well – first thing they'd say, well okay, what's the public health message about this? You know, how can I perhaps give a few comments about interpreting it? But many, many times, it was – the first concern was what does this mean about our communications? How do we explain it to the people? Does it mean we have to change policy? If so, how do we change the policy and how do we communicate it? Things like that.

So communications was at the far and center of this response. And I think they did very well. It's always stressful. Nothing's perfect but I think we have to be given high marks on how we communicated out. I mean I do understand that some people are unhappy. But I think the number of people that are unhappy versus the number of people that thought we gave out adequate and enough information and explained things, I think, was far greater than the number of people that were unhappy.

Barbara: So looking back over the past year, are there any things that you would have done differently or would have recommended be done differently?

Martin: It's sort of like other people think the pandemic's over, to me, it's still in the middle of the pandemic and writing it up, and thinking about it. Would it be different? Very little that I can see at this point. Maybe in two or three years I might think, you know, this – the one defining feature of the pandemic response as you know it was the delay in getting vaccine; or, to put it the other way, the epidemiology of how the disease spread and who it infected, it came early. We've never seen a pandemic or even a flu season come this early and this hard. And so that meant that we are always behind the 8-ball in terms of vaccine delivery.

And there are limits to what the technology can do in terms of vaccine production and delivery. And so we got caught. And obviously what we would like is a perfect vaccine that we could produce and stockpile. That's been a goal of ours and we've had – spent lots of money in the past researching different types of vaccines. They haven't panned out. And we have to accept there are always limitations in our technology.

So the biggest impediment to a perfect response was pretty much outside our control. And as far as I'm concerned, would – if we were to do it again, would we like to have the vaccine product – produced and delivered early? Sure. Do we have to accept the fact that perhaps it won't be? Absolutely. Can we control the speed at which the pandemic arrives as it did in fall? No. That's just the nature. In fact, it was fascinating to us just – during the summer there was a low level of disease throughout the nation. What that did was like seed it. And the
moment schools went back, they had this explosion of cases right across the country; and as I said earlier, unlike anything we’ve really seen. That – that much activity, that really in the year, unprecedented. And you can’t plan for that. You can’t say, oh, we could’ve done better. That just wasn’t feasible.

Barbara: So do you have any final thoughts or recommendations that you would make?

Martin: Well, I think – I think – I would like to see planning that says take the good parts. Like for example, the surveillance that allowed us to produce the [inaudible 0:26:55.5] model with the multipliers that enabled us to produce simple models that got a handle and – they’re estimates. They’re not accurate head counts. They’re not accurate census. But it allowed us to provide estimates that we think are quite reliable and useful to policy makers.

I’d like to see that become embedded in the response type of thinking, the dogma, the protocol that we do, that type of surveillance upfront; and, right away, without question. There isn’t do we need it? [inaudible 0:27:27.1] It can be very time consuming, and it can be expensive and it can, in fact, bother a number of people ’cause we ask a lot of people. But more the better. And I think it proved itself. We couldn’t have done anything that we did in terms of modeling without that. And in fact, it is interesting to me that, as far as I know and I’ve yet to see on any other websites from any other countries, estimates like we’ve produced. Other countries have produced and posted estimates, for example, of laboratory confirmed cases, hospitalization, and deaths which is very appropriate. But in terms of extrapolating based on what they know of the multipliers and what does each case that record, how many does that represent unrecorded, I haven’t seen any other work done. Doesn’t mean it hasn’t been done but it hasn’t been widely publicized as us. And I think that went along way to the media and the public understanding the relative impact, and why this was a pandemic, and why we needed to get vaccinated when the vaccine was available. And so, working to ensure that we can replicate this again and again, is I think to me, the number one priority. I don’t think it’s overly complicated. I just think it means a lot of hard work and making sure that it’s upfront.

Barbara: Great. Thank you very much.

Martin: Surely. [audio ends 0:28:43.1]
Male: The first thing you want to do is start with the name.

Toby: Okay, my name is Toby Merlin and I am Deputy Director of CDC’s Influenza Coordination Unit.

Barbara: Thank you. We’re here to develop an understanding of the [inaudible 0:00:17.2] could you tell us about your training and your specialization?

Toby: Sure, glad to. I trained, I went to medical school at the University of Florida in Gainesville, Florida, and trained as a pathologist in both anatomic and clinical pathology at Stanford and University of New Mexico. And I was on the faculty at the University of New Mexico really specializing in pathology of infectious diseases and microbiology. And that’s where I began my connections with the CDC serving on advisory groups for the CDC. And I actually came to work for the CDC in 2003, and I came to work at the CDC on projects – developing laboratory capacity for HIV Aids in Africa working primarily in Tanzania but also doing some work in Zimbabwe and South Africa also did some work in Batswana. And then in 2007, I moved to the Influenza Coordination Unit to be Steve Redd’s Deputy Director.

Barbara: Great, thank you. Are you currently involved in the H1N1 issue?

Toby: Oh yes. I have been Deputy Incident Manager for the CDC H1N1 response so I have been involved in CDC’s H1N1 response really since the response began in late April of 2009, so going on 10 months.

Barbara: Can you recall when did you first heard about H1N1?

Toby: Oh yes, I – I may have – I may have – I guess everyone has good remembrances of this but I was on vacation and I – I woke up in my hotel room in Istanbul Turkey and there was a strange set of emails about swine flu being detected in two children on a test device that the CDC had deployed as part of its development. And I was getting ready to return from vacation and I didn’t make all that much of it. I thought it was odd. We had been experiencing swine flu detection in human beings with refinements in our detecting abilities over the past couple of years and it was just sort of an odd thing. And I got back to Atlanta the next day and wasn’t even scheduled to call back to work and I called Steve Redd and asked what was up and he said oh, you probably better come in. And I remember saying, isn’t this just another one of these small swine flu outbreaks? And he said it looks like it’s something much larger. That was before I knew anything about what was going on in Mexico. So, I should’ve stayed in Turkey.
Barbara: Did it strike you at that point that it might be a potential crisis? Or when did it become clear that it was a larger issue?

Toby: It became clear to me once the size and scale of what was going on in Mexico became clear, and that the virus was the same virus. It was so then obvious that this was way beyond anything we had experience previously in terms of human outbreak of a novel influenza virus. I mean we, you know, there’ve been these little sputters of detections of swine cases in a couple of people but nothing that crossed international borders.

Barbara: So how did your day to day operations change or what happened as a result of this?

Toby: Well, we left our cozy offices in Building 1 and moved to the CDC Emergency Operation Center. And the Emergency Operations Center was essentially stood up for the response fairly quickly and all of a sudden, we, you know, quickly moved from having a small operating – the ICU is a small group, from having a small group of about 15-18 people to having hundreds of people in the Emergency Operations Center and running an operation that would begin at, you know, three or four in the morning and end at nine or 10 at night with people spanning the night. It really accelerated very, very rapidly.

Barbara: So could you describe a little bit about the early days of this response, what was taking place? What happened?

Toby: You know, the – what I remember as the key focus early on was really trying to get a good handle on what was going on in Mexico City because there was a lot of non-scientific information, a lot of non-verifiable information and trying to get a real as good a grip as we could on what the actual underlying facts were as well as trying to rapidly determine the extent of disease in the U.S. and turning up surveillance systems particularly in the cross-border states where it appeared most of the disease was occurring. And then so that was on the – at the – then on the laboratory side, there was this enormous push to characterize the agent and then develop diagnostics for the agent so to genetically characterize the agent and develop PCR tests that could be used to detect the agent. And that was an enormous full court press that was – turned out to be quite successful.

Barbara: Did you feel you were getting enough information at that point? Or the right kind of information?

Toby: That’s a – yes, I think – yeah. I – I do think so. I think the hardest problem was Mexico City. You know, we have very well established surveillance systems that have been tested and are used for seasonal influenza in – in the U.S. And we’re familiar with the data and we have established laboratory networks for the U.S. Mexico City was all together a different matter. We did not have reliable laboratory testing. We had relationships with people in Mexico and Mexico City that were very good relationships but these people were also very,
very busy themselves trying to deal with an emerging crisis. So I think
that that – you know, what was going on in Mexico City was – it
would’ve been nice to have been able to have more discrete verifiable
information than we did initially.

Barbara: Did you have existing plans in place to deal with an emerging threat?

Toby: Oh yes. That – that – that’s something I think that we all feel quite
good about as part of the major national pandemic influenza
preparedness initiative that began in 2005. And as a direct result of
the president’s initiative and congressional funding, we had been
working to develop plans to respond to an influenza pandemic and we
had had multiple exercises of responding to the emergence of a
pandemic in the CDC EOC. So we all sort of knew our roles. We –
one of – none of this was really something that we were not prepared
for. We were surprised at the emergence in Mexico and we were
surprised at the emergence from swine rather than H5N1. But I think
we felt quite prepared; so much so that during the initial phases of the
response, people would forget and refer to it as an exercise because it
felt very much like an exercise. It felt very much like the exercises
we’d been through over and over again except this one was real. It
stopped feeling like an exercise after about two or three weeks when
we couldn’t stop it and – and go back to our regular jobs. It, you know,
it – it clearly had a life all its own but we – we all I think felt very well
prepared.

Barbara: So as the virus – as the threat expanded, did you find that you needed
to make any changes either in processes or within your organizational
structure to meet the demand?

Toby: Yea, we made – initially for me, I had assumed a role initially running
the Plans Unit doing decision briefings. But it became clear that Steve
Redd who was the Incident Manager needed a – a shadow Incident
Manager. He needed someone who could do the things he couldn’t do
because he was being pulled in multiple different directions. So I
moved out of the Plans Unit and actually became the Deputy Incident
Manager and took on this role of going to those things that Steve
couldn’t and sort of, I think shadow’s the best word, shadowing his
leadership.

Then we actually – our major organizational challenge occurred in
June after the initial outbreak and after the characterization of the
virus and the initial response. A lot of the people who were working on
the response went back to their regular jobs. We had not built a
structure that would staff the response indefinitely. And we found
ourselves with losing critical staff that we needed to actually run the
response. And we spent a lot of time in June and July essentially
trying to build a staffing structure so that we – we could staff to
continue the response. So I think all of us found ourselves particularly
in June and July moving from not just running response but running
response and building a human resources organization to staff the response which was – none of us had anticipated.

Barbara: Could you talk a little bit about the Plans and Decision Unit that you mentioned?

Toby: Sure. Part of our exercises had included development of a unit that would be dedicated to preparing decision briefings for the CDC Director or the response leadership on issues, and taking the information and providing them with standardized briefings and options so – and the notion is to remove the variability in – in decision making that’s often – that often comes from people presenting things in different ways, and different formats, and having a standard format for presenting the – that facts and assumptions, the criteria for the decision, the options, and Rich Besser who was then the Director and Steve Redd very much liked this – liked having this – this certainty, at least the reliability of a way of having briefings presented.

The Plans Unit also ran Team B and Team B was a group of outsiders led by David Sencer the former CDC Director, and at the time, David Bell who was a senior leader from within CDC, a group of outsiders who would provide an outside perspective on what was happening and decisions we were making. And that information was summarized and fed up to CDC leadership.

Barbara: Great, thank you. So in terms of information that flowed into the Decision Making Unit, the Plans Unit, could you talk a little bit about where it came from and how you felt that process worked?

Toby: We were gathering the information by recruiting subject matter experts from the response to inform these briefings. So if it was something that involved deployment of strategic national stockpile assets, we would bring in people from the strategic national stockpile and people from the Influenza Division who had expertise in anti-viral use would bring people from HHS that were involved in acquisition of anti-virals and decisions about the strategic national stockpile. If it was a decision about school closures, we would bring in people who had developed CDC’s community mitigation strategy, people who were working on the epi-aids that were taking place in communities that were experiencing outbreaks who could help us understand what was going on with school closures in those communities.

Barbara: Great. Do you feel that the process worked well and that you were well informed?

Toby: Well you know, the – I do. The – there’s always a fog of war aspect to making decisions in the absence of complete information. And I guess my response is, I didn’t – I did not personally expect us to have complete information, and I expected that we would be making decisions with the best information that was available. I think Rich Besser certainly was very comfortable with that and most of the response leadership was comfortable with that. When you do that, you
make decisions that when you have more information later on you change that decision, you change that direction. I think the best example, you know, the – the best example of a changed decision is that our initial guidance on school closure was – we had a recommendation for pre-emptive school closure that schools would close as soon as there was evidence of infection in the school, in the community, to try to dampen down the spread of disease in the community.

As we got information about the severity of disease caused by this virus and the extent of the infection and the public dismay over the school closures, we moved to a guidance for what we called a reactive school closures that we recommended that schools stay open, that sick students stay away from school and that schools really only close if – if there were no longer enough staff and students at the school to warrant keeping the schools open or enable the schools to stay open.

Barbara: Could you talk a little bit about the internal communication processes that you used and developed to keep CDC employees informed about what you were doing?

Toby: Well, you know there’s – I – I think there are – there were at least two communities that we needed to focus on internally and one was actually the response community. The response really has ranged from having hundreds of people involved to its estimated 1,500 people involved. And we needed to take steps to just make sure that everyone involved in the response knew what was going on. And that was largely accomplished through our standing meetings. We had director’s briefings every day and broadcast of those standard meetings to people in the EOC, and people who could call in so that everyone, we tried to see that everyone felt that they could listen in to the briefings for the CDC Director and understand what decisions were being made.

Then we worked through the communications department to have periodic communications and I think they went out weekly updating CDC staff in general on what was going on. I can tell you in retrospect, I think that people who weren’t in the midst of it probably didn’t get a sense of the acuity of it that people working the response got.

Barbara: Great. Could you talk just a little bit about the decisions that you did make in terms of how you prioritized them or in the early days what did you feel were the key decisions that had to be made?

Toby: There were several in the early days – I think there were several key decisions that needed to be made. One early issue was related to borders and what to do at borders and whether to close the U.S. border with Mexico, whether to implement some type of screening at – of international travelers. And the decision was made early on to not close the border and not do that. It was – we had in our exercises
visited this over and over again. We clearly understood that once
disease was established in the U.S., there was marginal if any benefit
that would come from screening travelers or closing borders. But we
also knew that there was a communications issue with that that many
people, lay people, felt that that was something that you should do. So
that – making that decision and advocating for that decision was
clearly important.

Another key decision was whether to deploy assets from the CDC's
strategic national stockpile, particularly anti-virals, oral anti-virals,
and if so, how much and where to. And that was a complicated
decision where actually the initial recommendation from the Plans
Unit was a much – a small deployment of anti-virals from a portion of
the strategic national stockpile to a small number of affected states.
And that was the recommendation. The actual action taken was
deployment of 25% of the strategic national stockpile in sort of pre-
arranged trounces to all states. So there was a decision made to really
lean very forward in the deployment of anti-virals.

You know, there were decisions around, you know, how – deployment
of – of staff to Mexico and decisions about how far to proceed in
providing diagnostic testing, not just domestically but internationally.
The decision was made to provide test kits essentially to every country
internally that was capable of receiving test kits and working with
them. So those were sort of a number of early decisions.

Barbara:  Great, thank you. So almost a year later, has your time commitment
and involvement with this changed?

Toby:  Yes. There was a period of time I would say from April, wow, into the
summer where I was working as many hours as it was possible to
work. And – and only getting a fraction of the work that I thought I
needed to do done. I moved to, you know, not being able to really had
to prioritize what I was able to work on and some things didn’t get
done. I’m now back to a stage where I actually leave the CDC at a
normal time of day and feel that most of my work has been done. And
that actually feels quite nice.

Barbara:  So looking back over the past year, are there any things that you
would’ve done differently?

