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Final After Action Report

Texas Department of State Health Services Response to the Novel H1N1 Pandemic Influenza (2009 and 2010)

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AUTHORS NOTE: This report will refer to the disease as the "novel H1N1" or "H1N1" influenza virus in order to be consistent with the terminology used during the time frame of this event. Changes in the virus over time may render this terminology somewhat dated; however, as this report is about the 2009 influenza pandemic, the terminology that was in effect at the time the pandemic occurred will be used.

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1 Executive Summary

1.1 Overview

In 2009, Texas was at the forefront of the nation's response to the novel H1N1 influenza pandemic. This pandemic provided a real-life test of the capacity and capability that Texas had created since September 2001 to strengthen its public health and emergency management response systems. The Texas Department of State Health Services (DSHS), the agency responsible for Emergency Support Function 8, Health and Medical Services, served as the lead agency during the pandemic. DSHS commissioned a comprehensive after action evaluation to capture the history of this event and to summarize the successes, challenges, and lessons learned from response partners at the local, regional, and state levels. This after action report will assist both DSHS and its response partners in planning for future responses should another similar incident occur.

1.2 Event History

1.2.1 First Pandemic Wave

The novel H1N1 pandemic of 2009 unfolded in a matter of weeks. The Centers for Disease Control and Prevention (CDC) laboratory confirmed the first novel H1N1 influenza result from a case in California on April 17, 2009. On April 23, DSHS received laboratory confirmation of two cases in Guadalupe County, Texas. Soon thereafter, additional cases were identified in South Texas and South Central Texas. These cases marked the beginning of the first wave[1] of the novel H1N1 pandemic in Texas. Some geographical areas, including South Texas and South Central Texas, were more affected than others. The first death in the United States due to novel H1N1 influenza was confirmed in Texas on April 29, 2009. The World Health Organization declared an influenza pandemic on June 11, 2009.

1.2.2 The Response

As the lead agency, DSHS became the central point for collaboration and communication with a wide variety of entities representing populations affected by the novel H1N1 pandemic. DSHS worked with the Office of the Governor, CDC, local health departments, Texas Division of Emergency Management, Texas Health and Human Services Commission, Texas Education Agency, Texas Department of Agriculture, and other entities to establish a network of channels for communication, information sharing and dissemination, and resource allocation. DSHS also worked with the United States Air Force in San Antonio on the development of a case definition for the novel H1N1 virus.

[1] According to medterms.com: "A phenomenon of infections that can develop during a pandemic. The disease infects one group of people first. Infections appear to decrease. And then, infections increase in a different part of the population, resulting in a second wave of infections."

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Several centers of communication and coordination were activated at the state and regional levels. DSHS activated its emergency operations center, the Multi-Agency Coordination Center, to support the state's response. In addition, regional operations centers were established in DSHS health service regions to help coordinate the response at the local level. To keep response partners and local elected officials informed, the State Operations Center initiated daily conference calls.

At the beginning of the H1N1 pandemic, prevention and containment measures to mitigate diffusion of the H1N1 influenza virus included non-pharmaceutical interventions such as hand washing, cough etiquette, and the use of hand sanitizers. In addition to promoting non-pharmaceutical interventions, DSHS also utilized a state cache of antiviral medications that was made available to uninsured and underinsured persons through a public-private partnership. The goal of this state cache and the public-private partnership was to make sure those who could not afford the medication could receive it and have ready access to it at a local pharmacy.

In late spring 2009, CDC informed state health departments that a novel H1N1 vaccine was in production and would be available in early fall 2009. As such, DSHS was responsible for the allocation and distribution of the vaccine in Texas. Although flu activity decreased in the summer, activities necessary to prepare for the receipt, allocation, distribution, and administration of the H1N1 vaccine continued, including the development of the DSHS Vaccine Ordering and Reporting System. On September 28, 2009, DSHS received the state's first allocation of H1N1 vaccine.

1.2.3 Planning Expectations

Although much planning had occurred across the state in preparation for pandemic influenza, the 2009 outbreak of novel H1N1 influenza varied significantly from assumptions made in existing plans. Most planning scenarios were based on the outbreak originating in Asia and on a highly pathogenic virus (e.g., H5N1 avian influenza). In 2009, the novel H1N1 outbreak began in Mexico and was mild to moderate in severity.

1.2.4 Second Pandemic Wave

A second pandemic wave occurred in fall 2009. Based on previous knowledge of pandemic influenza, the second wave was expected. Therefore, DSHS and its response partners spent considerable time and effort in summer 2009 to prepare for the challenges of the second wave. As the first pandemic wave presented certain challenges (e.g., occurred in Mexico, spread rapidly to Texas, etc.), so did the second wave. Challenges in the second wave included the allocation and distribution of vaccine, ongoing monitoring of H1N1 as a threat, and potential fatigue by the public on this issue.

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1.3 The After Action Evaluation Process

The purpose of this after action review is to evaluate the DSHS response to the novel H1N1 pandemic. More specifically, it identifies the successes of the response as well as areas for improvement. Feedback for this report was solicited from over 600 individuals located across the state representing a wide variety of response partners. These partners included public health officials at the local, regional and state levels, emergency management officials, elected officials, hospital staff, hospital planning entities, physicians, pharmacists, and others. Methods to obtain input from response partners, as well as from the DSHS staff who were heavily involved in the response, included focus groups, interviews, surveys, and debriefing sessions.

While this report aims to be comprehensive, it is not exhaustive because of the complexity and broad scope of the response. As a result, the after action review primarily focuses on the following topics: (1) antiviral allocation and distribution, (2) vaccine allocation and distribution, (3) communication, (4) planning, (5) health and medical surge, and (6) the DSHS Multi-Agency Coordination Center. A previous after action report on the first wave of the novel H1N1 pandemic addressed epidemiological surveillance and laboratory surge topics and these topics are not presented in detail in this report.

1.4 Context of this Event and Report

After action reviews report primarily on activities that did not work well during a response. As a result, this after action review is designed to identify opportunities for improvement. However, based on extensive interviews and contacts with stakeholders and a firsthand view of response activities beginning in April 2009, the authors wish to note that many response partners throughout the state acknowledged many positive aspects of the DSHS-led state response. The reader is advised to consider the observations in this report in context of the many positive actions that also occurred.

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1.5 Findings

1.5.1 Major Successes

Much of the planning for pandemic influenza was based on a worst-case scenario (i.e., projections concerning H5N1 avian influenza), but public health officials, emergency responders, and other response partners adapted quickly to this event as it was presented. These efforts led to the major successes highlighted below.

- **Public Health Surveillance and Laboratory Testing:** A key success in this response was the ability of the surveillance and testing system to surge in the initial stages of the event.

- **Guidance for School Closure:** DSHS and the Texas Education Agency (TEA) worked closely to identify the most appropriate parameters to consider when contemplating school closure. As more was learned about the H1N1 virus, its transmission, and its virulence, DSHS and TEA reassessed the balance between closing schools and preventing disease transmission. The end result was a decision-making process that emphasized business operations rather than specific thresholds related to absenteeism.

- **School Meal Programs:** An unintended consequence of school closures was the disruption of school meal programs for breakfast and lunch. The Texas Department of Agriculture, working with TEA, DSHS, the Texas Health and Human Services Commission, and the United States Department of Agriculture, created a mechanism to allow school meal programs to continue should a school close due to the novel H1N1 influenza pandemic.

- **Public-Private Partnership for Distribution of State Cache Antiviral Medication:** During the novel H1N1 response the DSHS modified and revamped plans for antiviral medication distribution. Private pharmacies and federally qualified health center pharmacies were engaged to manage state stock and to distribute it to uninsured or underinsured individuals with a valid prescription. This program initially started with several dozen outlets in one chain pharmacy but has since expanded to 1,348 chain outlets, 71 independent pharmacies, and 69 federally qualified health center pharmacy sites. Statewide, all counties are covered except the 47 counties that do not have a licensed pharmacy.

- **Public-Private Partnership for Distribution of the Novel H1N1 Vaccine:** The CDC announced in spring 2009 that they would be responsible for purchasing and distributing the novel H1N1 vaccine to each state. In Texas, DSHS would then be responsible for allocating and distributing the vaccine to individual providers using a system to be established by DSHS. DSHS successfully created a public-private partnership to allocate and distribute vaccine to local health departments, hospitals, physicians, pharmacies, and other providers to promote widespread distribution of vaccine. Previous plans for mass vaccinations had relied primarily

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upon the local public health system working with clinical and community volunteers to provide immunizations to the public. A vaccine management system was designed and implemented in a matter of months. Over 11,000 Texas providers registered and more than nine million doses of novel H1N1 vaccine had been distributed to Texas providers by August 2010.

- **Multi-Faceted Communication Strategy:** DSHS implemented a multi-faceted communication strategy to inform and educate both providers and the public regarding the H1N1 influenza pandemic. This included a comprehensive web site (TexasFlu.org), ongoing media relations, a statewide public awareness campaign, conference calls with stakeholders, and use of the Texas Information Referral Network to provide flu information. Response partners identified two particularly beneficial activities: (1) the Texas Division of Emergency Management State Operation Center conference calls intended for local elected officials and response partners; and (2) the partnership between DSHS and the Texas Information Referral Network which was created to enhance communication with the general public and providers regarding novel H1N1 by using the Texas 211 system.

1.5.2 Major Challenges

The novel H1N1 pandemic presented the following major challenges to the state's current public health and emergency response systems.

- **Communication:** In April 2009 information about the novel H1N1 influenza virus was limited and a vaccine was not available. However, guidance was needed for medical providers, local public health partners, laboratory submitters, schools, and the general public. The CDC and DSHS developed initial guidance documents based on information known at the time, and documents were modified as more definitive information about the virus became available. Keeping response partners and the general public informed during a multi-month response was challenging and included management of rumors and misinformation. With availability of information by Internet, including social media, countering misinformation was important so that the public had factual information upon which to make personal decisions.

- **Laboratory:** In the early portion of the response the DSHS public health laboratory in Austin and Laboratory Response Network laboratories were overwhelmed with submissions for H1N1 diagnostic testing. During a typical influenza season the DSHS laboratory receives 1,500 specimens. During spring and summer 2009 the DSHS laboratory received 1,000 to 1,500 specimens per day. During summer 2009, the DSHS laboratory reverted to its normal role of surveillance testing and away from diagnostics testing.

- **Epidemiology:** The initial few months of this outbreak required extensive and labor intensive epidemiological investigations at both state and local levels. Such investigation was critical in order to identify clinical characteristics of the disease

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and to identify those persons who were most susceptible to H1N1. As more was learned about the disease, the intensity of investigations declined.

- **Availability of the H1N1 Vaccine:** A major challenge during the response was the availability of H1N1 vaccine. At the time the H1N1 virus was identified the production of the 2009 seasonal flu virus was already in progress. As such, the vaccine for the H1N1 strain could not be included with the seasonal flu vaccine, resulting in two separate vaccines being produced.

- **Health and Medical Surge:** In this response, primary care providers and hospital emergency departments experienced medical surge that lasted for weeks, and in some cases months. Despite the ability of response partners to meet surge demands during this event, the challenges faced by health care systems identified issues that may be more pronounced should a future, more virulent pandemic occurred. These challenges included supply and resource needs, extended lengths of stay beyond the norm in intensive care units, and pediatric surge demand.

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1.5.3 Observations

The after action review identified 72 observations. These observations form the core of activities that have been identified for remediation. Table 1.1 presents a summary of these observations. Details of specific observations are available in this report as identified by the appropriate page number.

Table 1.1: Summary of observations identified in this report

Section	Observation	DHS Target Capability	Page
4.1.2.1.1	Prescription medication compounding was not widely available.	Medical Supplies Management and Distribution	46
4.1.2.1.2	A mechanism did not exist to reimburse for compounding capsules into suspension for state stock antiviral medications.	Medical Supplies Management and Distribution	47
4.1.2.1.3	Some participating pharmacies did not always waive the $10 administrative fee for dispensing state stock if a patient could not afford the fee.	Medical Supplies Management and Distribution	48
4.1.2.1.4	In order to access state stock, a prescription is required.	Medical Supplies Management and Distribution	49
4.1.2.1.5	There was a lack of access to state stock antiviral medications in rural counties and some urban neighborhoods.	Medical Supplies Management and Distribution	50
4.1.2.1.6	There was a lack of clinical guidance on antiviral medication prescribing at the onset of the pandemic.	Medical Supplies Management and Distribution	51
4.1.2.1.7	Many providers did not know how to prescribe medication from state stock and some did not know about the state stock program.	Medical Supplies Management and Distribution	52
4.1.2.1.8	Standing delegation orders were needed to allow non-physician personnel within DSHS greater scope of practice to support health and medical response activities	Medical Supplies Management and Distribution	53
4.1.2.1.9	Local health departments may have space limitations related to receiving and storing antiviral medications.	Medical Supplies Management and Distribution	54
4.1.2.1.10	Many first responders did not receive prophylaxis because of a lack of a clinical indication, despite expectations to the contrary.	Medical Supplies Management and Distribution	55
4.1.2.1.11	The role of federally qualified health center pharmacies in the distribution of state stock was misunderstood.	Medical Supplies Management and Distribution	56
4.1.2.1.12	Hospital pharmacies may have been underutilized during the pandemic.	Medical Supplies Management and Distribution	57
4.1.2.1.13	There was a need to address concerns of local entities regarding expiration dates for antiviral medication caches.	Medical Supplies Management and Distribution	58

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Section	Observation	DHS Target Capability	Page
4.1.2.1.14	Qualified entities that purchased antiviral medications under the federal contract noted confusion regarding when and how to dispense antiviral medication purchased under federal contracts.	Medical Supplies Management and Distribution	59
4.1.2.1.15	There was insufficient data to support resupply requests from the Strategic National Stockpile based on current Centers for Disease Control and Prevention criteria.	Medical Supplies Management and Distribution	60
4.1.2.1.16	The communication equipment originally deployed to the receiving, staging, and storing site did not meet receiving, staging, and storing operational needs.	Medical Supplies Management and Distribution	61
4.1.2.1.17	Changes to security plans caused confusion for some responders at the regional and local levels.	Medical Supplies Management and Distribution	62
4.1.2.1.18	The utilization of a private partner for receiving, staging, and storing operations proved extremely efficient and effective.	Medical Supplies Management and Distribution	63
4.1.2.1.19	There were multiple challenges with the use of the Texas Inventory Management System in this response.	Medical Supplies Management and Distribution	64-65
4.1.2.1.20	The use of a courier service improved distribution capacity.	Medical Supplies Management and Distribution	66
4.2.2.1.1	The two-step Vaccine Ordering and Reporting System provider registration system was confusing to new providers and redundant for Texas Vaccine for Children providers.	Medical Supplies Management and Distribution	70
4.2.2.2.1	There was confusion regarding priority group definitions.	Medical Supplies Management and Distribution	71
4.2.2.2.2	Initially, DSHS allocated vaccine to providers serving priority group populations, but administration of the vaccine to priority group populations was inconsistent at the local level.	Medical Supplies Management and Distribution	72
4.2.2.2.3	Some local health departments indicated that they would have preferred to have managed novel H1N1 vaccine allocation and distribution activities for their service area.	Medical Supplies Management and Distribution	73
4.2.2.2.4	Vaccine allocation decisions made by the DSHS Vaccine Allocation Advisory Committee were not routinely shared with providers and local response partners.	Medical Supplies Management and Distribution	74
4.2.2.3.1	Providers did not know which vaccine formulations would be received prior to shipment and many did not receive H1N1 vaccine supplies at the same time as the vaccine.	Medical Supplies Management and Distribution	75
4.2.2.3.2	Some Vaccine Ordering and Reporting System providers were not prepared to store the multiple formulations of vaccine and vaccine supplies received.	Medical Supplies Management and Distribution	76
4.2.2.4.1	Providers had issues in reporting the number of doses of novel H1N1 vaccine administered	Medical Supplies Management and Distribution	77

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Section	Observation	DHS Target Capability	Page
4.2.2.4.2	VORS providers did not have instructions on how to dispose of remaining vaccine and to deal with vaccine waste.	Medical Supplies Management and Distribution	78
4.2.2.5.1	The DSHS Infectious Disease Prevention Section conducted an after action evaluation that identified additional observations associated with novel H1N1 vaccine allocation and distribution	Medical Supplies Management and Distribution	79
4.2.3.1.1	Some individuals did not receive the novel H1N1 vaccine based on advice from health care professionals.	Mass Prophylaxis	81
4.2.3.1.2	A number of providers, health care workers, and the public had concerns about the safety of the H1N1 vaccine.	Mass Prophylaxis	82
4.2.3.2.1	Multiple challenges were reported with the operation of mass vaccination clinics	Mass Prophylaxis	83
4.2.3.2.2	Although not used statewide, point of dispensing (POD) sites were effective in some regions.	Mass Prophylaxis	84
4.2.3.2.3	School-based vaccination campaigns and clinics were considered successful despite some unique planning challenges	Mass Prophylaxis	85
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4.3.4.1.1	The lack of standardized case investigation forms and database tools early in the event caused delays in the regional response effort.	Epidemiological Surveillance and Investigation	89
4.3.4.1.2	Epidemiological requests from the Multi-Agency Coordination Center (MACC) to health service regions were difficult to understand at times.	Epidemiological Surveillance and Investigation	90
4.3.4.1.3	Information obtained through the Health Service Region 11 Community Assessment for Public Health Emergency Response was useful.	Epidemiological Surveillance and Investigation	91
4.5.3.1.1	A primary source for health and medical preparedness and response information at the state level is needed.	Emergency Public information and Warning	97
4.5.3.1.2	Defining the role of DSHS leadership in information management during preparedness response is needed.	Emergency Public information and Warning	98
4.5.3.1.3	Response partners questioned the timeliness and extent of the media campaign.	Emergency Public information and Warning	99
4.5.3.1.4	Minor changes would improve the TexasFlu.org website.	Emergency Public information and Warning	100
4.5.3.1.5	Methods to provide information to the public differed by population served and geographic location, especially in rural areas.	Emergency Public information and Warning	101
4.5.3.1.6	Distributing information to all licensed physicians and other health care providers is challenging.	Emergency Public information and Warning	102

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Section	Observation	DHS Target Capability	Page
4.5.3.1.7	The partnership between DSHS and the Texas Information and Referral Network 211, created during the response, was viewed as helpful to local jurisdictions in many areas of the state, but some minor changes could enhance the effectiveness for future responses.	Emergency Public information and Warning	103
4.5.3.1.8	H1N1 conference calls coordinated through the State Operations Center were lengthy.	Emergency Public information and Warning	104
4.6.3.1.1	Assignments to staff serving in the MACC were not always coordinated through the MACC and may have come from persons outside the MACC.	Emergency Operations Center Management	106
4.6.3.1.2	There were delays in responding to response-related requests and assignments due to the virtual reporting structure.	Emergency Operations Center Management	107
4.6.3.1.3	The lack of breadth and depth of staffing for the Medical Countermeasure Distribution Branch led to a lack of continuity of activities and impacted programmatic continuity of operations.	Emergency Operations Center Management	108
4.6.3.1.4	During a portion of the response there was a delay in approval of 213 resource requests.	Emergency Operations Center Management	109
4.6.3.1.5	Providing clear objectives and target audiences for the various reports generated by the MACC would streamline the report development process and increase the effectiveness of the documents.	Emergency Operations Center Management	110
4.6.3.1.6	Lack of incident command system knowledge by contract staff caused problems with clinic operations.	Emergency Operations Center Management	111
4.6.3.1.7	Clear criteria for mobilizing and demobilizing the MACC have not been identified for an infectious disease event.	Emergency Operations Center Management	112
4.6.3.1.8	The responsibility for supervision of contract staff was unclear.	Emergency Operations Center Management	113
4.6.3.1.9	The roles of executive leadership and MACC incident command were not well differentiated early in the response.	Emergency Operations Center Management	114
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2 Introduction

In April 2009, Texas identified its first cases of the novel H1N1 influenza virus in Guadalupe County. These cases were identified through sentinel surveillance systems[2] operated by the United States Air Force. Soon after the first cases were identified, additional cases were discovered in South Texas and South Central Texas. Overall, a majority of the Texas population has reportedly been infected with the virus, with 240 deaths occurring either directly or indirectly due to the novel H1N1 virus.[3] This report provides an in-depth assessment of the Texas Department of State Health Services (DSHS) response to this first influenza pandemic of the twenty-first century. The remaining part of this section describes in detail the background associated with this event, including capacity building, an overview of influenza, and background on the response to this pandemic event.

2.1 Capacity Building

2.1.1 Introduction to Capacity Building

The purpose of this section is to identify the capacity building activities that have taken place in Texas since the availability of dedicated federal and state funding following the September 11, 2001 terrorist attacks. The availability and implementation of federal and state funding for capacity building has had the cumulative effect to prepare Texas to meet the current pandemic influenza outbreak. This section describes the history and outcome of capacity building that has occurred since 2001.

2.1.2 Federal Support

The events of September 11, 2001 and the subsequent anthrax attacks highlighted both the importance and the vulnerability of America's public health system. The United States Department of Health and Human Services, through the Centers for Disease Control and Prevention (CDC), had been providing some preparedness funding to state health departments starting in fiscal year 2000 but increased the funding substantially in fiscal years 2002 and 2003. This funding was intended to bolster the public health infrastructure at the local, regional, and state levels and to enable the public health system to begin extensive emergency preparedness planning. Although funds were prioritized for planning to respond to a biological attack, planning efforts also focused on responding to naturally occurring infectious disease outbreaks and other public health threats or emergencies, including a pandemic influenza event.

The Texas Department of Health, and its successor agency, DSHS, received over $56 million in public health emergency preparedness funding for state fiscal years 2000-2003

[2] Sentinel surveillance is a "system that uses a prearranged sample of sources (e.g., physicians, hospitals, or clinics) … to report all cases of one or more notifiable diseases." (Source: Centers for Disease Control and Prevention. Available at: http://www.cdc.gov/excite/library/glossary.htm#surveillancesentinel. Accessed June 17, 2010)
[3] Texas Department of State Health Services, May 22, 2010

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combined. DSHS has continued to receive public health emergency preparedness (PHEP) funding on an annual basis from the CDC by way of congressional appropriations. Some of the annual cooperative agreement funds were designated, or set aside, for specific preparedness priorities (see Table 2.1). In most fiscal years, with the express approval of the CDC, unspent money from the previous year, designated as "carry forward funds," could be used in the new fiscal year to support specific preparedness activities or projects.

For the combined state fiscal years 2002 and 2003, DSHS also received over $8.3 million in funding for the newly authorized Hospital Preparedness Program (HPP). This program was designed to enhance the ability of hospitals and health care systems to prepare for and respond to bioterrorism and other public health emergencies. Initially, this program was administered at the federal level by the Department of Health and Human Services Health Resources and Services Administration, but in 2007 was transferred to the Office of the Assistant Secretary for Preparedness and Response. DSHS has continued to receive HPP funding on an annual basis. In some fiscal years a portion of HPP funding was also designated or set aside for specific purposes (see Table 2.1).

To date, DSHS has received over $856 million from federal funding sources to support public health, hospital, and other health care system preparedness efforts in Texas. Approximately 74% of PHEP funds have been distributed to the local public health system over the last decade and approximately 86% of HPP funds[4] have been allocated to local health care system partners. These funds have been used at local, regional, and state levels to build public health and hospital capacity, as well as to build or enhance preparedness capabilities. Table 2.1 summarizes the types of federal preparedness funding provided to DSHS from state fiscal years 2002 to 2010.

[4] Source: Texas Department of State Health Services

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Table 2.1: Supplemental federal preparedness funding to DSHS from state fiscal years 2000 - 2010

Fiscal Year	Base Funding (includes Set Aside / Dedicated Funding)	Set Aside (Dedicated) Funding Priorities*
2000	• PHEP: $1.16 million	• Surveillance and Epidemiology • Laboratory – Biologic Agents • Health Alert Network
2001	• PHEP: $1.1 million	• Surveillance and Epidemiology • Laboratory – Biologic Agents • Health Alert Network
2002 / 2003	• PHEP: $54.0 million • HPP: $8.3 million	• Not specified
2004	• PHEP: $68.9 million • HPP: $35.1 million	• PHEP – Border preparedness • PHEP – Smallpox • PHEP – Strategic National Stockpile • HPP – Hospital support for Dallas, Houston and San Antonio
2005	• PHEP: $67.2 million • HPP: $33.5 million	• PHEP – CRI • PHEP – EWIDS • HP – ESAR-VHP
2006	• PHEP: $78.1 million • HPP: $34.0 million	• PHEP – CRI • PHEP – EWIDS • PHEP – Pandemic Influenza
2007	• PHEP: $66.96 million • HPP: $37.9 million	• PHEP – CRI • PHEP – EWIDS • PHEP – Pandemic Influenza • HPP – Pandemic Influenza
2008	• PHEP: $74.9 million • HPP: $30.3 million	• PHEP – CRI • PHEP – EWIDS • PHEP – Pandemic Influenza • PHEP – Real-time disease detection
2009	• PHEP: $58.94 million • HPP: $28.9 million • Competitive Pandemic Flu (Lab only): $0.8 million	• PHEP – CRI • PHEP – EWIDS
2010	• PHEP: $49.7 million • PHER: $93.3 million • HPP: $26.2 million • Improvements: $6.9 million	• PHEP – CRI • PHEP – ESAR-VHP • PHEP – EWIDS • HPP – ESAR-VHP • HPP – Pandemic Flu Health Care Preparedness • PHER – Novel H1N1 Influenza Response

Source: DSHS, Division of Prevention and Preparedness Services, June 2010
* CRI: Cities Readiness Initiative; ESAR-VHP: Emergency System for the Advance Registration of Volunteer Health Professionals; EWIDS: Early Warning Infectious Disease; HPP: Hospital Preparedness Program; PHEP: Public Health Emergency Preparedness; Public Health Emergency Response

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2.1.3 State Support

In addition to federal funding, the Texas legislature has provided funding to support pandemic influenza preparedness and response activities. In the 2007 legislative session, $10 million was appropriated for the purchase of antiviral medications. In the 2009 legislative session, another $11.8 million was appropriated for the purchase and distribution of antiviral medications.

Also in the 2009 legislative session, approximately $3.9 million in state general revenue funding was appropriated toward the required state match of federal funds that began in fiscal year 2010.

2.1.4 Capacity Building

Since 2002, DSHS, local health departments, and hospital and health care systems have increased capacity by building infrastructure and systems to support health and medical disaster response activities. In addition, these entities have also strengthened the capability to execute health and medical preparedness activities.[5] Tables 2.2 and 2.3 highlight current public health emergency preparedness capacity and hospital and health care system preparedness capacity in Texas, respectively.

[5] Association of State and Territorial Health Officials. Public health preparedness: how do we measure success? February 2006.

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Table 2.2: Major public health emergency preparedness capacity created in Texas from state fiscal years 2002 through 2010

Public Health Emergency Preparedness Capacity in Texas
• Contingency contracts for clinical staffing, administrative and data entry, ambulances, oxygen, and pharmacy support, vector
• Continuity of operations planning
• Critical incident stress management services for responders
• Disaster behavioral health services for the public
• Disease surveillance, tracking, and reporting
• Emergency operations center at DSHS
• Emergency operations centers at multiple jurisdictional levels
• Evacuation and sheltering supply allocation, distribution, tracking for cots and bedding, shelter supply kits, medications, medical supplies, and oxygen
• Exercises, training, and continuous cycle of improvement
• Fatality management planning
• Incident command system staffing and training
• Interoperable communication system
• Laboratory Response Network to conduct testing and confirmation of biological, chemical, and radiological samples
• Medical countermeasure allocation, distribution, dispensing, tracking, reporting, adverse event tracking for vaccines, medications, personal protective equipment, medical supplies, and medical equipment
• Medical special needs patient transportation, sheltering, and health care
• Mortuary services and supplies
• Responder health and safety
• Risk communications for the public including prevention and intervention strategies
• Specialty strike teams and re-entry task force
• Volunteer staffing management and support
• WebEOC web-enabled crisis information management system

Source: Texas Department of State Health Services

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Table 2.3: Major hospital and health care system preparedness capacity created in Texas from state fiscal years 2002 through 2010

Hospital and Health Care System Preparedness Capacity in Texas
• Alternate care facilities
• Decontamination
• Patient / evacuee tracking
• Emergency operations centers
• Employee health and safety
• Exercises, training, and continuous cycle of improvement
• Hospital bed tracking and reporting
• Incident command system staffing and training
• Interoperable communication systems
• Isolation and quarantine
• Medical countermeasure allocation, distribution, dispensing, tracking, reporting, adverse event tracking for vaccines, medications, personal protective equipment, medical supplies, and medical equipment
• Mobile medical assets, including triage tents
• Planning development for medical surge and alternate care systems
• Texas Disaster Volunteer Registry / ESAR-VHP
• WebEOC web-enabled crisis information management system

Source: Texas Department of State Health Services

2.1.5 Health and Medical Response Activities from 2005 - 2008

2.1.5.1 *Hurricanes Katrina and Rita (2005)*

Following the events of September 11, 2001 and the subsequent anthrax attacks, the next major national emergency and the first significant test for the public health and hospital preparedness system in Texas occurred in 2005 when Hurricanes Katrina and Rita came ashore less than one month apart on the coasts of Louisiana and Texas. DSHS and partner agencies mobilized resources at all jurisdictional levels and mounted a response effort that lasted for months. The main areas of improvement are discussed in the *Hurricanes Katrina and Rita After Action Report*,[6] and are summarized in Table 2.4.

[6] Morrill JB, Litaker JR, Markovich RJ, Bradshaw RT, Walts CO, Chou JY. The Health and Medical Response to Hurricanes Katrina and Rita by the Texas Department of State Health Services: An After Action Assessment. June 2006.

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Table 2.4: Improvements made to DSHS preparedness and response planning based on the DSHS response to Hurricanes Katrina and Rita in 2005

Major Areas of Improvement	Specific Areas of Improvement
Information management	• Information flow • Communications among emergency response structures • Issue and request tracking • Patient and evacuee tracking
Roles and responsibilities	• Roles of the State Operations Center and the DSHS Emergency Support Center • Multiple local, regional, and state response structures • DSHS roles under the Texas Emergency Management Plan Annex H
Resource management	• Volunteer coordination and credentialing • Acquiring, tracking, and deploying resources • Emergency procurement of supplies • Use of human resources during an emergency
Preparedness activities	• Supporting special needs populations • Responding to the variety of needs at shelters • Providing medical support to the evacuees during mandatory evacuation • Assisting in nursing home evacuations • Reimbursement for nongovernmental service providers • Planning with the private sector • Training in the incident command system and the National Incident Management System • Addressing the capacity to assimilate animals during an emergency • Hospital surge capacity
Continuity of operations	• Identifying DSHS essential functions • Preparing to support long-term operations

Source: Morrill JB, Litaker JR, Markovich RJ, Bradshaw RT, Walts CO, Chou JY. The Health and Medical Response to Hurricanes Katrina and Rita by the Texas Department of State Health Services: An After Action Assessment. June 2006.

In the months following Katrina and Rita, many improvements were made with regard to preparedness planning and response at the national and state levels. A major change occurred at the federal level on December 19, 2006, when President Bush signed *Public Law 109-417, the Pandemic and All-Hazards Preparedness Act*. This law amended the Public Health Services Act with respect to public health security and expanded bioterrorism preparedness and response to all-hazards preparedness and response. The purpose of the amendment was to improve the nation's public health and medical preparedness and response capabilities for emergencies, whether deliberate, accidental, or natural.

In addition, as a result of lessons learned from Katrina and Rita, DSHS made many improvements in its preparedness capacity and capability, including but not limited to: (1) expanding incident command system training and planning for response personnel;

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(2) improving communications with all response partners; (3) improving planning, including the development of a medical special needs plan; (4) improving resource management including documenting the types and sources of federal assets available to states; (5) developing memoranda of agreement and contingency contracts for ambulances, oxygen, and other assets needed in a public health emergency response; (6) increasing awareness and financial accountability for documenting response related costs; (7) ordering medical special needs shelter equipment and supply caches; and (8) working with response partners to enhance evacuation planning for medical special needs patients.

2.1.5.2 *Hurricane Dean (2007)*

The next major disaster for Texas occurred in August 2007 as Texas prepared for Hurricane Dean, which threatened the lower Rio Grande Valley. Although Dean ultimately turned south into Mexico, Texas put into motion the largest mobilization of assets in the state's history. As the lead agency for Emergency Support Function 8, Health and Medical Services, DSHS was responsible for the evacuation and sheltering of people with medical special needs as well as for providing disaster mental health services both during and after an emergency. More than 450 DSHS staff from Austin and the health service regions participated in the response and most of the evacuation and sheltering assets were assembled in San Antonio. DSHS implemented agreements for ambulance services that had been developed after Katrina and Rita, which resulted in the largest mobilization of ambulances in one location in the nation's history.[7]

As a result of lessons learned from the Hurricane Dean mobilization, DSHS again focused on making further improvements in its preparedness and response planning. These included: (1) improving the memoranda of agreement for mobilization of ambulance resources; (2) developing memoranda of agreement for emergency medical service personnel to staff medical buses; (3) making refinements to the Multi-Agency Coordination Center (MACC) structure and improving standard operating procedures and processes; (4) identifying and training multiple incident command system general and command teams; and (5) developing and providing extensive training for WebEOC, a web-enabled crisis information system.

2.1.5.3 *San Angelo Mass Sheltering Event (2008)*

In spring 2008, DSHS was asked to provide health and medical services to women and children living temporarily in a mass shelter in San Angelo, while allegations of abuse were being investigated at the Yearning for Zion Ranch in El Dorado. The event provided some unique challenges for DSHS including: (1) the deployment of agency staff to San Angelo; (2) the provision of ongoing support to deployed staff; and (3) the extended duration of deployment.[8]

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[7] Texas Department of State Health Services. DSHS Council Meeting. Commissioner's Report. October 10-11, 2007. Available at: http://www.dshs.state.tx.us/council/agendas/101007/CROct07.pdf. Accessed: June 13, 2010

[8] Litaker JR, Morrill JB, Bradshaw RT. After Action Report: The Health and Medical Response by the Texas Department of State Health Services in Support of the San Angelo Mass Shelter Event (April 2008), February 2009.

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Following the San Angelo mass shelter event, DSHS made further improvements in its preparedness capacity and capability. These included: (1) developing and preparing "go kits" to support specific functional activities of deployed staff; (2) identifying, developing, and training several response "strike" or assessment teams to support field operations; and (3) developing contingency contracts for clinical staffing.

2.1.5.4 *Hurricane Season (2008)*

In 2008, Texas faced a particularly active hurricane season. DSHS, along with other response partners, was ultimately impacted by four named storms: Hurricanes Dolly, Gustav, Ike, and Tropical Storm Edouard. Hurricane Ike would prove to be the most destructive storm in Texas history, causing a storm surge and billion of dollars in damage. Emergency Support Function 8 response activities managed by DSHS during the 2008 hurricane season included medical special needs evacuation and sheltering, public health community assessments, responder and population immunizations, vector control, and mortuary services.

As in previous years, DSHS documented lessons learned from the 2008 hurricane season and made improvements in its preparedness capacity and capability. DSHS continued: (1) developing, staffing and training community assessment teams; (2) participating in the establishment, staffing, training and exercising of state impact area re-entry teams; (3) enhancing and documenting MACC policies, procedures, processes; (4) enhancing the use of contracted expertise; (5) improving communications with local response partners regarding DSHS assets and capabilities; and (6) improving recovery plans.

2.1.5.5 *Summary of Capacity Building*

Over the past five years, DSHS has responded to multiple incidents requiring Emergency Support Function 8 support. Each incident has provided practical experience and the opportunity to test preparedness and response capabilities. Each incident has allowed DSHS to identify lessons learned that can be applied to future response efforts. The capacity building and lessons learned identified from these events has served to prepare Texas to respond to the first pandemic influenza event of the twenty-first century.

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2.2 Overview of Influenza

2.2.1 Influenza Viruses

Influenza is a common viral illness that as a syndrome was first identified by Hippocrates in 412 B.C.[9] It is a common illness that occurs on an annual cycle with viral strains usually originating in Southeast Asia. Its two surface antigens,[10] hemagglutinin and neuraminidase, are used to identify a particular viral strain. The hemagglutinin antigen has 16 antigen types and the neuraminidase antigen has nine antigen types. The two surface antigen types by themselves do not necessarily imply virulence. An example of how an influenza virus is identified is the H5N1 strain, or avian influenza strain.

Influenza viruses are also categorized as one of three types: A, B, or C. Type A viruses can infect humans and other mammals (e.g., pigs) and birds. Influenza A viruses can undergo changes in either the hemagglutinin or neuraminidase surface antigens and thus have the propensity to cause illness in humans, mammals, and birds. Because such shifts can occur relatively quickly – as compared to other viruses – a person's immune system may not be able to build natural immunity in a timely manner. A population thus remains susceptible to influenza and its associated secondary co-infections.[11] Type A viruses also can cause influenza pandemics. Type B viruses are found mainly in humans, although they have been isolated in seals and ferrets.[12,13] Type B viruses are characterized by slow genetic shift[14] and are not implicated in pandemic influenza because of their limited host range. Type C viruses can infect pigs and humans, but are extremely rare. Type C viruses are known to cause local epidemics.[15] Table 2.5 summarizes characteristics of the three viral types.

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[9] GlobalSecurity.org. Flu pandemics in history. Obtained 29 Apr 2010 from: http://www.globalsecurity.org/security/ops/hsc-scen-3_pandemic-history.htm.

[10] An antigen is defined as "a substance that is capable of inducing [a] specific immune response." A Dictionary of Epidemiology, 3rd Edition, Ed: John M. Last

[11] Gupta RK, George R, Nguyen-Van-Tam JS. Bacterial pneumonia and pandemic influenza planning. Emerg Infect Dis [serial on the Internet]. 2008 Aug [date cited]. Available from http://www.cdc.gov/EID/content/14/8/1187.htm

[12] Osterhaus AD, Rimmelzwaan GF, Martina BE, et al. Influenza B virus in seals. Science. 2000;288(5468):1051-1053,

[13] Nobusawa E, Sato K. Comparison of the mutation rates of human influenza A and B viruses. Journal of Virology. 2006;80(7):3675-3678.

[14] Nobusawa E, Sato K. Comparison of the mutation rates of human influenza A and B viruses. Journal of Virology. 2006;80(7):3675-3678.

[15] Matsuzaki Y, Sugawara K, Mizuta K, et al. Antigenic and genetic characterization of influenza C viruses which causes two outbreaks in Yamagata City, Japan, in 1996 and 1998. Journal of Clinical Microbiology. 2002, 40(2):422-429.

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Table 2.5: Summary of characteristics for influenza virus types A, B, and C

Influenza Type	Known Hosts	Virulence Potential	Pandemic Potential
Type A	• Wild aquatic birds • Poultry • Pigs • Humans	• Can cause severe disease • Transmission to other species possible • Relatively quick genetic shift, thus decreasing ability for natural immunity to occur • Human-to-human transmission increases pandemic potential	• Yes
Type B	• Humans • Seals • Ferrets	• Mutates 2-3 times slower than Type A influenza • Some immunity occurs at an early age in humans • Enough seasonal mutation occurs to require annual vaccination	• No
Type C	• Humans • Dogs • Pigs	• Known to cause severe illness and localized epidemics, but usually only causes mild disease	• No

References: Footnotes 12 - 16.

2.2.2 Seasonal Influenza

Seasonal influenza follows a predictable course, even though the particular strain may differ each year. In North America, the annual influenza season usually begins in late fall and ends in early spring. As viral strains vary from year to year due to antigenic change and mutation, a new vaccine is developed each year to protect against potential viral strains expected to circulate and cause illness. Recommendations are made about which viral strains to include in upcoming vaccines based on monitoring and reporting by the Global Influenza Surveillance Network administered by the World Health Organization. However, because such recommendations are made six to eight months[16] in advance of influenza season in order to produce the vaccine, there is always the potential that a viral strain not included in the seasonal vaccine will occur. When a new strain not previously known appears suddenly, not only is there a lag time for vaccine development, but there is also potential for the general population to be susceptible to the virus. This was the case with the novel H1N1 influenza virus that began circulating in Texas in April 2009.

[16] CDC (Updated 1 Aug 2009). Selecting the Viruses for Seasonal Flu Vaccine. Obtained 22 May 2010 from: http://www.cdc.gov/flu/professionals/vaccination/virusqa.htm

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2.2.3 Pandemic Influenza

Influenza pandemics have been documented since 1580.[17] The first instance of a pandemic with epidemiological data available occurred from 1889 to 1890.[18] This so-called Asiatic Flu originated in Uzbekistan in 1889 and rapidly moved west causing approximately one million deaths. In the twentieth century, there were three influenza pandemics. The novel H1N1 pandemic was the first in the twenty-first century. Although the morbidity and mortality of pandemic influenza are generally higher than that of seasonal influenza, each successive pandemic has been less virulent than previous pandemics. Table 2.6 identifies some major characteristics of the four most recent influenza pandemics.

Table 2.6: Actual and extrapolated morbidity and mortality by pandemic influenza in the United States of America during the twentieth and twenty-first centuries

Year	Common Name	Viral Strain	Actual Morbidity	Actual Mortality	Extrapolated Morbidity*	Extrapolated Mortality*
1918[19]	Spanish	H1N1	36M	675,000	100M	1,993,600
1957[20]	Asian	H2N2	45M	76,000	78M	134,780
1968[21]	Hong Kong	H3N2	50M	34,000	66.5M	51,667
2009[22]	Novel H1N1	H1N1	60M	12,270	-	-

* Extrapolated morbidity and mortality comparisons are made using population numbers in the year that the pandemic occurred versus 2009 population numbers. M: Million.

2.2.4 Novel H1N1 Influenza

The novel H1N1 virus is a type A virus of swine origin.[23] The epidemiology of this virus indicates that it may be less lethal than previous type A viruses from 1918, 1957, and 1968.[24] However, clinical features of the 2009 H1N1 virus indicated potential for increased morbidity and mortality in specific patient populations.

Clinical manifestations of influenza-like illness attributed to 2009 H1N1 were similar to seasonal flu although vomiting and diarrhea were reported more frequently with the 2009 H1N1 virus. Severity of disease ranged from asymptomatic infection to mild upper

[17] Ghendon Y. Introduction to pandemic influenza through history. European Journal of Epidemiology 1994; 10(4): 451-453.
[18] Vijaykrishna D, Poon LLM, Zhu HC, et al. Reassortment of pandemic H1N1/2009 influenza A virus in swine. Science 328: June 18, 2010, pg. 1529.
[19] The influenza pandemic of 1918. Stanford University. http://virus.stanford.edu/uda/index.html. Accessed June 4, 2010.
[20] Henderson, D.A., Inglesby, T.V., Toner, E., & Nuzzo, J. Public Health and Medical Responses to the 1957-58 Influenza Pandemic. *Biosecurity and Bioterrorism, 7*(3). Obtained March 24, 2009 from http://www.upmc-biosecurity.org/website/resources/publications/2009/2009-08-05-public_health_medical_responses_1957.html#morbidity
[21] GlobalSecurtiy.org. 1968 Hong Kong Flu. http://www.globalsecurity.org/security/ops/hsc-scen-3_pandemic-1968.htm. Accessed June 4, 2010.
[22] CDC. Updated CDC Estimates of 2009 H1N1 Influenza Cases, Hospitalizations and Deaths in the United States, April 2009 – April 10, 2010 http://www.cdc.gov/h1n1flu/estimates_2009_h1n1.htm#Table%20Cumulative
[23] Swedish KA, Conenello G, Factor SH. First season of 2009 H1N1 influenza. Mount Sinai Journal of Medicine. 2010;77:103-113
[24] Swedish KA, Conenello G, Factor SH. First season of 2009 H1N1 influenza. Mount Sinai Journal of Medicine. 2010;77:103-113.

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respiratory illness, viral syndrome, and severe pneumonia to acute respiratory distress syndrome and progression to multi-organ failure and death.[25]

Illness Characteristics: In-depth review of medical records of patients who died of novel H1N1 influenza identified the following characteristics.[26]

- 25% (68/272) were admitted to an intensive care unit
- 45% (122/272) were less than 18 years old
- 5% (14/272) were 65 years old or older
- 73% (198/272) had at least one underlying medical condition (e.g., asthma, diabetes, heart disease, lung disease, neurologic disease, or pregnancy)
- 40% (100/249) had findings consistent with pneumonia based on chest radiography obtained at admission

Table 2.7 compares mortality and hospitalizations in the United States and in Texas. Both obesity and pregnancy posed significant risks. Five percent of deaths occurred in pregnant women, even though they only made up one percent of the population.[27] Pregnancy was identified as a risk factor during the first wave with obesity identified as an additional risk factor in the second wave. In fact, the morbidly obese, defined as patients with a body mass index greater than 40, were more than five times as likely to be hospitalized than a non-obese patient. Obese patients also died at greater rates than non-obese patients.[28]

Table 2.7: Hospitalizations and deaths in the United States and Texas from the novel H1N1 virus between April 2009 and June 2010

	Hospitalization (per 100,000)				Deaths (per 100,000)			
Age Group	United States	Rank	Texas	Rank	United States	Rank	Texas	Rank
0 – 4	58.76	1	26.35	1	0.47	5	0.67	3
5 - 24	22.64	2	9.12	2	0.5	4	0.46	5
25 – 49	16.19	4	5.53	5	1.03	2	1.1	2
50 – 64	22.17	3	8.91	3	1.69	1	1.43	1
≥65	16.01	5	5.65	4	0.97	3	0.54	4

Sources: Centers for Disease Control and Prevention and DSHS Infectious Disease Control Unit[29,30,31,32]

[25] CDC (29 Oct 2009). 2009 H1N1 Early Outcome and disease characteristics. Obtained 4 Jun 2010 from http://www.cdc.gov/h1n1flu/surveillancega.htm
[26] Seema, J., Kamimoto, L. & Bramley, A. (2009). Hospitalized patients with 2009 H1N1 in the United States April –June 2009. New England Journal of Medicine, 361(20), 1935-1944.
[27] CIDRAP (23 Apr 2010). H1N1 LESSONS LEARNED: Pandemic underscored influenza's unpredictability. http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/apr2310pandemic-jw.html
[28] CDC (10 Nov 1999). People at high risk of developing flu-related complications. http://www.cdc.gov/h1n1flu/highrisk.htm. Accessed May 2, 2010.
[29] CDC (April 16, 2010). Flu-related hospitalizations and deaths in the US from April 2009 – January 2010. Obtained May 12, 2010 from http://www.cdc.gov/h1n1flu/hosp_deaths_ahdra.htm
[30] CDC (Oct 27, 2009). Early Outbreak and Disease Characteristics. Obtained 30 May 2010 from: http://www.cdc.gov/h1n1flu/surveillancega.htm#graphc
[31] Cumulative Report Texas Aggregate Surveillance Summary: Novel Influenza H1N1 week ending 5/22/10. Obtained 4 Jun 20100 from http://www.dshs.state.tx.us/txflu/TX-cumulative-age.pdf
[32] Email from Rita Espinoza, Epidemiologist, DSHS. 2009 H1N1 Hospitalizations and deaths April – July, 29, 2009.

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2.2.5 Influenza Surveillance

Surveillance activities are an essential tool to monitor morbidity, mortality, and antiviral resistance among circulating and novel influenza viruses. Both the CDC and DSHS operate surveillance systems. These systems are described below. These sentinel systems are designed to collect data or specimens, depending on the specific surveillance activity, from pre-designated providers. It should be noted that cases of seasonal influenza are not required to be reported to DSHS.[33]

2.2.5.1 *CDC Influenza Surveillance System*

The CDC influenza surveillance system is comprised of eight components (see Table 2.8). Together these components provide a system of ongoing surveillance of influenza year-round and operational throughout the United States. Since 2000 this system has been operational year-round.

Table 2.8: Summary of the eight components of the CDC influenza surveillance system and Texas participation in each

CDC Influenza Surveillance System Type	Functions	Texas Participation
Laboratory Surveillance	• Reports total number of respiratory specimens tested and the number positive for influenza by type (A, B, and C) and subtype • Data are reported weekly • Approximately 150 reporting laboratories nationwide	• The 11 Texas public health Laboratory Response Network laboratories participate
Mortality Surveillance	• Pneumonia- and influenza-related mortality are reported by the Cities Mortality Reporting System • Data are reported weekly • Some 122 cities report data each week	• The seven Texas cities that report this data are: ➢ Austin ➢ Corpus Christi ➢ Dallas ➢ El Paso ➢ Fort Worth ➢ Houston ➢ San Antonio
Outpatient Influenza-Like Illness Surveillance	• Voluntary state-level reporting system • Influenza-like illness visits per 250,000 patient population are reported • Age groups represented are 0-4, 5-24, 25-49, 50-64, and > 65	• See Section 2.2.5.2 for information on Texas Sentinel Provider Network

[33] Some illnesses must be reported to the Texas Department of State Health Services for surveillance and disease control purposes. Seasonal influenza is not a reportable illness. However, novel outbreaks of influenza, such as the initial outbreak of the novel H1N1 type A virus are reportable.

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CDC Influenza Surveillance System Type	Functions	Texas Participation
State and Territorial Epidemiologist Report	• State health departments report influenza activity weekly • Activity is reported as sporadic, regional, or widespread based on specific criteria	• Texas actively participates
Influenza-Associated Pediatric Mortality	• Laboratory-confirmed influenza-associated deaths in children less than 18 years old are reported to the CDC	• Texas actively participates
Human Infections with Novel Influenza A Viruses	• Type A viruses isolated from humans, but sub-typed as nonhuman or not able to be sub-typed by standard methods	• Texas actively participates • Reporting infection of novel influenza A virus can identify viruses of pandemic potential
Emerging Infections Program	• Conducts surveillance for laboratory-confirmed influenza-related hospitalizations for persons less than 18 years old • Covers 12 metropolitan areas in 10 states	• Texas does not participate in this program
New Vaccine Surveillance Network	• Provides population-based estimates of laboratory confirmed influenza hospitalization rates for children less than five years old • Covers three counties	• Texas does not participate in this program

Source: US Centers for Disease Control and Prevention[34]
CDC: Centers for Disease Control and Prevention

2.2.5.2 *Texas Sentinel Provider Network*

Currently, Texas has 190 reporting providers in the Texas Sentinel Provider Network. Eighty-three of 254 Texas counties are represented in the network. Except for providers along the Texas-Mexico border, most providers are located in urban areas or in areas with a local health department (see Figure 2.1).

[34] CDC. U.S. Influenza Sentinel Provider Surveillance Network. Obtained 9 May 2010 at http://www.ccbh.net/ccbh/export/sites/default/CCBH/pdf/admin/sentinal.provider.pdf

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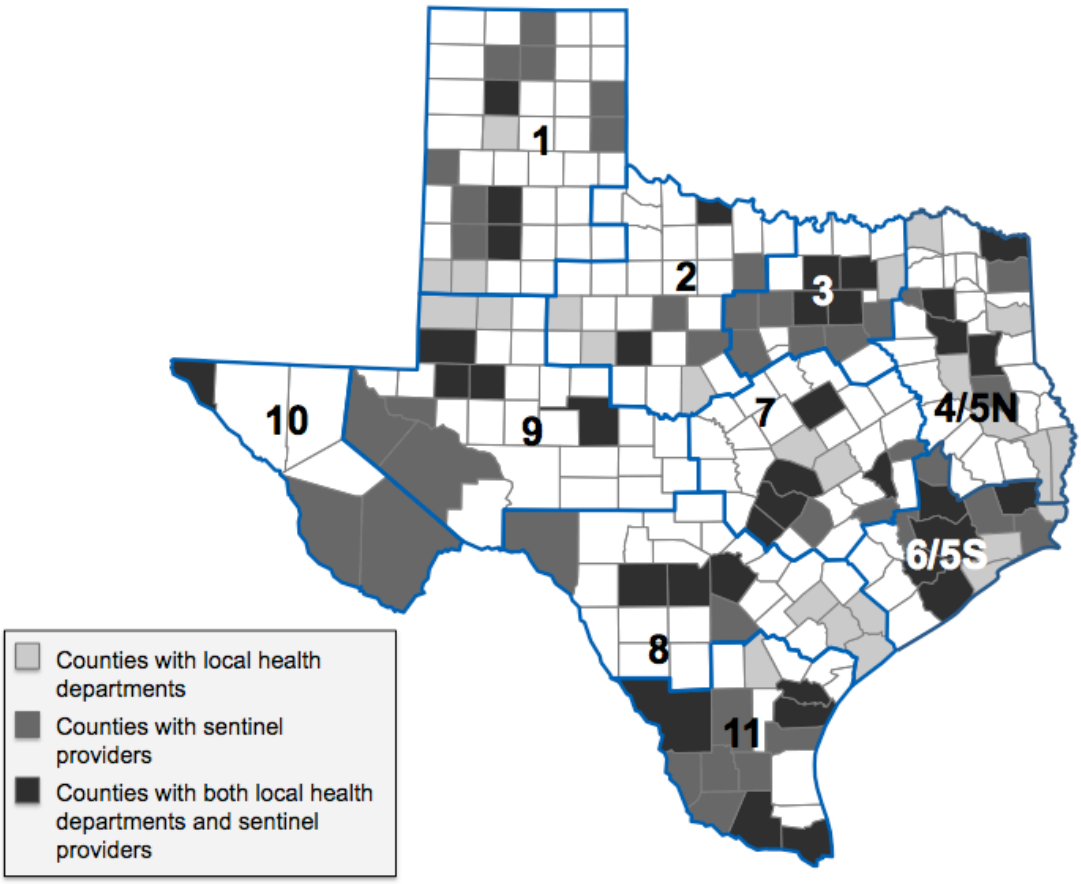
Figure 2.1: Map of Texas counties with influenza surveillance sentinel providers



Source: Texas Department of State Health Services
Numbers on the map indicate DSHS Health Service Regions

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2.3 Novel H1N1 Response

2.3.1 Chronology of Events

Table 2.9 provides a timeline of events and activities associated with the DSHS response to the novel H1N1 pandemic.

Table 2.9: Chronology of events related to the novel H1N1 influenza pandemic

Date	Activity
Friday **April 17, 2009**	• The CDC laboratory confirms the first novel H1N1 influenza result from California
Tuesday **April 21, 2009**	• The CDC issues *Morbidity and Mortality Weekly Report Dispatch* announcing novel H1N1 influenza infection in two children in Southern California, one with recent travel to Texas
Wednesday **April 22, 2009**	• The DSHS Commissioner of Health calls an urgent meeting of senior staff and pandemic influenza subject matter experts to discuss the unfolding situation in Mexico, the two cases in Southern California, and the suspected cases in Guadalupe County, Texas • Minimal incident command system structure is activated
Thursday **April 23, 2009**	• DSHS receives laboratory confirmation of novel H1N1 influenza virus in two teenagers from Byron Steel High School in the city of Cibolo, Guadalupe County, Texas
Friday **April 24, 2009**	• Confirmation of influenza-like illness in Mexico is reported • DSHS MACC opens and activates for response • Preliminary DSHS laboratory results from a third teenager identifies influenza A, untypable (probable novel H1N1 influenza). The 18-year-old attends the same high school as the previously identified cases. He has no known swine exposure and does not know the two index cases in Texas. This may represent ongoing transmission within the school and state.
Saturday **April 25, 2009**	• Three epidemiology assistance teams from the CDC arrive in Texas • A third student from Byron Steel High School is confirmed with novel H1N1 influenza • The decision is made to close Byron Steel High School, Cibolo, Texas • Governor Rick Perry makes an initial request for 37,430 courses of antiviral medication from the federal Strategic National Stockpile (SNS) • DSHS call center opens to provide information to the public and to practitioners • World Health Organization announces “A Public Health Concern of International Importance”

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Date	Activity
Sunday **April 26, 2009**	• Amount of antiviral medications requested from the SNS is increased to 25% of the Texas allotment, or 850,000 courses • Daily State Operations Center conference calls are initiated • All 14 schools in the Schertz-Cibolo-Universal City Independent School District are closed • Charles E. Johnson, Acting Secretary, U.S. Department of Health and Human Services, declares a nationwide public health emergency for Swine Influenza A (later called novel H1N1 influenza)
Monday **April 27, 2009**	• DSHS continues to operate the multi-agency coordination center to coordinate ESF-8 activities • DSHS initiates real-time after action review process with The Litaker Group
Tuesday **April 28, 2009**	• Texas begins to receive supplies from the SNS
Wednesday **April 29, 2009**	• There is confirmation of novel H1N1 influenza in a 22-month-old Mexican national who died in Houston, Texas. This is the first novel H1N1 influenza-related death in Texas and the United States • Governor Rick Perry issues a statewide disaster declaration in response to the novel H1N1 influenza outbreak • The World Health Organization raises the pandemic alert to level 5, its second-highest level, characterized by human-to-human transmission in at least two countries in one World Health Organization region
Tuesday **May 5, 2009**	• The CDC announces new guidelines for school closure • DSHS issues emergency room use guidance for the public to reduce reported overcrowding of hospital emergency rooms across the state
Friday **May 15, 2009**	• DSHS call center closes and callers are referred to their health care provider or nearest health department • Final situation report is completed for the spring outbreak • MACC operations are ended and work continues from individual offices as needed • DSHS begins an immediate after action process and summer-long planning phase to prepare for the second wave of this pandemic
June – July 2009	• The World Health Organization raises the pandemic alert to level 6, indicating sustained transmission globally and the start of the 2009 influenza pandemic • DSHS forms five interdisciplinary work groups to review and improve response activities related to pandemic influenza. These five work groups focus on: (1) epidemiology and laboratory surveillance; (2) antiviral medication / vaccine allocation and distribution; (3) non-pharmaceutical interventions and public awareness; (4) continuity of operations; and (5) DSHS MACC operations • Work and meetings continue with local health departments to implement strategies related to the five interdisciplinary work groups • A comprehensive public education campaign is developed Work and meetings continue with the Texas Division of Emergency Management, Texas Education Agency, Texas Department of Agriculture, and federal partners

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Date	Activity
August 2009	• DSHS begins outreach campaign to potential H1N1 vaccine providers
Monday August 10, 2009	• DSHS convenes the Texas Pandemic Influenza Summit in Austin to discuss the recent novel H1N1 virus outbreak and to inform stakeholders of response plans for the second wave. Over 600 people attend this conference.
Friday, August 14, 2009 through Friday September 11, 2009	• DSHS convenes 13 regional H1N1 conferences across Texas to present an overview of the Spring 2009 response, to highlight changes to the response environment for an expected second wave, and to conduct a facilitated question-and-answer session with participants. Over 2,500 people attend the 13 regional conferences.
Tuesday, August 18, 2009	• DSHS MACC reactivates for H1N1 response
Sunday, August 23, 2009	• H1N1 call center is established for medical providers • Staffing agency is contracted to provide nurses for the call center located in the MACC
September 2009	• DSHS creates a vaccine incident management team, as a virtual component of the MACC, to coordinate the H1N1 vaccine allocation and distribution activities
Tuesday, September 1, 2009	• Preregistration begins for providers interested in participating in the vaccination campaign
Wednesday, September 16, 2009	• Contract is finalized to integrate the DSHS general information H1N1 call center with 211 Texas
Week ending Friday, September 18, 2009	• DSHS deploys a receiving, staging, and storing team to begin fall antiviral shipments for the second wave • Media campaign broadcast is launched
Friday, September 25, 2009	• Call center is co-located with 211 on Austin State Hospital campus • Calls to toll-free DSHS call center number begin transferring automatically to 211 • Bilingual nurses are contracted to meet the needs of Spanish speakers
Week ending Friday, September 25, 2009	• First H1N1 vaccine allocation is available to Texas
Friday, October 9, 2009	• DSHS implements H1N1 vaccine call center
Sunday – Tuesday October 18 – 20, 2009	• DSHS Commissioner of Health convenes a multidisciplinary workgroup of subject matter experts representing medicine, nursing, pharmacy, medical ethics, emergency medical services, and local health departments to develop a framework to guide decision-making in the ethical allocation of resources during pandemic influenza
Tuesday, November 3, 2009	• DSHS receives additional personal protective equipment from the CDC (remainder of N-95 mask allocation)

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Date	Activity
Thursday, November 19, 2009	• Use of Flu Locator is initiated to help the public identify H1N1 vaccination locations
Tuesday, December 1, 2009	• DSHS issues news release encouraging providers to target all priority groups
Friday, December 11, 2009	• DSHS opens vaccine supply to general public
January – July 2010	• Comprehensive after action review of the response to the 2009 pandemic influenza event is conducted by The Litaker Group
Thursday January 14, 2010	• DSHS implements open ordering process for vaccine to allow all providers to order H1N1 vaccine as needed
Wednesday March 31, 2010	• DSHS call center closes; 211 continues to handle calls as received
Friday April 30, 2010	• Data entry into Flu Locator is discontinued • MACC demobilizes
Tuesday, August 10, 2010	• World Health Organization declares the H1N1 influenza pandemic over[35]
Monday August 30, 2010	• Final After Action Report of the DSHS response to the novel H1N1 pandemic influenza outbreak is submitted to the Texas Commissioner of Health

Sources: DSHS Situation Reports; DSHS Incident Action Plans; DSHS press releases; Texas Office of the Governor press releases; World Health Organization website; CDC *MMWR* Dispatch April 21, 2009; DSHS Pandemic influenza Summit and Regional Conference materials.