Toby:  There are – yes. Yes, several things. I mean I think – I think we all
would have, you know, retrospective knowledge’s always brilliant. I
think we would all have much sooner implemented a staffing plan for
the response to enable us to keep up staff. It was – it was really a
problem to – to – to have a deficit of staff in the summer and was we
were entering the fall. I think we would have made much clearer and
more rapid decisions about our infection control recommendations. We
had initial precautionary infection control recommendations by
actually late May there was an interest in re-examining them and
moving back from them.
But this is an issue that rapidly we lost control over and there were a
number of sort of competing interests in trying balance the issues of
infection control versus worker protection in an atmosphere of
incomplete information, an atmosphere of no – no – often unpublished
information and strong opinions. And I think it is something that we –
we just felt events had got control of the situation. You know, we
ended up not being able ourselves to make a recommendation without
going outside of the CDC to the Institute of Medicine and asking the
Institute of Medicine to do a rapid turnaround review of the evidence
and provide that back to us. And I think given it to do over again, we
would’ve taken a different approach on that.

I – actually in terms of the development and deployment of diagnostic
devices, I think that worked famously. I don’t think we would have
done anything differently on that. And in general in our
communications strategy, I think our communications were very good.
I think, you know, it – Rich Besser who was CDC Director in April and
May, was an extremely capable communicator. I think the transition
between Rich and Tom Frieden left a period of time that – a period of
time where there was no full-time CDC Director on board, and where
Rich was acting in no Secretary at HHS and it really created
communications challenges.

So given it to do over again, I mean, that’s something to avoid. But
that’s just sort of uncertainty we had to deal with. If you don’t think
about this in terms of emergency response, but working in a political
environment there – there – you can be in situations where the
political leadership is simply not there; or just coming on and not
familiar with the issues and building their own staff and that creates
an enormous challenges.

Barbara: Thank you. Do you have any final thoughts or recommendations?

Toby: I – it’s going – it’s going to sound probably a little like preaching to the
choir or saying things that are obvious but you can’t – you can’t ever
rate being prepared. The things that worked best were the things that
CDC had been preparing for for the last four years. And the reason the
diagnostic testing went so well is that people in the laboratories and
Influenza Decision and Dan Jernigan, in particular, had made great
effort to plan out how the testing would be done, planned out how the
testing would be developed to get FDA clearance of antecedent devices
that an antecedent that were placed in state laboratories to develop a
mechanism for manufacturing and distributing test kits once there
was a need to do this, it was still a huge amount of work but it
wouldn’t have been possible without all that preparation. So the
ability to stand back from a situation and realize that you are going to
need diagnostic testing capability, you’re going to need enhanced
surveillance capability and lay the groundwork for that is really
absolutely critical.

Barbara: Great, thank you very much.
Toby: Oh, you're welcome.
Interview #11 Glen Nowak, PhD
Director, CDC Media Relations

Barbara: If you could please give us your name and current position.

Glen: My name is Glen Nowak. I'm the Director of Media Relations for the Centers of Disease Control and Prevention. I'm also the Acting Director of the Division of Electronic – of News and Electronic Media here at CDC.

Barbara: Great. And could you give us a little background information on yourself? Your training, what brought you to CDC, how long you've been at CDC?

Glen: I've been formally part of CDC for about 12 years. I came to CDC from the University of Georgia. I was an assistant then and subsequently an associate professor of Advertising and Public Relations at the Grady College of Journalism at the University of Georgia. I came to Atlanta to the University of Georgia in 1989. And when I first arrived at the University of Georgia, I began doing projects for the CDC as a visiting communication scientist.

Most of those projects were with the division of HIV Aids Prevention. And they ranged from helping them test public service announcements to helping them organize focus group and other research, and even getting involved in some of the behavioral science interventions that they did.

In about 1999, I believe, I applied for a job as the first Director of Communications at the National Immunization Program at CDC and was offered that position. And I joined CDC in 1999 as the first Director of Communications for the National Immunization Program. I was the Director of Communications and stayed in that office in communications and I did that for about five years. And then I was asked to come over on a detail to become the Acting Director of Media Relations at CDC. And four years ago, I became the – I formally became the Director of Media Relations at CDC.

And so I've been involved with CDC for - for probably close to 20 years. A lot of my early work was in HIV Aids Prevention. Then I went to Immunization, and more recently I've been involved in all the – all the different topics and issues that touched CDC as Director of Media Relations.

Barbara: Great. Well, we're particularly interested in your involvement with the H1N1 pandemic response. So if you could think back to last spring, do you recall when you first heard about H1N1?

Glen: I first heard about H1N1 probably a few weeks before the public did. One of my press officers, Tom Skinner, had brought to my attention some research – some findings from the Influenza Division that said
that they had found a novel influenza virus. And it involved a couple of children in California, I believe, and he had been talking to them about how they were going to make that information publicly known.

And so I was involved in some of those early conversations perhaps about a week before we held our first press briefing on this novel H1N1 virus. And so I would say probably around April 17th, April 18th is when I first became aware of H1N1.

Barbara: And when you were involved in these discussions, can you think back to sort of the climate, the feeling in the discussions? Did you think that this was a potential pandemic or did it strike you as a crisis or – what was the general feeling?

Glen: Well, the general feeling when this was first brought to - at least our attention in media relations - was that this was something that we probably should think about bringing to public attention sooner rather than later, and that wasn’t so much based on the number of children who had been affected because that point, it was only about two and I believe both of those children had recovered from their illness and it was not very remarkable.

But given the interest that there had been over the past few years in pandemic flu and the potential for flu – flu viruses to call a pandemic, we thought that it would behoove CDC to try to bring this to people’s attention sooner rather than later because if this did turn out to be the cause of – of more illness or – or serious outbreaks, it would’ve been better for the agency in terms of its credibility, in terms of being transparent, to have brought this to people’s attention very early on. And we knew that when we made that recommendation that – that we also had to be very careful that at that stage we had no indication or no idea that this would turn out to be a pandemic flu virus.

At that point, what we had was a novel influenza virus that had caused some cases of illness, that may have caused other cases and we were in the process of – of trying to figure that out as an agency. And so what we wanted to do is make sure that we notified people, alerted them to the possibility that this virus has the potential to cause illness, but also put that information to a – into a context so that people weren’t unduly alarmed based on the information we had.

Barbara: So in the first few days of your initial response period, were you working primarily within your own division, your media division, or were you working with other parts of CDC?

Glen: We were working with other parts of CDC. We’re working very closely with the influenza division and our influenza experts. We were working very closely with the CDC Office of the Director. I – I was in meetings with – with Acting Director Richard Besser as well as Dr Ann Schuchat who at that point was part of his senior leadership team. And we had a number of conversations early on about the – the importance of making sure that this information got out in a timely
manner, and that when we put the information out that we put it out in the appropriate context.

And so one of the things that we did was we did hold a press briefing on, I believe it was like April 23rd or 24th, and it featured not Dr. Besser but – but Dr. Schuchat and Dr. Nancy Cox. And one of the reasons for that was based on the number of cases that we were aware of, based on the lab results that – that we had as of that date. We decided that – that was the best way to inform people without causing undue alarm.

When the CDC Director is part of a press briefing, it really heightens things. And so we wanted to make sure that we wanted to get people’s attention but we also wanted to keep it in step with the information that we had.

Barbara: Right. So what was – do you recall what was the general public response to that press brief or did you feel that the media recognized the severity of what you were discussing, the potentiality?

Glen: Well, very early on, I – I think it was hard for them to put in context. In fact, the day before that press briefing, we – we had a call and what we call a background briefing with I believe about five major reporters to let them know what we were going to be talking about the next day. And we talked to news media that is often the very first to report on something. And so we talked to a reporter from Associated Press, from Reuters, from CNN. And we told them what we knew.

We told them that we had discovered this novel virus, that the virus had called illness in at least two children, both of those children had recovered without any notable difference in the severity or course of illness from – from seasonal flu, that we had other samples that were on their way to CDC to test, but it was a relatively small number of samples. It was probably less than 10 or around 10 or 12. And at that point, we did not know if this virus had caused other disease, or if that virus – the virus was causing disease currently. And most of those reporters chose not to write a story based on the initial briefing. A couple of them did a little story and said basically what I just said which is – which was that the CDC had discovered this novel influenza virus, it appeared to have caused some – some illness, it wasn’t clear that it had caused any additional illness and it wasn’t clear it was still – still causing illness.

And then after our – our press briefing on the 23rd, we did have more media stories and again, a lot of the media interest at that point was not so much in the two cases that we had confirmed, but in the number of test results that – that – that CDC was still – number of cases that were still being analyzed. And because that number was still relatively modest, again at that point, most of the news media was – was pretty conservative and cautious in how they approached the story.
Barbara: Great. Where – where were you getting your information about what was happening and developing?

Glen: Pretty much directly from the subject matter experts involved. When – when something like this happens, we – we go right to the subject matter experts at CDC to – to learn from them what they know, and to see what their thinking is, and how – how they think it will play out. I was also in a number of meetings with the CDC, with the Acting CDC Director and the CDC leadership team related to this.

Barbara: And could you describe a little bit about the internal communication processes that were being used at CDC in order to keep the CDC employees informed about what was going on?

Glen: Well, you know, very early on, again the processes were mostly between those people who were directly involved in it versus, you know, a broader way of communicating with a lot more employees.

And at that point, it was, you know, again, when you go back to that period in time, we had relatively limited information. We also know that as a matter of course given what CDC does, they do identify novel viruses all the time. That’s – that’s not an unusual thing for CDC to do given the business it’s in. And we also identify influenza viruses that have what look like unique characteristics. With further research, they may turn out to be, you know, similar to viruses that – that are already known.

And so at that point, it was very important for us to – to keep things in – in that kind of a context knowing again that – that there is a lot of interest on both the public, and the media and the healthcare community in influenza viruses, we probably – we had a great obligation to make known what we knew about that virus sooner rather than later, even though I, as I mentioned, at the point that we were talking about this, we started talking about this, we only had two children who had been impacted and we only had about seven to 10 samples that were on their way to CDC.

Barbara: So as time went on and the situation became increasingly more dire, and more cases were reported, and the Emergency Operations Center was activated, and CDC began a more – a more coordinated response, who did your role with the media change?

Glen: Well I guess – I guess one – one important transition I should – I should probably elaborate on a little bit, we did our press briefing on April 23rd with Dr. Schuchat and Dr. Cox. And at that point, we thought that we pretty much had brought people up to date and we – what we said in the press briefing that we would let people know more as we knew more. Our anticipation when that press conference ended was that we probably weren’t going to be back with an update for at least a few more days, perhaps another week or so.
About three hours after that press briefing though, Dr. Besser got word from Canadian health officials that they had been testing samples from Mexico where – where a country that had been experiencing a lot more severe disease at that time had been in the news because many people had died from influenza or influenza-related complications.

And so about three hours after that first press conference, we were brought back down to the Emergency Operations Center to get an update from Dr. Besser about the situation in Mexico. And at that point when we – when we realized that this virus had contributed to much more illness than – than what we were aware of previously, had probably been responsible for a lot more severe illness, at that point, we realized that we – we probably were going to be back communicating to the public and the media the very next day, and we were probably going to be dealing with Dr. Besser, as the Acting Director of CDC.

And in that afternoon of – of discussion about the next steps, one of the things that was abundantly clear was that this was going to probably be of media and public interest for a while and that we, CDC, had to be prepared to be in front of cameras answering media and policy maker questions quite frequently and be ready to go and assume that for the next few days, next few weeks, we were going to be having to update people on a regular basis.

Barbara: Right. Often times in public health emergencies there are really heavy demands placed on organizations for immediate and very detailed information about the threat. In this case, there were a lot of unknowns and uncertainties, so how did you deal with that?

Glen: Well, one of the first things we did to deal with the unknowns and uncertainties is if you look at the transcripts of Dr. Besser’s first press briefing, one of the things that we did was we – before we gave an update in terms of what we knew about this virus and the number of deaths it was causing, we had Dr. Besser spend about two minutes giving reporters in the media kind of a lay of the land, telling them what to expect in the coming days and weeks. He told them up front that, you know, the information we were talking about this day was likely to change and change in ways that were not predictable, that there was going to probably be considerable uncertainty, there would be uncertainty for probably long periods of time and we would have to act and make decisions in light of uncertainty, that our decisions may change; they may change quickly, and without notice, and people should be prepared for that: that states, and communities, and countries across the world may take different actions, different steps in term of preventing, and combating, or treating illness caused by the virus; that that would not be surprising; people should not be surprised by that; in fact, that was a good thing because it would help us in terms of identifying best practices.
And so I think that setting the stage was a really critical step and it was – it was something that we came back to quite often in those first couple of weeks because we made the assumption that may reporters as – or as this grew in scope and scale, more reporters were – were coming – becoming interested. New reporters were coming online and we wanted to make sure everybody was operating from the same course out of assumptions.

And so one of the things that we – we did take a lot of effort or made a big effort to do was to make as many of our assumptions explicit to try to guide people, particularly the reporters and the public in terms of how things may play out, and to foreshadow things that may change so that they wouldn’t be surprised and be critical or – or become negative as a result of change.

Barbara: I recall, and I think you probably do, during the period of time as it was developing, there was considerable media sensationalism for lack of a better term. There was inaccurate reports, misleading information, web postings. How did you manage that, or attempt to manage that, or did you have any role with that?

Glen: Well, I think at first I put that in perspective. I – I think the vast majority of the media coverage was very accurate. We – we monitored the media on – on an hourly basis. And I got reports every day and I think if you do this for a living and you see the full scope of media coverage, I think one of the things that impressed – that impressed me was that the vast majority of the media coverage was correct.

Some stories, as would be expected, probably were more sensationalistic; but again, a lot of those people were – were dealing with the same uncertainty that we were dealing with as an agency in terms of trying to anticipate where this was going. There had been a lot of – of hype and warnings about pandemics over the last five years. A lot of people had warned the people in the public that if a pandemic or the next pandemic came that many people could be harmed, many people could – could die. And so there was – there’s a – a lot of work, ground work that had been laid, many – much of it probably not intentionally, that caused a lot of people including some in the media to come to this – this – this new virus with the expectation that we were on the cusp of something very dramatic and very tragic.

And then you also had – what – one of the media conventions is – is they will seek out experts, and they will seek out experts who will provide them with the full range of opinions, and projections and estimates. And very early on, nobody had a good crystal ball. And as a result, many in the – many stories included projections and estimates that – that in retrospect seem quite extreme. But you had a lot of people trying to get their – their – their voice out through the media.

And then websites are always, I think, going to be a challenge. I think the expectation that – that you can get every website to run your
perspective, provide your information, cover this like you would – you
would like it to be covered is completely unrealistic. And what you’re
better off shooting for is the vast majority of them being in concert
with your messages and I think we achieve that. But – but to expect
that there would be no media hype, I think, is unrealistic. Public
health, I remember an expert in public health once told me public
health is about one foot on the brake and one foot on the gas. And I
think you saw that throughout – throughout the last – through the
months of this pandemic.

Barbara: Good. You mentioned decision making a while ago. I was wondering if
you could talk a little bit about the process of how you made decisions
in the media relations division about what information to share with
the public, when to share it, how much to share and so forth?

Glen: Well, very early on, we realized that we were going to have to have a
regular basis in the media. Part of that was just sheer survival. The –
when something like this takes off, we get more media calls than you
can handle on a one-on-one basis. And so you have to then switch the
systems to manage that volume of media.

And so one of the systems we did was we instituted daily press
briefings. And if we needed, we – we did a couple of additional smaller
press briefings each day. So for the first five, four or five weeks of this,
we did a press briefing every single day, including weekends,
including holidays, to bring people up to speed. Every day, we got
 together with the people who were going to be serving as the spokes
people for those press conferences, whether it was Dr. Besser and
most of them were Dr. Besser, sometimes he was joined by Dr.
Schuchat, sometimes he was joined by Dr. Cox, depending on, you
know, what the specific issues were, and we looked at what had been
reported as of that morning. We looked at what we knew as an agency
that was different from the previous day. We looked at how things
were playing out and we – we tried to anticipate where the stories
might be going, where the media and reporter interest might be going.
And we factored all that into trying to figure out what our key
messages were going to be that day.

One thing we also tried to do every day before we did a press
conference was to think in terms of if this press briefing or this
interaction with the media works, what would or should the headlines
be for most of the stories? And so we tried to make sure that we had
that kind of communications discipline, not just knowing what were
the two or three key messages that we want to deliver, but to also
know what the bigger umbrella message was. And so we – we spent a
lot of times thinking about, you know, what our – what our – some
potential desired headlines.

We also tried to make sure that we coordinated and disseminated our
key messages with a wide range of others who might be called upon by
the press. And so once we did a press conference, we made sure that
we distributed our key messages widely. We distributed them to state
and local health officials through their public affairs offices. We
distributed them to partner organizations. We developed lists of
people who were getting called by the media to – to be experts and to
be quoted in stories, and we worked to provide them with our key
messages.

They didn’t have to agree with us but at least you want to make sure
that they accurately portrayed what CDC’s messages were.

Barbara: Did you experience any sort of, pressure’s probably too strong, but any
sort of emphasis on the need for more transparency or any pushback
from the media or any sort of a challenge from the media that perhaps
CDC was not being completely forthcoming with the public? Did that
occur at any time?

Glen: No, not really. In fact, we got way the opposite phenomenon. After
about four or five weeks, I had reporters asking me are you – when are
you going to stop doing these daily briefings, telling me that we had
worn them out which was – which was a highly unusual event. But no,
throughout – throughout – we made every effort and it was – and we
had the full support and endorsement of Dr. Besser and Dr. Schuchat
that whatever media inquiries came our way, we would look at them
and we would – we would evaluate them and we would try to do as
many as possible; not obviously, we had to – had to make sure that we
prioritized Dr. Besser and Dr. Schuchat’s time. And so that meant
that – that entities that could reach large numbers of people like
CNN, Associated Press, and Reuters, and Washington Times, you
know, were our top priorities. But we made sure we cast our net as
widely as possible, that we – if it wasn’t Dr. Besser and Dr. Schuchat
doing the interviews, that we found appropriate subject matter
experts to talk to the – to the media outlets that were calling us.

We sent an invitation to media to come to CDC to observe. And again,
Dr. Besser fully endorsed that strategy and I know it made some
people nervous because we had media in the Emergency Operations
Center, and we had them there very early on. We had media at CDC
and once they’re here, you know, they all want to go in different
directions but each one of them had to have a press person assigned to
them to make sure that they didn’t go places where they couldn’t go
since they weren’t federal employees.

And then in August, we spent – we invited about 50 or 60 media to
come to CDC for a two-day workshop that they could – that was on the
record, they could spend time talking to our experts.

Looks good. Looks fine. Alright, I guess we’ll have to start that
question somewhat over, right? I can’t remember the question.
Barbara, you want to ask a question?
Barbara: Okay, well were you finished talking about the workshop that went on with Dr. [inaudible 0:23:27.4] being there and were – had you completed that thought?

Glen: Well, I guess I could pick up that thought. One of the – one of the things that we did that I think was very helpful was we invited about 50 or 60 media to come to CDC for a two-day workshop in August. And it was on influenza, on H1 – 2009 H1N1 influenza, but it was designed to give them a chance to talk to our experts on the record. We brought almost all of our flu division experts into that workshop at some point in time. And we – we gave them an update, not just on the current situation, but we also talked about how the thing – how H1N1 might unfold in the fall, how the influenza vaccine situation may unfold in the fall. We talked about the differences between H1N1 – the 2009 H1N1 flu and seasonal flu which we also anticipated in the fall. And we – I think we achieved a really helpful forum for answering their questions and getting our – our key messages out.

And when we issued the invitations, our expectations were pretty modest. We were hopeful that maybe 15 to 20 news organizations would accept our invitation, and I think we had a response rate probably about 95, 96 percent. And we had to move from – from a small conference room into one of the large auditoriums to accommodate all the media interest. And we had all the major media here giving us pretty much their undivided attention for two days.

Barbara: Great. Would you say that they’re – your primary means of communicating with the public was through television media or did you have other message that you used?

Glen: Well the – I think we used a number of methods. Television’s obviously the most visible, reaches large numbers of people. A lot of people do get their information and news from TV. But I think equally important and probably not quite as recognized is – television relies on – on probably a handful of other media for their information. And so it’s very important for us to get our – our messages into the Associated Press stories, into the Reuters news service stories, onto CNN because often times those three media influence what many of the TV stations are doing, and how they’re thinking, and whether they’re covering a story, or whether how – how they’re covering a story. And so, they’re equally important.

We also used a wide variety of social media as well as purchased media, donated media. So the TV was probably the most visible but probably equally important was with some of the print media as well as some of the – the other broadcast media such as radio.

Barbara: Could you talk a little bit about how you used social media and what you used?

Glen: Well, social media, we did a number of things. We developed a Facebook page. We developed a Twitter account so people could follow
us through Twitter. And I think at one point, there were 1.2 million
Twitter followers just on the H1N1 alone.

We – one – probably one of the key things which is – which is the
realm of new media but – but probably is not something that many
people would ever notice, a lot of people come to CDC’s website for
information. And they will simply cut and paste that information and
then re-purpose it and post it on their website. We know, for instance,
state and local health departments do this a lot. They come to CDC’s
website, and they will cut and paste information, and put it on their
website. Sometimes they’ll credit CDC. Sometimes they won’t. That –
that’s fine.

But one of the challenges with that approach is that when we update
information on our website, they may not know we updated it. And in
H1N1, there was a lot of updating happening on web pages that were
related to – to this virus, to prevention measures, to our
recommendations.

And so one of the things that we developed that falls in the realm of, I
guess, new media was something called Content Syndication. And
through this effort, what we did was we – we reached out to
organizations such as local and state health departments and said, if
you would like to use our content, or we noticed you’re using our
content from our website, we’d like you to sign up. And if you sign up,
you can, through this Content Syndication effort, when we update a
web page on the CDC website, it will automatically updated on your
site. You won’t have to do anything.

And so that way, we can be sure that you have the latest information
and you can be sure that you have the latest information from CDC.
And that’s something that we think has got much wider applicability
but it was a break through because it helped us maintain or helped us
achieve more consistent information on local and state – state and
local health department websites.

Another tool that had been developed was something called flu.gov
and flu.gov was run by the Department of Health and Human
Services. This content syndication program enabled us to help them
with flu.gov. They could again take content from CDC’s website and
when we updated it on our website, it would automatically be updated
on flu.gov.

Barbara: That’s great. In terms of the information that you decided to post or
share, can you talk about the process that you went through for
clearance of the information or how – how was that managed?

[break in audio 0:28:59.7]

Glen: …your original question.
Barbara: Okay, so the first thing would be about your process of deciding what information to share, how you – how you worked that process, who made the decisions about what information to share and...

Glen: The [inaudible 0:29:24.0] go back to your original question.

Barbara: Okay, so the first thing would be about your process of deciding...

Glen: We're good to go so you can go – go to your original question.

Barbara: Okay, so the first thing would...

Glen: Well, in terms of what information to share, as I mentioned, one of the things that we knew is that very early on, we were doing a daily press briefing. And so one of the first factors in terms of what information to share was what do we know today that we didn't know yesterday. What new information is there that is of relevance, of pertinence, public health value, that we should share with people today. And I think those were probably the, you know, the major criteria was, you know, what is new, try to look at how relevant or pertinent it is to a wider audience, whether and how it had public health implications and making sure that we gave them those public health implications.

We also would look forward and we would say, you know, what are the things that could happen, or will be happening – happening in the next two, three or four days, that we may benefit from foreshadowing, letting people know what options are under consideration. And most of those conversations, I guess, started our flu branch, our flu division. But they quickly involved CDC senior leadership. You have to remember, all these parties, all the major parties were getting together in the morning as – at – as part of a director's update. And so we media relations were present with about 15, 16 other senior leaders including those involved in the response, those involved in monitoring what was happening, those involved in vaccines. And so every day, very early in the morning, we like the CDC Director heard the updates and those updates were one of the most critical factors in terms of giving us a sense of what were the possibilities to talk about that day.

We then would have conversations with senior leadership at – at the Department of Health and Human Services. We would give them some idea of what we thought could be the major topics for the press briefing that day or for – for public updates. We also looked at what was possibly going out to the healthcare provider community, to clinicians, in terms of information to see whether that had anything that we should be aware of, and be mindful of, and bring to people's attention. And so we would go through that process every day. We would then develop, draft some key talking points, some key messages, some possibilities, circulate those probably by about 11 o'clock in the morning; and I say 11 o'clock in the morning because we typically were doing our press briefings around noon or one o'clock.
And so two hours before those press briefings, we would circulate what we thought was a pretty good draft to HHS, to the flu branch, to the CDC OD, to the Acting Director, have them take a look at the information, get their reactions, their edits, their suggestions, do another iteration, re-circulate that, do another iteration, re-circulate that. And then very often, we were working right up to 10 minutes before the press briefing in terms of sharpening and honing our messages.

Barbara: In your own organization in the media division in responding to H1N1, did you find it was necessary to make organizational changes whether in terms of process, or staffing, or resources of any type?

Glen: We – very early on, we – we realized that we did not have enough regular staff to – to maintain the hours, and pace, the schedule that – that this required. We have a relatively small number of press officers who are in the CDC Office of the Director. And that – that’s probably ranges from 12 to 15 on any given day depending on where you sit with vacancies and people who are on vacation or out sick.

This required – we knew pretty much a – a seven day a week, 24 hour capability. And so one of the first things we did was we – we put out a call to try to find all the people in the organization at CDC who had either been part of our office in the past, or whose jobs entailed working with the media, if only on a part-time basis, or who had skills that could be used as part of this.

And so, for instance, there are people who are really good writers. And one of the things that we need was – was talking points and key messages. So if we could find people who were good writers, that helped us enormously. They didn’t have to be people who had experience dealing with the media and with the press, but they could do some of the other work that goes on in terms of being able to do an effective media response.

And so we brought in a number of people on detail. We brought in some people through outside contracts to kind of build up our staff. We worked to build a work schedule that made sense in terms of sustaining people for long period of time. And then the other thing we did is – is again, we work with state and local health officials, public affairs officers and we had daily calls with them, shared our information with them so that we could direct some of the people who are calling us to the right people in the states to be able to answer their questions.

And again, it was a way of taking some of the burden off of us in terms of handling media questions. But he biggest thing we did was – was to make sure that we did these – these daily briefings and got the media, our staff and our spokes people into this daily rhythm, this daily habit of knowing at one o’clock every day the CDC would give an update.
Barbara: Okay. Great. I guess my last question would be just in terms of evaluating what you thought worked well, perhaps were challenges that were unanticipated, things that did not work so well. Any—any thoughts along those lines?

Glen: Well, I think—I think what worked well, there—there were a number of things that—that helped us have an effective response. I think it started with the recognition of—of CDC's leadership, that it was going to be important to meet the demands, the communications and media demands, that we had to meet them head on, and start right from the beginning with the expectation that we had to be open, we had to place a very high priority on answering the questions of the media. ‘Cause if you don't start with that priority, you never recover.

And so—so from the word go, Dr. Besser and the CDC senior leadership had made a commitment that this is going to be in the media, and we're going to do whatever we can to meet the demands of the media, to make the media—to make ourselves assessable and available to the media, and so that we can reach the public through the media. And I think that was the first really important thing that that worked.

Second, was following through on that. It's easy to say that but as Dr. Besser and Dr. Schuchat can probably attest, they were probably putting in, you know, 20 hour days. And we were probably placing 10 hours of demands on them some days in terms of the media demands. And they—they never hesitated. They went wherever they needed to go. This can involve significant travel, whether it's going to Washington, DC, whether it's going to downtown Atlanta. And so that was very important.

I think another thing that worked really well was—was the approach that we took which was trying to figure out what were our desired headlines, and what could come up in the next couple days that—that could change so that we could foreshadow those things. I think that that really helped us stay ahead of things thinking—thinking like the media in terms of where the story was going, and how it may switch, and how it may change. I think that was extremely effective.

Making sure that we circulated our key messages as widely as possible to both internal parts of CDC as well as to external audiences, I think, was extremely helpful because in many cases the state and local health departments were scrambling. They too are—we're sometimes understaffed and so they greatly appreciated having our key messages and they were able to tailor our messages for use in their state or their community. And I think that was extremely helpful.

I think one of the—one of the challenges, talking about challenges, was that no matter how many people you send your key messages to, no matter how many people you have invited to be part of your
process, there are still going to be some you miss and some of those
will be internal. And so I think one of the challenges that unfolded
was projections and estimates. There were a lot of people including
government officials and government agencies outside of CDC, some of
them at HHS, some of them outside of HHS, that were making
projections and estimates based on things they probably had
read, or heard, or seen, as part of pandemic planning; but when they
made those estimates, however well intentioned, that set us – that
created some difficulties. I think one area was in terms of projections
about number of doses of vaccine.

We at CDC, if you look at our messages in June, we were very careful
to say we don’t know if we’ll even have vaccine. You know, many
times, things go wrong in the vaccine production process. We’ve seen
that happen with seasonal flu. And so we made a decision at CDC not
to get into the – into making estimates or projections regarding doses
of flu vaccine.

Unfortunately, others including some work for the federal
government, did make projections. And those projections then were
extrapolated or projected on to CDC, and we had a hard time getting
people to understand that those projections were – were – were just
that. They were – they were guesses. And we spent a lot – we – I think
we lost some momentum trying to backtrack and talk about, you
know, why there wouldn’t be so many doses available at a certain
date; when if we had stayed what we thought was the best strategy at
CDC which was to be very cautious, very conservative about
projections, I think it would’ve worked out better.

But again, I think it speaks to the complexity and the number of
people that – you know, the media will call upon anybody and
everybody. Sometimes you can – you can – you can guess or – or based
on expert judgment have a good idea of how many people or who those
people may be, but you’ll never be able to guess all of them. And – and
I think that’s one of the challenges.

And I think another challenge is just understanding and recognizing
that – that after a while, different reporters want to write different
stories. And so while 80 percent of the media may be covering things
the way you would like them to cover, when you have an event like
this, there’s always going to be reporters who are going to stake out
purposely so, different ground, different issues. And that could be a
challenge for – for everybody when they do that but I think you have
to expect that that’s going to happen and not – not be surprised. And I
think that took some people by surprise that there would be some
reporters who’d go in different directions.

And in terms of staffing, I think – I think staffing is always going to be
a challenge because you – you – you really have to staff for – for day-
to-day operations. But you do have to be able to put in place plans that
enable you to surge more quickly. And I think we learned some things
in this process about steps that we have to take in the future to be able to build capacity or bring on additional capacity faster. We – we – it probably took us an extra couple of weeks to figure that out. So I think – I think one of the things that we learned is that we have to have to have steps in place to be able to do that more rapidly within a matter of days versus weeks.

Barbara: Great. Do you have any final recommendations that you would like to offer for the future?