2.3.2 After Action Evaluation Process

DSHS instituted a real-time after action review process on Monday April 27, 2009. The contractor responsible for this evaluation was provided access to ongoing activities throughout the entire response. This after action review continued until August 30, 2010. Key activities of the after action evaluation process are noted in Table 2.10.

[35] World Health Organization. H1N1 in post-pandemic period. http://www.who.int/mediacentre/news/statements/2010/h1n1_vpc_20100810/en/index.html. Accessed August 11, 2010.

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Table 2.10: Summary of ongoing after action evaluation and remediation activities during the novel H1N1 influenza pandemic

Time Period	Activities	Outcomes
April and May 2009	• Real-time evaluation in the DSHS MACC and SNS receiving, staging, and storing site • Participation in meetings and conference calls during the first two weeks of the outbreak	• Created a comprehensive after action report for the period April 17, 2009 to May 15, 2009 • Developed an improvement plan covering the period April 17, 2009 to May 15, 2009
June and July 2009	• Project management to oversee five interdisciplinary work groups to review and improve response activities related to pandemic influenza • Planning for the Texas Pandemic Influenza Summit • Planning for 13 regional H1N1 conferences statewide	• Revised plans and procedures for the five interdisciplinary work groups to improve response activities for the second wave •
August and September 2009	• Conducting the Texas Pandemic influenza Summit and the 13 regional H1N1 conferences statewide	• Educating over 600 persons at the statewide summit and 2,500 persons statewide on the novel H1N1 pandemic and preparations for the second wave
October 2009	• Planning and conducting a work group to develop a framework for ethical decisions making allocation decisions for scarce resources during pandemic influenza	• Document outlining the ethical framework for making allocation decisions for scarce resources during pandemic influenza
November and December 2009	• Evaluation of response activities during the second wave	• Created a comprehensive after action report for the period August through November 2009 • Developed an improvement plan covering the period August through November 2009
January through July 2010	• Comprehensive final after action report of the DSHS response to the novel H1N1 pandemic	• Created a comprehensive after action report for the period April 2009 through July 2010 • Developed an improvement plan covering the period April 2009 through July 2010

Source: The Litaker Group archives

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2.3.3 Pandemic Influenza Medical Ethics Work Group

DSHS has considered ethical issues on an ongoing basis with regard to pandemic influenza. On May 18, 2006, DSHS convened a group of experts to address ethical issues related to antiviral medications and vaccines. This group discussed priority groups, distribution of scarce resources, and antiviral medication purchases by DSHS.

In 2009 DSHS continued the review of medical ethics issues with regard to pandemic influenza. While the pandemic did not result in a severe shortage of medical resources (e.g., vaccine, antiviral medication, or personal protective equipment), there was concern that future pandemics may be more severe and that difficult allocation decisions would need to be made if resources became more limited. Consequently, DSHS outlined a process to develop an ethical framework to support decision-making in the allocation and distribution of scarce state-owned resources. This multi-step process included:

1. Convening a multidisciplinary work group of 17 members to deliberate and recommend a decision-making process to assist in the allocation and distribution of scarce health and medical resources owned by DSHS
2. Writing a draft report of the goals, framework, values, and recommendations emanating from this work group
3. Posting the draft report on the DSHS website for a 30-day public comment period
4. Summarizing all public comment for consideration by the multidisciplinary work group for inclusion in the final report
5. Providing the final report to the commissioner of health

The following topics were addressed by the work group: (1) vaccine allocation and distribution, (2) antiviral medication allocation and distribution, (3) medical surge resource allocation and distribution, and (4) ventilator allocation and distribution. This report is available from DSHS.

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2.4 Partners Involved in the Response to H1N1 Influenza Pandemic

2.4.1 Partner Roles

Table 2.11 highlights the response partners and stakeholders involved in the H1N1 influenza pandemic response.

Table 2.11: Summary of activities by response partners during the novel H1N1 influenza pandemic response

Response Partner	Abbreviation	Key Role During the Event
211 / Texas Information and Referral Network	211	• Served as an information resource to the public and medical providers during the event
American Red Cross	ARC	• Facilitated the distribution of public information
Baptist Children and Family Services	BCFS	• Provided incident management services to DSHS • Provided novel H1N1 immunizations to state employees
Department of Aging and Disability Services	DADS	• Provided support and information distribution related to its core client base • Provided staff to DSHS to support response operations
Department of Assistive and Rehabilitative Services	DARS	• Provided support and information distribution related to its core client base • Provided staff to DSHS to support response operations
Department of Family Protective Services	DFPS	• Provided support and information distribution related to its core client base • Provided staff to DSHS to support response operations
Department of State Health Services	DSHS	• Served as the lead agency for this response as lead for Emergency Support Function 8 – Health and Medical • Coordinated distribution of antiviral medications and H1N1 vaccine • Served as the primary laboratory resource for the state • Coordinated the statewide epidemiological surveillance and investigation activities • Conducted a public awareness campaign
Federally Qualified Health Centers	FQHCs	• Provided state stock antiviral medications to patients by using on-sited licensed pharmacies

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Response Partner	Abbreviation	Key Role During the Event
Health and Human Services Commission	HHSC	• Provided overall support through the HHS Emergency Management Council • Provided staff to DSHS to support response operations (e.g., Enterprise Contracting and Procurement Services) • Provided transportation services for vaccines and supplies in some areas of the state
Hospital Preparedness Program contractors	HPP contractors	• Managed regional supply caches • Provided hospital admission and bed census data • Supported medical surge activities at the hospital level
Local Health Departments	LHD	• Served as key partners with DSHS to support epidemiological investigations, antiviral medication distribution, vaccine distribution, information distribution, and other health and medical response activities
Pharmacies	Not Applicable	• Provided antiviral medications from the state cache to uninsured and underinsured persons • Provided the novel H1N1 vaccine
Physicians	Not Applicable	• Provided access to state stock antiviral medications by prescription • Provided the novel H1N1 vaccine to patients
Professional Associations	Varied	• Provided information to their members to keep members informed and up to date • Assisted DSHS with input into planning efforts
Texas AgriLife Extension Service	ALEXT	• Distributed informational publications, including bilingual publications on H1N1 to Head Start Centers, school health clinics, early childhood centers and colonia community centers • Posted information on their website
Texas Animal Health Commission	TAHC	• Worked closely with DSHS on investigating any possible link between persons who had contracted the H1N1 virus to particular swine • Worked with the swine production industry personnel and other appropriate stakeholders in the dissemination of information
Texas Association of Local Health Officials	TALHO	• Provided input into the allocation and distribution discussion related to the novel H1N1 vaccine and antiviral medications • Served as a liaison between local health departments and DSHS throughout the response

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Response Partner	Abbreviation	Key Role During the Event
Texas Department of Agriculture	TDA	• Provided a mechanism for school districts to feed students in a non-congregate setting when a school was closed due to H1N1 and to be reimbursed for those meals
Texas Department of Criminal Justice	TDCJ	• Took precautionary measures to prevent the spread of H1N1 in its facilities
Texas Department of Public Safety	TXDPS	• Coordinated security for the SNS and state cache
Texas Division of Emergency Management	TDEM	• Coordinated the response of state agencies during the pandemic • Organized and facilitated statewide conference calls related to H1N1
Texas Education Agency	TEA	• Worked with school districts to provide information and guidance • Provided information on their website
Texas Forest Service	TFS	• Provided operations, planning and logistical support to DSHS, Disaster District Committee Austin and Disaster District Committee San Antonio
Texas Higher Education Coordinating Board	THECB	• Provided information and assistance to institutions of higher education
Texas Military Forces	TMF	• Assisted in planning efforts as needed and prepared for activation to assist if necessary
U.S. Centers for Disease Control and Prevention	CDC	• Coordinated the national response effort • Coordinated with manufacturers to develop vaccines • Provided public information about H1N1 and vaccine • Provided epidemiological teams to Texas to assist with investigations • Provided laboratory testing and coordination

Sources: Texas Department of State Health Services and Texas Department of Emergency Management

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2.5 Successes

While much of the planning for pandemic influenza was based on a presumed worst-case scenario (i.e., H5N1 avian influenza), public health and health care systems were able to adapt to what turned out to be a milder than anticipated novel H1N1 influenza pandemic. Both the original plans and the subsequent adaptations led to some successes that are highlighted below.

2.5.1 Public Health Surveillance and Laboratory Testing

To understand the clinical manifestations of a new virus, epidemiological surveillance and laboratory testing are needed. Surveillance and testing are resource intensive, yet essential. A key success in this response was the ability of the surveillance and testing system to surge in the initial stages of the event when very little was known about the virus and to continue providing information throughout the first and subsequent pandemic waves. For more information on laboratory testing and observations identified in the first wave, the reader is advised to review the initial after action report covering the period of April 17 to May 15, 2009.[36]

2.5.2 Guidance for School Closure

DSHS and the Texas Education Agency (TEA) worked closely to identify the most appropriate parameters to account for when considering school closure. Initial efforts focused on stopping transmission by closing schools. This led to the closure of 55 school districts and 12 charter schools impacting nearly 473,000 students in May 2009.[37] As more was learned about this virus, its transmission, and its virulence, DSHS and TEA reassessed the balance between closing schools and preventing disease transmission. The end result was a decision-making process that emphasized business operations rather than specific thresholds related to absenteeism. Specifically, when local school officials deemed an independent school district could no longer effectively conduct its educational mission due either to staff or student absence then school closure might be an option.

2.5.3 School Meal Programs

An unintended consequence of school closure was the disruption of school meal programs for breakfast and lunch. The Texas Department of Agriculture, working with TEA, the Texas Health and Human Services Commission and the United States Department of Agriculture, created a mechanism to allow school meal programs to continue should a school close due to the novel H1N1 influenza pandemic. One hundred ninety schools applied for the waiver and were approved to provide meals through this mechanism but none invoked the waiver.

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[36] Litaker JR, Ramon MM, McGlothlin M. The Texas Department of State Health Services Response to the Novel H1N1 Influenza Outbreak: April 17 – May 15, 2009, October 2009

[37] Texas Division of Emergency Management. State Operations Center Situation Report No. 7. May 4, 2009.

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2.5.4 Public-Private Partnership for Distribution of State Cache Antiviral Medication

During the novel H1N1 response the DSHS modified and revamped plans for antiviral medication distribution to meet the specific needs of this situation and event. Prior planning in Texas for pandemic influenza relied upon the private marketplace and local health departments to distribute antiviral medications. Local health departments were designated to provide medications to those without resources to access the private marketplace. However, due to the nature of the event and the need for extensive epidemiological investigations at the local level, local health departments did not have available staff to dispense medications on a large scale. The solution was to engage private pharmacies and federally qualified health centers to manage state stock and to distribute it to qualified individuals with a valid prescription. This program initially started with a single chain of pharmacies with several dozen outlets, but has since expanded to 1,348 chain outlets, 71 independent pharmacies, and 69 federally qualified health center pharmacy sites. Statewide, all counties are covered except the 47 counties without pharmacies.

2.5.5 Public-Private Partnership for Distribution of the Novel H1N1 Vaccine

The CDC announced in spring 2009 that they would be responsible for purchasing and distributing the novel H1N1 vaccine to each state. In Texas, DSHS would then be responsible for allocating and distributing the vaccine to individual providers using a system to be established by DSHS. A public-private partnership was successfully created to allocate and distribute vaccine to local health departments, physicians, pharmacies, and other providers to promote widespread distribution of vaccine. Previous pandemic influenza plans for mass vaccination relied upon the local public health system working with clinical and community volunteers to provide immunizations to the public.

DSHS regularly manages the vaccine distribution process for the Vaccine for Children Program with vaccine dose volumes of around one million — 7% of the total 13 million distributed annually, primarily through private sector channels. In this event, DSHS was told to expect up to 15 million doses of the H1N1 influenza vaccine. A vaccine management system was designed and implemented in a matter of months. Over 11,000 Texas providers registered and more than nine million doses of novel H1N1 vaccine had been distributed to Texas providers by August 2010.

2.5.6 Multi-Faceted Communication Strategy

DSHS implemented a multi-faceted communication strategy intended to inform and educate both providers and the public regarding the H1N1 influenza pandemic. The strategy included a comprehensive web site (TexasFlu.org), ongoing media relations, a statewide public awareness campaign, conference calls with stakeholders, and use of the Texas Information Referral Network to provide flu information. Response partners found most components of the communication strategy successful, but two strategies were

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found to be particularly beneficial. The Texas Division of Emergency Management State Operation Center conference calls were deemed successful by local elected officials and by response partners from diverse backgrounds particularly in the early weeks when disease epidemiology and response strategies were evolving frequently. Another innovative communication strategy was the partnership between DSHS and the Texas Information Referral Network, which was created to enhance communication with the general public and providers regarding novel H1N1 by using the Texas 211 system.

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3 Information Collection Methodology

3.1 Purpose

The Department of State Health Services (DSHS) was the lead response agency in Texas for the 2009 novel H1N1 pandemic influenza outbreak. To assess this response, DSHS contracted with The Litaker Group to conduct a final after action review. This review provides DSHS the opportunity, in collaboration with key response partners, to evaluate and examine the response in its entirety. In addition, this after action review provides DSHS the information necessary to revise operational plans to respond better to future pandemics or other infectious disease outbreaks. Additional details regarding the data collection methodology are available in Appendix 7.4.

3.2 Data Collection

The after action review of the novel H1N1 health and medical response used a four-phase process to gather information, data, and input from stakeholders (see Appendix 7.4). Figure 3.1 shows the locations in which data collection activities took place. Data were collected using four methods:

1. **Interviews:** A series of interviews with DSHS subject matter experts, DSHS leadership, and leadership of other organizations was conducted. Interviews with subject matter experts were designed to obtain background information on areas of programmatic response (e.g., vaccine allocation and distribution) and updates on response activities. Interviews with DSHS and other leadership organizations were designed to identify high-level, strategic input on the response.

2. **Hot Wash Sessions:** Seven debriefing sessions, known as hot wash sessions, were conducted in Austin and eight debriefing sessions were conducted in the DSHS health service regions. Following each health service region hot wash, a session was held to discuss and develop a corrective action plan for major issues identified in the hot wash session.

3. **Regional Partner Focus Groups:** Eighteen regional partner focus groups were conducted in 17 cities statewide. Four additional focus group sessions were held in Austin. These all-day focus groups discussed four common topics: (1) antiviral medication allocation and distribution; (2) vaccine allocation and distribution; (3) communications; and (4) local and regional planning. Additional topics included: medical surge capacity, epidemiology, laboratory, policy considerations, and other topics as identified by the regional medical director and focus group participants (see Figure 3.1 for focus groups locations).

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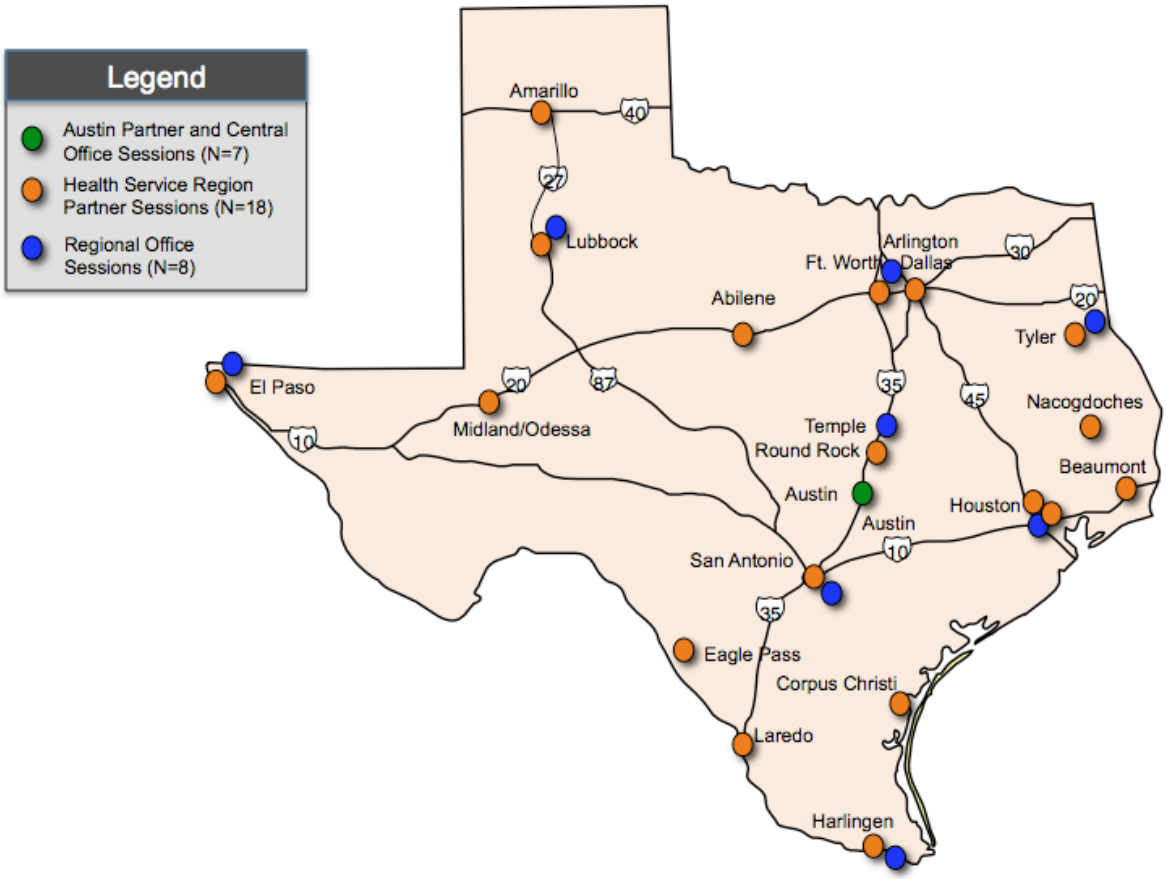
4. **Online Surveys:** Additional data were gathered from surveys with focus group participants and with members of the Texas Association of Obstetricians and Gynecologists (see Appendix 7.9 for more details).

Figure 3.1: Locations of data gathering sessions to obtain input for the novel H1N1 after action report



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3.3 Data Reporting

To be consistent with the Department of Homeland Security Exercise Evaluation Program (HSEEP) after action report format, the categories identified in the collaborative review noted above are further categorized by specific Department of Homeland Security target capability. However, because this after action report is for an actual event rather than for an exercise, some of the components that are typically included in a HSEEP modeled report are not applicable here. For example, this report does not correlate a particular observation to an exercise objective. Otherwise, this report is consistent with the HSEEP format.

For each activity, the following information is provided:

1. **Observation:** A statement describing the activity being evaluated
2. **Analysis:** An examination of the issues associated with the response activity
3. **Recommendation(s):** A suggested course of action for improving the activity evaluated
4. **Resources:** Identification of additional resources to support the analysis and recommendations

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4 Topical Area Discussion and Observations

This section details specific observations, analyses, and recommendations. The following eight topics are discussed:

1. Antiviral medication allocation and distribution
2. Vaccine allocation and distribution
3. Epidemiological surveillance
4. Laboratory operations
5. Communications
6. DSHS Multi-Agency Coordination Center
7. Health and medical surge
8. Planning

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4.1 Antiviral Medication Allocation and Distribution Observations

4.1.1 Introduction

Antiviral medications were a key component in the prevention and treatment of novel H1N1 influenza. The state stockpile of antiviral medications managed by the Texas Department of State Health Services (DSHS) contained approximately 2.4 million courses of medication. This included medication received in Texas from the federal Strategic National Stockpile, and medication purchased by DSHS with funds appropriated from the federal government and the Texas legislature. The stockpile of antivirals included both Tamiflu® (oseltamivir) and Relenza® (zanamivir) in adult and pediatric dosage forms, with the pediatric dosages being limited in supply.

4.1.1.1 *Creation of the Private Pharmacy Distribution Network*

Previous plans to distribute antiviral medications to the public were based on two major assumptions: (1) that most persons would be able to obtain antiviral medications through the retail marketplace with a prescription from their health care provider and (2) that individuals who could not afford an antiviral medication could obtain it by a distribution mechanism at a local health department or from a DSHS health service region office.

It became evident early in the event that a mechanism to distribute courses of antiviral medications to those who could not afford them would be needed. This was especially true as local health departments became overwhelmed with epidemiological investigations, outbreak control, and other core public health duties related to the response and were not able to dispense medications.

To promote an efficient allocation and distribution of state stock, DSHS contracted with a single pharmacy chain in May 2009 to place state stock antiviral medication within the pharmacy chain. Uninsured or underinsured patients could obtain the state stock without cost, but could be charged an administrative fee of $10. If they could not afford it, the fee would be waived. This system allowed DSHS to utilize the efficiencies of private industry to make antiviral medications available to individuals across the state. The private-public partnership was later expanded to include additional pharmacy chains, independent pharmacies, and federally qualified health center (FQHC) pharmacies (see Table 4.1).

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Table 4.1: Participating pharmacies as of July 30, 2010 in the Texas private pharmacy distribution network

Pharmacy Type	Number of Pharmacy Type	Number of Retail Stores	Counties Covered[1]
Chain Pharmacies[2]	8	1,348	160
Independent Pharmacies	71	71	47
FQHC Pharmacy Sites	69	69	53
Total Current Pharmacies[3]	**-**	**1,488**	**207**
Total Potential Pharmacies	**-**	**1,520**	**227**

1. Independent pharmacies participate if there is not a chain pharmacy in that county; FQHC pharmacies serve their patient populations only and may be used in counties that may or may not have coverage by a chain or independent pharmacy
2. Chain pharmacies examples include: HEB, Walgreens, CVS, Walmart, etc.
3. There are 47 counties in Texas that do not have a pharmacy

The criteria for accessing the state stock were twofold. Either a patient lacked insurance coverage or was underinsured. Physicians would designate this on the prescription and patients would receive state stock from a participating pharmacy without cost, except for an administrative fee, as noted above, which could be waived if needed.

Overall, feedback on the private pharmacy distribution network concept and operation has been positive. Some of the observations in this section identify opportunities for improvement, but individuals across the state indicated that this system should remain in place.

4.1.2 Target Capability: Medical Supplies Management and Distribution

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Medical Supplies Management and Distribution as "the capability to procure and maintain pharmaceuticals and medical materials prior to an incident and to transport, distribute, and track these materials during an incident." Observations related to antiviral medication allocation and distribution fall within this target capability.

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4.1.2.1 *Allocation and Distribution of Antiviral Medications*

4.1.2.1.1 Compounding

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Prescription medication compounding was not widely available.

Analysis: There was a national shortage of Tamiflu® suspension.[38] To relieve this shortage, compounding from adult dosage forms into a suspension was utilized. However, not all pharmacies or pharmacists are equipped to provide compounding services. In addition, provisions were not in place to predetermine which participating state stock pharmacies could provide compounding. Consequently, some local health departments assumed the additional responsibility of identifying compounding pharmacies and/or procuring compounding services.

Recommendations:

1. Determine which private pharmacy distribution network pharmacies offer compounding services.
2. For counties and cities without a compounding pharmacy in the private pharmacy distribution network, seek to identify and enroll compounding pharmacies or identity other compounding options.
3. Develop contingency plans to institute compounding services at multiple levels should widespread compounding services be needed in a future event.

Related Resources:

- 4.1.2.1.2: Reimbursement for Compounding

[38] A suspension is a liquefied form of medication typically provided to children or individuals who are unable to swallow capsules or tablets in whole form.

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4.1.2.1.2 Reimbursement for Compounding

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: A mechanism did not exist to reimburse for compounding capsules into suspension for state stock antiviral medications.

Analysis: There was a national shortage of antiviral Tamiflu® suspension.[39] To relieve this shortage, compounding from adult dosage forms into pediatric suspension was utilized. However, a mechanism to reimburse pharmacies, over and above the $10 dispensing fee, for compounding services and supplies did not exist. As a result, participating pharmacies could either (1) provide compounded medication without charge to the patient; or (2) charge the patient for the cost of compounding while providing the antiviral medication at no charge. Many pharmacies chose the first option, but this may not be sustainable over the long term, especially during a severe pandemic if compounding services are widely needed. The second option may prevent patients from obtaining their prescription medication.

Recommendations:

1. Consider the feasibility of developing a contractual mechanism for DSHS to reimburse pharmacies for compounding services of state stock antiviral medications so that patients would not be charged for these services.

Related Resources:

- 4.1.2.1.1: Compounding

[39] A suspension is a liquefied form of medication typically provided to children or individuals who are unable to swallow capsules or tablets in whole form.

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4.1.2.1.3 Administrative Fee Waiver

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Some participating pharmacies did not always waive the $10 administrative fee for dispensing state stock if a patient could not afford the fee.

Analysis: State stock was available to patients who were either uninsured or underinsured. At the point of dispensing, the medication itself was free, but pharmacies were contractually allowed to charge a $10 administration fee to cover dispensing costs. This fee could be waived for patients if they could not afford the cost. This presented several challenges. Not all private pharmacy distribution network pharmacists were aware that the fee could be waived. In instances where the fee was not waived, patients often left pharmacies without their medication and were not treated. In addition, not all patients were aware of the potential fee waiver nor felt empowered to request it. In cases where the fee was waived, participating pharmacies did not receive reimbursement.

Recommendations:

1. Inform participating pharmacies that pharmacists can waive the administrative fee if the patient cannot afford it. Such a waiver would not require authorization from either the prescribing physician or DSHS.
2. Provide education materials directly to individual pharmacists about the administrative fee waiver and how it can be applied.
3. Develop a mechanism for patients to inform DSHS if they are not able to obtain needed medication.
4. Consider the feasibility of developing a contractual mechanism to reimburse pharmacies when the administrative fee is waived.

Related Resources:

- **None**

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4.1.2.1.4 Obtaining Access to a Health Care Professional

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: In order to access state stock, a prescription is required.

Analysis: In order to achieve a wide distribution of state stock antiviral medication, DSHS developed a partnership with private pharmacies to house state stock. To gain access to this stock, a patient had to present a valid prescription. For individuals without access to a physician or prescriber, this would hinder access to state stock antiviral medication. While it is true that access to a health care provider depends on a variety of factors during disaster and non-disaster situations, the fact that a prescription was needed to obtain this particular medication could impact the ability to provide treatment, even if the medication itself could be dispensed without charge to the patient. Access to a health care provider is a complex issue. Planning activities need to consider how to provide a prescription for the uninsured who may not have ready access to a physician if this is a critical step in obtaining state stock.

Recommendations:

1. Work with local, regional, and state partners to assess barriers and options related to supporting access to health care providers for the evaluation and treatment of those without ready access to such care to address this observation.
2. Plan alternative methods to ease barriers regarding provision of access to medical care, as appropriate, to support state operational plans (e.g., if a prescription is needed to access state stock, then identify methods to provide a prescription to those without access to a health care provider).

Related Resources:

- **None**

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4.1.2.1.5 Access to State Stock in Rural Areas and Some Urban Neighborhoods

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There was a lack of access to state stock antiviral medications in rural counties and some urban neighborhoods.

Analysis: Texas has 44 rural counties (population 2,500 – 9,999) located within metropolitan statistical areas and 133 non-metropolitan rural counties (population <2,500)[40]. There are 47 counties that do not have a pharmacy, and many rural counties do not have a chain pharmacy and are served by an independent pharmacy only. In counties without a pharmacy or with only a few pharmacies, individuals may need to travel long distances in order to access state stock antiviral medication. This may also be the case in some urban neighborhoods where the contracted chain pharmacy does not have a presence. This may cause a delay in obtaining medication and impact treatment and health outcomes. DSHS worked with the Texas Pharmacy Association to recruit individual pharmacies in rural counties to participate in the pharmacy distribution network, but there remains concern about access to state stock in some areas of the state.

Recommendations:

1. Clearly identify counties that do not have a pharmacy or that do not have a pharmacy willing to distribute state stock. For these counties, identify reasonable methods that individuals could undertake to obtain a state stock antiviral if needed. These methods may consider customary and usual practices that individuals use to obtain pharmacy services for an acute infection.
2. Continue to identify and enroll pharmacies in rural counties. DSHS health service regions and local health departments can assist in identifying and encouraging enrollment of additional pharmacies.
3. Consider contracting with independent pharmacies in urban neighborhoods that do not have a participating chain pharmacy already in place.

Related Resources:

- **None**

[40] Office of Management and Budget, 2003.. Utah Rural Counties 2005. http://lists.tsl.state.tx.us/pipermail/syscon-tx/2005-February/001277.html. Accessed June 13, 2010.

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4.1.2.1.6 Clinical Guidance for Antiviral Medication Prescribing

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There was a lack of clinical guidance on antiviral medication prescribing at the onset of the pandemic.

Analysis: Clinical guidance for prescribing antiviral medication was limited in the early phase of the response. While the development of these documents began immediately, there were delays in completion and approval of documents due to rapidly evolving information about the virus and the need to have a robust approval process. For this reason, physicians prescribed antiviral medication based on clinical judgment and best practices known at the time, even when such prescribing may have been later deemed inappropriate based on the emerging clinical epidemiology of the influenza virus. Clinicians reported that when available, clinical guidance for antiviral medication prescribing was helpful and positively influenced appropriate prescribing behavior. Clinicians prefer concise clinical guidance that utilize algorithms to assist in treatment decisions.

Recommendations:

1. Work with the Texas Medical Association, the Texas Osteopathic Medical Association, local medical societies, and other medical associations to develop clinical guidance early in an infectious disease response and provide to clinical providers.
2. Develop a DSHS process to review and rapidly approve clinical guidance.
3. Consider the establishment of a call center dedicated to answering treatment questions from clinical providers at the time of patient care.
4. Promote the use of evidence-based clinical guidance documents. Guidance documents should identify appropriate clinical conditions that warrant a prescription, define proper treatment, identify who should be treated, and use algorithms when appropriate.

Related Resources:

- 4.1.2.1.7: Guidance for Providers about Prescribing from State Stock

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4.1.2.1.7 Guidance for Providers about Prescribing from State Stock

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Many providers did not know how to prescribe medication from state stock and some did not know about the state stock program.

Analysis: Providers indicated that there was a lack of information about where to access and how to prescribe antiviral medications from state stock. As an example, many physicians did not know how to indicate on a prescription that an antiviral should be dispensed from state stock. Currently there is not a mechanism to distribute information to all licensed physicians in Texas.

Recommendations:

1. Identify methods to improve the effectiveness of communicating to physicians, other health care providers, and pharmacists about the process for prescribing from state stock.
2. Continue to communicate to pharmacists the process to dispense medications from state stock, even if the prescription is not designated as such. This includes informing pharmacists that based on their determination of underinsurance or lack of insurance, state stock medication can be dispensed without follow-up with DSHS or the prescribing physician.
3. Provide the list of participating pharmacies to all pharmacies statewide.

Related Resources:

- 4.1.2.1.6: Clinical Guidance for Antiviral Medication Prescribing

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4.1.2.1.8 Standing Delegation Orders

Level of Observation	☐ Federal	☒ State	☒ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☒ DSHS HSR	☒ DSHS Statewide	

Observation: Standing delegation orders were needed to allow non-physician personnel within DSHS greater scope of practice to support health and medical response activities.

Analysis: DSHS did not have all of the needed standardized standing delegation orders (SDO) available for personnel at the statewide level. However, during this event, some health service regions created the additional SDOs needed to allow nursing personnel to provide additional duties under the scope of practice of the regional medical director. This practice was effective.

Recommendations:

1. Develop SDO templates at the DSHS statewide level for all medications in the SNS.

Related Resources:

- **None**

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4.1.2.1.9 Receipt and Storage of Antiviral Medications at the Local Level

Level of Observation	☐ Federal	☐ State	☐ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Local health departments may have space limitations related to receiving and storing antiviral medications.

Analysis: State officials decided to request antiviral medications from the SNS and in some areas these medications were sent to local health departments without advance notice. In communities that did not have an immediate need for these medications, preparing to handle a large influx of antiviral medications on short notice was difficult. Planning activities should address the influx of federal assets at the local level.

Recommendations:

1. Work with local public health officials to develop communication protocols regarding medication shipments and plans involving receipt and storage of supplies from the SNS (or other stockpile) to address receipt and storage issues.

Related Resources:

- **None**

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4.1.2.1.10 First Responder Prophylaxis

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Many first responders did not receive prophylaxis because of a lack of a clinical indication, despite expectations to the contrary.

Analysis: SNS planning and operational guidelines indicated that prophylaxis should be provided to first responders in order to prevent morbidity and mortality associated with an infectious disease outbreak. Many of these plans were based on a potential response to a bioterrorism event in which prophylaxis would be appropriate. Some first responders felt that they should have received antiviral medications because a pandemic was declared and because a portion of the SNS was released, even though prophylaxis was not clinically indicated. In some cases, relationships between first responders and the health and medical community suffered because prophylaxis was not provided as expected by first responders. Recommendations for this observation should be applied not only to a pandemic influenza event, but also to any event in which prophylaxis or vaccination may be needed.

Recommendations:

1. Educate first responders on when and under what circumstances prophylaxis will likely be offered and the limitations of antiviral medications as prophylaxis. For example, antiviral prophylaxis availability during a future pandemic influenza event will depend on illness severity, likelihood of transmission, extent of patient contact, availability of stock, and other epidemiological factors.
2. Revise plans and operational guidelines to include language sensitive to the decision-making process involved in determining when and under what circumstances prophylaxis will be made available to first responders.
3. Identify opportunities to review plans and procedures as related to prophylaxis for other infectious disease or bioterrorism incidents.

Related Resources:

- **None**

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4.1.2.1.11 Role of Federally Qualified Health Centers in Providing State Stock Antiviral Medication

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The role of federally qualified health center (FQHC) pharmacies in the distribution of state stock was misunderstood.

Analysis: FQHC pharmacies were included in the private pharmacy distribution network in order to provide outreach to potentially underinsured or uninsured patients. The inclusion of FQHCs was intended to support FQHC patients served by these health clinics, not patients at large. However, FQHCs were sometimes incorrectly identified as free clinics for those without a medical home when, in fact, FQHCs have established patient populations. At times patients were inappropriately referred to an FQHC to receive medication. There is a need to clarify the role of FQHCs in disasters, and specifically in the private pharmacy distribution network, as well as the patient populations they are able to serve.

Recommendations:

1. Clarify the role of FQHCs in the disaster response system, and specifically in the private pharmacy network with explicit notation that FQHCs:
   a. Serve a defined patient population who have an established doctor-patient relationship
   b. Provide pharmacy services to established patients only, not to the public at large
   c. Charge a sliding scale fee for physician visits
   d. Are not a free clinic
2. Identify opportunities to communicate this message to local health department officials and other response partners.

Related Resources:

- **None**

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4.1.2.1.12 Potential Role of Hospital Pharmacies in Dispensing Antiviral Medications

Level of Observation	☐ Federal	☐ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Hospital pharmacies may have been underutilized during the pandemic.

Analysis: Hospital pharmacies, for the most part, are not licensed to dispense medications to non-patients. However, during a public health emergency, hospital pharmacies could be a distribution option for state stock to outpatients who would otherwise seek access at a retail pharmacy. Focus group participants suggested that dispensing restrictions by hospital pharmacies could be relaxed during a public health emergency for certain medications and for certain populations.

Recommendations:

1. Determine the feasibility of including hospital pharmacies in the private pharmacy distribution network with the following considerations:
   a. The patient population to be served (e.g., discharged patients or outpatients)
   b. Pharmacy regulatory issues that may need to be addressed
   c. Hospital interest and willingness to serve in that role during a pandemic event
   d. Logistical issues that come with including hospital pharmacies in the network considering the limited amount of state stock available to be distributed throughout Texas

Related Resources:

- **None**

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4.1.2.1.13 Expiration of Antiviral Medication Caches

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: There was a need to address concerns of local entities regarding expiration dates for antiviral medication caches.

Analysis: Local entities have purchased antiviral medications over the last five to eight years to create local caches in case of a pandemic influenza event. While these caches were not necessarily used or needed during the novel H1N1 pandemic, entities have expressed concern about the expiration dates of these caches. In particular, many noted that considerable funds were allocated for these purchases and they would like to identify alternatives from simply disposing of the medications when they expire. There was also concern among these entities that during the current economic climate, it will be difficult to justify expenditure on a product that would expire without some consideration of a stock rotation option. This observation is not necessarily within the jurisdiction of state authorities, but this observation may provide an opportunity to discuss this topic further at the national level.

Recommendations:

1. Consider initiating a discussion with appropriate federal partners regarding expiration issues related to antiviral medication caches and identify if opportunities are available to address these concerns.
2. Communicate information to local and regional partners about this issue.

Related Resources:

- 4.1.2.1.14: Dispensing Antiviral Medications Purchased under Federal Contract Opportunities

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4.1.2.1.14 Dispensing Antiviral Medications Purchased under Federal Contract Opportunities

Level of Observation	☐ Federal	☐ State	☐ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Qualified entities that purchased antiviral medications under the federal contract noted confusion regarding when and how to dispense antiviral medication purchased under federal contracts.

Analysis: A number of local governmental entities (e.g., local health departments, independent school districts, fire, police, emergency medical services) had purchased antiviral medication through the federal contract opportunity offered by DSHS. They noted confusion about how and when these stocks could be used. Some organizations that placed orders under the federal contract in summer 2009 had not yet received their purchase almost a year later. Participants noted that there are too many requirements attached to the purchase of antiviral medications made with state and federal funds.

Recommendations:

1. Develop a set of guidelines or frequently asked questions to address concerns among local entities that participated in the federal contract purchasing opportunity. Concerns to be addressed include:
   a. Timeline for purchase of stock and arrival
   b. How and when the antiviral medications could be used
   c. Stock rotation options
   d. Shelf-life extension options

Related Resources:

- 4.1.2.1.13: Expiration of Antiviral Medication Caches

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4.1.2.1.15 Work with Federal Authorities to Modify Request Justification Criteria

Level of Observation	☒ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: There was insufficient data to support resupply requests from the SNS based on current Centers for Disease Control and Prevention (CDC) criteria.

Analysis: DSHS made a request to the CDC for additional 30 mg and 45 mg antiviral formulations. This request was denied because there was insufficient data to demonstrate that the medication originally allocated had been used or was projected to be used. This insufficient data was due to lack of real-time usage information at over 1,400 locations across the state and the fact that the shortage was caused in part by the geographic distribution necessary to provide statewide availability. The utilization rate was a complex function of disease incidence, severity, provider and patient behaviors, availability of antiviral medications, and other considerations. In order to have the most effective clinical outcome, antiviral medications should be provided within 48 hours of the onset of symptoms. This required antiviral inventory to be available in pharmacies across the state. The private pharmacy distribution network included 1,419 retail pharmacies and 69 FQHC pharmacy sites statewide to allow for timely patient access in any part of the state. As such, the initial allocation, though in itself a large quantity, was distributed to about 1,500 locations across Texas. This in turn limited the quantities at any particular location. If a location requires additional supply, this would come from a central location. Therefore, there is a need to have sufficient quantity available at a central location for resupply and not depend on redistribution.

Recommendations:

1. Consider working with CDC to provide information regarding the use of geographic spread as a factor to support requests for additional materials in a future event so that actual or projected use of supplies, medications, or other resources would take into account geographic distribution of the resource as well as the utilization rate of this resource.
2. Consider a per capita measure to address geographic spread.
3. Discuss any proposal with federal officials before implementation.

Related Resources:

- **None**

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4.1.2.1.16 Receiving, Staging, and Storing Tactical Communication Equipment

Level of Observation	☐ Federal	☐ State	☐ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The communication equipment originally deployed to the receiving, staging, and storing (RSS) site did not meet RSS operational needs.

Analysis: Tactical communication equipment, such as phones and laptops, originally deployed to the RSS site did not fully meet the needs of on-site DSHS staff. The original equipment did not include air cards or routers for full Internet access. Response personnel used personal cellular phones to communicate with each other from varying on-site locations and cellular phone reception was limited within the RSS facility.

Recommendations:

1. Develop a tactical communication kit specifically designed for rapid deployment and operation at the RSS site that address the issues identified in the analysis.

Related Resources:

- **None**

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4.1.2.1.17 Understanding Security Changes

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Changes to security plans caused confusion for some responders at the regional and local levels.

Analysis: The Texas SNS plan and related exercises emphasized the need for security during deployment and distribution of SNS materials. During the novel H1N1 response, these plans were modified based on the nature of this specific event and on current threat assessment information. Many local and regional responders were not aware of these changes or the reasons for these changes. They expressed concern about the lack of security measures implemented.

Recommendations:

1. Modify the SNS plan and related training to clarify that security plans can change based on the event scenario and threat assessments.
2. Develop methods to communicate better security plan changes to persons who need to know this information.

Related Resources:

- **None**

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4.1.2.1.18 Receiving, Staging, and Storing Partnership

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The utilization of a private partner for RSS operations proved extremely efficient and effective.

Analysis: RSS plans in Texas for pandemic influenza response called for the use of a state-run warehouse with state personnel. While effectively meeting the expectations of this plan when SNS supplies were received, it became clear that logistical and operational expertise would be needed to meet manpower and storage requirements for this event. A contract with a private partner was established to provide personnel resources to support a long-term response and to secure facilities to store, stage, and ship antiviral medications and personal protective equipment. This partnership proved very effective and should be continued.

Recommendations:

1. Formalize plans for RSS operations with a private partner for future events.
2. Review regional plans and agreements for RSS operations and update agreements to include contract language similar to that used in the H1N1 response, if appropriate.

Related Resources:

- 4.1.2.1.19: Use of Texas Inventory Management System

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4.1.2.1.19 Use of Texas Inventory Management System

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There were multiple challenges with the use of the Texas Inventory Management System (TIMS) in this response.

Analysis: The TIMS system was designed to: (1) allow local point of dispensing sites to request medical materials from DSHS; (2) serve as a warehouse management system within the RSS to record storage locations and issue pick lists; and (3) provide inventory management at the RSS site and to point of dispensing sites. Training and exercise on the TIMS system had occurred in accordance with operational plans. In this event, however, TIMS experienced the following challenges.

- SNS materials arrived at the RSS site with incorrect or missing manifest logs and multiple packaging formats per item. Consequently, inventory information had to be recorded manually from each pallet
- Numerous new users were asked to use TIMS during this event, with many not having previous experience with TIMS. Some new users did not have Internet access, and just-in-time training was not in place.
- As such, data entry eventually shifted to a spreadsheet method, thus disabling TIMS request capabilities from local point of dispensing sites.
- The system lacked some fields that were deemed necessary throughout the event (e.g., justification information).
- Creation of the private pharmacy network and transfer of state stock antivirals to a sophisticated warehousing and distribution site occurred. This site had a propriety warehouse management system already in place. This proprietary system proved to be more efficient to use.
- TIMS was unable to serve as an integrated inventory system to support other ongoing inventory management activities such as the allocation and distribution of vaccine.

Recommendations:

1. Modify plans to use one process for requesting all health and medical materials in an event.
2. Modify plans to use the private partner facility warehouse management system in an event where applicable.
3. Identify a new inventory management system, or make extensive changes to TIMS, to create a system that allows for the following features at a minimum:
   a. Flexibility to use with multiple and varying products and multiple types of events
   b. Ability to enter data received from CDC, vendors, and other entities in multiple formats

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   c. Capability for daily application for other public health programs to provide multiple user experience and training prior to an emergency
   d. Ability to track lot numbers
   e. Ability to separate or expand the event as needed to allow for movement of materials from locations other than the RSS
4. Develop a comprehensive training program to include web-based and just-in-time training.
5. Develop plans for use of the system in an event requiring new partnerships.
6. Develop detailed backup plans in case of system failure.

Related Resources:

- 4.1.2.1.18: Receiving, Staging, and Storing Partnership
- 4.7 Health and Medical Surge

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4.1.2.1.20 Courier Service

Level of Observation	☐ Federal	☐ State	☐ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The use of a courier service improved distribution capacity.

Analysis: Distribution plans in Texas were based on shipping large quantities of medical materials by the pallet. The need for smaller shipments consisting of one case, or only a few cases was underestimated in prior planning. A courier service was used to distribute multiple small shipments of antiviral medications during this event.

Recommendations:

1. Formalize and implement plans statewide for use of a courier service at the RSS site.

Related Resources:

- **None**

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4.2 Vaccine Allocation and Distribution Observations

4.2.1 Introduction

Primary vaccine-related response activities for this pandemic included the manufacture, allocation, distribution, and uptake of the novel H1N1 influenza vaccine. DSHS, like other state health departments, was directed by the Centers for Disease Control and Prevention (CDC) to allocate and distribute the vaccine in Texas. In this event, DSHS expected to manage the allocation and distribution of 15 million doses of the H1N1 influenza vaccine.[41] To accomplish this goal, DSHS decided to allocate and distribute the vaccine using a network of public and private providers.

DSHS created an inventory management system that could support the logistical and operational functions associated with: (1) allocating and distributing the vaccine; and (2) managing the provider network. This inventory management system was created in just a few months in order to be ready for the initial scheduled arrival of the vaccine in September 2009. See Appendix 7.6.9 for more information about the allocation and distribution process.

4.2.1.1 *Vaccine Manufacturing Process*

The development and manufacturing of a new vaccine is a controlled process that takes from five to six months. The process calls for a series of sequential steps to be taken that would enable a safe, effective vaccine to be developed. Figure 4.1 outlines the timeline and activities associated with the identification of viral strains and the manufacturing process for a new influenza vaccine.

[41] DSHS regularly manages the vaccine distribution process for the Vaccine for Children Program in Texas and is responsible for distributing about 1 million doses through this program, with the remaining 13 million doses distributed in the private sector.

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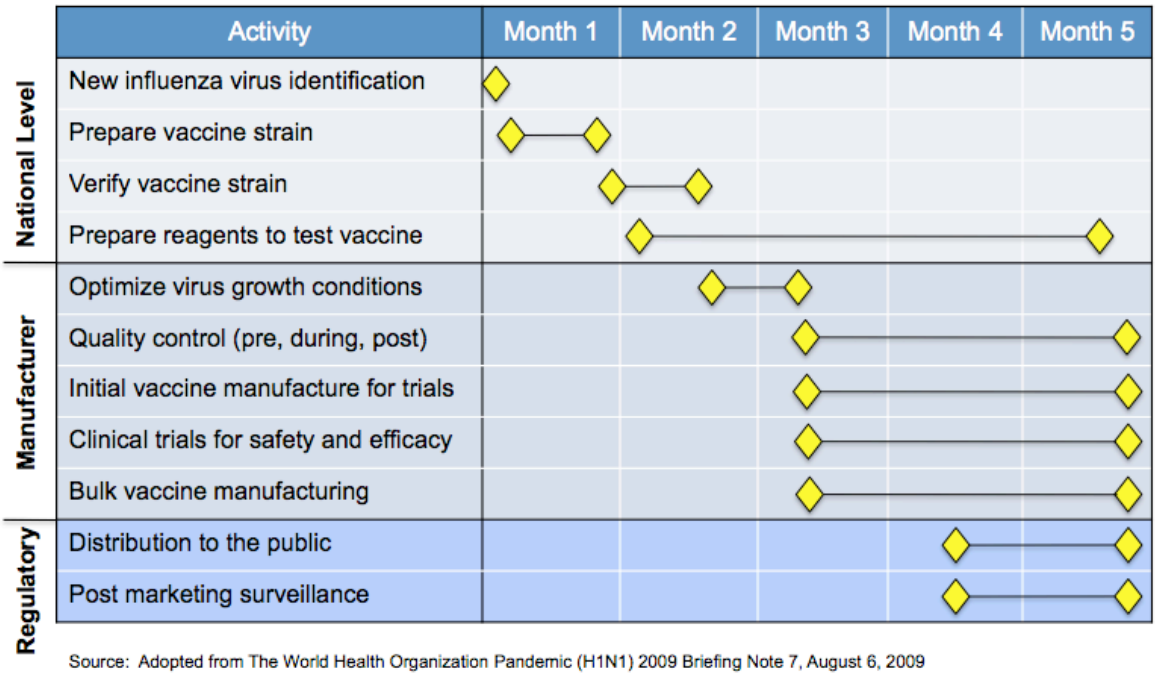
Figure 4.1: General timeline and activities associated with developing a new influenza vaccine



Source: Adopted from The World Health Organization Pandemic (H1N1) 2009 Briefing Note 7, August 6, 2009

4.2.1.2 *Allocation of Vaccine to Texas*

The CDC allocated vaccine to all 50 states, the District of Columbia, eight US Territories and freely associated states, and three large metropolitan health departments. The timing of vaccine allocation was dependent on the manufacturing process, which included the need to consider quality control, regulatory issues, good manufacturing practices, and the need to conduct clinical trials. With these many variables in play, the allocation of vaccine to states varied and did not meet initial timeline expectations. In addition, the type, formulation, and quantity of vaccine to be received at any one time were unknown until the allocation actually occurred.

4.2.1.3 *Texas Vaccine Ordering and Reporting System*

In preparation for vaccine availability from the manufacturers, Texas created an inventory control and information management system to manage: (1) provider registration details; (2) vaccine allocation information; (3) vaccine orders and confirmation to providers; (4) vaccine distribution to providers; and (5) vaccine uptake and reporting. This system was mapped, developed, validated, and put into use in a matter of months during summer 2009.

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4.2.1.4 *Allocation and Distribution of Novel H1N1 Vaccine in Texas*

The DSHS Vaccine Allocation Advisory Committee was responsible for making weekly allocation and distribution decisions for the novel H1N1 vaccine. Allocation decisions were based on: (1) provider priority group estimates; (2) vaccine formulation availability; (3) limitations of the distribution system; (4) Advisory Committee on Immunization Practices guidelines; (5) geographic equity; and (6) other factors. Once distribution decisions were made, providers had an opportunity to confirm or deny an order. Distribution of vaccines occurred on a weekly basis.

4.2.1.5 *Vaccine Uptake Reporting*

Information on vaccine uptake was reported through one of two systems: (1) the Texas Statewide Immunization Tracking System (ImmTrac) that captured doses administered to individuals; and (2) the Vaccine Ordering and Reporting System (VORS) which captured aggregate data on doses administered and wasted by provider. Texas law requires that vaccine doses administered in preparation for an emergency or disaster be entered into ImmTrac within 30 days of vaccination. Due to the volume some data delays were inevitable and consequently resulted in an underestimation of vaccine uptake. Vaccine providers were also required to register to become ImmTrac providers.

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4.2.2 Target Capability: Medical Supplies Management and Distribution

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Medical Supplies Management and Distribution as "the capability to procure and maintain pharmaceuticals and medical materials prior to an incident and to transport, distribute, and track these materials during an incident." Some observations related to novel H1N1 vaccine allocation and distribution are related to this DSHS target capability.

4.2.2.1 *Vaccine Ordering and Reporting System*

4.2.2.1.1 Provider Registration

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The two-step VORS provider registration system was confusing to new providers and redundant for Texas Vaccine for Children (VFC) providers.

Analysis: DSHS developed the Vaccine Ordering and Reporting System (VORS) to meet operational needs related to the allocation and distribution of the novel H1N1 vaccine. This system differed from the Vaccine for Children (VFC) system and required VFC providers to register separately in VORS if they wished to receive and administer the novel H1N1 vaccine. The VORS system was a two-step process that (1) collected provider enrollment information and demographic data; and (2) obtained agreement from providers to be enrolled in this program. In step one, providers were asked to estimate the populations they intended to serve. This was confusing to some providers, especially those who do not typically provide immunization services. In step two, providers agreed to CDC rules in order to participate in the program. Due to logistical difficulties, step two could not be completed at enrollment for some providers. It should be noted that this observation did not impact vaccine availability, allocation, or distribution.

Recommendations:

1. Determine the feasibility of migrating appropriate data directly from existing VFC databases for those VFC providers who wish to participate in VORS or any new vaccine management system developed.
2. Develop and provide clear instructions on how to estimate patient populations in the absence of baseline data (e.g., for a provider who does not ordinarily provide vaccines to patients).

Related Resources:

- **None**

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4.2.2.2 *H1N1 Vaccine Allocation*

4.2.2.2.1 Priority Group Definitions

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There was confusion regarding priority group definitions.

Analysis: The CDC Advisory Committee on Immunization Practices (ACIP) developed vaccine priority groups to prioritize immunization to those most at risk of developing complications from H1N1. DSHS supported the ACIP priority groups and allocated the H1N1 vaccine based on these groups when quantities were limited.

There was concern at the local and regional levels regarding the definition of health care and emergency medical service personnel. Specifically, providers and emergency response partners questioned whether the priority group definition included fire and police personnel. Some providers recommended that school nurses and school teachers should have been considered as H1N1 vaccine priority groups due to their potential exposure to ill children. Some populations, particularly senior citizens, did not understand why they were not considered a priority for the H1N1 vaccine since they had been given preference for seasonal influenza vaccines in the past.

Recommendations:

1. Clarify under which conditions first responders (e.g., fire and police personnel) would be included in the definition of health care and emergency medical service personnel.
2. Share feedback from stakeholders with the CDC regarding other professions (e.g., teachers) that might could be considered a priority group.
3. Consider developing and publicizing messages for the public that clearly define vaccine priority groups for the specific public health emergency and how those priority groups were determined.

Related Resources:

- The Centers for Disease Control and Prevention. The 2009 H1N1 Recommendations. http://www.cdc.gov/h1n1flu/vaccination/acip.htm. Accessed July 26, 2010.
- Texas Department of State Health Services (DSHS) – Pandemic Influenza Medical Ethics Work Group. A Medical Ethics Framework to Support Decision-Making in the Allocation and Distribution of Scarce Medical Resources During Pandemic Influenza. http://www.dshs.state.tx.us/txflu/PIMEWG-Report-for-Public-Comment-051410.pdf. Accessed July 26, 2010.

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4.2.2.2.2 Vaccine Allocation – By Priority Group

Level of Observation	☐ *Federal*	☒ *State*	☐ *Regional*	☒ *Local*
Agency Perspective	☐ *DSHS Austin*	☐ *DSHS HSR*	☒ *DSHS Statewide*	

Observation: Initially, DSHS allocated vaccine to providers serving priority group populations, but administration of the vaccine to priority group populations was inconsistent at the local level.

Analysis: Most response partners supported the use of priority groups when vaccines were in short supply but recommended flexibility to use local judgment on when exceptions to this policy should be made. Some providers suggested that the strict use of vaccine priority groups resulted in missed opportunities to immunize many members of the public who never returned (e.g., family members of those in priority groups and healthy senior citizens). For instance local health departments (LHD) and other VORS providers generally followed one of four protocols when administering the novel H1N1 vaccine in fall 2009 when the vaccine was in short supply:

- Followed ACIP priority and sub-priority groups strictly.
- Used locally determined sub-priority groups based on perceived local needs (e.g., immunized first responders and school teachers).
- Immunized all who presented on a first-come, first-served basis.
- Publicized outreach for the H1N1 vaccine based on priority group populations but immunized anyone who presented.

Some health and medical response partners expressed concern with the lack of consistency in the application of priority groups when one county opted for strict compliance and another county chose to be flexible. Many early vaccine allocations were made to private providers who saw only insured and paying patients thus creating the perception of possible discrimination for lower income and/or uninsured populations.

Recommendations:

1. Evaluate whether the targeting of priority groups was an effective vaccine allocation and administration strategy in Texas and make modifications to future allocation strategies, if appropriate.
2. Involve local and regional response partners in the evaluation process.

Related Resources:

- **None**

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4.2.2.2.3 Local Management of H1N1 Vaccine Allocation and Distribution Activities

Level of Observation	☐ Federal	☒ State	☐ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Some local health departments indicated that they would have preferred to have managed novel H1N1 vaccine allocation and distribution activities for their service area.