Glen: Well, I think – I think I hope that when people look at this that they realize that one of the reasons it went so well was because the communications was very good. But if they look further, I think they will see that, you know, we – we really did follow the tenets of risk communications early and often. And so we shared – we were comfortable sharing dilemmas with people, acknowledging the uncertainty, telling people what the uncertainty would mean. We were comfortable in telling people that the course would change and when the course changed, we did, you know, we acknowledged that that was going to be disruptive for some.

But that – that just was part and parcel for the territory. And so I think we were always mindful that part of our job in communications was – was guiding, and setting the appropriate expectation level. And if you don’t set the appropriate expectation level, you know, a lot of this goes much worse.

Barbara: Thank you very much. This is…[audio ends]
Interview #12. Stephen Redd, MD (RADM, USPHS)
H1N/A Incident Commander and Director, Director CDC Influenza Coordination Unit

Barbara: Good afternoon. If you could please give us your name, just acknowledge the date, and where we are, and your present position.

Steve: My name is Steve Redd. It’s February 18th, 2010, and we’re at the CDC Clifton Road Campus in the basement of Building 19, I think.

Barbara: And your present position?

Steve: My present position is the Incident Commander for CDC’s H1N1 response and I’ve been doing that since last April. Before that, I was – I am the Director of Influenza Coordination Unit which is responsible for organizing CDC’s pandemic preparedness work.

Barbara: Great, thank you. Well, what we want to do today is develop an understanding of the history of the H1N1 virus as a public health threat and CDC’s response to this threat as it emerged. We are hoping to create an oral history of the CDC’s response to this public health issue and are interested in details of your role and participation in the CDC’s response. These are key to helping us document the events and processes that shaped the organization’s response. And we hope this oral history record will be useful to future leaders by giving them the benefit of your experience with H1N1 as they confront new and possibly similar challenges. So we’re hoping you will recall in as much detail as possible your experiences in recognizing and developing strategies and practices to cope with H1N1 as it emerged and grew into a global health issue. So if we could start with a little background information on you. Could you tell us about your training, medical specialization and what brought you to CDC?

Steve: Well, I went to medical school at Emory so I’m trained as a medical doctor. And during one of the summers of medical school, I worked at CDC in the Co-STEP Program in the Reproductive Health Program. So that, both from the proximity to – to Emory and working here that summer, when I finished my training in internal medicine, or as I was finishing it, I – I did the EIS program. I came to CDC in 1985 and I’ve worked in a lot of different parts of CDC since then, in bacterial diseases, in international health, in malaria, in the measles work, for about eight years in environmental health with the asthma program there, and for the last four years, I came to work on flu in the spring of 2006 as a new unit was being formed to manage the preparedness work that CDC was doing. This was in the days of bird flu and a very high priority was put on being prepared for bird flu pandemic. So that what I’ve been doing -- I had been doing, between that period of April 2006 and April 2009.

Barbara: Are you currently completely involved in the H1N1?
Steve: Completely since last April. Yes.

Barbara: Since last April. So do you recall when you first heard about H1N1?

Steve: Well, the – there were – there were a couple of different things that happened and I remember the date of April 15th. We – as part of our preparedness work, we had a weekly meeting to review progress in getting prepared for a pandemic. And part of that was kind of in a new thing that had happened and there was a single case of – of swine flu virus that had been identified. In fact, the person had recovered before the identification was made at CDC. So we heard about this case from San Diego. It was detected using a machine that was a prototype that we were developing under contract to identify influenza virus infections and the – the thing about this particular infection, when it was originally identified, is it wasn’t a seasonal virus so it wasn’t the normal H1N1, it wasn’t an H3N2, it wasn’t a V virus, it wasn’t H5N1, it was an Influenza A virus. So that led to a series of laboratory investigations that eventually identified it as something that had never been seen before. It was a single case and we – the really – people wondered if this was the kind of thing that had always been happening; we just never had the capability to detect it.

And what the investigation that was going on was intended to identify the – the pig, or the farm, or the county fair that the person had been to that – where they had acquired the infection. So that was the very first day. On Friday, April 17th, I was actually in Galveston with my ex-boss giving a talk about pandemic preparedness, and a second case of the same infection was identified that was in a different county and there was no obvious connection between those two cases. And that next day, on the 18th, it was a Saturday, we had a conference call with the California Health Department. It was a couple of hours. And one of the early decisions that I think was a really important one was at the end of that call the decision to draft an MMWR Article to notify the public of these two cases from – and it was to be published early the following week. And I think that initial decision to get that out – out of CDC – if we hadn’t done that, we would’ve never ever caught up because during that week, more cases were identified. These from Texas and then a couple of days after that, cases from Mexico that were very severe were identified. So that was – that kind of launched everything.

The Wednesday, the 22nd, is when we activated the Emergency Operation Center. We had three locations in the US of these cases. And the first, that Thursday night, the 23rd, was when the severe cases from Mexico were identified. And that led to a lot of discussion with the – HHS, the Department on what our next steps were, how we were going to try to figure out whether this was a severe illness, or not severe, because the cases in Mexico were very severe and the cases
that we’d identified were not very severe. Most of the people had actually recovered.

So it really sort of cascaded from there. And we knew we were going to be very busy after that Thursday for a long time.

Barbara: So it, early on, struck you as a potentially serious crisis?

Steve: It did. I think that the – it was probably those cases, the sort of third round of cases from Texas that made us known it was going to be widespread. And then shortly after that, when severe cases were identified that – I think what actually happened is that we learned that we knew less and less about what the situation was than what we thought. And that was a little bit unnerving but kind of keeping a grip on the uncertainty became an important way of navigating; and also, identifying some practical actions to take to find out more.

Barbara: Do you recall what steps you took immediately in the first few days and what those actions were?

Steve: Yeah, I think that the – the biggest initial thing was that MMWR article which I think was published on the 21st of April. But a series of guidances were developed after that relating to treatment, to infection control, practices, and some decisions about whether to recommend that people who are exposed to the case receive anti-viral drugs and that all took place in those first few days. I think that probably after – well, and then on that phone call on the Thursday night when the severe cases were identified, we sort of organized the response into a couple of categories of activities. And I’m not sure we were actually organized in this way but it was a way to kind of plan what we needed to do the first being to understand what the situation was and there was epidemiologic investigations and laboratory work in that area.

The second was to do things to treat people and control the disease so kind of the intervention zone which included the question of travel advisories and movement restrictions, treatment, protection for workers who would be exposed to the illness and the development of a vaccine.

And then the third thing was the – the third big category was communication and putting as much information as we could out about what we knew, what we were doing to find out more.

Barbara: And what was the process you used in putting the information out to the public?

Steve: The first, well, there was the MMWR when the cases in Texas were identified, there was a press conference that Anne Schuchat was the spokesperson. She was the acting Deputy Director of CDC at that point. And when the cases in Mexico were identified, Rich Besser, the acting Director, gave a press conference and described what was going on. I think that was really at a very uncontroversial decision also. I should – I think was very – very correct going that route as well.
Barbara: And organizationally, did you notice some impact immediately and change – any changes that needed to be made?

Steve: Well, on the Wednesday after the Texas cases were identified, we organized in the Emergency Response – the Emergency Operation Center and we used the model that we had exercised the previous October so it was actually a kind of familiar setting except it was real instead of not real and so that – yeah, in fact there was one person that – it was Marsha actually, Marsha Vanderford who a couple of times talked about the exercise when she was describing the event. So it was actually a pretty familiar environment because of the exercises.

Barbara: So you had existing plans in place?

Steve: We did. We had – this really had been my job before the response had been developing an operations plan and exercise program that we were doing with contractors but we organized – we’d had five functional exercises where we pretended that there actually was a pandemic occurring and we gave briefings, did interviews with the press, all the things that we would have to do during a real response.

Barbara: Did you find you needed to change anything or modify anything?

Steve: We – we were constantly changing things and I think at that – if that – that’s one bit of advice is that you should never hesitate to change if it seems like change is needed. And so one – one example of something that – and I think there were other examples that could be really similar but in the first few days, there was a first was a real burden of notifying the other parts of government, and other governments as well. And so it was pretty chaotic. Things were – be called to a conference call with people from the White House, or Health and Human Services, or getting calls from the Department of Homeland Security, or Department of State.

And on one day, we – we – our originally planning had been to have 60 minute briefings. And on one day, we – the – there’s something that was happening at 8:30 so we had a 30 minute briefing. And it turned out that that 30 minute briefing, that that was actually the right length of time for the briefing and so from that day onward, we kept it 30 minute briefings. But it was really the conflicts that we couldn’t do a 60 minute briefing that led us to the 30 minute briefing. So that – that sort of thing was occurring quite frequently.

Barbara: So in terms of the CDC’s internal communication processes, could you offer some insight into the – how that worked in this case?

Steve: Sure. I – I would put that in kind of two levels. One was people who are working on the response that we had, a daily briefing of the Director, and we also had several meetings to coordinate our activities through the day. And I actually think those coordination meetings were extremely important in keeping everybody on the same page and evolved with throughout the response that during April and May we
had daily 4 or 5 PM meetings for an hour where we talked about either something that was evolving or strategy issue or did a decision briefing. And we backed off from that in June. We reinstituted that in August so there was a lot of tinkering with the daily schedule.

The other part of the response though was for the rest of CDC and so initially I think it was a conference call, it might have been a video conference, but we had a briefing of – of – of Center Directors and Division Directors and we did that for several weeks as the situation was evolving. I think that the – keeping everybody apprised of what was happening in the Emergency Operation Center, that might be something that we could've done better particularly in the lull between the intense activity of April and May, and what might've seen like a lull to other people but was even more intense activity in June, July and early August. So we did briefings of Center – the Center Director, our group, a Division Director group, just describing what the activities were.

It was hard to do enough of that to – I think probably the rest of CDC might have felt during that period that there wasn’t as much going on as there actually was.

**Barbara:** Did you feel that you got as much information as you needed?

**Steve:** I did. And – and I think that was partly because of my role was to know and coordinate the information flow from the response upward. So I think that that – that’s probably something about the – using the Operation Center that really the organizational entities largely melted away and people worked as a team in that – in that net environment. I think that – we – partly that was the result of the exercises and that kind of knowing that you – you might normally work in a certain division or branch; but in the response, we’re a single team and new – yeah, there’s a new organizational structure that we have to work within.

**Barbara:** And how was that communicated to everyone, the new structure?

**Steve:** It – there – we had a chart and we were constantly changing that also. I mean one of the – one of – speaking of sort of memories from those early days, I – it was pretty long hours the first week or two and I took a, sort of a night off and went to my son’s trumpet concert. And I was feeling pretty good about the response and I realized that there were – I didn’t really have a clear sense of actually who reported to me and that was kind of – made me recognize that maybe it wasn’t so clear to people. And so there were two people that were kind of floating in the upper parts of the response that we actually made up titles for and had them report to me. So that – that was a way that we had to kind of keep things structured. And I do think that that, you know, was something that was constantly changing. Probably got really finalized in June and July with a – a task force structure that we had an
epidemiology surveillance and laboratory task force, a vaccine task
force, medical care, encounter measures task force, a community
mitigation task force, a communications – I’ve said that but – let’s see,
we had four, or six, a media and – media and communications, and I’m
forgetting the sixth. Let’s see, anyway, there was a sixth one. It’ll
come to me. Maybe I’ll ask for that to be edited [inaudible 0:34:55.5]
the tape.

Barbara: Would you recommend this task force structure be part of a protocol
for response?

Steve: Well, we’re going to document that wasn’t the way we had responded
in the exercises and I think for a pandemic response, it’s the right way
to organize, and probably it doesn’t so much matter exactly how it’s
organized as that it actually is organized, and that people have
responsibilities, and that the leadership of those task forces keep
people below them apprised of what’s going on. I’m not sure that the
exact structure is so important as the fact of having a structure.
Actually, I thought of the last task force too, it was the state and local
coordination task force which was kind of a cross cutting task force
but did a lot with the funding and the organized communication with
the state and local health departments and other partners.

Barbara: Good. In terms of decision making, if you can think back early on,
what do you feel were the key decisions that needed to be made in the
first few weeks and months?

Steve: Well, the – I think the – was – is really, you know, in terms of things
that we actually did, make decisions, or provide recommendations,
develop guidance, and then some of the real specific things like
shipping, counter measures, anti-virals, and personal protective
equipment that got shipped to states. Those – those were kind of the
few things that we actually did so a lot of what we were doing was
channeling information and making decisions or recommendations.

And I think in the first few days or maybe week or so, there was so
much activity that the decision making was not very organized and I
think that’s an important thing to try to get a grip on is what are the
decisions that need to be made and just the process of identifying
them is really helpful in – to provide the structure that’s needed. We
actually used a method of decision making that was called the Plans
Decision Unit so we’d identify a decision that needed to be made,
there’d be a group that would sequester, come up with a briefing in a
very structured way, including options, pros and cons for options, and
a developing criteria for evaluating the options, and then
recommendation and we’d talk about that and come up with a – all the
important things were actually recommendations even though we call
them decisions but we’d come up with a CDC recommendation.

So that was a pretty rigorous process designed to make sure that we
weren’t forgetting something important. And I think it – it worked
pretty well once we got it going. The first big decision was about the –
the recommendations for school closure. And that was – the – the
exact date was kind of the end of the last week of – of April, beginning
of May. And what was clear to us – the – the planning that we had
done was that if there were severe pandemic, there’d be pre-emptive
closure of schools for up to 12 weeks. And we – when we first saw
these cases, they weren’t as severe as what we thought a – a pandemic
like 1918 with a 2% mortality would look like; but we weren’t sure.
And so we initially had kind of a middle ground where if a case was
identified in a school, we recommended closing the school for seven
days initially as the first part of that recommendation.

But we were hearing from health departments that that seemed a
response out of proportion to the problem and that a less restrictive
option seemed to make more sense to people who were in the field.
And these were people we knew well that were kind of on the front
lines that we respected. And we fed that into this decision making
process and we ended up over about a four or five day period
recommending not doing this reactive school closure but closing
schools when the educational mission couldn’t be accomplished,
recommending that sick children be sent home and not attend school
until they were – actually, initially, it was for seven days during that
period.

So that was an example of – of having recommendation that was made
not in the decision making process and then trying to examine it and
we backed off from it in a – in a – what I think was a very sensible
way to do that. And school closures dropped precipitously after that.

Barbara: Do you recall how that decision making group was formed and who
was involved?

Steve: For that particular one, Stephanie Zaza was the person that convened
the group and did the briefing, but there were a number of people from
different parts of CDC that had expertise either in flu or in the – this
community mitigation procedures. I don’t know the exact people that
were on, you know, did develop the briefing but it was a separate unit
from the – a defined unit within the response.

Barbara: But you were – it was within your organization?

Steve: Yes.

Barbara: So, you were...

Steve: Right. We just made the assignments as what the decision briefings
need to – or what decisions we needed a recommendation on.

Barbara: And then once the recommendations or decisions were arrived at, how
did you communicate those internally?

Steve: Well, I think we weren’t quite so strong on this as the other but what
– ideally we drafted a memorandum that summarized what the
decision was, what the reasons were, what the options were and that
could be a vehicle for communicating both to the CDC Director and
then above. And I think that, in those early days and the response, our
integration with the rest of the Department wasn't nearly as good as it
got to be later on. And some of that was that people were just starting
their jobs in the new administration and we didn’t know who they
were and we didn’t have a forum to do that. I think that’s actually one
of the strengths of the – I guess probably from June on that we
participated in a daily teleconference with the Chief of Staff and the
leadership of HHS, the – the [inaudible 0:41:13.8] Nicky Lurie, Laura
[inaudible 0:41:15.5] who was the Chief of Staff, Tony Fauci from
NIAID, Jesse Goodman from FDA, and that – that was kind of the
core group that we had a daily kind of discussion of issues.