Analysis: DSHS sought input from the Texas Association of Local Health Officials and from medical professional organizations on the method to manage allocation and distribution activities for the novel H1N1 vaccine. Based on this input, DSHS opted to allocate and distribute the novel H1N1 vaccine to both public and private providers. DSHS managed this system and was responsible for making weekly allocation and distribution decisions. Despite distributing approximately 20% of the vaccine to local health departments (LHD) some voiced concerns regarding a lack of flexibility in the H1N1 vaccine allocation and distribution process. Some options proposed by LHDs included:

- Allowing LHDs to manage allocation and distribution of the vaccine to public and private providers in their service area. The LHD would decide which local providers would participate and instruct third-party distributors regarding where to ship vaccine within their service area.
- Distributing all novel influenza vaccine to interested LHDs and allow them to determine if local private providers are needed to support local vaccine administration efforts. This would require the establishment of vaccine depots in various areas of the state.
- Distributing a percentage of the state's novel vaccine allocation to LHDs to allow them to cover priority needs of their community as early in the response as possible. Some vaccine might be distributed to private providers in the area.

Recommendations:

1. Evaluate the effectiveness of the current novel H1N1 influenza vaccine allocation process to include input from response partners in the evaluation process.
2. Evaluate the effectiveness of allocating a percentage of the vaccine to local public health partners initially to promote availability of the vaccine to populations typically served by LHDs.
3. Consider a hybrid novel influenza vaccine allocation strategy where some LHDs have all or some decision-making authority based on an evaluation of their willingness, capability, and capacity to manage their response function.
4. Survey LHD officials to determine their willingness, capability, and capacity to manage allocation and distribution of novel influenza vaccines for future events.

Related Resources:

- **None**

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4.2.2.2.4 Vaccine Allocation Advisory Committee

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: Vaccine allocation decisions made by the DSHS Vaccine Allocation Advisory Committee (VACC) were not routinely shared with providers and local response partners.

Analysis: DSHS convened a team of DSHS Austin-based subject matter experts and public health officials called the VAAC to oversee the allocation of the H1N1 vaccine to VORS providers. The H1N1 vaccine allocation decisions were based on the CDC ACIP priority groups and several other variables including but not limited to: (1) quantity of vaccine available; (2) vaccine formulations available; (3) limits in the distribution system; (4) estimated vaccine uptake in population groups; (5) geographic equity; and (6) other factors. The VAAC met at least every two weeks until there were sufficient quantities of the H1N1 vaccine to move to an open ordering system, which allowed providers to order the vaccine based on need.

Some local response partners questioned the allocation decisions made by the VAAC and suggested that several non-DSHS members, including a medical ethicist, should be included on the committee in future response efforts to provide transparency and a local perspective. The VAAC did not routinely share information with VORS providers or local and regional response partners regarding how weekly allocation decisions were made so information was not transparent at the local and regional levels. Local response partners received inquiries that they could not answer from local elected officials, local media, and/or the public regarding vaccine allocation decisions.

Recommendations:

1. Consider developing a process to communicate novel vaccine allocation decisions to providers and response partners.
2. Consider expanding the membership of the VAAC to include some non-DSHS representatives.

Related Resources:

- **None**

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4.2.2.3 *Vaccine Distribution and Storage*

4.2.2.3.1 Vaccine and Vaccine Supplies Distribution

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Providers did not know which vaccine formulations would be received prior to shipment and many did not receive H1N1 vaccine supplies at the same time as the vaccine.

Analysis: Providers often did not know the types of vaccine formulation that would be received prior to shipment. This impacted their ability to receive and store some formulations and in some cases impacted their ability to provide immunizations due to the different formulations (e.g., intranasal formulations could be administered to some populations and not others). There were also issues related to restrictions based on formulation type (e.g., prefilled syringes were applicable to children from 6 to 36 months in age).

The federal government provided vaccine supplies (e.g., syringes and needles). However, these supplies were shipped separately from the vaccine, thus creating problems for providers (e.g., not having supplies in stock at the same time the vaccine arrived). In addition, some supplies were deemed inappropriate to the patient populations being served.

Recommendations:

1. Develop a mechanism for third-party distributors to communicate with providers regarding which vaccine formulations will be shipped prior to shipment.
2. Consider allowing providers to order specific formulations of influenza vaccines in VORS or allowing the development of a new vaccine management system.
3. Develop a mechanism for third-party distributors to communicate with providers regarding which vaccine supplies will be shipped prior to shipment.
4. Require that the third-party distributor ship vaccine and vaccine supplies at the same time if possible. If there are delays, providers should be notified so that they can make alternate arrangements for supplies.
5. For future response efforts consider working with the CDC to develop supply criteria and specifications appropriate for the vaccine and populations served and communicate this information to providers.
6. Communicate these vaccine and supply concerns with the CDC for consideration in future related procurement activities.

Related Resources:

- **None**

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4.2.2.3.2 H1N1 Vaccine and Vaccine Supply Storage

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Some VORS providers were not prepared to store the multiple formulations of vaccine and vaccine supplies received.

Analysis: DSHS asked providers to confirm that appropriate space was available to store the quantity of vaccine ordered. However, despite this confirmation, many providers did not have appropriate storage space when the vaccine arrived. This could be due to operational errors (e.g., incorrect quantities arriving), not knowing the formulation types that would be received at the time the order was placed, or inability to estimate accurately storage space needs. As a result, some providers, including LHD, purchased storage space at the last minute. Some providers called on LHDs to store vaccines that exceeded their storage capacity.

Providers were also not prepared in many cases to store vaccine supplies long term, especially those supplies that were deemed inappropriate for the patient populations served.

Recommendations:

1. Consider developing or requiring the third-party distributor to develop vaccine packaging and storage specifications by formulation type and send to providers in advance of receipt of vaccine or include packaging size and specifications at the time of order confirmation in VORS.
2. Consider developing or requiring the third-party distributor to develop vaccine supply packaging and storage specifications and send to providers in advance of receipt of supplies.
3. Consider alternative mechanisms or contingency plans for the storage of large amounts of vaccines at the state, regional, and local levels.

Related Resources:

- 4.2.2.3.1: Vaccine and Vaccine Supply Distribution
- 4.2.2.4.2: Plans for Disposal of Remaining Vaccine and Vaccine Waste

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4.2.2.4 *Vaccine Reporting*

4.2.2.4.1 Reporting of H1N1 Doses Administered

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Providers had issues in reporting the number of doses of novel H1N1 vaccine administered.

Analysis: Providers were asked to report vaccine administration data using one of two systems: (1) ImmTrac captured doses administered to individuals; and (2) VORS captured aggregate data on doses administered and wasted by provider. However, such data was not always reported due to:

- Logistical concerns among providers (e.g., the need for double entry into employee personnel systems at the hospital level and ImmTrac)
- Lack of staff to enter data at the private provider level (e.g., in an individual medical practice)
- Lack of reimbursement for entering data into ImmTrac
- Discrepancy in federal requirements regarding administration (e.g., the CDC did not require dose administered data after December 2009)

Recommendations:

1. Consider enhancing communication with providers regarding the option to upload vaccine-administered data from existing databases and electronic medical record systems.
2. Consider modifying or replacing ImmTrac and including or developing a new vaccine reporting system that is interoperable and capable of health information exchange.

Related Resources:

- **None**

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4.2.2.4.2 Plans for Disposal of Remaining Vaccine and Vaccine Waste

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: VORS providers did not have instructions on how to dispose of remaining vaccine and to deal with vaccine waste.

Analysis: As of late spring 2010 some providers still had large quantities of H1N1 vaccine on hand including both unexpired and expired doses. These providers were waiting for disposal or return instructions from DSHS.

Recommendations:

1. Work with the CDC to develop and distribute closeout plans to manage remaining inventories of both expired and unexpired H1N1 vaccine.

Related Resources:

- 4.2.2.3.2: H1N1 Vaccine and Vaccine Supply Storage

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4.2.2.5 *DSHS Infectious Disease Prevention Section After Action Evaluation*

4.2.2.5.1 DSHS Infectious Disease Prevention Section After Action Evaluation

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The DSHS Infectious Disease Prevention Section conducted an after action evaluation that identified additional observations associated with novel H1N1 vaccine allocation and distribution.

Analysis: On March 31, 2010, the DSHS Infectious Disease Prevention released a report identifying observations and recommendations related to novel H1N1 vaccine management. This report includes a narrative description of all major components, activities related to management of the H1N1 vaccine, graphical illustrations, project statistics, data, as well as lessons learned from the experience. This report is adopted by reference.

Recommendations:

1. Consider developing corrective actions for appropriate lessons learned outlined in the *DSHS 2009-2010 H1N1 Influenza Vaccine Distribution in Texas* report.

Related Resources:

- DSHS 2009-2010 H1N1 Influenza Vaccine Distribution in Texas report (see Appendix 7.6)

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4.2.3 Target Capability: Mass Prophylaxis

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Mass Prophylaxis as "the capability to protect the health of the population through the administration of critical interventions in response to a public health emergency in order to prevent the development of disease among those who are exposed or are potentially exposed to public health threats. This capability includes the provision of appropriate follow-up and monitoring of adverse events, as well as risk communication messages to address the concerns of the public." Some observations related to novel H1N1 vaccine allocation and distribution are related to this DSHS target capability.

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4.2.3.1 *Vaccine Safety*

4.2.3.1.1 Lack of Vaccination Based on Advice of Health Care Professionals

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Some individuals did not receive the novel H1N1 vaccine based on advice from health care professionals.

Analysis: A number of private physicians across the state reportedly had concerns about the safety of the H1N1 vaccine and advised patients not to receive the vaccine, which conflicted with outreach messages promoted by the CDC, DSHS, and local health departments. This difference in professional recommendation became a credibility issue for public health in the eyes of the public and may have contributed to a lower uptake of the H1N1 vaccine. Concerns about the vaccine that contributed to physicians advising patients not to receive it included misperceptions about the vaccine production and approval process, misperceptions about the efficacy and safety of the vaccine, and concerns about potential side effects.

Recommendations:

1. Work with medical and clinical professional associations and health care systems to provide more educational opportunities regarding vaccine safety and vaccine production methods. This education should be targeted to physicians, nurses, nurse midwives, and other health care professionals and might include:
   a. Developing continuing medical education courses on vaccine safety and the influenza vaccine production process
   b. Publishing articles in appropriate journals regarding vaccine safety and production concerns
   c. Creating educational opportunities for hospital and health care facility staff to receive important information about vaccine safety

Related Resources:

- 4.2.3.1.2: Provider and Public Concerns Over Vaccine Safety

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4.2.3.1.2 Provider and Public Concerns Over Vaccine Safety

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: A number of providers, health care workers and the public had concerns about the safety of the H1N1 vaccine.

Analysis: A number of health care workers, providers, and members of the general public had concerns and misperceptions about the safety of the H1N1 vaccine, which kept them from seeking and receiving the H1N1 influenza immunization. For example misperceptions included concerns about the vaccine production process, efficacy and safety, potential side effects, and that natural immunity by way of infection provided a similar benefit with less risk. People were also reluctant to receive the H1N1 vaccine if their health care provider did not recommend it. Most response partners noted that the public health system at all levels did not respond and counter H1N1 vaccine safety concerns and misperceptions effectively.

Recommendations:

1. Identify proactive opportunities to promote the safety and efficacy of both seasonal and novel H1N1 influenza vaccine.

Related Resources:

- 4.2.3.1.1: Lack of Vaccination Based on Advice of Health Care Professionals

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4.2.3.2 *Vaccine Administration*

4.2.3.2.1 Mass Vaccination Clinics

Level of Observation	☐ Federal	☐ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☒ DSHS HSR	☐ DSHS Statewide	

Observation: Multiple challenges were reported with the operation of mass vaccination clinics.

Analysis: Multiple challenges were reported with the operation of mass vaccination clinics. Some of the challenges are reported below.

- Demand for mass vaccination clinics lessened by the time sufficient quantities of vaccine were made available to support clinic activities.
- Clinic efficiency, as measured by throughput, is dependent on a variety of factors including vaccine formulations. Single dose syringes are more appropriate than multi dose vials.
- Paperwork requirements were redundant for families in that some clinics required registration sheets to be completed for each person rather than by family.
- Some clinics did not have language translation services.
- Transportation to clinics for staff was hindered by the need to bring supplies, which were often in large quantities and bulky.
- Just-in-time training for clinic staff was not available in all locations.

Recommendations:

1. Consider consolidating or streamlining novel influenza vaccine screening tools.
2. Determine if it is feasible to reduce the number of vaccine formulations distributed to any one public health provider to maximize patient flow in mass immunization clinics.
3. Develop just-in-time training materials for use with contract personnel, volunteer clinicians, or other clinical staff who have not provided immunizations in the recent past.
4. Provide language translation services in mass vaccination clinics, if appropriate.
5. Consider partnering with the Health and Human Services Commission Regional Administrative Services for delivery services for novel vaccine and supplies to clinics and other provider locations as designated by the health service region.
6. Consider developing a checklist outlining space and other needs for mass vaccination clinics.

Related Resources:

- **None**

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4.2.3.2.2 Use of Points of Dispensing Sites

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Although not used statewide, point of dispensing (POD) sites were effective in some regions.

Analysis: POD sites, as outlined in planning documents, are to be used to distribute medications to a population within a defined geographical area. In the novel H1N1 influenza response, the POD concept was used for mass vaccination clinics in some locations. These included using the POD concept for drive-through mass vaccination clinics. Participants reported that POD planning was easily adapted to mass vaccination activities and should be considered in future events.

Recommendations:

1. Consider using the POD concept of providing vaccinations in future vaccination clinics.

Related Resources:

- **None**

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4.2.3.2.3 School-Based Vaccination Clinics

Level of Observation	☐ Federal	☐ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: School-based vaccination campaigns and clinics were considered successful despite some unique planning challenges.

Analysis: Only two percent of VORS providers were school-based. Many other independent school districts (ISD) were reportedly interested in becoming VORS providers but did not have a physician willing to serve as the medical sponsor. Other ISDs had liability and legal concerns about providing the H1N1 vaccine. Overall, the clinics that operated were deemed successful. However, some considerations for future school-based clinics are reported below.

- Coordinate with school officials on the timing and location of clinics
- Agree on the populations to be served by the clinic, whether this be students and staff or the general public
- Know school policies related to liability, background checks for clinic staff operating on school property, and identification requirements for individuals coming on campus to be vaccinated.

Recommendations:

1. Consider working with the Texas Education Agency and the education service centers to address school concerns regarding vaccine liability / legal issues and other planning considerations.
2. Consider evaluating the many variations of school-based immunization clinics that were used during the H1N1 influenza response to determine best practices that could be replicated statewide.

Related Resources:

- **None**

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4.2.3.3 *Contract Staffing*

4.2.3.3.1 Contract Staffing for Mass Vaccination Clinics

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Using contract nursing staff for mass vaccination clinics had both positive aspects and challenges.

Analysis: Funding from Public Health Emergency Response funds allowed contract nurses to be used to support activities associated with the novel H1N1 influenza vaccination campaign. While the availability of contract nurses was generally lauded, some challenges were identified.

- Contract nurses were only available to support vaccination activities related to the novel H1N1 vaccine. This presented problems in that some mass vaccination clinics wanted to offer both seasonal and novel H1N1 vaccinations. As such, contract staff could be used only to provide the novel H1N1 vaccine not the seasonal influenza. This created logistical and staffing issues at clinics.
- Contract nurses were only available to support vaccination activities for public health entities even though the majority of vaccine went to private providers.
- Individuals raised concerns about the rate negotiated between DSHS and contract staffing agencies to provide nursing staff. Some localities believed that they could procure a contract to hire nurses at a lower rate.
- Some nurses employed in the private and public sector sought to take personal or vacation time from regular employment to work for contract nursing agencies, thus impacting staffing levels elsewhere.
- Previous mass vaccination clinic plans primarily relied on the use of volunteers. Now that nurses have been hired by contract once, there is concern that nurses will be less likely to volunteer in the future.
- Not all contracted nurses possessed the appropriate skill sets needed to perform vaccination services.

Recommendations:

1. Initiate discussions with stakeholders and other response partners to address concerns about the procurement of a contract to hire nurses for public health emergency response activities.
2. Create contingency plans to address staffing in future events, should funding not be available to procure a contract to hire nurses.
3. Develop just-in-time training so future mass vaccination clinic staff are prepared to perform assigned duties upon arrival at their duty location.

Related Resources:

- 4.8.2.1.2: The Use of Contract and Volunteers to Support Response Activities

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4.3 Epidemiological Surveillance Observations

4.3.1 Introduction

Epidemiological surveillance was an integral part of the response to this pandemic. Many of the lessons learned were identified during the first wave of the pandemic and were addressed in the initial after action report.[42] Specific observations and recommendations are not repeated here. However, information related to the spring and fall 2009 response is provided here to give an overview of epidemiological surveillance activities that took place during the pandemic.

4.3.2 Spring 2009 Response

Reports of the novel H1N1 outbreak in Mexico reached Texas in March 2009. Shortly thereafter, as identified in the chronology in Section 2.3.1, untypable influenza-like illness (ILI) began to be reported in Texas. Initial investigations concentrated on all ILI cases that occurred between April and May 2009 in order to understand the characteristics of this novel influenza virus and to determine if ILI was due to seasonal influenza, which should have been waning, or due to the emerging novel influenza virus. As more was learned about the outbreak, evidence suggested that the symptoms of both seasonal and novel H1N1 were similar. Therefore, investigations after May 2009 focused only on laboratory-confirmed cases. In June 2009, investigation criteria were further refined to focus on hospitalizations and deaths due to novel H1N1 and in July 2009 to focus on severe illness requiring admission to the intensive care unit and / or if novel H1N1 infection was identified as a cause of death.

Data collection in Spring 2009 focused on:

- Answering questions about this novel virus and determining whether this virus differed epidemiologically from the seasonal influenza virus
- Gathering information on all laboratory-confirmed cases
- Developing a three-page questionnaire to obtain general information and
- Developing a 16-page questionnaire to obtain detailed patient history, including exposure history, clinical signs and symptoms, and demographics for patients who were admitted to the intensive care unit or had died

[42] Litaker JR, Ramon MM, McGlothlin M. The Texas Department of State Health Services Response to the Novel H1N1 Influenza Outbreak: April 17 – May 15, 2009, October 2009

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4.3.3 Spring and Fall 2009

In summer 2009, DSHS convened five work groups to address issues identified in the spring response and to prepare for a second wave that would likely begin in the fall. One work group was convened to review epidemiological and laboratory issues in which data collection and investigations were the primary topics addressed. Based on the work of this group, DSHS instituted the following activities for epidemiological surveillance for fall 2009:

1. Data collection for surveillance purposes would focus on suspected H1N1 cases involving hospitalization, intensive care unit admission, and death
2. A one-page investigation form would be used to collect data
3. DSHS would rely on routine influenza detection and monitoring to determine levels of influenza activity in Texas
4. DSHS would not provide case counts on the number of individuals infected with the novel H1N1 influenza virus as this information was not collected

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4.3.4 Target Capability: Epidemiological Surveillance and Investigation

The Department of Homeland Security *Target Capability List* (September 2007) defines epidemiological surveillance and investigation as the "the capacity to rapidly conduct epidemiological investigations. It includes exposure and disease (both deliberate release and naturally occurring) detection, rapid implementation of active surveillance, maintenance of ongoing surveillance activities, epidemiological investigation, analysis, and communication with the public and providers about case definitions, disease risk and mitigation, and recommendation for the implementation of control measures." Observations related to epidemiological surveillance fall within this target capability.

4.3.4.1 *Epidemiological Information*

4.3.4.1.1 Epidemiological Templates

Level of Observation	☐ Federal	☐ State	☒ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: The lack of standardized case investigation forms and database tools early in the event caused delays in the regional response effort.

Analysis: DSHS Austin did not provide a standardized case investigation form or a database for epidemiological surveillance until multiple DSHS health service regions were involved in this event. This meant that the health service regions involved created investigation tools and forms independently and then were required to switch to the standardized forms once they became available. This caused confusion and inconsistencies in data.

Recommendations:

1. Standardized case investigation forms and databases should be developed and distributed as early in the event as possible.

Related Resources:

- **None**

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4.3.4.1.2 Epidemiological Information Requests

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Epidemiological requests from the Multi-Agency Coordination Center (MACC) to health service regions were difficult to understand at times.

Analysis: Requests for epidemiological information were processed at times by MACC staff who were unfamiliar with epidemiology terms and processes and this led to confusion for the field epidemiologist receiving the request.

Recommendations:

1. Coordinate all MACC requests for epidemiological information from the Operations Branch response team lead with knowledge and experience in epidemiological surveillance.

Related Resources:

- **None**

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4.3.4.1.3 Community Assessment for Public Health Emergency Response

Level of Observation	☐ Federal	☒ State	☒ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Information obtained through the Health Service Region 11 Community Assessment for Public Health Emergency Response (CASPER) was useful.

Analysis: Health Service Region 11 conducted a CASPER study to learn more about vaccination decisions by the public. This study provided key insights into general public knowledge and opinions about the H1N1 vaccine and was utilized to target communication within the region. A broader application of this process may benefit overall communication and response.

Recommendations:

1. Utilize the CASPER method to gather information during future infectious disease outbreaks where and when appropriate.
2. Develop mechanisms to use information gathered through CASPER.
3. Develop pre-identified CASPER teams.

Related Resources:

- DSHS HSR 11 Community Assessment for Public Health Emergency Response; Willacy County Influenza Survey, February 6, 2010: Field Report

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4.4 Laboratory Operations Observations

4.4.1 Introduction

Laboratory testing was an integral part of the response to this pandemic. Many of the lessons learned were identified during the first wave of the response and were addressed in the initial after action report.[43] Specific observations and recommendations are not repeated here, and there were no new recommendations identified for this report. However, information related to the spring and fall 2009 response is provided here to give an overview of laboratory testing activities that took place during the pandemic.

4.4.2 Spring 2009 Response

The Texas Department of State Health Services operates the second largest public health laboratory system in the world outside of the Centers for Disease Control and Prevention public health lab. During a typical influenza season the DSHS laboratory receives approximately 1,500 specimens. At the height of the response, the DSHS laboratory system received 1,000 to 1,500 specimens per day. Consequently, the laboratory system experienced surge conditions and shortages of equipment, reagents, supplies, and personnel to conduct testing. In this phase of the response the laboratory supported diagnostic testing, which is different from its traditional mission of surveillance testing.

In May 2010, DSHS revised specimen submission criteria that redirected lab resources towards a surveillance testing role rather than a diagnostic testing role. This meant that DSHS would no longer identify whether a specimen was positive for novel H1N1 for clinical purposes. This change did not impact treatment decisions, since clinicians would be treating based on symptoms and because laboratory confirmation would typically occur after a patient was well. However, the shift to surveillance testing supported the following attributes:

- Detecting novel influenza viruses
- Identifying antiviral resistance
- Monitoring changes in virus type

4.4.3 Spring and Fall 2009

In summer 2009, DSHS convened five work groups to address issues identified in the spring response and to prepare for a second wave that would likely begin in the fall. A work group to review epidemiological and laboratory issues was convened. For laboratory testing, the transition from diagnostic to surveillance testing was the primary issue resolved in this group. Based on the work of this group, DSHS instituted new criteria for laboratory specimen submission related to novel H1N1:

[43] Litaker JR, Ramon MM, McGlothlin M. *The Texas Department of State Health Services Response to the Novel H1N1 Influenza Outbreak: April 17 – May 15, 2009,* October 2009

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1. Hospitalized patients with symptoms of influenza-like illness (i.e., fever greater than 100F and cough and / or sore throat, plus one or both of the following conditions)
    a. Severe illness such as lower respiratory tract infection or pneumonia
    b. Unusual presentation in children, adults older than 64 years of age, and individuals with suppressed immune systems
2. Patients who have died of influenza-like illness and who have no other known cause of death. Specimens from these individuals must be collected before death
3. Pregnant women with influenza-like illness
4. Surveillance as part of public health investigations as identified by DSHS or the local health department
5. Enrolled providers in the DSHS Influenza Laboratory Surveillance Program as designated by the DSHS Infectious Disease Control Unit

All specimens to be tested by the DSHS Influenza Laboratory Surveillance program were required to meet the above criteria. Otherwise, specimens were to be submitted to a commercial or reference laboratory service. These changes significantly improved the Laboratory Response Network function by allowing the public health laboratory system to concentrate on surveillance activities.

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4.5 Communications Observations

4.5.1 Introduction

Communication was a critical component of the State of Texas response to the novel H1N1 influenza pandemic. From the time the first cases were identified in Texas, health care providers and the general public actively sought information about the virus and how to prevent transmission and illness. This information was particularly important in the first portion of the response when facts about the novel virus were limited. Numerous methods of information distribution were used including the Texas Department of State Health Services (DSHS) TexasFlu.org website, the State Operations Center (SOC) conference calls, a statewide media campaign, and call centers, among others.

4.5.2 Background

TexasFlu.org
The TexasFlu.org website was originally created by DSHS in 2004 due to the shortage of the seasonal flu vaccine that year. The website was reactivated in spring 2009 in response to the outbreak of the H1N1 virus. The website served as an information repository for the general public as well as for medical providers and other professionals. Specific information, including guidance documents, was available for families, childcare and school facilities, congregate settings, communities and employers, laboratories, health care providers, Vaccine Ordering and Reporting System providers, and news media. The website also had a flu locator function so website users could find where H1N1 vaccine was available in their community.

State Operations Center Conference Calls
In spring 2009 and again in fall 2009, the SOC conducted conference calls with H1N1 response partners around the state.[44] The stated purpose of these calls was to provide maximum situational awareness. On each call state agencies and other organizations provided an update followed by a question-and-answer period where callers could ask a question and receive a response. Participants included representatives of state agencies, public health departments, public schools, higher education, elected officials, hospitals, and Hospital Preparedness Program contractors. In the spring these calls were held daily from April 27 through May 6. In fall 2009, in anticipation of the release of the H1N1 vaccine, calls were held weekly for five weeks beginning in early October. Situation reports from the Texas Division of Emergency Management can be found in Appendix 7.8.

[44] The State Operations Center is managed by the Texas Division of Emergency Management under the auspices of the Texas Department of Public Safety.

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Public Awareness

In late September 2009, DSHS launched the DSHS Flu Public Awareness Campaign in response to the H1N1 outbreak. The campaign was funded by the Public Health Emergency Response grant, even though distribution of funds was not available to DSHS at the outset of the event. The campaign objectives were to:

- Inform and educate Texans about preparing for and responding to the fall and winter flu season that might include a resurgence of the novel H1N1 influenza virus.
- Provide innovative ways to get information to local partners and the public about the need to prepare for and respond to a significantly different type of flu season.
- Make tools and resources available to local partners to help them to engage their communities in preparing for and responding to seasonal flu and novel H1N1 influenza.

The campaign was developed in both English and Spanish and included television and radio messages, use of social media and webinars, and a variety of printed materials that could be downloaded from the TexasFlu.org website. The television and radio spots directed the public to the website and to Texas 211 for additional information.

H1N1 Call Center/211

In April 2009, the Texas Department of State Health Services activated a call center to respond to questions regarding H1N1 from the general public and professional and medical providers. Staffing for the call center came from DSHS and contract nurses. The call center was deactivated on May 15, 2009 due to a significant decrease in call volume.

In anticipation of the delivery of the H1N1 vaccine, the DSHS call center was reactivated on August 24, 2009. The initial focus was to assist potential vaccine providers with the preregistration process. Beginning August 24, 2009, medical providers could contact 211 for assistance on how to preregister to receive allocations of vaccine and how to complete the final registration through the Vaccine Ordering and Reporting System.

On September 23, 2009, the DSHS call center, under a contract with the Texas Health and Human Services Commission, was integrated with the Texas Information and Referral Network 211. This network was established by the Texas legislature to be the single point of coordination for statewide health and human services information and referrals. Callers used 211 to request either general information or specific medical information about H1N1. The information and referral specialists for each 211 area information center received additional training regarding signs and symptoms of flu and handled general information questions. Contract nurses answered specific questions regarding illness for the general population and medical provider questions. Information and referral specialists as well as nurses, including two who were fluent in Spanish and English, were available to respond to questions from the general public and providers. A language translation service was also available if needed for callers speaking a language

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other than Spanish or English, or if no Spanish speaking information and referral specialist was available.

Messaging to the General Public

The methods used to provide messages and information to the general public varied across the state. Local communities had trusted sources, including elected officials, local health authorities, and well-known physicians to provide information to the public. Traditional methods of information distribution such as newspapers, television and radio were used, as were social media outlets such as Facebook®, Twitter®, and YouTube®. Some local areas developed their own media campaigns. Businesses, schools, faith-based organizations and ministerial alliances, and volunteer organizations were also used to disseminate information. In rural areas where there is no local television station or a daily paper, radio is the preferred method of communication. In some areas of the state Telemundo® and Univision® played a role in the distribution of information to Spanish speakers.

Messaging to Providers

During the H1N1 response, local, regional and state entities employed a variety of methods to provide information to physicians and other health care professionals, including pharmacists. These included working through state-level and regional professional associations, using a trusted source, working through hospital networks, working through the lead nurse and/or office manager, face-to-face meetings, blast faxes, email, hand delivery of key guidance documents, academic detailing with a pharmaceutical company or contract detailing firm, direct follow-up with physicians known to prescribe large quantities of medication, and working through corporate offices for pharmacy chains. Currently there is no one single database with email or fax numbers for all licensed physicians in Texas.

Working with the News Media

The DSHS press office fielded hundreds of calls and provided information to the media regarding response efforts. This occurred throughout the event and included fielding inquiries from local, state, national, and international press outlets. It also included working with the press to explain the new virus, the new vaccine (including allocation and distribution), and other fast-breaking issues.