Barbara: So overall, would you say that there was, in your view, from your
perspective, the response was effective or do you feel that there were
areas where things could’ve been done differently?

Steve: Well, I think both. I think that certainly – I do think it was effective. I
think there were – are lots of things that we could’ve done quicker or
done better. Probably from the standpoint of the overall response, the
biggest issue was the – the development and production of – really the
production of vaccine and what we know now is that large quantities
of vaccine became available after the fall wave. And so the opportunity
to prevent those cases just like the ’68 and ’57 pandemic that the
vaccine became available after the bulk of disease. So that – that it
was a disappointment. I don’t think there’s anything that the response
could’ve done to make that go better.

I think tied to that though was a not very good communication about
the uncertainty around the availability of vaccine that I think people,
state health departments and the public felt that we promised that
vaccine would be available sooner than it was available.

Barbara: There was also a little public fear of the vaccine that became almost a
rumor to some extent?

Steve: That’s true. I hate that – I kind of think that we were pretty good
about that actually that there was a – a sense that the – this was a
new virus therefore the vaccine had to be a new vaccine therefore
there was more uncertainty about the safety than there was; when in
fact, that wasn’t the case that – it was a new virus but it was very
closely related to flu viruses at all kinds. And the methods that were
used to produce it were exactly the same as are used for seasonal
vaccines year in and year out. And the – the – really what happens
every year is that there’s a – or almost every year is that the strains
that are used to produce the vaccine change. And so this was really
like a strain change in the vaccine. And I think that there was an
element of – where, you know, just from the polling that we did that
people thought this vaccine was more dangerous than seasonal
vaccine and less likely to protect than a seasonal vaccine was. And
probably – it’s actually probably more likely to protect because it’s such a close match with – with the circulating virus that’s not always the case with seasonal – seasonal viruses and seasonal vaccine.

And the safety, it turned out to be exactly the same as seasonal vaccine, very safe. I think that’s it’s hard to communicate without the experience that we had but as we did accumulate experience we were able to communicate that. I think this was also something that was really important was the effort that we put into monitoring for adverse events that might be related to the vaccine, that this was a big focus of work at CDC and also a structure for collaboration within the Department was set up. This was kind of in the August, September, October time frame.

Barbara: So, along those lines, would you have any recommendations based on your experience for perhaps some redeployment of organizational resources or organizational structural changes?

Steve: Well, I think we – I would say that overall in the response, we had funds for preparedness that we were able to convert into response funds right away. And in the spring, there were a lot of enthusiasm for the response so it was easy to recruit people into the response. Funds were appropriated for the response over the summer so that – that helped us. I think internally we didn’t really have a problem with financial resources. There were issues with having enough people to do the work particularly during the summer when the focus – it was out of the media temporarily or at least at the same kind of fevered pitch, but we weren’t able – we have challenges recruiting enough people to work on the response during that – that kind of summer, not really – not really a lull from there’s still disease transmission but I think we did kind of fall below the – the numbers needed.

That – we did get that righted during August and had lots and lots of people doing the right work from August through – through December and January. But I think this is really – it is a big challenge. I would say that there were three kind of organizational challenges to keep things running. One was personnel, so keeping enough people and actually keeping track of all the people. The other was the thing that we talked about earlier, that Plans Decision Unit. That was hard to keep staffed. And the third area was policy that we – we recognized during the summer that we needed a strong policy presence and it really wasn’t until October until we got that staffed adequately. But that was – that was really valuable once we got the right kind and right number of people in the policy area.

Barbara: So looking back over the past year, are there things you would’ve done differently with knowing what you know now?

Steve: Well, there are little things but I think the biggest one would’ve been to – for the vaccine development to have really worked harder to – and this is not so much me but for the overall response, to make sure that
we were not giving overly optimistic projections for vaccine availability. I think that was probably the biggest – the biggest thing that didn’t happen the way that it should have. Everything else, you know, wasn’t perfect and there’s room for improvement but that was really the big thing.

Barbara: So, do you have any final thoughts or recommendations you’d like to add?

Steve: Well, I guess in terms of for the next person that leads one of these responses, I think one of the things that is really important to recognize is when more structure is needed and also to recognize when there’s too much structure. And when there’s not enough structure, people will be confused and the efforts won’t be as effective as they could be because they’ll – people’ll be wondering if they’re doing the right thing. If there’s too much structure, people will be in meetings all the time and will be communicating rather than doing the work. So I think that there’s a constant adjustment of that balance between too much structure and excessive rigidity and not enough structure and chaos. And, you know, I think that’s where the – the leadership is to kind of get that in the right zone, and recognizing that there are going to be periods that are just inherently confusing.

Barbara: Good. Well, thank you very much.

Steve: Sure. [audio ends 0:48:48.3]
Anne: Dr. Ann Schuchat. I’m the Director of the National Center for Immunization and Respiratory Diseases at the CDC.

Barbara: Thank you, Ann. I wonder if we could begin with a little background information about yourself, your training, medical specialization?

Anne: Sure. I'm a physician. I'm an internal medicine specialists and I've been at the CDC for 22 years. I came here for the Epidemic Intelligence Service Program and I stayed. I was – began with Infectious Diseases and I've worked in Infectious Diseases and Vaccines for my whole career, going from EIS Officer to Medical Epidemiologist, Branch Chief within the Respiratory Diseases Branch and Bacterial Diseases. And then most recently became the Center Director for the new Center – National Center for Immunization and Respiratory Diseases. Is that enough?

Barbara: Are you currently involved in some aspect of the H1N1 response?

Anne: Yea, since the beginning I've had a major role in the H1N1 response. When the response began, I was actually serving as the Acting Deputy Director for CDC during the transition. But my long-term job as Center Director for Immunization and Respiratory Diseases meant that I've been involved in pandemic planning, and then had a lead role in the response as well.

Barbara: Can you recall when you first heard about H1N1?

Anne: Sure. Friday evening, April 17th, I opened my door at home and my cell phone went off, and my colleague, Beth Bell was on the phone. Beth was serving as the Acting Director of the Center while I was on this detail to the CDC's Office of the Director. She was calling to let me know that our lab had found two different children with new influenza virus that had swine origin. We had been following unusual influenza cases that had swine origin. We'd had one here, and one there, over the past two years or so. But these were two children with no contact with each other, or with pigs or animals apparently, who had a new strain that wasn't one we'd already seen. She let me know that and talked about what the team was doing to work with California in further evaluation and planned on, you know, putting together an MMWR report on this.

So that was when I first knew about it and I in turn called Rich Besser who was the Acting Director to let him know as well.

Barbara: And when you first heard about this, did it strike you as a potential crisis situation?
Anne: Well, I think that it was interesting because this was a strain that was different and it – the principal of the thing was that we needed to really get to work with California and understand whether there were more of these. The illness involved had already re – improved. The kids were better and so it wasn’t necessarily a crisis but it was what we call a potential public health event of international concern. And so that’s why we eventually ended up reporting it through the International Health Regulations.

So Beth really went through the couple things that were critical, what was going on and, you know, many of the right things were being done. So it was interesting and not necessarily tipping me off as a crisis but certainly something I immediately called the Director about.

Barbara: When do you feel that the Organization began to take this as an emerging crisis?

Anne: Well, we – I would say, by the following Wednesday, we – we had a weekly – we had, for years, been having a weekly Wednesday morning influenza pandemic update bringing people from different parts of the agency together to talk about what was going on. And that particular Wednesday was during the Epidemic Intelligence Service conference, the EIS conference. It’s once a year. It’s kind of out on the suburb of Atlanta.

And so I knew that, you know, Rich Besser was planning to be at the conference and decided no, I should be at this flu meeting in person. I had to be at the conference ‘cause I was moderating a session and called into it. And I think the discussion on that Wednesday morning about what else we knew because we’d found a few more cases by then was, you know, the next level. And then, of course, it definitely became a crisis on the Thursday when we – Thursday, April 23rd, when we had the first press conference and later learned about the confirmation in Mexico. So the press conference for us was just seven U.S. cases, everybody’s better, we don’t know if it’s something or nothing. And by that night, we definitely knew that Mexico’s very severe cases were the very same virus.

Barbara: Can you describe the events of the first few days after that?

Anne: Right, well the – the Thursday was a really big day. You know, the – the – for me, I did this press conference together with Nancy Cox which is unusual. We usually do press conferences, you know, after big meetings or when there’s an article coming out. But this was actually news that we were making. And then we had a – a conference call later that evening with leaders at Health and Human Services to make sure they understood the details that we were then aware of and could discuss it with other leadership across the government.

That evening was this incredible thunderstorm in Atlanta. You’ve probably been talking to people about it. And so, you know, I know – remember sitting there on the phone with lightning and thunder just
really loud and this conversation where Rich was really explaining to
HHS the likelihood that this was going to be a big problem and
helping them – they were generally new to this whole area as new
appointees or – not even – we didn’t have a Secretary yet. So it was
with other leadership who were newly – newly there to convey, you
know, what we did and didn’t know at this point.

And as I got off the phone, I had a voicemail from Nancy Cox sharing
with me the discussion she’d just had with collaborators in Mexico
about the virus and the details we knew then. And then later that
night, I was phoned by a colleague who had been called by a colleague
of his who had just got out of a meeting with the President of Mexico,
the Cabinet meeting that the Mexican President had about what was
going on in Mexico and should we basically shut all the schools down
in Mexico.

So that evening was fairly intense in terms of going from seven cases
who were pretty much okay to Mexico was closing their entire school
system and was very memorable. The next morning, our Emergency
Operation Center was fully activated. There were, you know, instead
of a handful of people, the place was full and we began a non-stop
intense effort over the next – the next, you know, weeks. And then, of
course, it’s turned into months.

Barbara: What do you think were the key decisions that needed to be made in
the first few weeks or months?

Anne: Okay, so the first several days there were a number of decisions. The
issues involved what do we do with the border? What's going on with
Mexico and are there travel – needs for changes in travel advisories?
Should we distribute the anti-viral medicines we have? How should we
do that? To all states? Just to the ones that know they have cases?
What level of severity does this thing have? What are we to do for
schools? What should we do for anti-viral use? Should it just be for
sick people or should it be for prevention? Should it be for everyone
who’s sick or just some people? How long should things be closed? If a
school is closed, how long should that be? What guidelines should we
give doctors about testing? Should they test everyone? Do we want to
know about everyone? What about contacts? Do they need special
precautions or not of people who are confirmed to be ill? Really, there’s
dozens of major decisions.

And then a handful of major policy ones by, you know, we went
through many rounds of interim guidance on the school issue, and the
anti-viral issue, the mask issue that you probably have talked to
others about, or – and 95 respirators. But by June, we were really
focusing in on decisions about a vaccination program, both – early
decisions about buying vaccine, antigen, buying Adjuvant and then
subsequent decisions about what type of program might we need.
We had to make most of those decisions early in June because they were pretty much related to a budget request that was going in for emergency funding.

Barbara: Who were the key decision makers in this process?

Anne: You know, there were several kinds of decisions and so some of the decisions that were of vital importance to the health care professionals or to the public were not that controversial, issues about who ought to be tested for the virus or really how to use the anti-viral medicines. We had a large technical specialty unit with experts in a lot of different areas and they would develop content and then it would be reviewed by higher levels of the response.

The first 10 days or so of the response, I think, the policies and decision making was really internal to CDC. And then as then as the people in very senior leadership positions at HHS arrived, we entered a more formal policy development and review process phase. And so the, you know, materials would often cross disciplines so people within CDC, different groups, would get together about best ideas and work these things out. And then for really major decisions like release of the anti-virals to the states, we had formal decision briefs here at CDC that went through a rigorous structured process presented to the CDC Director or Acting Director, decision made and then recommendations given to the Secretary or her agent.

Some of these guidances that we were developing required other departments or other agencies within HHS to opine. And so that was coordinated out of the Chief of Staff’s Office at Health and Human Services. For something like the vaccine planning, this was – there was a leadership group across HHS with one or two of us from CDC, a couple of people from HHS, Office of the Secretary, BARDA, somebody from NIH, somebody from FDA, the – usually that core group of us making decisions about how much vaccine antigen should we buy? What about the Adjuvant? What about fill and finish of vaccine products? When do would make these decisions?

And then CDC pretty much developed and proposed the strategy for vaccination and then we presented that in multiple ways to the Secretary and then across the government to the National Security Staff or Homeland Security Staff at the White House. So those were, in June, decisions that were then linked to budget requests to OMB so they really did need this broad support.

Barbara: And how were these decisions communicated both internally at CDC and then publically?

Anne: Well for things like the anti-viral recommendations or who should be tested, we have a number of networks that we use to notify health professionals, to notify the public health labs. We have our Joint
Information Communication Center, the JICC, basically can push a button and have a health alert advisory or warning go out to selected groups. We use the MMWR for many of our important guidance documents and we did extremely frequent press briefings. So we were doing them daily for a while and we also used webcasts and other channels to disseminate information, not just as news, but as ways to really reinforce our message with the target audiences.

Barbara: Often times in public health emergencies, there are very heavy demands placed on the organization for immediate and detailed information about the threat situation. Did you find this to be the case with H1N1?

Anne: Yea, we had a, you know, it was extremely intense. I've been part of our response to Anthrax, and SARS and, you know, West Nile virus a little bit, but Hantavirus long ago and I think that this is, by far, the most intense response we've had both because of the newness of the problem, because it started here in the U.S. and because a pandemic is sort of the mother of all health threats.

Also, because we're in a 24/7 media, internet, news environment and because a this began during a transition in leadership when it could have been in different circumstances that the focus was not on us but was on another part of the government but partly because this information was – we had the information as CDC working with the state and local health departments and having the lab, and partly because we didn't actually have a Secretary of HHS at the time this began and we didn't have an Assistant Secretary of Preparedness and Response. The new one hadn't arrived yet.

There were reasons that – or we had one who was going to be leaving. There were reasons that CDC was the natural place to be at the spot light but we certainly, incredible intense interests by the public and the media and, of course, we have a means now to serve that demand. And we had a policy, you know, we were asked to and we probably would have had this anyway but, HHS said we don't want you to turn any media request down. And so we had to figure out how to meet those needs which were huge and both did them by the daily press events and by feeding lots of information out but really by being available for live and taped radio, TV, you know, in person standup kinds of things nonstop. And so it was several of us who were doing – doing the media at that point.

Barbara: How did you manage media sensationalism of H1N1, inaccurate reporting misleading information?

Anne: I think that we did really well but a couple things helped. One is that a number of us have had risk communication training and for crisis, public health crisis, risk communication is the best communication strategy so the idea of the – the audiences needs were not unfamiliar to us. The other thing is that we, over the year, really worked very
closely to anticipate the media’s needs. Glen Nowak runs our media office and really was brilliant with his. And HHS did a really nice job as well.

We had a workshop for about 50 journalists last August to bring them in here for two days to hear directly from all the scientists in great detail, and from some of us spokes people in less detail, so they’d know what to expect. And then HHS organized three different table tops with reporters in three different cities. The Secretary did work at the White House which I accompanied her on to reach out to print, broadcast and wire reporters twice, and two rounds of those in, I think, the summer. We did two rounds of those to get people familiar with what might be happening, what kinds of things we don’t think are stories but they might want to do as stories and give them a common base.

In spring, of course, we had to build off the relationships we already had. We didn’t have those kinds of things. But actually a lot of the media had been through a pandemic table top years before. So the concepts might have been scary but they were familiar to some of the core media.

And then I really think our – our press office was fantastic in preparing us and the Administration had this wonderful policy which was they wanted science and health experts speaking about this. They didn’t want politicians. And so we were thrown into being the spokes people.

Barbara: In terms of balancing the need of the Organization to inform the public and yet not panic the public through – through the media communication, how – how did that process work?

Ann: Well, you know, when you study risk communication in public health crisis, you actually learn that people don’t tend to panic. And so whatever the music is on the radio or the TV coverage, you know, panic isn’t a natural response usually for this kind of thing. So I think that we had key principles that we wanted to be accurate. We wanted to be rapid. If we could be talking about something before others, you know, we might be able to – to provide the base for the story rather than have to be in a reactive mode. And that we were committed to acknowledge uncertainty, that we weren’t going to say we were sure about things when we weren’t. And unfortunately, with influenza, it’s very hard to be sure about things.

So the media interest was the greatest when the uncertainty was the greatest. But we were still viewed as credible sources even with acknowledging the – the many unknowns. And then we really had, I think a commitment to transparency to say, you know, we’re working on that. We don’t have it yet. We’ll get it to you when we can. We’re really trying to make sure it’s right by the time we give it to you.
And I think that with this climate of, you know, just the natural expected suspicions that people have, all the different theories and such, you know, our being as transparent as possible and as, you know, honest as possible, that we don't know everything, that some of these questions you have that might turn out to be right, we need to look into it.

So it was, you know, it was both building on communication science and the – the science base that we had.

Barbara: So looking back over the past year, from your perspective, are there things that CDC could’ve done differently?

Anne: I think that there’s always room to improve. And so there are process issues where something’s were harder to do than they should’ve been, and there are some more fundamental decision making where I think we're really going to need time to help us figure out whether a different anti-viral strategy might have been better. You know, I – we decided to focus, you know -- based on a number of factors, we focused on anti-viral medicines for those who were severely ill, or people who had milder illness with risk factors to get worse. If we’d been more liberal, anybody with any kind of symptoms might -- there have been fewer unexpected complications. Would the healthcare system have done worse because more people would’ve been showing up to get the anti-virals? Countries did different things and so I think in the next few years, we'll learn a lot about different approaches.

So I think that’s one question that I wonder about because I know there are, you know, that there are many different ways you could’ve approached this. I think that certainly some countries decided to go for adjuvant vaccine. We decided not to. By deciding not to go for vaccine, we essentially were stuck with this very slow delivery of vaccine the first month or so of the program. And that was the same time when disease was really on the upswing. I think in retrospect, it was the right decision because we were trying to balance what was acceptable to people with, you know, the idea that there’s a known track record for non- vaccine. But I think, you know, one could wonder if we’d – was there any way that we really could’ve gotten a lot more vaccine quickly given the manufacturing problems. Certainly other ways to monitor and improve that are needed. But from our standpoint, how else could we have gotten a lot of vaccine quickly?

Well, maybe by adjuvant. So I think it was the right decision but it’s one that I also wonder about.

Barbara: You mentioned some processes that you felt could have been improved or – or adapted differently?

Anne: Yea, I mean I think a good thing about our response was we really tried to self-correct. You know, there were times where, you know, with an emergency operation center; we had, you know, dozens, probably hundreds of desks of different groups that were focusing on
different issues. There was a period where, you know, guidance
documents and information were coming from like all over the place
and we realized it was taking more time to go through these things
than to – than it merited. And that we needed to put a stop on, you
know, everybody initiating their own guidance document for this tiny
little niche group.

And so I think that there – those processes improvements were
needed. Could we, you know – or sometimes it took us longer to make
the corrections. I think the key process thing that was a struggle for
us was the staffing and what looks, from the outside world, like the
pace of a response is very different than what a response really needs.
So from the world’s perspective or the public’s perspective or really
CDC at large’s perspective, April and May were the big times. And
June onward, everything was fine.

Whereas, for our response, April and May were the discovery
investigation phase but June onward, we knew we were going to be
having to have evidence based guidance for schools, and evidence
based guidance for travel, and evidence based guidance for businesses
and we were going to have to have a massive vaccination program
planned out to the Nth degree. And it was quite difficult for us to get
the staffing you needed quickly in the summer as it was easy to get
the staff in the spring when the response was just so obviously in the
news.

The other thing that was procedurally difficult is the funding. We, you
know, May – the weekend of May 17th or 18th, a couple of us spent
drafting out a budget for vaccination program and rounds and rounds
of policy decisions, emergency funds or Congress appropriates, you
know, but the ability to move money from this part of the government,
to another part, from within our agency, to states, to locals, to where
they can do the vaccination really took extraordinarily too much time.

And so the process of how you fund this kind of response and can
really be nimble, I don’t think we did well despite people were working
non-stop, you know, we got our first guidance out, you know, people
worked through the July 4th weekend to make sure on that Tuesday,
this thing was ready to go and could be posted by the time of this big
summit we had.

I think that money aspect, had we had a whole lot of vaccine quicker,
which would’ve been great, I’m not sure we would’ve had the things in
place to deliver a ton of vaccine quickly. So that’s – that’s a process
thing that needs a fix.

Barbara: Do you have any final thoughts or recommendations that you would
like to make?

Anne: Well, I think it’s been really important that we were taking pandemic
seriously before this started because as an agency and with our state
and local public health partners, we were, you know, this didn’t come
out of the blue. A lot of the things that were difficult, we’d thought
about. We didn’t have answers for all of them but we – we’d try to, you
know, improve the systems and the communications and so forth. I
think the – the – there are a lots of things I could say for whoever has
to be the spokesperson next time about ways to try to do as good a job
as possible there. But I think as an agency, a key message is that
working together with the other parts of the federal government, and
together with the state and local government, rather than having
completely separate operations has to be essential to any kind of
public health response.

Barbara: Great, thank you very much.

Anne: Sure. Okay. [audio ends 0:25:29.5]
Michael Shaw. I'm Associate Director for Laboratory Science, the Influenza Division, here at CDC in Atlanta. Today is Thursday, February 28, 2010.

Barbara: Thank you. We're here to develop an understanding of the history of the H1N1 virus as a public health threat and the CDC's response to this threat as it emerged. We want to create an oral history of the organization's response to this public health issue and particularly your role and participation in the CDC response. This is key to helping us document the events and processes that help to shape the organization's response. We hope this history will be useful to future leaders by giving them the benefit of your experience with H1N1 as they confront new and possibly similar challenges. So may we begin with a little background information on you. Could you tell us about your training, your medical specialization and what brought you to CDC?

Michael: I started in influenza actually when I began graduate school in the 1970s. And my first year in graduate school was when the 1976 swine flu incident occurred, the outbreak at Fort Dix, New Jersey. I am basically – I've been primarily influenza ever since. After I got my PhD, I was at the Rockefeller University in New York for a post-doc in Virology Laboratory working with Purnell Choppin, an old influenza person. I was there, became a faculty member. I left there and came to CDC in mid-1980s as a visiting scientist. Then, to University of Michigan at Ann Arbor, Department of Epidemiology which also has a very rich history of influenza. Some of the very first influenza vaccine work was done there. And then after a permanent position opened up at CDC in 1993, I came back here in the Influenza Division. It was just the Influenza Branch at the time and I've been here ever since.

Barbara: Are you currently involved in some aspect of the response to H1N1?

Michael: Yes, very much. Our division was the front line. We're the ones that got the first specimens. It was our group in the laboratory that actually identified the virus, was able to tell that it was something different. So we've been in it from the very beginning and will continue to be in it long after most of the people in the Emergency Operation Center stood down.

Barbara: When did you first heard about H1N1?

Michael: Well, this particular strain, it was when we first got the specimens and figured out that there was something unusual. It was the – the week after Easter I remember because I was home at the time with my grandsons and had some conference calls, talking about the lab results that had come in, and toward the end of that week was when
we realized it truly was something different and we had to get the notification out to basically the rest of the government and to WHO.

Barbara: Did you – did it strike you as a potential crisis situation or some serious threat emerging?

Michael: Well, at the very beginning, we suspected that it was just another swine influenza that had jumped to humans because these happen maybe three or four times a year. It was only when we got the second case that was unrelated with the same virus, and then a few days later discovered it was in Texas, and the same day we discovered it was the same virus that was in Mexico, everything sort of came together at that point and we realized that it was much, much different from what we’d seen before.

Barbara: So when you recognized the – the novelty of this or the uniqueness of this, whom did you notify and what actions did you take?

Michael: Well, the first notification goes up the chain. The Director of our center, Ann Schuchat, was one of the first ones notified. Steve Redd, Toby Merlin and the Influenza Coordination Unit, and it went up to the CDC Director who was – Rich Besser – was acting Director at that time. So that was a standard protocol to send it up like that; and they in turn notify HHS in Washington who while at the same time we had been notifying colleagues and WHO and a formal notification was made by the U.S. Government to WHO under the International Health Regulations.

Barbara: Could you describe the first few days of this initial response period? What happened?

Michael: Well, the first few days, it was making sure everyone who was supposed to know knew and to get as much information out to our partners. Our Influenza Division at CDC is – is a WHO collaborating center in the Global Influenza Surveillance network. There are other collaborating centers in London, Tokyo and Melbourne. So there was a conference call held among these WHO partners at the same time. We shared the information we had, the genetic sequence information we determined at that time and that was not just to let them know what was going on here but so that they could sort of set up the alert in their own countries to see if they were seeing anything similar. So it was on several different levels. There was a ramping up of the laboratory activity here to increase the diagnostics and the – the molecular analysis of the virus, making sure that all the partners in Washington were notified, plus all our partners in WHO.

Barbara: Did you find that you needed to make any modifications to your routine business practice or the way that you were doing – conducting business every day?

Michael: Well, as – as part of the process, we started sending out the notifications to public health laboratories in the US, requesting
specimens, requesting information of any unusual outbreaks they
were seeing because this was right at the end of the regular flu season
and usually activity is going down. We knew since the virus was in
Mexico and that Mexico was a very popular destination for college
students going on spring break who were coming home at about that
time, it – it – it was logical to increase the surveillance on college
campuses too. We very quickly heard about outbreaks in New York
City. The specimens started coming in which meant that we had to
ramp up our own laboratory activities. Basically people were working
around the clock, seven days a week. We started talking to other
laboratories at CDC to get assistance from them. And it was soon after
that the Emergency Operations Center was activated and we – we
started expanding in general all of the laboratory aspects of what we
were doing.

Barbara: I feel like there was a period of time where you had planning to do in
response and perhaps you could talk a little bit about within your own
team or organization, the kinds of planning exercises you went on and
how you enacted them.

Michael: Well, we'd had quite a few exercises during the pandemic planning
where we had worked out the – the reporting chain in the Emergency
Operation Center. That we could activate pretty quickly. Everyone
knew what they were supposed to do. The trick here [inaudible
0:08:17.1] was actually ramping up the laboratory activities because
that involves expanding into space basically we didn't have because
we had already been cramped before the outbreak hit and we had to
figure out how to do a lot more work, in basically the same amount of
space, with the same number of people. There were a lot of volunteers
from other groups who were willing to help. And we couldn't have
gotten through it without that.

But there were also problems that – that were popping up that we
hadn't anticipated. For example, since this was essentially a swine
virus and we – we tried to get away from that word, but it did come –
it was a swine origin virus. That means that USDA was concerned
about it as well. And for transferring animal pathogens within the US,
USDA has control over that. So at the beginning, there was the
possibility that USDA would have put restrictions on shipment of the
specimens if they could be classified as animal pathogens. That would
have greatly inhibited our ability to get specimens from these different
outbreaks all around the country. So it required some pretty close
work with our colleagues at USDA to make sure that restrictions like
that weren't put in place, and that we were able to ship specimens
quickly.

Barbara: Can you give us an idea of approximately how much of your time was
devoted to the H1N1 issue?

Michael: Well, it – it rapidly consumed just about all of the time. My position is
as Associate Director of Laboratory Sciences means that I'm primarily
overseeing the three lab branches in the Influenza Division and since they're the ones that first detected the virus, they were the only ones essentially in the world that could've diagnosed it at the time. It required not just getting our own group up but getting the reagents and the tests to the place where we could get them out to other laboratories so that they could do the testing and not everything would have to come to us. That was something we did very quickly and it required us working with FDA too because they have to clear the assay before it can be released for diagnostics. And that was done really in record time, in only like two weeks after identification of the virus. We had these assays out to all the US public health laboratories in well over a hundred laboratories worldwide. So that was a tremendous effort that we were able to build on some structure we already had in place as part of our planning when we didn't know what the next pandemic was going to be.

Barbara: Did you find that the time commitments changed as the virus spread? Or did it seem to remain constant?

Michael: It did change because in the beginning there was a heavy emphasis on the diagnostics. The people wanted to see if the virus was in their community, was in their state, if it was spreading. After the tests were out there and it was pretty clear the virus was essentially everywhere in the country, the emphasis shifted more to looking at if the virus was developing resistance to anti-viral drugs, if the virus was varying very much because one of the first things we needed to do was – was if the virus was fairly constant, fortunately it was, that made it easier to find a vaccine strain because it meant that they were all essentially alike.

So there are a lot of things that had to be scaled up rapidly because just of the nature of influenza. It’s a very variable virus so we had to solicit specimens from different areas, from different age patients, from different levels of severity to make sure they had a good picture of – of everything that was going on.

Barbara: Did you feel that you got enough information? Were there areas where information was lacking?

Michael: I think from the – the US, we got a great deal of very useful information. The problems started occurring when it was spreading to other countries where often these other countries were understandably very – they were getting hit pretty hard themselves. And they had enough trouble keeping up with their own diagnostics to take the time to pack up some virus and ship it off to us so we could look at it. So there were times when we would've liked to have known better what was going on for example in Central and South America and we did send our own people down to train, to help them get their labs up and running. But that’s – that’s nothing new. That’s always been a problem getting – getting current representative specimens from all over the world.
Barbara: So looking back over your experience over the past year, what would you have done differently?

Michael: Well, actually not much. I think it went very well at the beginning, extremely well. It would’ve been nice to have – had an idea of what was going on in Mexico earlier than we did. It took a while. We were getting conflicting information for one thing. The outbreaks were scattered around in Mexico. There were reports, it was flu reports, it wasn’t flu and, you know, if – if we’d been able to get the specimens a little earlier, it might’ve given us probably not a lot of time but a couple of weeks, maybe even a month earlier, getting the vaccine out. It could’ve headed off a lot of the – the fall wave of the virus in this country if we’d had the – the vaccine earlier.

Barbara: And do you think the – the main issue with getting the vaccine earlier was related to getting the specimen information?

Michael: It was because no one was willing to commit to say that this is a good vaccine strain to use until you have enough information about the circulating viruses to know that it’s a good representative. And that just requires data, and data requires time. And that’s something you can’t speed up.

Barbara: Is there a way through maybe external coordination or other agencies that this process could be improved?

Michael: In this particular case, it was pretty much our ballgame. All of our planning for pandemics had been assuming it was going to start in some other part of the world, we would have some advance warning. None of our planning included us being an affected country and it definitely didn’t include us being the one where the virus was first identified. So we didn’t have that advance warning that was factored into all of our pandemic preparations. We were literally right in the middle of it from the beginning and it had clearly spread to multiple places, California, Texas, Mexico, before we even knew it was there which is why I say if we had – I mean, it’s – as a scientist you’re reluctant to say definitely about anything but it’s about as definite as you can get that this started in Mexico. And that gets back to the – if we had gotten down there earlier, gotten specimens earlier and saw that something unusual was going on, it probably wouldn’t have stopped the pandemic but it would’ve given us a little advance warning to get things ready before it – these outbreaks started in the big cities.