DSHS hosted a webinar with news media representatives during the second H1N1 wave to inform and educate the media about the type of information they could expect from the DSHS press office. The press office worked closely with reporters assigned to cover H1N1 to provide accurate and timely information, dispel misconceptions, support agency vaccine plans, and communicate how to prevent transmission of the virus.

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4.5.3 Target Capability: Emergency Public Information and Warning

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Emergency Public Information and Warning as the capability that includes "public information, alert/warning and notification. It involves developing, coordinating, and disseminating information to the public, coordinating officials, and incident management and responders across all jurisdictions and disciplines effectively under all hazard conditions." Observations related to communication fall within this target capability.

4.5.3.1 *Communication*

4.5.3.1.1 Primary Source of Health and Medical Preparedness Information

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: A primary source for health and medical preparedness and response information at the state level is needed.

Analysis: Many local communities and regions have identified a primary source(s) of information for health and medical preparedness and response information. The Centers for Disease Control and Prevention is considered a primary source for public health information at the federal level. However, there is a need to identify and promote this primary source at the state level. This primary source is particularly important for health care providers and response partners so that there is one primary source of information for the state that is timely, accurate, and reliable. A state-level primary source of information would also be valuable for members of the general public. Building credibility and recognition for this primary source is important and will require collaboration among response partners.

Recommendations:

1. Support DSHS as the state-level primary source for health and medical preparedness and response information.
2. Develop, through collaboration among response partners, a plan for building credibility and recognition for the primary source working collaboratively with response partners.
3. Continue to communicate public health information to stakeholders.

Related Resources:

- **None**

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4.5.3.1.2 Role of DSHS in Information Management

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Defining the role of DSHS leadership in information management during preparedness response is needed.

Analysis: For a preparedness response that has a significant public health component, the public health community and others expect DSHS to take a leadership role in information management. They look to DSHS to provide timely and accurate guidance, information and education on appropriate health issues and response strategies and to play an active role in countering misinformation while providing factual information. During the H1N1 response misinformation and rumors about the safety of the H1N1 vaccine were widespread. Participants noted that a lack of communication on misinformation implies that the misinformation is correct. Participants believed that DSHS did not play an active enough role in countering misinformation about the safety of the vaccine, including the process for developing and preparing the vaccine and the reason for vaccine recall. Participants reported that when the public heard misinformation about the vaccine safety, this often negatively influenced their decision about being vaccinated. Response partners also looked to DSHS to issue state guidance on public health and medical service activities, particularly when federal guidance documents conflicted. Addressing this issue of information management is closely related to the identification of a primary source for health and medical preparedness and response information.

Response partners expect to be kept apprised of strategy changes during a response and the rationale for those changes. Keeping response partners at the state, regional and local levels up to date is a critical component of effective information management.

Recommendations:

1. DSHS should review and clarify their leadership role in information management during preparedness and response.
2. DSHS should be proactive in countering misinformation and identify vehicles for distributing correct information to specific target audiences and the general public, as appropriate.
3. DSHS should develop a plan for keeping response partners at all levels informed of strategy changes throughout a response.

Related Resources:

- **None**

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4.5.3.1.3 Statewide Public Awareness Campaign

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Response partners questioned the timeliness and extent of the media campaign.

Analysis: DSHS was responsible for creating a statewide media campaign to provide public information on non-pharmaceutical interventions and vaccination. The campaign consisted of television and online spots, radio advertisements, and campaigns at the grade school level. The release of this campaign was dependent on a variety of factors including federal funding, procurement rules, and campaign development activities. Federal funding was not available for implementation in a timely manner. However, due to contracts in place at the time, DSHS was able to procure a vendor to develop and release the statewide public awareness campaign in a matter of weeks once funding did become available.

While generally favorable toward the campaign, most response partners felt that it was released too late within the response period, that it encouraged vaccination when vaccine was not universally available, and that health service region staff did not have an opportunity to provide input on the types of advertising that works in their community.

Recommendations:

1. Identify components of the media campaign that were effective (e.g., television spots and the school-based Flu Fighters campaigns) and could be used in future events.
2. Identify opportunities to push forward the development and release of a future media campaign, especially public service announcements related to non-pharmaceutical interventions.
3. Involve local and regional entities in the planning of campaigns, as appropriate, so as to maximize effectiveness of media buys and available funding.

Related Resources:

- **None**

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4.5.3.1.4 TexasFlu.org Website

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Minor changes would improve the TexasFlu.org website.

Analysis: The TexasFlu.org website was used as a resource of information by medical providers and the general public across the state. Many users noted that they could navigate the website without difficulty. Users of the website liked being able to sign up for automatic updates. However, some suggestions for improvement were made. The home page was thought by some to be cluttered. When the website was redesigned during the response, there was no advance notice to users. For users who had bookmarked particular pages and/or had distributed links to particular pages to interested stakeholders, the redesign created difficulty. Guidance documents were available in Spanish and English, but users suggested availability in other languages including Vietnamese. Having a bulleted summary of guidance documents, particularly those used by medical providers, would be helpful to aid in the distribution to providers.

Recommendations:

1. Modify the home page to have less clutter and more white space.
2. Consider having tabs or buttons on the home page to take the user to guidance documents and other information pertaining to a particular user group such as schools.
3. Provide advance notice of website redesign to users.
4. Have guidance documents available in languages other than Spanish and English.
5. Have bulleted summaries of guidance documents available on the website.
6. Identify specific updates to the website in email alerts.

Related Resources:

- **None**

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4.5.3.1.5 Messaging to the General Public

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Methods to provide information to the public differed by population served and geographic location, especially in rural areas.

Analysis: A variety of methods was used at the local, regional and state levels to provide information to the public. Some of the methods were those used in previous responses and were built on established relationships with response partners and the media. While some areas and entities such as institutions of higher learning used social media outlets, other areas see these outlets as where they want to focus in the future, particularly for outreach to the younger generation. Another vehicle used successfully, especially in more rural areas, was faith-based organizations. Ministers are often seen as primary sources of information. Local media campaigns were also used as were fliers distributed at community events.

Recommendations:

1. Evaluate the effectiveness of the methods used to distribute information to the public, review best practices, and identify methods to be included in planning for future events.

Related Resources:

- **None**

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4.5.3.1.6 Distribution of Information to Physicians and Other Health Care Providers

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Distributing information to all licensed physicians and other health care providers is challenging.

Analysis: There is currently no one way of distributing information in a timely manner to all licensed physicians and other health care providers in Texas. The Texas Medical Board does not have a database of email addresses or fax numbers for licensed physicians that can be released. Professional associations such as the Texas Medical Association can be used to distribute information, but not all licensed physicians are members of that association. When physicians are involved in a response effort such as H1N1, their caseloads may increase and they may have limited time to review information provided to them by email, fax, or other means. Communities across the state have used a variety of methods to distribute information including blast fax, email, face-to-face meetings, working through an office manager or lead nurse, local medical societies\ visits to physician offices by a pharmaceutical company or contract detailing firm, and direct follow-up with physicians known to prescribe large quantities of medications. The Public Health Information Network is another vehicle to distribute information.

Recommendations:

1. Continue work at the state level with professional organizations to identify the optimum vehicles for sharing information with physicians, nurses, pharmacists and other health care professionals.
2. Evaluate at the local and regional levels the methods used during the H1N1 response to provide information to health care providers.
3. Identify additional methods that could be used and include these in future planning efforts.
4. Consider working with state licensing entities to use their databases for distribution of information.

Related Resources:

- **None**

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4.5.3.1.7 H1N1 Call Center / 211

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The partnership between DSHS and the Texas Information and Referral Network 211, created during the response, was viewed as helpful to local jurisdictions in many areas of the state, but some minor changes could enhance the effectiveness for future responses.

Analysis: Local health departments in various parts of the state found the services provided by the H1N1 Call Center/211 to be helpful. Having 211 information and referral specialists and the DSHS medical call center staff respond to calls from the general public and providers relieved local health departments from needing to have staff available to respond to questions. When the H1N1 vaccine was available, information and referral specialists provided information on where a person could go to receive the vaccine, although the specialists sometimes did not have the information needed. A process was in place for local health departments, vaccine providers, and other entities to provide information to 211 regarding the time and location of public vaccine clinics and information had been shared with those entities. In a few areas of the state there is limited public awareness of 211 and the services 211 provides. The residents in some locations may be familiar with 211 but only with regard to registering with 211 if they need assistance during an evacuation for a hurricane (e.g., East Texas). Some local entities reported that it would have been helpful to have had reports from 211 on the number of calls received from their geographical area and on the types of questions callers were asking. Some local areas opted to use 311 rather than 211 to receive public calls regarding the H1N1 pandemic.

Recommendations:

1. Consider educational campaigns in targeted geographical areas to enhance public awareness of a call center during a public health response.
2. Refine the existing process to be utilized consistently across the state so that 211 has access to critical information for a public health event and can share this information with local entities.
3. Consider providing to local health departments and other local jurisdictions reports on the number of calls from their geographical area and on the types of questions asked by callers.

Related Resources:

- **None**

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4.5.3.1.8 State Operations Center H1N1 Call Length

Level of Observation	☐ Federal	☐ State	☐ Regional	☒ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: H1N1 conference calls coordinated through the State Operations Center were lengthy.

Analysis: The H1N1 conference calls coordinated through the State Operations Center were widely praised as providing helpful information statewide. However it was noted that at times the length of the calls impeded full participation for key stakeholders, and that there were no notes released following the calls.

Recommendations:

1. Work with the Texas Division of Emergency Management to identify efficiencies in calls in a public health event by:
   a. Consider limiting state agency briefings to new information only
   b. Consider requesting that questions be submitted in advance or through a filter to group questions and avoid repeat questions
2. Provide a written summary of calls (e.g., notes) on a website or public forum.

Related Resources:

- **None**

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4.6 DSHS Multi-Agency Coordination Center Observations

4.6.1 Introduction

In 2005, the Texas Department of State Health Services (DSHS) completed the development of a formal on-site operations center to support the functions of the health and medical desk at the state emergency operations center (now known as the State Operations Center). The DSHS operations center is presently referred to as the Multi-Agency Coordination Center (MACC) to reflect that DSHS often works with other state agencies (including health and human services agencies), federal agencies, and private partners in a response. The role of the MACC is to provide full support to the personnel operating the health and medical desk and is organized according to the incident command system. All health and medical activities related to a large response are coordinated through the MACC. The MACC serves to coordinate Emergency Support Function 8 – Health and Medical Services during a disaster.

4.6.2 Background

Prior to the novel H1N1 influenza response, DSHS had activated the MACC primarily to respond to events such as hurricanes, floods and tornadoes. The response to novel H1N1 influenza was unique. The MACC was activated on April 24, 2009 and was demobilized on January 29, 2010. There were periods during summer 2009, and after the deactivation in 2010, that response activities were conducted completely outside of the MACC in a virtual incident command structure. In addition, there were times when the MACC was activated that individual staff members functioning as part of the MACC structure did not report to the MACC, but instead worked from their individual offices, again relying on a virtual command structure.

Due to the nature of an infectious disease event, the Austin Clinical Epidemiology Team was created under the MACC organizational structure. This group was primarily responsible for developing new guidance documents, as well as revising existing ones.

On September 21, 2009 a dashboard report with key information was created to provide DSHS leadership and others up-to-date information on the response. This proved to be a valuable communication tool and reduced the burden on responding staff and partners as the number of ad hoc requests for information and data was significantly reduced.

4.6.3 Target Capability: Emergency Operations Center Management

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Emergency Operations Center Management as "the capability to provide multi-agency coordination for incident management by activating and operating an EOC for a pre-planned or no-notice event. EOC management includes EOC activation, notification, staffing, and deactivation; management, direction, control, and coordination of response

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and recovery activities; coordination of efforts among neighboring governments at each level and among local, regional, State, and Federal EOCs; coordination of public information and warning; and maintenance of the information and communication necessary for coordinating response and recovery activities." Observations related to the MACC fall within this target capability.

4.6.3.1 *Multi-Agency Coordination Center Operations*

4.6.3.1.1 Multi-Agency Coordination Center Coordination of Assignments

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: Assignments to staff serving in the MACC were not always coordinated through the MACC and may have come from persons outside the MACC.

Analysis: Persons assigned to work under the MACC organizational structure received response-related assignments from persons within DSHS, but not from within the MACC structure. These assignments were often not coordinated through the appropriate incident command channels. This lack of coordination resulted in questions about the line of authority, conflicts between assignments and the timeline assigned to each assignment, confusion, and rework. Persons outside the MACC organizational structure who made response-related assignments to persons working within the MACC may not have been aware of other priority assignments or similar work already underway. Resolving these issues took valuable time. Additionally, the use of WebEOC mission tasking boards was not deemed an effective way of making assignments when working in a virtual structure.

Recommendations

1. Bring together key individuals from across DSHS to develop a process to coordinate assignments for persons serving in the MACC structure, whether serving in the physical MACC or serving virtually.
2. Develop standard operating procedures to document this process.
3. Educate and train on the standard operating procedure and periodically evaluate the process to determine if modifications are needed.
4. Evaluate the effectiveness of using WebEOC mission tasking boards as a way of making assignments in a virtual MACC.

Related Resources:

- **None**

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4.6.3.1.2 Virtual Operations

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: There were delays in responding to response-related requests and assignments due to the virtual reporting structure.

Analysis: The H1N1 response was sustained over the course of a year. During a portion of the response some persons working under the MACC organizational structure worked from their normal workspaces. This process was also implemented in the health service regions with a virtual regional operations center (VROC). While working in the MACC and VROC, staff members also continued to be responsible for their non-response programmatic activities. Having to perform both normal and response-related tasks created challenges for staff members as they tried to fulfill all of their responsibilities. In some instances, having to multitask resulted in a delay in responding to and / or completing assignments and requests coming from the MACC or VROC.

Recommendations:

1. Develop a policy or directive that directs personnel working under a virtual response organizational structure to give priority to assignments and responsibilities related to the response.
2. Conduct training related to such policies or directives.
3. Develop and implement a communication plan on the policy or directive.

Related Resources:

- **None**

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4.6.3.1.3 Medical Countermeasure Distribution Branch Staffing

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: The lack of breadth and depth of staffing for the Medical Countermeasure Distribution Branch led to a lack of continuity of activities and impacted programmatic continuity of operations.

Analysis: The MACC Medical Countermeasure Distribution Branch was responsible for distributing antiviral medication and personal protective equipment from state stock. This branch faced staffing shortages and disruption to productivity due to staffing changes. There was a lack of depth and breadth of staffing, and a struggle to balance the needs of the response and the needs of continuity of operations. There were positions staffed by the same person through the majority of the response and positions that rotated frequently through the use of temporary staff workers and preparedness staff rotations. Staff inconsistencies caused confusion with partners such as the DSHS pharmacy and there was a lack of continuity between shifts. In addition, there was often confusion on the part of a new staff member. Those positions filled by permanent or contractual staff were reported to operate more smoothly allowing for experience to be gained and knowledge levels to increase, but this created issues with continuity of operations for programs with staff assigned to these roles for long periods of time.

Recommendations:

1. Formalize the Medical Countermeasure Distribution Branch structure with an organizational chart and job action sheets.
2. Consider a position on the Medical Countermeasure Distribution Branch to serve as a liaison with the DSHS pharmacy.
3. Develop operational procedures and training for each position.
4. Identify a primary and two backups for each position.
5. Identify a position responsible for documentation and modification of procedures as the event progresses. This position could have lead responsibility for shift change briefings and continuity of activities.
6. Develop shift change protocols that allow for comprehensive briefings.

Related Resources:

- **None**

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4.6.3.1.4 213 Resource Requests

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☒ DSHS HSR	☐ DSHS Statewide	

Observation: During a portion of the response there was a delay in approval of 213 resource requests.

Analysis: The 213 resource request is used by DSHS to acquire additional personnel, materials, supplies, and equipment. The incident commander or deputy incident commander must sign the form to approve each request. During the height of the response there was a backlog of 213 resource requests awaiting approval due to the volume of requests being submitted and the intense workload for the incident commander and deputy incident commander. Health service regions were not always informed of the status of their requests.

Recommendations:

1. Evaluate the 213 resource request process to determine how to expedite review of requests, establish an expected timeline, review the mechanism for tracking, provide feedback to the submitter on the status of the request, and provide explanation of the decision when requests are denied.
2. Conduct training for staff responsible for submitting 213 resource requests to the MACC.
3. Periodically evaluate all processes related to the 213 resource request system and make any necessary changes.
4. Involve submitters in the evaluation process.

Related Resources:

- **None**

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4.6.3.1.5 Clarification of MACC Operational Reports

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☒ DSHS HSR	☐ DSHS Statewide	

Observation: Providing clear objectives and target audiences for the various reports generated by the MACC would streamline the report development process and increase the effectiveness of the documents.

Analysis: During the H1N1 response several operational reports were generated by staff serving in the MACC Planning and Intelligence Section. These reports primarily included the incident action plan, situation report, and dashboard. The target audience for each report was not clear and there was some duplication among reports.

Recommendations:

1. Evaluate the operational reports generated by the MACC to identify clearly the objective(s) and target audience for each report.
2. Develop a distribution list for each report and review and update this list periodically.
3. Develop a standard operating procedure for developing operational reports.
4. Train all MACC staff on the procedure.
5. Include development of the operational reports in future exercises/drills.

Related Resources:

- **None**

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4.6.3.1.6 Contract Staff

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☒ DSHS HSR	☐ DSHS Statewide	

Observation: Lack of incident command system (ICS) knowledge by contract staff caused problems with clinic operations.

Analysis: DSHS had contingency contracts with medical staffing agencies to assist with the H1N1 influenza response. Some contract staff assigned to assist health service regions with vaccination clinics did not have training in ICS. The ICS structure was used in many of the clinic operations, so this lack of training was problematic.

Recommendations:

1. Consider requiring that contract staff participating in a response have a specified level of ICS certification.
2. Develop just-in-time ICS training modules for volunteers and contract staff.

Related Resources:

- **None**

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4.6.3.1.7 Mobilization and Demobilization

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: Clear criteria for mobilizing and demobilizing the MACC have not been identified for an infectious disease event.

Analysis: Currently there are no criteria that clearly define for the mobilization and demobilization of the MACC for an infectious disease event. Since events of this type regularly occur on a smaller scale, it is important to understand the triggers that activate a MACC response. Additionally, infectious disease events can often last much longer than a typical natural disaster, so clarity is needed on the appropriate time to demobilize.

Recommendations:

1. Develop guidelines for the mobilization and demobilization of the MACC for an infectious disease response.
2. Train on the guidelines.
3. Develop drills and exercises to use the guidelines.
4. Periodically evaluate the guidelines to determine if changes are needed.

Related Resources:

- **None**

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4.6.3.1.8 Contract Staff Management Authority

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☒ DSHS HSR	☐ DSHS Statewide	

Observation: The responsibility for supervision of contract staff was unclear.

Analysis: Nurses were hired under the DSHS staffing contracts to serve as 211 information and referral specialists to respond to medical related calls. There was confusion regarding responsibility for supervision of staff during working hours. It was not clear if this was the responsibility of the contracting agency or DSHS. It was also unclear if the contract staff must comply with requests made by DSHS regarding implementation of tasks. Lines of authority need to be clarified.

Recommendations:

1. Clarify whether DSHS or the contract agency has supervisory authority over contract staff when the contract staff are responding for DSHS, and include this clarification in the staffing contract.
2. Educate DSHS and contract staff on the supervisory policy.

Related Resources:

- **None**

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4.6.3.1.9 DSHS Leadership and MACC Incident Command

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: The roles of executive leadership and MACC incident command were not well differentiated early in the response.

Analysis: During the first wave of the response, the role for the DSHS executive leadership and MACC ICS structure appeared to overlap, leading to confusion of roles and responsibilities as well as some duplication of assignments and requests for information. During this time several DSHS physicians were actively involved in providing guidance and direction on the response, but no lead was identified among these individuals. Clarity on the role of each is important to the successful management of a response. To resolve this issue, following the first wave, DSHS executive leadership weekly strategy meetings were expanded to include MACC leadership. These meetings were successful in providing the needed coordination during the remainder of the response. The roles may change depending on the nature of the event, and those changes need to be communicated as soon as possible in the response.

Recommendations:

1. Review the key roles and responsibilities of agency executive leadership and MACC ICS during a response.
2. Continue DSHS strategy meetings to include agency executive leadership and MACC leadership.
3. Have meetings to align with MACC operational periods and to support implementation of policy directives in a timely and efficient manner.

Related Resources:

- **None**

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4.6.3.1.10 Management of Tasks Following Demobilization

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☒ DSHS HSR	☐ DSHS Statewide	

Observation: Plans and processes are not in place to manage responsibilities assigned to the MACC after demobilization.

Analysis: After the MACC was demobilized, tasks and some activities related to the response remained. For example, after the MACC was demobilized for the H1N1 response, providers with remaining state stock of antiviral medication were asked to return those medications to the state. DSHS currently does not have a plan or process in place for how those activities and tasks will be managed, including which staff will carry out the tasks, track the progress, and report on status. Development of this plan or process is important for all future responses requiring activation and demobilization of the MACC.

Recommendations:

1. Develop a plan and process to manage MACC responsibilities, tasks and activities after the MACC is demobilized for a response. The plan and process should have an all-hazards focus.
2. Consider whether temporary contract staff should be used to assist with this work.
3. Train on the plan and process.
4. Develop drills and exercises on the plan and process.
5. Periodically evaluate the plan and process.

Related Resources:

- **None**

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4.6.3.1.11 Sustaining a Long-Term Response

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☒ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: A pandemic response is prolonged and requires more personnel resources than a short-duration event.

Analysis: The duration of the H1N1 response was the longest since the MACC was created in 2005. There is no plan in place outlining how to sustain prolonged response from the MACC in the future. Staffing the MACC often requires individuals in addition to DSHS preparedness personnel. During H1N1 temporary contract staff were used to supplement DSHS staff by serving in the MACC throughout the response. When this occurs, documentation of the work temporary staff have completed or are currently working on is critical so that DSHS staff are apprised at all times.

Recommendation:

1. Develop a plan for sustaining a long-term response involving the MACC. This plan should include whether temporary contract staff will be used in this effort.

Related Resources:

- **None**

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4.7 Health and Medical Surge Observations

4.7.1 Introduction

The novel H1N1 influenza pandemic offered an opportunity for medical surge capability and capacity to be observed at the local level. While there reportedly was not a surge on inpatient beds due to the relative mild nature of the H1N1 influenza pandemic, many hospital emergency departments and intensive care units, as well as primary care practices and clinics, operated at surge capacity on several occasions during the event. The Texas Department of State Health Services (DSHS), working closely with public and private partners at the local, regional, and state levels, has identified several opportunities to prepare for health care system surge.

4.7.2 Background

The United States Department of Health and Human Services defines medical surge as the ability to provide adequate medical evaluation and care during events that exceed the limits of the normal medical infrastructure of an affected community.[45] This would include addressing planning issues such as:

- How will all points of entry to the health care system cope with an increase in visits?
- How will hospitals cope with demands for admission that exceeds bed availability?
- How will the health care system cope with workforce shortages due to illness among health care employees?
- How will physician offices, clinics, and hospitals deal with medication, supply and equipment shortages?

There are four potential stages of planning placed on communities and health care systems to meet surge capacity demands:[46]

1. **Pre-Surge:** At this stage, people are beginning to become ill with influenza-like illness, but are not yet accessing the health care system. Medical surge planning in this stage would utilize a combination of public information, using multiple media sources, to inform patients when to seek access to health care and how to provide treatment at home. This will enable more people to receive care at home and to utilize the health care system only when warranted.

[45] U.S. Department of Health and Human Services. A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies. September 2007.
[46] Levin JL, *et al*. A Medical Ethics Framework to Support Decision-Making in the Allocation and Distribution of Scarce Medical Resources During Pandemic Influenza: A Report to the Texas Department of State Health Services. July 30, 2010.

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2. **Health Care System Surge:** At this stage, there is an increase in the number of people seeking treatment at all levels of the health care system (e.g., physician offices, clinics, and hospital emergency departments). Medical surge planning in this stage would include increasing availability of supplies, medications, and other treatment resources. As additional demands are placed on the health care system, providers may begin to defer nonessential services like postponing elective or non-emergency procedures.

3. **Health Care System at Capacity:** At this stage, the health care system is exceeding the normal number of patients treated. Physician offices may experience overwhelming demand and hospitals may be at or above full census. Medical surge planning during this stage may include increased hours of service, alternate treatment sites, and triage. Health care staff may be assigned to care for a greater number of clients and augmentation of staff may occur by using retired health care professionals or students in health care programs. Health care systems may also be seeking assistance from nearby communities.

4. **Health Care System Over Capacity:** At this stage, the health care system is exceeding its capacity to provide care in the usual and customary manner. Hospitals may be unable to admit persons who require care. Alternate care systems will continue to be used and crisis standards of care may be required. All elective procedures will be canceled. An ethical decision framework will be needed to assist in making some decisions about the allocation of scarce resources.

Health care systems and communities throughout Texas are in various stages of planning to maximize their health and medical surge capacity but there are inconsistencies in approach and response strategies. As the lead agency for Emergency Support Function 8 (ESF 8), Health and Medical Services, DSHS has created expectations at the local and regional levels that the agency will provide coordination and guidance to help facilitate consistency in health and medical surge planning at the facility and community levels.

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4.7.3 Target Capability: Medical Surge

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Medical Surge as the capability "to rapidly expand the capacity of the existing health care system (long-term care facilities, community health agencies, acute care facilities, alternate care facilities and public health departments) in order to provide triage and subsequent medical care. This includes providing definitive care to individuals at the appropriate clinical level of care, within sufficient time to achieve recovery and minimize medical complications. The capability applies to an event resulting in a number or type of patients that overwhelm the day-to-day acute-care medical capacity." Observations related to health and medical surge capacity fall within this target capability.

4.7.3.1 *Health and Medical Surge Planning*

4.7.3.1.1 Health and Medical Surge - Guidance Documents

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Guidance documents for health and medical surge planning are lacking.

Analysis: Guidance documents for strategic and operational planning and decision-making frameworks are needed to support health and medical surge planning at the local, regional, and state levels. Guidance documents and or decision-making frameworks are needed on a variety of health and medical surge topics including:

- Primary care surge – for both public and private practices / clinics
- Hospital / hospital system medical surge
- Alternate care facilities / systems
- Altered standards of care
- Medical ethics operational guidance on the allocation of scarce resources

Recommendations:

1. Consider convening a multi-disciplined workgroup to develop guidance documents for strategic and operational planning and decision-making frameworks for health and medical surge topics as appropriate.
2. Consider a corrective action plan that includes participation or a process to seek input from local / regional ESF 8 response partners.
3. Consider developing a process to identify and report on best practices for primary and tertiary care surge for possible replication.

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Related Resources:

- National Health Security Strategy of the United States of America U.S. Department of Health and Human Services December 2009. http://www.hhs.gov/aspr/opsp/nhss/nhss0912.pdf
- The Next Challenge in Health Care Preparedness: Catastrophic Health Events Preparedness Report | January 2010 Center for Biosecurity of UPMC. http://www.upmc-biosecurity.org/website/resources/publications/2010/pdf/2010-01-29-prepreport.pdf
- Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies http://www.hhs.gov/disasters/discussion/planners/mscc/mscc080626.pdf
- Texas Recommendations On Minimal Levels Of Preparedness And Future Capabilities By ASPR Capability, FFY 2009 Hospital Preparedness Program Application Narrative, Appendix A http://www.dshs.state.tx.us/comprep/hpp/FFY09_HPP_App_narrative%20_Final%20061909.pdf
- Institute of Medicine Report Brief • September 2009 Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report http://www.iom.edu/~/media/Files/Report%20Files/2009/DisasterCareStandards/Standards%20of%20Care%20report%20brief%20FINAL.ashx
- **Forms:** California Hospital Association Hospital Surge Plan Checklist http://www.calhospitalprepare.org/sites/epbackup.org/files/resources/HospitalSurgePlanChecklistandResources.pdf
- **Example Plan:** Central Texas Regional Advisory Council Trauma Service Area L Emergency Healthcare System Plan 2009 http://www.tsa-l.com/images/ctrac_documents/ctrac_trauma_system_plan_09.pdf

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4.7.3.1.2 N-95 Respirators – State Guidance

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Guidance from various federal partners on the appropriate use of N-95 respirators during the pandemic influenza event was inconsistent.

Analysis: Physicians, nurses, and other personnel who are in contact with patients suffering from an infectious disease use N-95 respirators to protect from airborne pathogens. Guidance from federal officials at the Centers for Disease Control and Prevention (CDC) and the Occupational Safety and Health Administration (OSHA) differed at times on the use of N-95 respirators. CDC guidance reflected current clinical knowledge about H1N1 and the fact that a shortage of N-95 respirators may occur. OSHA guidance reflected workplace safety issues. Therefore, OSHA guidance was more conservative than CDC guidance and supported wearing these respirators. Organizations subject to OSHA oversight that did not adhere to OSHA guidelines were subject to punitive actions. During the response DSHS did not specifically advise on the use of N-95 respirators. DSHS did initiate conversations with federal authorities regarding concerns about this conflict. Focus group participants felt that DSHS should have provided some input to Texas health care organizations in light of the conflicting federal guidance.

Recommendations:

1. In instances where federal guidance is inconsistent on issue related to a public health emergency:
   a. Continue to outline discrepancies in this guidance and initiate a conversation with appropriate federal partners to express the concerns and impact this has on response workers; and
   b. Develop guidance specific to Texas, when appropriate (i.e. when state authority is not superseded by federal authority), that addresses the conflicting issues with a goal to seek a common ground and common sense solution for response workers.

Related Resources:

- **None**

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4.7.3.1.3 Health and Medical Preparedness and Response Training

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There was a lack of training among some local response partners, including local elected officials and emergency management coordinators (EMC), on health and medical preparedness and response topics.

Analysis: In Texas, local elected officials have ultimate responsibility for emergency planning and response for their jurisdictions. Response partners identified a need for more education and training on public health and medical preparedness and response issues for local elected officials, EMC, and other response partners as needed. This training should include: (1) an overview of the Texas Emergency Management Plan, Annex H – Health and Medical Services, (2) a review of roles and responsibilities for DSHS, local health departments, Hospital Preparedness Program (HPP) contractors, and (3) an overview of key health and medical response activities including health and medical surge topics.

Recommendations:

1. Consider developing continuing education and training on health and medical preparedness and response topics for local elected officials, EMCs and other response partners.
2. Provide the names and contact information of the current HPP contractors to EMC.
3. Invite EMC to hospital planning committee meetings to discuss and learn about medical surge capacity and capability in their jurisdiction.
4. Convene a statewide conference on preparedness issues for local elected officials, EMC, HPP contractors, public health partners, and others as appropriate.

Related Resources:

- **None**

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4.7.3.1.4 Integrated Public Health and Hospital Preparedness Planning

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Integrated planning between HPP contractors and other public health and medical preparedness and response partners needs improvement.

Analysis: In most of the major urban areas of Texas, HPP contractors participated in and were well integrated into the overall ESF 8 H1N1 planning activities. However, this was not the case in all areas of Texas. There is a need for HPP contractors to participate in health and medical surge planning and decision-making activities at all local and regional jurisdictional levels.

Recommendations:

1. Consider developing a corrective action plan that addresses the need to integrate hospital preparedness and response activities with other ESF 8 planning and response activities at the local, regional, and state levels.

Related Resources:

- **None**

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4.7.4 Target Capability: Fatality Management

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Fatality Management as "the capability to effectively perform scene documentation; the complete collection and recovery of the dead, victim's personal effects, and items of evidence; decontamination of remains and personal effects (if required); transportation, storage, documentation, and recovery of forensic and physical evidence; determination of the nature and extent of injury; identification of the fatalities using scientific means; certification of the cause and manner of death; processing and returning of human remains and personal effects of the victims to the legally authorized person(s) (if possible); and interaction with and provision of legal, customary, compassionate, and culturally competent required services to the families of deceased within the context of the family assistance center." The activity associated with the DSHS response to novel H1N1 influenza outbreak that falls under this capability is the need for scalable operational guidelines for mass fatality planning. Observations related to fatality management fall within this target capability.

4.7.4.1 *Mass Fatality Planning*

4.7.4.1.1 Mass Fatality Planning

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: While there has been some work on mass casualty response planning across Texas, operational planning for mass fatalities is still lacking in most communities.

Analysis: DSHS recently published a high-level mass fatality annex to the state's emergency management plan, but operational guidance is needed at the local level. Some mass casualty planning has occurred at local and regional levels in Texas, but such planning does not always address long-term mass fatality concerns. A plan to address long-term mass fatality concerns may address:

- Limited hospital morgue capacity;
- Management of deaths that occur outside of hospitals; and
- The possible private sector role of managing deceased bodies.

Stakeholder input recommended that DSHS publish operational guidance on mass fatality planning that is scalable based on population size.

Recommendations:

1. Develop scalable operational guidance on mass fatality planning.

Related Resources:

- **None**

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4.7.5 Target Capability: Medical Supplies Management and Distribution

The Department of Homeland Security *Target Capabilities List* (September 2007) defines Medical Supplies Management and Distribution as "the capability to procure and maintain pharmaceuticals and medical materials prior to an incident and to transport, distribute, and track these materials during an incident." Some observations related to health and medical surge fall within this target capability.

4.7.5.1 *Health and Medical Surge Supply Distribution*

4.7.5.1.1 Local / Regional Health and Medical Supply Caches

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Local officials are not always aware of regional pharmaceutical, supply, and equipment caches and the conditions for use of these caches.

Analysis: There are multiple pharmaceutical and supply caches available at local jurisdictional levels. Local response partners, including local elected officials and emergency management coordinators, are concerned that they do not know what assets are available to the local jurisdiction in these supply caches. Lack of information on available resources at local and regional levels can lead to duplicative purchases or unnecessary requests for state assets and assistance. Others issues related to medical supply caches include addressing long-term storage, stock rotation, and stock expiration.

Recommendations:

1. Develop an inventory management system that can be used to manage all local / regional / state medication, supply and equipment caches.
2. Develop a long-term storage, maintenance, and rotation plan for pharmaceutical, supply, and equipment caches.
3. Consider surveying hospitals participating in the HPP to document brand and model preferences for N-95 respirators and other supplies and equipment.

Related Resources:

- **None**

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4.8 Planning Observations

4.8.1 Introduction

The response to the first influenza pandemic of the twenty-first century allowed partners to put in place activities that had been planned and exercised for years. It was an opportunity to determine how robust the current plans are and an opportunity to identify lessons learned. More importantly, it allowed these plans to be tested using a real response. This section identifies some broad planning activities to be considered when revising the current plans.

4.8.2 Target Capability: Planning

The Department of Homeland Security *Target Capabilities List* (September 2007) defines planning as "the mechanism through which Federal, State, local and tribal governments, non-governmental organizations (NGOs), and the private sector develop, validate, and maintain plans, policies, and procedures describing how they will prioritize, coordinate, manage, and support personnel, information, equipment, and resources to prevent, protect and mitigate against, respond to, and recover from Catastrophic events. Preparedness plans are drafted by a litany of organizations, agencies, and/or departments at all levels of government and within the private sector. Preparedness plans are not limited to those plans drafted by emergency management planners. The planning capability sets forth many of the activities and tasks undertaken by an Emergency Management planner when drafting (or updating) emergency management (preparedness) plans. Unlike the other target capabilities, the attributes of planning are difficult to quantify, as individual planners may have considerably varied education and experience and still produce plans that lead to the successful implementation of a target capability. The focus of the Planning Capability is on successful achievement of a plan's concept of operations using target capabilities and not the ability to plan as an end unto itself. Plans should be updated following major incidents and exercises to include lessons learned. The plans should form the basis of training and should be exercised periodically to ensure that responders are familiar with the plan and able to execute their assigned role. Thus, it is essential that plans reflect the preparedness cycle of plan, train, exercise, and incorporation of after action reviews and lessons learned." Observations related to planning fall within this target capability.

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4.8.2.1 *Planning Issues*

4.8.2.1.1 Consequences of School Closure

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The impact of a public health emergency on business operations for schools should be reviewed in light of a potential need for closure.

Analysis: While school closures may be an effective public health intervention to reduce or prevent disease diffusion – as shown by reductions in seasonal influenza diffusion over winter holidays – there are consequences to closure. Consequences include reduced opportunities for education, a potential financial impact on the school, and a downstream impact to communities when schools are not in session

Recommendations:

1. Continue to work with the Texas Education Agency and independent school districts on issues of school closure related to public health events like pandemic influenza.
2. Continue to work with local and regional health and medical entities to be aware of the impact of school closures and to consider this impact in planning activities.
3. Include strategies in pandemic influenza plans to meet educational, nutritional, and childcare activities impacted by pandemic influenza related school closure.
4. Encourage ongoing communication and education on issues related to school closure as a public health intervention for emergency situations.
5. Work with the Texas Education Agency and the Texas Department of Agriculture to address the school lunch waiver process issue in future events, as appropriate.

Related Resources:

- **None**

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4.8.2.1.2 The Use of Contract and Volunteers to Support Response Activities

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There is a need to balance the use of contract staff and volunteers in response activities.

Analysis: Most planning activities highlight the use of volunteer staff. However, during this event, funding was made available to the local public health system to use contract staff, particularly including nurses, to support mass vaccination clinics. While grateful that funding was available to provide contract staffing, local and regional partners raised some concerns. These include:

- Most planning activities call for use of volunteer staff
- Funding may not always be available to hire contract staff
- Competition between public health departments and the medical community for the same limited nursing resources

Recommendations:

1. Consider a mixed-model plan of using both volunteers and contract staff, with an emphasis on volunteers to support immediate response needs and contract staff to support long-term response needs.

Related Resources:

- 4.2.3.3.1: Contract Staffing for Mass Vaccination Clinics

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4.8.2.1.3 Rural Issues

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There is a need to be responsive to rural issues during planning and response activities.

Analysis: Rural counties have circumstances that differ from urban areas. These circumstances include limited means of communication, limited resources as compared to urban areas, and potential geographic isolation. However, rural areas also have a strong sense of community often built upon faith-based organizations, local schools, and long-time residents.

Recommendations:

1. When developing plans that may impact or include rural issues, consider including representatives from the health service regions who can speak to these issues and offer constructive solutions and dialogue.

Related Resources:

- **None**

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4.8.2.1.4 International Border Issues

Level of Observation	☒ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☒ DSHS Austin	☒ DSHS HSR	☒ DSHS Statewide	

Observation: There is a need to be responsive to international border issues during planning and response activities.

Analysis: Texas is one of four states that borders Mexico and shares the longest part of that border. There are also strong economic, community, and historical ties between Mexican citizens and Texas residents. While the Rio Grande River may be the political border between Texas and Mexico, issues related to the health and medical welfare of the two populations do not always respect this boundary. This is clearly evident with an infectious disease agent such as novel H1N1 influenza.

Recommendations:

1. Continue to promote dialogue between health and medical officials on both sides of the border, especially with regard to disease surveillance and outbreak control.

Related Resources:

- **None**

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4.8.2.1.5 Data Gathering and Reporting

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: There is a need to harmonize data gathering and reporting to discourage multiple activities related to acquiring the same data.

Analysis: Data collection and reporting is an essential component of any response. It provides situational awareness and information needed to inform the decision-making process. Data are collected from multiple entities throughout the state and assimilated into data sets used at the local, regional, state, and federal levels. An efficient, non-duplicative data collection process would be helpful to response partners.

Recommendations:

1. Identify opportunities to harmonize data collection so as not to have multiple requests for the same data and to be aware of the time needed for local response partners to collect, assimilate, and report data.
2. Identify opportunities to have single data stream reporting in which multiple agencies (e.g., local health departments, health service regions, and DSHS Austin) can utilize the same data sets.
3. Consider creating standardized data definitions across local, regional, and state entities. This would include identifying the types of data to be standardized.

Related Resources:

- **None**

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4.8.2.1.6 Strengthening Response Partnership with Public Health and Medicine

Level of Observation	☐ Federal	☒ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: The partnership between private medicine and public health for preparedness and response activities needs to be strengthened.

Analysis: Public health and private medicine are essential components of the health care system. Traditionally, during a disaster, each has worked more independently than together. The roles and responsibilities of each are not clearly defined for response activities nor does each entity necessarily understand the roles and responsibilities of the other. The H1N1 influenza pandemic highlighted the dichotomy between public health and primary care, and the need to foster an integrated partnership. In the H1N1 response private medicine was a major player, especially as a vaccine provider. Many private physicians look to sources other than DSHS for information and education on public health issues. Through a strengthened partnership between public health and private medicine, the success of the response will be improved, particularly in those responses where private medicine is a major player.

Recommendations:

1. Work with state professional medical associations and their members to explore this issue more fully, to understand why the dichotomy exists, then develop and implement a plan for beginning to strengthen this partnership.

Related Resources:

- **None**

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4.8.2.1.7 Opportunity to Utilize Health Service Region Expertise

Level of Observation	☐ Federal	☐ State	☐ Regional	☐ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☐ DSHS Statewide	

Observation: An opportunity exists to utilize expertise from staff and leadership in each of the eight health service regions in preparedness, planning, and response activities.

Analysis: Health service region leadership and staff work daily with the communities in their region and have established relationships with many response partners, including elected officials, public health officials, faith-based organizations, independent school districts, and other local leaders. They are aware of effective methods to communicate with those partners and the general public within their communities. They can provide local context on preparedness and response activities and provide a level of expertise on the cultural, historic, and economic conditions that may impact preparedness and response activities. With to this local knowledge and expertise, DSHS Austin is presented with a unique opportunity to meet the public health and health and preparedness needs of all Texans. For this response, health service region leadership had limited involvement in planning for the statewide media campaign and on the selection of pharmacies, particularly independent pharmacies, invited to participate in the public-private partnership established to dispense the state cache of antiviral medications.

Recommendations:

1. Recognize the expertise and leadership that health service region leadership and staff can provide in planning and response activities.
2. Develop a plan that promotes inclusion of this expertise and leadership in planning and response activities.

Re Related Resources:

- **None**

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4.8.2.1.8 Revise Plans to Increase Scalability and Multiple Options

Level of Observation	☐ Federal	☒ State	☒ Regional	☒ Local
Agency Perspective	☐ DSHS Austin	☐ DSHS HSR	☒ DSHS Statewide	

Observation: Existing planning documents, including the Strategic National Stockpile plan and the pandemic influenza plan and related operational guidelines, need to be revised.

Analysis: Most DSHS plans with a pandemic influenza component were developed based on the H5N1 pandemic influenza assumptions. The planning assumptions for that event varied significantly from the novel H1N1 disease outbreak. DSHS modified existing plans with some regularity during the early days of the response to address identified needs and known information about the virus. The response highlighted the need to develop plans that are scalable and that address varying severities ranging from a mild to severe pandemic. Table 4.2 highlights assumptions for specific metrics based on current planning and the reality of the event. Plans need to be flexible and scalable to adapt quickly to a variety of scenarios and response options.

Table 4.2: Assumptions and reality for specific metrics associated with pandemic influenza planning

Metric	Planning Assumption	Reality of the Event
Severity	High Severity	Mild to Moderate Severity
Virus Strain	H5N1	H1N1
Originating Location	Southeast Asia	Mexico
Epidemiology	4-5 Months of Surveillance Before Arriving	Little to No Surveillance Before Arriving

Recommendations:

1. Undertake a process to revise DSHS emergency plans based on lessons learned during the H1N1 influenza pandemic.
   a. Involve local and regional health and medical response partners in all planning phases
   b. Outline the organizational entity responsible to update specific plans
   c. Outline how input from local and regional health and medical response partners will be included in the planning process
   d. Address a variety of scenarios to include mild, moderate, and severe pandemic planning scenarios
   e. Include a communication plan
2. Develop a sensitivity analysis within each scenario type to assist further in planning efforts. A sensitivity analysis is used to look at how performance will vary based on changes in key assumptions.

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3. Have planning conferences to allow for thoughtful deliberation of roles, responsibilities and planning elements.
4. Have exercises to include participation from staff at the leadership level within DSHS and partner agencies.
5. Have plans to include multiple options and backup plans for key components of the response and these backup plans should be exercised with key stakeholders.

Related Resources:

- **None**

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5 Next Steps

The Texas Department of State Health Services (DSHS) will use the observations identified in this document to implement corrective actions, based on the attached improvement plan (see Appendix 7.3). Information will be provided to stakeholders on an ongoing basis to keep them informed of implementation activities.

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6 Conclusion

Texas was at the forefront of the nation's response to the first influenza pandemic of the twenty-first century. As is typical in an influenza pandemic, this event unfolded in multiple waves, beginning in April 2009. The Texas Department of State Health Services (DSHS), as the lead state agency for this response, worked with federal agencies, state leadership, state agencies, local health departments, and other partners to mount a response to this pandemic. The skills, expertise, and capacity in place to take action as the pandemic unfolded were the result of years of training, exercising, and capacity building.

The existing public health infrastructure proved to be an effective foundation for this response. The systems in place were used or modified as needed and new approaches were developed when necessary. For example, a modified system was created to distribute antiviral medications statewide for use by the uninsured or underinsured. In addition, DSHS created a system in a matter of a few months to allocate and distribute more than nine million doses of the novel H1N1 vaccine across the state. Texas was also able to manage surge capacity conditions at the primary care, clinic, and hospital emergency department level and begin discussions about how a more severe pandemic would tax the ability to meet surge demands.

Despite the many successes achieved in this response, improvements can be made. A response to a real disaster allows assumptions to be validated, plans to be tested, and weaknesses to be identified. The key, however, is to harness the opportunity provided by a response to identify and implement lessons learned. This after action report identifies strengths, best practices, observations, analyses, and recommendations for improvement that DSHS can consider in order to improve health and medical response operations for a future event.

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7 Appendices

Table 7.1 identifies the title, description, and location of all appendix documents associated with this after action report.

Table 7.1: Organizational table for documents accompanying the final after action report for the Texas response to the novel H1N1 influenza pandemic

Report Section	Title	Description	Where Located
7.1	Abbreviations	List of abbreviations used in the after action report	Attached as an appendix to the After Action Report
7.2	References	These are articles and sources of information cited in the after action report.	Attached as an appendix to the After Action Report
7.3	DSHS Response to the H1N1 Pandemic Influenza Improvement Plan	Improvement plan for each observation identified in the After Action Report	Attached as an appendix to the After Action Report
7.4	Methodology	Description of the four-phase process for the after action evaluation process	Attached as an appendix to the After Action Report
7.5	Focus Group Information	This includes the following sections: 1. Regional Partner Focus Group Survey 2. Focus Group Handouts 3. Focus Group Summaries 4. Focus Group Participant List 5. Focus Group Participant Evaluation Report	Electronic files are located on the H1N1 After Action Report CD provided to DSHS Folder Name: 7.5 - Focus Group Information
7.6	Topical Area Background Information	This includes the following sections: 1. Antiviral Medication 2. H1N1 Call Center/211 3. Epidemiology 4. Guidance Documents and Non-Pharmaceutical Interventions 5. Laboratory 6. MACC Operations 7. Media Campaign 8. Personal Protective Equipment 9. Vaccine	Electronic files are located on the H1N1 After Action Report CD provided to DSHS Folder Name: 7.6 - Topical Area Background Information

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Report Section	Title	Description	Where Located
7.7	DSHS Response Documentation	This includes the following sections: 1. DSHS Meeting Minutes 2. DSHS Incident Action Plans 3. DSHS Situation Reports 4. DSHS Dashboard Reports 5. Multi-Agency Coordination Center Summary; 6. Willacy Community Assessment Report 7. H1N1 Spring 2009 After Action Report 8. H1N1 Mid-Course After Action Report 9. H1N1 Medical Ethics Report	Electronic files are located on the H1N1 After Action Report CD provided to DSHS. Folder Name: 7.7 - DSHS Response Documentation
7.8	Response Documentation from Other State Agencies	This includes the following sections: 1. Texas Department of Agriculture 2. Texas Division of Emergency Management 3. Texas Education Agency 4. Texas Animal Health Commission	Electronic files are located on the H1N1 After Action Report CD provided to DSHS. Folder Name: 7.8 - Response Documentation from Other State Agencies
7.9	Other Documents	This includes the following documents: 1. OB/GYN practitioner survey tool 2. OB/GYN practitioner survey results	Electronic files are located on the H1N1 After Action Report CD provided to DSHS. Folder Name: 7.9 – Other Documents

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7.1 Abbreviations

Table 7.2: Abbreviations used in this after action report

Abbreviation	Definition
ACIP	Advisory Committee on Immunization Practices
CASPER	Community Assessment for Public Health Response
CDC	Centers for Disease Control and Prevention
CRI	Cities Readiness Initiative
DHS	Department of Homeland Security, Federal
DSHS	Department of State Health Services, Texas
EMC	Emergency management coordinator
EOC	Emergency Operations Center
ESAR-VHP	Emergency System for the Advance Registration of Volunteer Health Professionals
ESF 8	Emergency Support Function 8, Health and Medical
EWIDS	Early Warning Infectious Disease Surveillance
FQHC	Federally Qualified Health Center
HPP	Hospital Preparedness Program
HSEEP	Homeland Security Exercise and Evaluation Program
HSR	Health Service Region, DSHS
ICS	Incident command system
ImmTrac	Texas Statewide Immunization Tracking Registry
ISD	Independent School District
LHD	Local Health Department
MACC	Multi-Agency Coordination Center, DSHS
OSHA	Occupational Safety and Health Administration
PHEP	Public Health Emergency Preparedness
PHER	Public Health Emergency Response
PIMEWG	Pandemic Influenza Medical Ethics Work Group
POD	Point of Dispensing
RAC	Regional Advisory Council on Trauma, Texas
RSS	Receiving, staging, and storing
SDO	Standing Delegation Order
SNS	Strategic National Stockpile
SOC	State Operations Center
TDEM	Texas Division of Emergency Management
TEA	Texas Education Agency

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Abbreviation	Definition
TIMS	Texas Inventory Management System
VAAC	Vaccine Allocation Advisory Committee
VFC	Vaccine for Children
VORS	Vaccine Ordering and Reporting System
VROC	Virtual Regional Operations Center

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7.3 H1N1 After Action Report Improvement Plan

Designated Texas Department of State Health Services person responsible for managing the Corrective Action Program: Sherrie Meck, Project Manager, Community Preparedness Section

Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
Medical Supplies Management and Distribution	4.1.2.1.1	Compounding	1. Determine which private pharmacy distribution network pharmacies offer compounding services.	Form a workgroup to address revisions needed to planning documents related to the private pharmacy distribution network. As part of the workgroup conduct a survey to determine which independent pharmacies offer compounding services (information already collected for chain pharmacies).	Planning Evaluation	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.1	Compounding	2. For counties and cities without a compounding pharmacy in the private pharmacy distribution network, seek to identify and enroll compounding pharmacies or identity other compounding options.	Issue an open enrollment contingency contract for pharmacies to participate in future responses. As part of this enrollment, seek to identify and enroll compounding pharmacies.	Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.1	Compounding	3. Develop contingency plans to institute compounding services at multiple	Develop contingency plans to institute compounding services at multiple	Planning	Michael Poole Note: Coordinate with CMU, RLHS.	1-Aug-10	31-Aug-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			levels should widespread compounding services be needed in a future event.	levels should widespread compounding services be needed in a future event						
Medical Supplies Management and Distribution	4.1.2.1.2	Reimbursement for Compounding	1. Consider the feasibility of developing a contractual mechanism for the Texas Department of State Health Services (DSHS) to reimburse pharmacies for compounding services of state stock antiviral medications so that patients would not be charged for these services.	Explore the feasibility and necessity for including (in the open enrollment contingency contract) a mechanism for DSHS to reimburse pharmacies for compounding services of state stock antiviral medications so that patients would not be charged for these services.	Systems Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.3	Administrative Fee Waiver	1. Inform participating pharmacies that pharmacists can waive the administrative fee if the patient cannot afford it. Such a waiver would not require authorization from either the prescribing physician or DSHS.	Continue to inform participating pharmacies that the pharmacists can waive the administrative fee if the patient cannot afford it. Such a waiver would not require authorization from either the prescribing physician or DSHS.	Systems Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.3	Administrative Fee Waiver	2. Provide education materials directly to individual pharmacists about the administrative fee waiver and how it can be applied.	Modify plans to provide education materials directly to individual pharmacists about the administrative fee waiver and how it can be applied.	Planning Training	Michael Poole	1-Aug-10	31-Aug-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
				Include an education sheet with each shipment; ask that they post this; blast fax to all shifts; verify that it was distributed; and use a standardized bright paper for ease of reference.						
Medical Supplies Management and Distribution	4.1.2.1.3	Administrative Fee Waiver	3. Develop a mechanism for patients to inform DSHS if they are not able to obtain needed medication.	Develop a mechanism for patients to inform DSHS if they are not able to obtain needed medications.	Planning Systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.3	Administrative Fee Waiver	4. Consider the feasibility of developing a contractual mechanism to reimburse pharmacies when the administrative fee is waived.	Investigate the feasibility of developing a contractual mechanism to reimburse pharmacies when the administrative fee is waived.	Planning Systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.4	Obtaining Access to a Health Care Professional	1. Work with local, regional, and state partners to assess barriers and options related to supporting access to health care providers for the evaluation and treatment of those without ready access to such care to address this observation.	Work with local, regional, and state partners to assess barriers and options related to supporting access to health care providers for the evaluation and treatment of those without ready access to such care to address this observation.	Planning Corrective action Evaluation	Beverly Ray	1-Sep-10	31-Aug-10		
Medical Supplies Management and Distribution	4.1.2.1.4	Obtaining Access to a Health Care Professional	2. Plan alternative methods to ease barriers regarding provision of access to medical care, as	Plan alternative methods to ease barriers regarding provision of access to medical care, as	Planning Systems	Beverly Ray	1-Sep-10	31-Aug-10		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			appropriate, to support state operational plans (e.g., if a prescription is needed to access state stock, then identify methods to provide a prescription to those without access to a health care provider).	appropriate, to support state operational plans (e.g., if a prescription is needed to access state stock, then identify methods to provide a prescription to those without access to a health care provider).						
Medical Supplies Management and Distribution	4.1.2.1.5	Access to State Stock in Rural Areas and Some Urban Neighborhoods	1. Clearly identify counties that do not have a pharmacy or that do not have a pharmacy willing to distribute state stock. For these counties, identify reasonable methods that individuals could undertake to obtain a state stock antiviral if needed. These methods may consider customary and usual practices that individuals use to obtain pharmacy services for an acute infection.	Clearly identify counties that do not have a pharmacy or that do not have a pharmacy willing to distribute state stock. For these counties, identify reasonable methods that citizens could undertake to obtain a state stock antiviral if needed. These methods may consider customary and usual practices that citizens use to obtain pharmacy services for an acute infection.	Planning Systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.5	Access to State Stock in Rural Areas and Some Urban Neighborhoods	2. Continue to identify and enroll pharmacies in rural counties. DSHS health service regions and local health departments can assist in identifying and encouraging	Continue to identify and enroll pharmacies in rural counties. This would require outreach to independent pharmacies to encourage them to participate and to understand /	Systems Planning Education	Michael Poole	1-Aug-10	31-Aug-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			enrollment of additional pharmacies.	address specific concerns these pharmacies might have. DSHS health service regions and local health departments can assist in identifying and encouraging enrollment of additional pharmacies.						
Medical Supplies Management and Distribution	4.1.2.1.5	Access to State Stock in Rural Areas and Some Urban Neighborhoods	3. Consider contracting with independent pharmacies in urban neighborhoods that do not have a participating chain pharmacy already in place.	Consider contracting with independent pharmacies in urban neighborhoods that do not have a participating chain pharmacy already in place. Develop clear criteria for the selection of participating pharmacies in a future event.	Systems Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.6	Clinical Guidance for Antiviral Medication Prescribing	1. Work with, the Texas Medical Association, the Texas Osteopathic Medical Association, local medical societies and other medical associations to develop clinical guidance early in an infectious disease response and provide to clinical providers.	Work with the Texas Medical Association, the Texas Osteopathic Medical Association, local medical societies, and other medical associations to develop clinical guidance early in an infectious disease response and provide to clinical providers.	Training and/or exercise	Susan Penfield, M.D. Kirk Cole	Event Dependent 1-Aug-10	On-going 1-Apr-11		
Medical Supplies Management and Distribution	4.1.2.1.6	Clinical Guidance for Antiviral Medication	2. Develop a DSHS process to review and rapidly approve clinical guidance.	Develop a process to review and rapidly approve clinical guidance.	Planning	Susan Penfield, M.D. Kirk Cole	Event Dependent 1-Aug-10	On-going 1-Apr-11		

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		Prescribing								
Medical Supplies Management and Distribution	4.1.2.1.6	Clinical Guidance for Antiviral Medication Prescribing	3. Consider the establishment of a call center dedicated to answering treatment questions from clinical providers at the time of patient care.	Do not move forward with this recommendation due to resource restrictions; promote the use of clinical guidance documents.	Equipment and systems Personnel					Not to be addressed.
Medical Supplies Management and Distribution	4.1.2.1.6	Clinical Guidance for Antiviral Medication Prescribing	4. Promote the use of evidence-based clinical guidance documents. Guidance documents should identify appropriate clinical conditions that warrant a prescription, define proper treatment, identify who should be treated, and use algorithms when appropriate.	Promote the use of evidence-based clinical guidance documents. Guidance documents should identify appropriate clinical conditions that warrant a prescription, define proper treatment, identify who should be treated, and use algorithms when appropriate.	Training and/or exercise	Susan Penfield, M.D.	Event Dependent	On-going		
Medical Supplies Management and Distribution	4.1.2.1.7	Guidance for Providers about Prescribing from State Stock	1. Identify methods to improve effectiveness of communicating to physicians, other health care providers, and pharmacists about the process for prescribing from state stock.	Identify methods to increase messaging to physicians, other health care providers, and pharmacists about the process for prescribing from state stock.	Equipment and systems	Michael Poole	1-Sep-10	31-Aug-10		
Medical Supplies Management and Distribution	4.1.2.1.7	Guidance for Providers about Prescribing from State Stock	2. Continue to communicate to pharmacists the process to dispense medications from state stock, even if the prescription is	Develop an education sheet to include with each shipment providing key program information to pharmacists	Training and/or exercise Equipment and systems	Michael Poole	1-Aug-10	31-Aug-11		