Barbara: So, in closing, what would you have any particular last thoughts to add or recommendations that you could make?

Michael: Well, one – one thing I’d like to emphasize is that, you know, in a situation like this, you really appreciate how – how devoted the people in the laboratories are and they’re – they often don’t get the credit they deserve. They’re the ones that are actually in there working with these specimens that are coming in from the field. They’re the ones
that actually identified this virus to let us know that something
unusual is going on and these people were putting in long hours, not
taking time off. They were – I mean, this is what – this is why they go
into this field. This is why you choose this as a career. It’s the people
who are running on adrenaline and they did an incredible amount of
work in a short amount of time. And I think everybody surprised
themselves. They didn’t know they could do so well until the – the gun
was pointed at your head.

Barbara: Good. Thank you very much. [audio ends 0:17:48.8]
Interview #15. Marsha Vanderford, PhD
Director, CDC Emergency Risk Communication System, Emergency Operations Center

Barbara: Could you give us your name and your current position?

Marsha: Marsha Vanderford and I am the Director of CDC’s Emergency Communication System. I’m also the Branch Chief for the Emergency Risk Communication Branch in the division of Emergency Operations.

Barbara: Are you currently involved in some aspect of H1N1?

Marsha: Yes, we are still activated in support of H1N1, the response, even though things are ramping down. The Emergency Operations Center has not been deactivated yet and so whenever it’s standing up, the Emergency Communication System also stands up.

Barbara: Do you remember when you first heard about H1N1?

Marsha: Yes. We were in an after action session from an exercise we had done the week before on hurricanes. And in the middle of that active – or in the middle of that emergency after action activity, I got an email saying something about H1N1 and I remember standing up and leaving the meeting and going back into the Emergency Operations Center to find out that there was confirmation of H1N1 and that people were in the process of determining whether or not there was going to be activation of the Emergency Operations Center in response.

Barbara: Was there a sense that this was an emerging crisis?

Marsha: I don’t know that I understood it at the moment. We had been preparing for years for pandemic influenza and I think our – our assumptions were that it would be very likely be Avian Influenza. So I – I didn’t know quite what H1N1 meant in the spectrum of different kinds of strains of flu, but it – you know, it took, I think, a couple of hours to really get a sense that this was new, this was novel, this was not seen in people before, and then sort of the awareness that this could be – this could be the pandemic that we were concerned about.

Barbara: Could you describe the first few days of this initial response period?

Marsha: Yeah, I think it was a little bit of a – a surreal feeling if you will. We had done so many exercises in preparation for pandemic influenza. And everyone, I think, had such a heightened sense that this would be such a severe event and that it – it – it – that the repercussions of it would be so dramatic that in the first several days as we were watching this event and trying to gather information, that sense that oh my gosh, this is it. This is what we’ve been preparing for. And so I think all of those moments of thinking – sometimes it felt like we were still exercising; that – and then you realize, no, this is real. People are
sick. People are – this is spreading. So there – for – I think for us in the Joint Information Center which is where the Emergency Communication System sits during an activation, I think there was a sense – and I can remember several of us that afternoon that we first became aware of it, it was maybe seven or eight o’clock at night, and there were several of us still in the Joint information Center, kind of saying to one another, oh my gosh. This is what we’ve been planning for and preparing for. And at that point, of course, we had no idea how it would unfold, how rapidly it would go but it sure fit from everything we knew the kind of virus that we could anticipate to turn into a pandemic.

Barbara: Were your existing plans activated?

Marsha: Yes, we have – the Agency had and still has an operational plan for pandemic influenza. We also have a national response plan, and CDC has emergency operation plans, so lots of different layers of plans. And at the moment of activation, the Emergency Communication System occupies the JIC and begins the process of reviewing information that’s available, begins gathering information from the media to try to determine what’s being said, begins to assemble teams and call people into the Joint Information System – or Center. So all of those things begin happening as per protocol.

Barbara: Did you feel that your existing plans met the current situation?

Marsha: Well, I think we had been – I think that all hazards plan in terms of how we fit into the organization, the kinds of channels, and distribution and outreach that we were expected to do, all of those kinds of plans that in a sense were content free, those operational plans, I think, yes, worked very well. There were many plans that we created in different places for a pandemic influenza communication outreach.

And -- for example, I served on the World Health Organization Communication Sub-task group that developed the implementation and the revision to the implementation guidelines for pandemic influenza. And we had just met two months – a month and a half before this meeting we had in Leone to layout the objectives for communication that fit within the objectives for response as a whole. But all of those assumptions were based on very severe, fast growing, very deadly strain of pandemic influenza.

So I think many of the things that we were prepared to do in the first couple of weeks, we were moving in that direction because it was moving quickly, was spreading, nobody quite knew yet what the severity would be. And then suddenly, it was – it was – there was kind of a turning point where I think we realized maybe the first wave was not going to be as severe. And so many of the materials that we developed, many of the objectives that we had for communication
didn’t fit the reality of that first wave; and then subsequently didn’t actually fit the second wave that we had in the fall either.

So much of the work that we had done pre-H1N1 was to develop camera ready materials, guidance for the public, for schools and so forth, that as we went through the process, we found were not appropriate for this incident. And so we found that we actually had to start over on many of the things that we sent out to the public because we didn’t have – the assumptions of the plans weren’t realized in the event.

Barbara: In terms of the process you used to quickly recreate these materials, how did you go about that?

Marsha: Well, we didn’t recreate exactly the same materials. This turned out, especially at the very beginning, I would say, April – late April, all the way through the middle of the summer, to be a guidance driven communication response. And what I mean by that is that the Agency scientists rapidly put out interim guidance for response, for professional audiences, for epidemiologists, for state health officers, for laboratorians, for clinicians. And then from those guidance documents, the communications staff rapidly developed fact sheets, talking points, key points, Twitter messages, text messages, buttons, widgets, RSS feeds and so forth. Those things were taken from the guidance documents and then disseminated through channels and partners.

And so the process of going from a highly technical document into public lay audience versions of that was a lengthy one, and sometimes a difficult one because it’s hard to go from highly scientific messages – guidance to very easy-to-understand public messages. So the – the answer to the question was it easy to go back quickly to those public messages we developed earlier and re-purpose, it wasn’t. It – it took longer than we hoped. So the technical guidance was out there much more quickly and we think effectively. It took us much longer than to translate those and clear those with the scientists for use by the public.

Barbara: Is there anything in particular you could recommend in the future to make that smoother?

Marsha: You know, it’s a hard – I think that was one of our big challenges in communication was that we had a really, you know, expert scientist but a shallow bench. And so the same people who were creating these materials, were also trying to clear audience – lay audience versions of them. And so, you know, when – when these two priorities clash, are we going to issue new guidance documents or update old ones, are we going to spend those energies actually clearing documents for the public that would be more easy – easy to understand, you know, guidance documents win. And so it took us quite a while to do – and sometimes we never got down to the appropriate literacy level.
I think the last time we really did a hard look at our web content, for example, it’s about 11th grade. And, you know, health communication guidelines on literacy would tell you that you probably ought to be focused on about the 6th grade reading level. And, of course, that has nothing – I mean that’s – that’s not even dealing with health literacy which is another complicated issue. So that was one of our challenges. And – and I think the – the way to address that is obviously – the best way would be to have more people able to do clearance who aren’t also necessary for doing the guidance documents themselves.

Barbara: In times of public health emergencies, there are often very heavy demands placed on organizations for immediate and detailed information about the threat situation. Did you find this to be the case with H1N1?

Marsha: Sure, and particularly in the first weeks, maybe couple months of the – the event where people were wondering, is this really going to be the severe pandemic we’ve been waiting for. Our media relations division led by Glen Nowak did a remarkable job of meeting the intense media demands, putting our CDC Director, Dr. Rich Besser, the Acting Director at that time, in front of media daily, sometimes we even did it more than that, answering questions, disseminating guidance and so forth. We also had big demands on our CDC info, the public inquiries line. In terms of numbers of calls, we had lots of requests for, you know, key messages, translations of fact sheets and so forth.

So, yeah, we were pretty swamped. I think to give you a sense of – of the response, we started on April 22nd on the H1N1 site, at that point, which was Swine Flu because it had not, at that point, been known to transfer to humans. There was one page and on that day, there were 6,000 views of that page. Two days later when we had a confirmation of human cases, then we started to build that capacity. By the middle of July, we had 500 pages of content up and the highest day of views was, I think, sometime in July, was eight million views in one day.

So you can kind of see the demand for information just in terms of the number of hits and the change – web page views and the number of changes over that time.

Barbara: So in managing the demands, these increasing demands for information, did you find it necessary to make staffing changes...

Marsha: Oh sure.

Barbara: ...organizational changes?

Marsha: Sure. We have in the Emergency Risk Communication branch which is the core, 24/7, 365 communication response branch, we have a little over 30 people. During the time of the spring response, we had in the Joint Information Center which is where all the communication staff comes together, most of it anyway, over 300 people in sometimes three shifts a day across about 15 different teams.
Barbara: Did you feel that the communication systems in place at CDC were adequate to respond?

Marsha: I think the systems themselves were—were quite strong, were targeted in the right ways. We have some teams that are targeted toward particular audiences such as clinicians. We have some teams that are focused primarily on channels such as web or hotline. And so I think we had covered really the systems that were needed but we didn’t always have enough staff to keep up with the demand.

Barbara: How about the issue of media sensationalism, inaccurate reporting, misleading information and so on?

Marsha: Yeah, I—I think we were very fortunate. We do media monitoring every day. We monitor print, and internet, and television, and radio, and—no, we don’t do radio. That’s—that’s not—that’s right. TV, internet, print, blogs, Twitters; and for the most part, the information that was in those media were—were accurate. Sometimes our key messages were not always what we would hope. One of the things you always know with—with media is that the first time you list recommendations for what people can do to protect themselves, they’re covered. But we know that people need to be reminded over and over again, especially if a response is long. And the media don’t—they don’t repeat those very often.

So we would find sometimes it wasn’t so much that the information wasn’t correct but it didn’t always include all the things we would hope and that people needed to know.

Barbara: In terms of making decisions about what information to release to the public, can you talk about that process?

Marsha: There—I think—CDC’s default position is really to transparency. We’re very fortunate in the leadership we have and, of course, President Obama made very clear as he came into office just before H1N1 hit that there was an expectation of transparency. And so the default position is if we have information that helps protect people, that helps people to do their jobs, and it is cleared and—verified to the extent that, you know, we could, based on the best information we had, our scientists were very proactive in—in wanting to get that information out. And I think just the fact that we did media events almost every day for the first two months and very often what was presented in—in those briefings was before we even got stuff up on the web. That would be the daily update and there would be new information announced in the press conference before it was even cleared to go on the web, I think is—is evidence that—that was, I mean, it was pretty clear that that was our high priority.

Barbara: Would you describe the web as being the primarily communication channel with the public?
Marsha: No, I – I think, you know, people – news media obviously played a major role in getting people’s attention, in keeping H1N1 in the public awareness even when it got into the summer and the fall when people were not as likely to be attending to it. The website is – is kind of the comprehensive information repository, if you will, so that news media, you know, we can be as complete as we want to in explanations but they’re not going to pick up all of that. So what we hope is that the awareness and the attention that people paid to the media would then drive them to the CDC website where they could look for more information. CDC’s website was the primary website for this response. It was much more comprehensive. We know from our colleagues around the world, the other communication counterparts that – that we work with, that they turned to CDC for information; and even the WHO, you know, the links and so forth, we know that a lot of WHO traffic came to CDC’s website.

Barbara: Do you feel that you received the information that you needed in order to create public messages?

Marsha: Absolutely. Communication at CDC is very fortunate. There are a lot of places where communication’s kind of an afterthought, after everyone decides what needs to be done, then communication is told to get it out the door. That’s not the case here. Communicators are at the table during briefings. They have an opportunity to brief the Director, to brief senior leadership about what recommendations we have for communication messages. Communicators were embedded in every task force and so even though our Emergency Communication System has the role of coordinating across all of the communications, there were communicators working with the vaccine task force to develop a full campaign for vaccine promotion in the fall; there were communicators sitting with community measures group to talk about social distancing, school closure measures, developing tool kits that would help businesses to create plans and execute them should they have needed to do so.

So communication really is an integrated part, I think, of all of our interventions with people understanding that it’s not enough to make the recommendation that you have to consider how it’s going to be communicated at the same time.

Barbara: Have these practices been institutionalized for future crises?

Marsha: Yeah. The processes of integration of communication into our interventions is institutionalized in all of our emergency planning, so there’s an annex or a separate plan for hurricanes, and for nuclear events should those occur, for bio-terror events. And there’s always a section about how communication works within that system. Right now, we are working on Haiti – the Haiti responses for the earthquake and we are at the table making recommendations, working through the process of developing and disseminating messages. So even before
H1N1, those processes were in place and they continue afterwards as well.

We have done some different kinds of management of communication in the H1N1 response that’s different because it’s been such a long one. But I think the inclusion of communication within all of the interventions and planning is still the same.

Barbara: In terms of internal communication processes with CDC employees, how did you communicate with them?

Marsha: Within the Joint Information Center, there is a desk and the concentration of the team that sits at that desk is for CDC employees. And so throughout this event, there were articles written for the CDC Connects which is our internal web communication forum. There were all hands meetings in which our Director talked about what was going on. There were announcements, you know, from the Director to CDC employees. So I think the way we set up our Emergency Communication System really works to the advantage here because it would be easy to forget your own employees, and you shouldn’t because you need their support, and they need to know what’s going on as well to protect themselves, as well as to understand how their Agency’s playing a role. And we have a team whose focus is on communicating to CDC employees. And so whatever’s going on, however we update or talk about issues, that group’s role is to communicate it to our employees in the same way as the clinician communication team’s role is to look at what’s going on and say, what is that needs to be communicated to clinicians out of this information.

So having teams that are focused either on channels or audiences helps us not to lose somebody in the pile.

Barbara: So in thinking back over the past year of your experience, are there things that you would do differently?

Marsha: I think so. At the very beginning of the response, we were organizing all of the communication pieces. And at that point, I think we were trying to sort out what the best organizational structure would be. And over time, I think because of the length of the event, communication got very diffused across a lot of organizations. And I think we were very busy at the beginning in just trying to respond. I think I would have spent more time really thinking organizationally about sort of the long haul instead of getting quite as focused on the response. But it’s very hard to do that because there’s a million things to be done. And thinking across the long haul is the hardest thing to do when you’re in the middle especially of, you know, an intense activation.

Barbara: Do you have any other specific recommendations that you would make for future events?
Marsha: Planning without locking yourself in. We – we had communication’s staff at work for years getting ready for pan flu. And one of the things that we did to make sure that we would get, you know, our feet on the ground right away was to develop camera ready what we thought were sure fire evergreen messages. And they were beautiful pieces of work done, thoughtful pieces of work done, tested messages done. We spent a lot of resources doing that. And I think what we know now and we probably knew then but we were so sure that – that this would, you know, be a more severe event was that we probably need to be more focused on shells, templates that could be quickly adjusted rather than things that were really camera ready. I would say that – that may have been the thing that – that if we could do it again I would do differently.

Barbara: Great. Thank you very much.

Marsha: You’re welcome. [audio ends]
Stephanie: My name is Stephanie Zaza. I'm the Deputy Director for Strategy in the Office of Public Health Preparedness and Response at CDC.

Barbara: Great. And how long have you been with CDC?

Stephanie: I've been with CDC for 19 years, and I've been in this position for the past four years. And in a variety of roles, within this position, I've mostly focused on strategy, high-level strategy and policy for CDC regarding preparedness and response generally but also specifically for flu planning. And as part of pandemic planning, I had been trained as one of four or five CDC leaders who could run a very specific kind of decision planning process. And we had done a fair amount of exercising for that process during the several years leading up to the H1N1 response. So I've been involved not only in some general planning and policy for preparedness and response but also some very specific training for influence pandemics.

Barbara: Great. And are you currently still involved in some aspect regarding H1N1?

Stephanie: I am. I've been asked to work on some issues in follow up to how we look at our response using oral anti-virals, and how we could potentially improve our ability to not only get those anti-virals distributed from federal asset control in our stockpile but then how do we move those to the states, and then how do we do a better job of tracking those anti-virals in the states and making sure that the people who need them get them. And we've just started that process so I'll be working on that over the next future weeks and months.

Barbara: Great. Thinking back to about a year ago and the first initial cases of H1N1, do you recall when you first heard about H1N1?

Stephanie: I do. I was actually in Washington, DC on a three month assignment. And I was at a meeting of the Institute of Medicine in their building and I received an email from Phil Navin who is the director of our emergency operations center asking me to participate in a call of the Department and CDC regarding some cases of an unusual flu in California. I And because the Institute of Medicine building is – I don't know what it's made of, it's Kryptonite or something, and I had to go stand out on the sidewalk to take the phone call because I couldn't get a signal otherwise.

And so the first I heard about it was on that call and really wasn't quite sure at that point what, if any, role I would have or if this would even really materialize into anything important or major. And at that point, there were I think only a couple of cases and it was an usual
virus but nobody really had a very good sense, at least I certainly didn’t have a good sense, of what this would turn into.

Barbara: And when did you – when do you recall becoming aware that this was in fact going to become a crisis event?

Stephanie: Well, it was very rapid after that. You know, the next couple of days, there were a lot of calls and I got pulled off of pretty much everything else I was working on on that assignment which was coming to an end. And Mr. Navin actually contacted me and asked me to serve as CDC’s liaison in the both the CDC Washington office and in – with the Assistant Secretary for Preparedness and Response since I was already on the ground in DC.

And so I began attending meetings pretty much all day every day including that first weekend. And I think I realized at that point that regardless of the number of cases, this was going to be a big deal and a big response, and that we were going to have to move quickly to figure out what was going on, and if it was going to materialize into something substantial. So I think it was within a day or two, but it was – it was still unclear, I think, even into the first week just how many cases there would be, whether or not it would really turn into anything important. And at that point, I don’t recall that the relationship to the cases in Mexico had been established. So it was still really evolving very fast.

Barbara: Alright. I understand from your bio that you were involved in either leading or being part of the Plans Unit for the pandemic response? Is that correct?

Stephanie: That is correct. I was actually still in Washington. My – it was about a week after that first phone call. And I got a call from Steve Redd late one evening as I was walking back to my apartment. And he asked me to return to Atlanta to assume leadership for some important decision briefings that needed to be made regarding some of our community mitigation measures. So he, in particular, was interested in having me come back and lead a process to help the Agency think through whether or not we should be recommending school closures, which was a very, very big part of the initial response, particularly in New York, and it was costly, and it was very, very difficult to implement, and there were a lot of questions about whether or not we should be recommending that.

So I did come back to Atlanta and the second weekend, it was the first weekend in May, began sitting down with a group of people who could provide some of the original – some of that very early data about the epidemiology, and the cases in schools, and children, and teachers, and what we were seeing, and to work through what our options were regarding making this recommendation, and then being able to take that, summarize it and bring it back to leadership group to help them understand what their options were and to make recommendation. So
it happened within the first week. I came back to Atlanta and began
that process with that particular decision briefing, and then worked
on that over the next several weeks.

Barbara: And could you describe a little bit the organization in the Plans Unit,
and the other people who were involved, and how they were selected to
be part of it?

Stephanie: Uh huh (yes). If I recall, the Plans Unit leadership, I – Toby Merlin
was the original leader of the Plans Unit piece that was about decision
briefing. There’s a separate element of planning which is the more
operational planning which Dave Kennedy and David Maples led in
terms of the basics of incident management. But that wasn’t really
part of the – the Plans Unit per se that did the decision briefings. Toby
Merlin led that. And if I recall, it was me, and perhaps Lisa Koonin,
and Lisa Rotz. I actually can’t remember. There were a few other
people who had been trained to do this particular method of – of
options analysis, and recommendations, and decision briefings.

And so they were calling on us to try and run through these processes
with the subject matter experts who could provide the data, and could
provide some of the reality checks on what those options were. So it
was a relatively small cadre of people who were actually on the Plans
Unit. But then, if I was given an assignment, so for example, the
assignment to do the school closure recommendation, I would then
pull in people from the epidemiology Unit, from the group of people
who thought about school closures in the past and who’d done some of
the original planning for that, and I, you know, I can’t remember, but
for each one, it was a generally slightly different group of people based
on their expertise.

We always tried to bring in an ethicist to help us think through the
issues. We would bring in, depending if it was an issue around using a
medication, we would bring in somebody from our stockpile program
and make sure we brought clinicians in. We would bring in people who
understood the particular population that we were trying to affect so
we brought in some folks from our Division of Adolescent and School
Health for the decision briefing around school closures. So it depended
on the issue who we brought into the room for that decision brief.

But the Plans Unit itself was actually a fairly small group of people
who either led the decision briefs or supported those decision briefings
in terms of scheduling meetings, preparing materials and so on. And
the two people that I worked with very closely who provided excellent
program management, were Mark Frank and Denise Bouvier, and
they were just instrumental in keeping the process moving, and
making slides, and getting the slides from the – from the meeting
room to the executive conference room, and making sure we had
everything. They were really terrific.
Barbara: Okay, great. And where – what were your sources of information? Did you get – have external sources, internal sources, a combination? And did you feel that you were receiving adequate information for your decision briefs?

Stephanie: We had – we generally started with internal sources of information so we were trying to make our decisions based on the data that we were collecting through our surveillance, and lab, and epidemiology programs. And then, we, in a couple of cases, there was a group that Dr. Besser had initiated that they called Team B, which was a group of outside experts from around the country who could weigh in on certain issues and help us think through them from a more practice, or academic, or policy perspective. And a couple of times in doing decision briefs, we would bring a specific question to them and ask for their input, and then we would take that input and bring it into the decision briefing process itself and use that as a source of information. So it wasn’t so much having that group vet the decision, but having them provide input on a specific question or specific piece of the decision so that we could use that information to help craft a better set of options and a better set of sometimes the criteria we needed to use to evaluate the options. So we often used only internal sources of information when it was a very technical question. But when it had overtones of policy or major practice decisions, we would generally ask our Team B folks as a very convenient source of sort of reality checking to weigh in on some of the issues.

Barbara: Could you think back to the earliest – the earlier days and do you recall what were in the beginning key decisions that you felt or the director felt needed to be made in the first weeks and months?

Stephanie: Uh huh (yes). Well as I mentioned, the first – the very first decision brief we did was a very important one on school closures. It was early May, schools were going to be in session for at least another month or two months, and so these decisions about school closures were extremely important. Right after that, we were asked to look at a very important decision around whether we should recommend that colleges, in particular, should cancel commencement exercises. These are a very big deal. They’re costly. They bring people from all over the country, if not all over the world, together.

And so we were asked to look at that question and provide a recommendation and then write guidance around that. We were asked to look very early on at the issue of whether we should recommend that healthcare workers use N95 respirators versus masks. And that one, I actually don’t know how that one ever resolved. I was pulled into a different set of activities before we concluded that one.

And then there was another very interesting briefing very early on that they requested a decision briefing on around the use of the previous year’s seasonal vaccine. There was some – it was the end of
the vaccinating season for the 2008-2009 vaccine, and there was a question as to whether there was any potential use for that vaccine, and it would be expiring at the end of June, and there was, I think, a million doses left in our own federal stockpile. And so there was a question about whether or not we should be using that for something. And so we – those were the four that I was asked to lead a process, to develop options and provide a recommended approach for CDC.

Barbara: Great. And has that – do you know or has the Plans Unit become sort of institutionalized in crises response? Is it something that will happen – will be triggered automatically in the future because of your experience?

Stephanie: I think so. My understanding is that they're trying to build that into the more generic response profiles. This really did come about in pandemic planning and was something that one of our major contractors brought this method forward and said this could really help as we were – this was the group that had been contracted with us to – to help with our exercise program for pandemic flu over the previous three years. And they suggested this approach as a way to help think through very tricky decisions, to very quickly analyze options and bring recommendation forward. It was very successful. In the exercise program, I think it was instrumental in the actual response and my understanding was that the same contractor was asked to develop a more generic approach and training program for other staff at CDC to learn how to do this and how to lead this approach. My feeling is that it’s an extremely systematic but rapid method for looking at a lot of information very quickly and bringing it forward to a leader. As a matter of fact, I ran this process on a completely different issue for a completely different disease with a group of subject matter experts who had never seen this method before, and in two hours, were able to very quickly move through a lot of very complex data and facts, and move to figuring out what our options were to recommend to the director of CDC, and to take this forward to the Department for a decision.

So it’s a very effective method and one that I use all the time because it suits my style, and it suits my need to move very quickly. And I do think that it will be something that we’ll be able to very easily translate over to other types of responses. It’s a matter of socializing it, I think, making people more familiar with it, getting additional people trained to lead the process and to also find ways to do it a little bit more quickly. We’ve – we were initially doing these over the course of a full day or even day and a half, and we’ve been able to learn how to do it more quickly, and to sort of pre-populate some of the pieces of the decision process, and then let the group actually have something specific to chew on rather than starting with a blank slate.

So I think we have a – some steps to take to – to make it more generalizable and to take it forward, but I think it’s very useful and I
think we'll be using it. I'm already using it so – in my regular course of
daily business.

Barbara: Great. So taking a step back in sort of the bigger picture, looking at
the organization's response generally to H1N1, how would you
evaluate it and could you point out strong points or areas where
perhaps could be improved?

Stephanie: Well, you know, over all, I – my perspective has always been that we
did a very good job under very unusual circumstances of not only a
pandemic that played out in very different ways than we'd ever really
planned for or thought about and we were very flexible and able to
move into this different scenario. It was really very different from
what we'd planned for. I – so I think we did a good job in being flexible
and learning as we went.

We also, for better or worse, and I think most of the time it was for
better, had – when questions came up or when we weren't sure what
to do, we purposefully said what is the – what did we plan for? What
did we practice? Let's do that first and figure out how we need to be
flexible within that. So we had these very excellent plans to fall back
on and start with so that we weren't making everything up as we
went. So we were, I think, very flexible within a systematic and
practiced approach that we'd been practicing over the previous three
years in our exercise program. So I give us full marks on being able to
respond quickly, and effectively, and flexibly given the nature of the
scenario as it played out.

The other very unusual thing that was going on, as I'm sure you're
aware, was that the political structures were not in place at – when
this all started. We did not have a confirmed Secretary of HHS and
her senior staff were not in place until some point in the first couple
weeks. She was confirmed on May 4th or 5th which was, you know, full
week into it and to her credit, jumped on a very steep learning curve
and really did, I think, a great job of stepping into the breach and
making sure that the Department had what it needed to do what it
needed to do.

But that said, I think that there were – we were operating in an
environment of – of either no appointed leadership or brand new
appointed leadership throughout the entire Department and – and
CDC was looked to to lead in that situation and I think that our
leadership did an excellent job of stepping in, making decisions,
moving things forward, using data to drive decisions, to not letting the
expedient or the easy things drive what they did, but to make very,
very difficult decisions and then to move those forward. And then, in
the middle of all that, to educate a new group of appointed and elected
leadership, and to make sure that they knew what was going on, I
think they did a very good job.
The other thing I think CDC did extremely well was laying out a very clear, open, and transparent communication process, and making sure that not only were we talking with the people we normally talk to, our state and local health department partners for example in frequent, daily if not multiple times during the day, calls, but also to the public, directly to the public and making sure that our senior leaders were visible and available. I don’t know how many press availability sessions they did, and talking points, and interviews. It was constant. And I think that the only way to help lead through that kind of situation is to be very active and proactive in a communication portfolio of activities, and I think they did a very good job on that.

We did a good job, as I said, in following the plans and making sure that when we were asked to do something, we were asked to, for example, distribute anti-viral medications from our federal stockpile to the states, moved the entire, you know, allocation that we were asked to move, within seven days to all fifty states, to the four major cities that we work with directly, to eight territories including those very far away in the South Pacific. So, you know, we were able to do that. We were able to implement, design, develop and disseminate a laboratory diagnostic kit within, I think, two weeks to the state laboratories so that they could do their own testing.

So there were a number of things that I think we did very well that we had planned for, prepared for, we thought about and did, and made decisions about very quickly and were able to do.

The things that I think were challenging were some of the things that we didn’t do as thorough a job planning for. We had done some planning around community mitigation measures, for example, school closures, and risk-based border strategies, you know, do we keep people from coming into the country or leaving the country. But again, we had planned for a completely different scenario and our – our triggers for implementing those types of pretty stringent activities were all based on a much more severe disease. And we had, I think a very difficult time adjusting to a disease where it was very unclear what the overall severity was, and to distinguish that from some of the very severe cases we were seeing in subpopulations, and how do you make decisions then about closing a school when the people at most risk were not necessarily all of the school children but a subset of those children. And I think that was just very, very difficult. I’m not sure how other kinds of planning might have helped in that situation but that is definitely something that I think we need to look at.

We also had a very hard time once we sent anti-virals out to the states really having – being able to track what happened, and did the people who needed them get them, and that’s further complicated by the fact that – the stockpiled drugs that we were using are also available in the commercial market. So it’s very difficult to know when those two different supplies mix together how they’re being used. So that was a
big challenge and one that we know we need to confront not just for flu
but for any other scenario when we're providing medications our
ability to make sure that they're getting to the people who need them,
not just to the state health department, but to the – the population is
something we need to look at a little bit more carefully.

I think those were the – the big things regarding some of the things
we could've done better. You know, it's hard to say, we were very
flexible. We could always have but, you know, people, I think, will say
we could've been more flexible. I think there were some challenges
with vaccine in terms of meeting expectations because we didn't get as
much in the way – as many doses as we thought early on from the
manufacturer. So again, was that a – a communication issue? Was it a
real issue of availability of vaccine? And how do we do that better?
And how do we set expectations for what's going to come and when it's
going to be delivered, I think, are important.

So those – I think those are the big strengths and weaknesses from
what I observed. I'm sure there were others.

Barbara: Well, that's great. So just in closing, do you have any other
recommendations or suggestions you'd like to – to give for the future?

Stephanie: I think that, for me, the most important lesson I learned was that we
had done so much planning, and so much exercising in it, I think,
really, really paid off in this particular situation, that we were able to
rely on that, and use that, and be flexible within what we places had
learned in that exercise program. As an Agency, we do not have the
resources, and have not been able to either secure or – or reprogram
resources to be able to do that for most of our other scenarios that we
might be asked to lead through a response. And I think that this was
such a valuable piece of the experience that I – I hope that we'll be
able to take that lesson and apply it to some of the other areas where
CDC will have a – a major role to play, and we need to make sure
we're ready to do that and we've done some exercises, and we've
rehearsed how we're going to do it, and where some of the challenges
are that we may not even anticipate. I think that was the places
where we had the biggest problems were the things we didn't
anticipate. And so, not even knowing through an exercise program
what some of those are really leaves us behind the 8 ball. So I would
hope that that's for other parts of the Agency that have other
scenarios to contend with. To me, that's probably the biggest issue.

Barbara: Great. Well, this is wonderful and thank you very much.

Stephanie: You're welcome. [audio ends 0:26:38.6]