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			not designated as such. This includes informing pharmacists that based on their determination of underinsurance or lack of insurance, state stock medication can be dispensed without follow-up with DSHS or the prescribing physician.	including that they have the ability to dispense antiviral medication from state stock without authorization from DSHS or the prescribing physician if warranted by a patient's inability to pay.						
Medical Supplies Management and Distribution	4.1.2.1.7	Guidance for Providers about Prescribing from State Stock	3. Provide the list of participating pharmacies to all pharmacies statewide.	Modify plans to provide the list of participating pharmacies to all pharmacies statewide in future events.	Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.8	Standing Delegation Orders	1. Develop SDO templates at the DSHS statewide level for all medications in the SNS.	Develop SDO templates at the DSHS statewide level for all medications in the SNS.	Planning	Bob Kaspar, M.D.	1-Aug-10	1-Feb-11		
Medical Supplies Management and Distribution	4.1.2.1.9	Receipt and Storage of Antiviral Medications at the Local Level	1. Work with local public health officials to develop communication protocols regarding medication shipments and plans involving receipt and storage of supplies from the SNS (or other stockpile) to address receipt and storage issues.	Work with local public Work with local public health officials to develop communication protocols regarding medication shipments and plans involving receipt and storage of supplies from the SNS (or other stockpile) to address receipt and storage issues.	Equipment and systems Training and/or exercises	Michael Poole	1-Aug-10	31-Aug-11		

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Medical Supplies Management and Distribution	4.1.2.1.10	First Responder Prophylaxis	1. Educate first responders on when and under what circumstances prophylaxis will likely be offered and the limitations of antiviral medications as prophylaxis. For example, antiviral prophylaxis availability during a future pandemic influenza event will depend on illness severity, likelihood of transmission, extent of patient contact, availability of stock, and other epidemiological factors.	Develop educational plan for first responders on when and under what circumstances prophylaxis will likely be offered and the limitations of antiviral medications as prophylaxis. For example, antiviral prophylaxis availability during a future pandemic influenza event will depend on illness severity, likelihood of transmission, extent of patient contact, availability of stock, and other epidemiological factors.	Planning Training and/or exercises Personnel	Strategic Preparedness	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.10	First Responder Prophylaxis	2. Revise plans and operational guidelines to include language sensitive to the decision-making process involved in determining when and under what circumstances prophylaxis will be made available to first responders.	Revise plans and operational guidelines to include language sensitive to the decision-making process involved in determining when and under what circumstances prophylaxis will be made available to first responders.	Planning	Strategic Preparedness	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.10	First Responder Prophylaxis	3. Identify opportunities to review plans and procedures as related to prophylaxis for other infectious disease or	Identify opportunities to review plans and procedures as related to prophylaxis for other infectious disease or bioterrorism	Planning	Strategic Preparedness	1-Aug-10	31-Aug-11		

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			bioterrorism incidents.	incidents.						
Medical Supplies Management and Distribution	4.1.2.1.11	Role of Federally Qualified Health Centers in Providing State Stock Antiviral Medication	1. Clarify the role of Federally Qualified Health Centers (FQHCs) in the disaster response system, and specifically in the private pharmacy network with explicit notation that FQHCs: a. Serve a defined patient population who have an established doctor-patient relationship b. Provide pharmacy services to established patients only, not to the public at large c. Charge a sliding scale fee for physician visits d. Are not a free clinic	Clarify in planning documents the role of FQHCs in the private pharmacy network with explicit notation that FQHCs: a. Serve a defined patient population who have an established doctor-patient relationship b. Provide pharmacy services to bona fide patients only, not to the public at large c. Charge a sliding scale fee for physician visits d. Are not a clinic	Planning	James Morgan, M.D. Note: Coordinate with SNS, TACHC	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.11	Role of Federally Qualified Health Centers in Providing State Stock Antiviral Medication	2. Identify opportunities to communicate this message to local health department officials and other response partners.	Identify opportunities to communicate this message to local health department officials and other response partners.	Planning	James Morgan, M.D.	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.12	Potential Role of Hospital Pharmacies in Dispensing Antiviral Medications	1. Determine the feasibility of including hospital pharmacies in the private pharmacy distribution network with the following considerations: a. The patient	Determine the feasibility of including hospital pharmacies in the private pharmacy distribution network with the following considerations: a. What is the	Planning	Michael Poole and Beverly Ray	1-Aug-10	31-Aug-11		

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			population to be served (e.g., discharged patients or outpatients) b. Pharmacy regulatory issues that may need to be addressed c. Hospital interest and willingness to serve in that role during a pandemic event d. Logistical issues that come with including hospital pharmacies in the network considering the limited amount of state stock available to be distributed throughout Texas	patient population to be served (e.g., discharged patients or outpatients) b. Would pharmacy regulatory issues need to be addressed c. Would hospitals be interested and willing to serve in that role during a pandemic event d. Would inclusion of hospital pharmacies in the network be logistically possible considering the amount of state stock available to be distributed throughout Texas						
Medical Supplies Management and Distribution	4.1.2.1.13	Expiration of Antiviral Medication Caches	1. Consider initiating a discussion with the appropriate federal partners regarding expiration issues related to antiviral medication caches and identify if opportunities are available to address these concerns.	Consider initiating a discussion with the appropriate federal partners regarding expiration issues related to antiviral medication caches and identify if opportunities are available to address these concerns.	Equipment and systems Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.13	Expiration of Antiviral Medication Caches	2. Communicate information to local and regional partners about this issue.	Communicate information to local and regional partners about this issue.	Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.14	Dispensing Antiviral Medications Purchased under Federal	1. Develop a set of guidelines or frequently asked questions to address concerns among	Modify guidelines and frequently asked questions to address concerns among local entities	Planning Equipment and systems	Patty Melchior	1-Aug-10	31-Aug-11		

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		Contract Opportunities	local entities that participated in the federal contract purchasing opportunity. Concerns to be addressed include: a. Timeline of purchase of stock and arrival b. How and when the antiviral medications could be used c. Stock rotation options d. Shelf-life extension	that participated in the federal contract purchasing opportunity. Concerns to be addressed include: a. Timeline for purchase of stock and arrival b. How and when the antiviral medications could be used c. Stock rotation options d. Shelf-life extension options						
Medical Supplies Management and Distribution	4.1.2.1.15	Work with Federal Authorities to Modify Request Justification Criteria	1. Consider working with the Centers for Disease Control and Prevention (CDC) to provide information regarding the use of geographic spread as a factor to support requests for additional materials in a future event so that actual or projected use of supplies, medications, or other resources would take into account geographic distribution of the resource as well as the utilization rate of this resource.	Work with CDC Division of SNS to discuss the feasibility of including geographic coverage as a criterion to justify future requests.	Planning Evaluation	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.15	Work with Federal Authorities to Modify Request	2. Consider a per capita measure to address geographic spread.	Consider a per capita measure to address geographic spread.	Evaluation	Michael Poole	1-Aug-10	31-Aug-11		

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		Justification Criteria								
Medical Supplies Management and Distribution	4.1.2.1.15	Work with Federal Authorities to Modify Request Justification Criteria	3. Discuss any proposal with federal officials before implementation.	Discuss any proposal with federal officials before implementation at the Commissioner of Health level as well as the SNS program level.	Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.16	Receiving, Staging, and Storing Tactical Communication Equipment	1. Develop a tactical communications kit specifically designed for rapid deployment and operation at the receiving, staging, and storing (RSS) site that address the issues identified in the analysis.	Develop a tactical communication kit specifically designed for rapid deployment and operation at the RSS site that address the issues identified in the analysis.	Planning	Shelly Robinson	1-Aug-10	31-Aug-11		Completed
Medical Supplies Management and Distribution	4.1.2.1.17	Understanding Security Changes	1. Modify the SNS plan and related training to clarify that security plans can change based on the event scenario and threat assessments.	Modify the SNS plan and related training to clarify that security plans will change based on the event scenario and threat assessments.	Planning Training and/or exercise	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.17	Understanding Security Changes	2. Develop methods to communicate better security plan changes to persons who need to know this information.	Develop methods to communicate better security plan changes to persons who need to know this information.	Planning Personnel	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.18	Receiving, Staging, and Storing Partnership	1. Formalize plans for RSS operations with a private partner for future events.	Formalize plans for RSS operations with a private partner for future events.	Planning	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.18	Receiving, Staging, and Storing Partnership	2. Review regional plans and agreements for RSS operations and update agreements	Review regional plans and agreements for RSS operations and update agreements	Planning Equipment and systems	Michael Poole	1-Aug-10	31-Aug-11		

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			to include contract language similar to that used in the H1N1 response, if appropriate.	to include contract language similar to that used in the H1N1 response, if appropriate.						
Medical Supplies Management and Distribution	4.1.2.1.19	Use of Texas Inventory Management System	1. Modify plans to use one process for requesting all health and medical materials in an event.	Explore the feasibility of modifying plans to use one process for requesting all health and medical materials in an event.	Planning Evaluation	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.19	Use of Texas Inventory Management System	2. Modify plans to use the private partner facility warehouse management system in an event where applicable.	Modify plans to use the private partner facility warehouse management system in an event where applicable.	Planning Equipment and systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.19	Use of Texas Inventory Management System	3. Identify a new inventory management system, or make extensive changes to TIMS, to create a system that allows for the following features at a minimum: a. Flexibility to use with multiple and varying products and multiple types of events b. Ability to enter data received from CDC, vendors, and other entities in multiple formats c. Capability for daily applications for other public health	Identify a new inventory management system to create a system that allows for the following features at a minimum: a. Flexibility to use with multiple and varying products and multiple types of events b. Ability to enter data received from CDC, vendors, and other entities in multiple formats c. Daily applications for other public health programs to provide multiple users experience	Equipment and systems Evaluation	Michael Poole	1-Aug-10	31-Aug-11		

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			programs to provide multiple users with experience and training prior to an emergency d. Ability to track lot numbers e. Ability to separate and expand the event as needed to allow for movement of materials from locations other than the RSS	and training prior to an emergency d. Ability to track lot numbers e. Ability to separate or expand the event as needed to allow for movement of materials from locations other than the RSS						
Medical Supplies Management and Distribution	4.1.2.1.19	Use of Texas Inventory Management System	4. Develop a comprehensive training program to include web-based and just-in-time training.	Develop a comprehensive training program to include web-based and just-in-time training.	Training and/or exercises	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.19	Use of Texas Inventory Management System	5. Develop plans for use of the system in an event requiring new partnerships.	Develop plans for use of the system in an event requiring new partnerships.	Planning Equipment and systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.19	Use of Texas Inventory Management System	6. Develop detailed backup plans in case of system failure.	Develop detailed backup plans in case of system failure.	Planning Equipment and systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.1.2.1.20	Courier Service	1. Formalize and implement plans statewide for use of a courier service at the RSS site.	Formalize and implement plans statewide for use of a courier service at the RSS site.	Planning Equipment and systems	Michael Poole	1-Aug-10	31-Aug-11		
Medical Supplies Management and Distribution	4.2.2.1.1	Provider Registration	1. Determine the feasibility of migrating appropriate data directly from existing Vaccine for Children (VFC) databases for those VFC providers who wish to participate in	At the time of an event, DSHS would survey existing VFC providers to see if they want to participate in the vaccine distribution program; if so, their data would be loaded into the	Evaluation Planning Equipment and systems	Karen Hess	1-Aug-10	1-Oct-10		

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			Vaccine Ordering and Reporting System (VORS) or any new vaccine management system developed.	system to be used.						
Medical Supplies Management and Distribution	4.2.2.1.1	Provider Registration	2. Develop and provide clear instructions on how to estimate patient populations in the absence of baseline data (e.g., for a provider who does not ordinarily provide vaccines to patients).	Develop and provide clear instructions on how to estimate patient populations; define provider types.	Evaluation Planning	Sharon Slater	1-Sep-10	1-Oct-10		
Medical Supplies Management and Distribution	4.2.2.2.1	Priority Group Definitions	1. Clarify under which conditions first responders (e.g., fire and police personnel) would be included in the definition of health care and emergency medical service personnel.	At the beginning of an event, the DSHS Vaccine Allocation and Advisory Committee (VAAC) or equivalent group will clarify if, when and which first responders are included in vaccine priority groups. Develop a plan for communicating this clarification.	Planning	Sharon Slater	1-Sep-10	30-Nov-10		
Medical Supplies Management and Distribution	4.2.2.2.1	Priority Group Definitions	2. Share feedback from stakeholders with the CDC regarding other professions (e.g., teachers) that might could be considered a priority group.	Consider for future event based on scientific evidence; mechanism in place.	Evaluation Equipment and systems					Completed
Medical Supplies Management and Distribution	4.2.2.2.1	Priority Group Definitions	3. Consider developing and publicizing messages for the	Review communication plan and roles and responsibilities	Planning	Sharon Slater	1-Sep-10	30-Nov-10		

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			public that clearly define vaccine priority groups for the specific public health emergency and how those priority groups were determined.	within DSHS regarding communications with providers and the public. Modify plan as appropriate.						
Medical Supplies Management and Distribution	4.2.2.2.2	Vaccine Allocation – By Priority Group	1. Evaluate whether the targeting of priority groups was an effective vaccine allocation and administration strategy in Texas and make modifications to future allocation strategies if appropriate.	Review the analysis being completed by the CDC and the Institute of Medicine and determine what lessons learned could be applicable to Texas.	Evaluation Corrective action	Sharon Slater	1-Sep-10	31-Dec-10		
Medical Supplies Management and Distribution	4.2.2.2.2	Vaccine Allocation – By Priority Group	2. Involve local and regional response partners in the evaluation processes.	Input has been gathered from local and regional partners through the after action process.	Planning Evaluation					Completed
Medical Supplies Management and Distribution	4.2.2.2.3	Local Management of H1N1 Vaccine Allocation and Distribution Activities	1. Evaluate the effectiveness of the current novel H1N1 influenza vaccine allocation process to include input from response partners in the evaluation process.	Determine the feasibility of allowing some local health departments latitude and flexibility in managing novel influenza vaccines in their service area.	Planning Organization and leadership	James Morgan, M.D. / Sharon Slater	1-Sep-10	31-Dec-10		
Medical Supplies Management and Distribution	4.2.2.2.3	Local Management of H1N1 Vaccine Allocation and Distribution Activities	2. Evaluate the effectiveness of allocating a percentage of the vaccine to local public health partners initially to promote availability	Determine the feasibility of allowing some local health departments latitude and flexibility in managing novel influenza vaccines in their service area.	Evaluation Equipment and systems Planning	James Morgan, M.D. / Sharon Slater	1-Sep-10	31-Dec-10		

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			of the vaccine to populations typically served by LHDs.							
Medical Supplies Management and Distribution	4.2.2.2.3	Local Management of H1N1 Vaccine Allocation and Distribution Activities	3. Consider a hybrid novel influenza vaccine allocation strategy where some LHDs have all or some decision-making authority based on an evaluation of their willingness, capability and capacity to manage their response function.	Determine the feasibility of allowing some local health departments latitude and flexibility in managing novel influenza vaccines in their service area.	Planning Evaluation Equipment and systems	James Morgan, M.D. / Sharon Slater	1-Sep-10	31-Dec-10		
Medical Supplies Management and Distribution	4.2.2.2.3	Local Management of H1N1 Vaccine Allocation and Distribution Activities	4. Survey LHD officials to determine their willingness, capability, and capacity to manage allocation and distribution of novel influenza vaccines for future events.	Dependent on the feasibility study.	Evaluation					
Medical Supplies Management and Distribution	4.2.2.2.4	Vaccine Allocation Advisory Committee	1. Consider developing a process to communicate novel vaccine allocation decisions to providers and response partners.	Review communication plan and roles and responsibilities within DSHS regarding communications with providers and the public. Modify plan as appropriate.	Planning Equipment and systems	Sharon Slater (coordination with Adolfo Valadez, M.D. and Luis Morales	1-Sep-10	31-Dec-10		
Medical Supplies Management and Distribution	4.2.2.2.4	Vaccine Allocation Advisory Committee	2. Consider expanding the membership of the VAAC to include some non-DSHS representatives.	Review the possibility of adding some non-DSHS representatives on the VAAC.	Planning Personnel	Sharon Slater	1-Sep-10	31-Dec-10		

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Medical Supplies Management and Distribution	4.2.2.3.1	Vaccine and Vaccine Supplies Distribution	1. Develop a mechanism for third-party distributors to communicate with providers regarding which vaccine formulations will be shipped prior to shipment.	Explore the feasibility of providing an email confirmation of the vaccine order from the vaccine ordering system.	Equipment and systems Planning	Karen Hess	1-Aug-10	31-Aug-10		
Medical Supplies Management and Distribution	4.2.2.3.1	Vaccine and Vaccine Supplies Distribution	2 Consider allowing providers to order specific formulations of influenza vaccines in VORS or allowing the development of a new vaccine management system.	This was completed when the VORS system moved to an open ordering system in January 2010.	Equipment and systems					Completed
Medical Supplies Management and Distribution	4.2.2.3.1	Vaccine and Vaccine Supplies Distribution	3. Develop a mechanism for third-party distributors to communicate with providers regarding which vaccine supplies will be shipped prior to shipment.	Explore the feasibility of providing an email confirmation of the vaccine supply order from the vaccine ordering system.	Planning Equipment and systems	Karen Hess	1-Aug-10	31-Aug-10		
Medical Supplies Management and Distribution	4.2.2.3.1	Vaccine and Vaccine Supplies Distribution	4. Require that the third-party distributor ship vaccine and vaccine supplies at the same time if possible. If there are delays, providers should be notified so that they can make alternate arrangements for supplies.	This recommendation should not move forward; DSHS does not have control over federal contracts.	Equipment and systems					Not to be addressed.

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Medical Supplies Management and Distribution	4.2.2.3.1	Vaccine and Vaccine Supplies Distribution	5. For future response efforts consider working with the CDC to develop supply criteria and specifications appropriate for the vaccine and populations served and communicate this information to providers.	Consider the feasibility of Texas providing supplies for future events when a novel vaccine is used. Providers would elect if they need supplies.	Planning Evaluation	Karen Hess	1-Aug-10	31-Aug-10		
Medical Supplies Management and Distribution	4.2.2.3.1	Vaccine and Vaccine Supplies Distribution	6. Communicate these vaccine and supply concerns with the CDC for consideration in future related procurement activities.	This has been completed. DSHS has shared concerns with the CDC.	Planning					Completed
Medical Supplies Management and Distribution	4.2.2.3.2	H1N1 Vaccine and Vaccine Supply Storage	1. Consider developing or requiring the third-party distributor to develop vaccine packaging and storage specifications by formulation type and send to providers in advance of receipt of vaccine or include packaging size and specifications at the time of order confirmation in VORS.	Consider developing or requiring the third-party distributor to develop vaccine packaging and storage specifications by formulation type and send to providers in advance of receipt of vaccine or include packaging size and specifications at the time of order confirmation in VORS.	Equipment and systems	Karen Hess	In process	Dependent on completion of automated system		
Medical Supplies Management and Distribution	4.2.2.3.2	H1N1 Vaccine and Vaccine Supply Storage	2. Consider developing or requiring the third-	Consider developing or requiring the third-party distributor	Equipment and systems Evaluation	Karen Hess	In process	Dependent on completion of automated		

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			party distributor to develop vaccine supply packaging and storage specifications and send to providers in advance of receipt of supplies.	to develop vaccine packaging and storage specifications by formulation type and send to providers in advance of receipt of vaccine or include packaging size and specifications at the time of order confirmation in VORS or any system that is developed to replace it.				system		
Medical Supplies Management and Distribution	4.2.2.3.2	H1N1 Vaccine and Vaccine Supply Storage	3. Consider alternative mechanisms or contingency plans for the storage of vaccines at the state, regional, and local levels.	DSHS has explored the feasibility of providing guidance and storage specification for vaccine and supplies; adapt a storage space calculation tool based on vaccine / supplies ordered and link modifications to the vaccine ordering system.	Evaluation Equipment and systems	Karen Hess	In process	Dependent on completion of automated system		
Medical Supplies Management and Distribution	4.2.2.4.1	Reporting of H1N1 Doses Administered	1. Consider enhancing communications with providers regarding the option to upload vaccine-administered data from existing databases and electronic medical record systems.	Conduct training for providers regarding the uploading of data into ImmTrac. Incorporate communication messages regarding ImmTrac into the overall DSHS communication plan.	Training and/or exercises Personnel	Ishah Coleman and Sharon Slater / Thomas Coldin	1-Sep-10	31-Dec-10		
Medical Supplies	4.2.2.4.1	Reporting of	2. Consider	Based on available	Planning	Sharon Slater	1-Aug-10	31-Dec-10		

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Management and Distribution		H1N1 Doses Administered	modifying or replacing ImmTrac and including or developing a new vaccine reporting system that is interoperable and capable of health information exchange.	funds, consider H1N1 or another novel vaccine needs as part of the proposed grant to improve ImmTrac's interoperability.	Equipment and systems					
Medical Supplies Management and Distribution	4.2.2.4.2	Plans for Disposal of Remaining Vaccine and Vaccine Waste	1. Work with the CDC to develop and distribute closeout plans to manage remaining inventories of both expired and unexpired H1N1 vaccine.	Develop and implement a plan for vaccine recovery and disposal. Plan completed; awaiting approval and implementation.	Planning Equipment and systems	Sharon Slater	1-Aug-10	31-Dec-10		
Medical Supplies Management and Distribution	4.2.2.5.1	DSHS Infectious Disease Prevention Section After Action Evaluation	1. Consider developing corrective actions for appropriate lessons learned outlined in the DSHS 2009-2010 H1N1 Influenza Vaccine Distribution in Texas report.	Develop corrective action plans for appropriate lessons learned.	Corrective action Planning	Sharon Slater	1-Sep-10	31-Dec-10		
Mass Prophylaxis	4.2.3.1.1	Lack of Vaccination Based on Advice of Health Care Professionals	1. Work with medical and clinical professional associations and health care systems to provide more educational opportunities regarding vaccine safety and vaccine production methods. This education should be targeted to physicians, nurses, nurse midwives, and	Develop and implement a plan to educate medical professionals and the public about vaccine safety	Planning	Lupe Garcia	1-Jan-11	31-Dec-11		

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			other health care professionals and might include: a. Developing continuing medical education courses on vaccine safety and the influenza vaccine production process. b. Publishing articles in appropriate journals regarding vaccine safety and production concerns. c. Creating educational opportunities for hospital and health care facility staff to receive important information about vaccine safety.							
Mass Prophylaxis	4.2.3.1.2	Provider and Public Concerns Over Vaccine Safety	1. Identify proactive opportunities to promote the safety and efficacy of both seasonal and novel H1N1 influenza vaccine.	Develop and implement a plan to educate medical providers and the public about vaccine safety.	Planning Training and education	Lupe Garcia	1-Jan-11	31-Dec-11		
Mass Prophylaxis	4.2.3.2.1	Mass Vaccination Clinics	1. Consider consolidating or streamlining novel influenza vaccine screening tools.	Review and improve / consolidate vaccine screening tools if appropriate.	Evaluation	Tony Aragon / Sharon Slater	1-Sep-10	1-Oct-10		
Mass Prophylaxis	4.2.3.2.1	Mass Vaccination Clinics	2. Determine if it is feasible to reduce the number of vaccine formulations distributed to any one public health provider to maximize patient flow in mass	Do not move this recommendation forward as DSHS does not control the number of vaccine formulations developed.	Evaluation Planning					Not to be addressed.

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			immunization clinics.							
Mass Prophylaxis	4.2.3.2.1	Mass Vaccination Clinics	3. Develop just-in-time training materials for use with contract personnel, volunteer clinicians, or other clinical staff who have not provided immunizations in the recent past.	When updating the Pandemic Influenza Plan and operating guidance, include just-in-time training materials.	Training and/or exercises Planning	Martha Gonzalez	1-Aug-10	1-Feb-11		
Mass Prophylaxis	4.2.3.2.1	Mass Vaccination Clinics	4. Require that language translation services be available in mass vaccination clinics, if appropriate.	Include as part of revised preparedness plans.	Planning	Martha Gonzalez	1-Aug-10	1-Feb-11		
Mass Prophylaxis	4.2.3.2.1	Mass Vaccination Clinics	5. Consider partnering with the Health and Human Services Commission Regional Administrative Services for delivery services for novel vaccine and supplies to clinics and other provider locations as designated by the health service region.	Noted as a best practice.	Planning					Completed.
Mass Prophylaxis	4.2.3.2.1	Mass Vaccination Clinics	6. Consider developing a checklist outlining space and other needs for mass vaccination clinics.	Include as part of revised preparedness plans.	Planning	Martha Gonzalez	1-Aug-10	1-Feb-11		
Mass Prophylaxis	4.2.3.2.2	Use of Point of Dispensing Sites	1. Consider using the POD concept of providing vaccinations in future vaccination clinics.	This option already exists in DSHS planning documents.	Planning					Completed
Mass Prophylaxis	4.2.3.2.3	School-Based	1. Consider working	Work with the Texas	Planning	Monica	1-Sep-10	31-Dec-10		

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		Vaccination Clinics	with the Texas Education Agency and the education service centers to address school concerns regarding vaccine liability / legal issues and other planning considerations.	Education Agency and education service centers to address school concerns and develop a communication plan to share information with school districts.		Gamez				
Mass Prophylaxis	4.2.3.2.3	School-Based Vaccination Clinics	2. Consider evaluating the many variations of school-based immunization clinics that were tried during the H1N1 influenza response to determine best practices that could be replicated around the state.	Consider setting up a process to share Texas' lessons learned / best practices.	Corrective action Planning	James Morgan, M.D.	1-Sep-10	31-Dec-10		
Mass Prophylaxis	4.2.3.3.1	Contract Staffing for Mass Vaccination Clinics	1. Initiate discussions with stakeholders and other response partners to address concerns about the procurement of a contract to hire nurses for public health emergency response activities.	Initiate discussions with stakeholders and other response partners to address concerns about the procurement of a contract to hire nurses for public health emergency response activities.	Evaluation Personnel	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Mass Prophylaxis	4.2.3.3.1	Contract Staffing for Mass Vaccination Clinics	2. Create contingency plans to address staffing in future events, should funding not be available to procure a contract to hire nurses.	Create contingency plans to address staffing in future events, should funding not be available to procure a contract to hire nurse.	Evaluation Planning Personnel	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Mass Prophylaxis	4.2.3.3.1	Contract Staffing for Mass Vaccination	3. Develop just-in-time training so future mass	Develop just-in-time training so future mass vaccination	Training and/or exercises	Jeff Hoogheem	1-Aug-10	1-Nov-10		

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		Clinics	vaccination clinic staff are prepared to perform assigned duties upon arrival at their duty location.	clinic staff are prepared to perform assigned duties upon arrival at their duty location.	Personnel					
Epidemiological Surveillance and Investigation	4.3.4.1.1	Epidemiological Templates	1. Standardized case investigation forms and databases should be developed and distributed as early in the event as possible.	As soon as possible at the beginning of an event, the Infectious Disease Control Unit (IDCU) will coordinate the development of a core data set and case investigation forms; health service regions will have the latitude to collect additional data.	Planning Equipment and systems	Susan Penfield, M.D.	Event Dependent	On-going		
Epidemiological Surveillance and Investigation	4.3.4.1.2	Epidemiological Information Requests	1. Coordinate all MACC requests for epidemiological information from the Operations Branch response team lead with knowledge and experience in epidemiological surveillance.	Create a flow chart to define the process for requests from epidemiological information from the Austin Clinical Epidemiological team to health service regions.	Planning Evaluation	Mary Evan	1-Aug-10	30-Nov-10		
Epidemiological Surveillance and Investigation	4.3.4.1.3	Community Assessment for Public Health Emergency Response	1. Utilize the Community Assessment for Public Health Emergency Response (CASPER) method to gather information during future infectious disease outbreaks where and when appropriate.	Utilize the CASPER method to gather information during future infectious disease outbreaks where and when appropriate.	Equipment and systems	David Zane	Event Dependent	On-going		
Epidemiological Surveillance and Investigation	4.3.4.1.3	Community Assessment for Public Health	2. Develop mechanisms to use information gathered	Develop mechanisms to use information gathered	Equipment and systems	David Zane	Event Dependent	On-going		

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		Emergency Response	through CASPER.	through CASPER.						
Epidemiological Surveillance and Investigation	4.3.4.1.3	Community Assessment for Public Health Emergency Response	3. Develop pre-identified CASPER teams.	Develop pre-identified CASPER teams.	Equipment and systems Personnel	David Zane	1-Aug-10	1-Feb-11		
Emergency Public Information and Warning	4.5.3.1.1	Primary Source of Health and Medical Preparedness Information	1. Support DSHS as the state-level primary source for health and medical preparedness and response information.	Work with partner organizations on ways to build an infrastructure to support information; work with local entities and health service regions to identify ways in which they can help support the information sharing infrastructure.	Equipment and systems Planning	Kirk Cole	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.1	Primary Source of Health and Medical Preparedness Information	2. Develop, through collaboration among response partners, a plan for building credibility and recognition for the primary source working collaboratively with response partners.	Work with partner organizations on ways to build an infrastructure to support information; work with local entities and health service regions to identify ways in which they can help support the information sharing infrastructure.	Equipment and systems Planning	Kirk Cole	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.1	Primary Source of Health and Medical Preparedness Information	3. Continue to communicate public health information to stakeholders.	Continue to communicate public health information to stakeholders.	Planning	Luis Morales	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.2	Role of Department of State Health Services in Information	1. DSHS should review and clarify their leadership role in information management during	DSHS will continue to evaluate communication needs and respond appropriately based	Evaluation Planning	Kirk Cole	1-Aug-10	31-Dec-10		

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		Management	preparedness and response.	on facts at hand and using available methods.						
Emergency Public Information and Warning	4.5.3.1.2	Role of Department of State Health Services in Information Management	2. DSHS should be proactive in countering misinformation and identify vehicles for distributing correct information to specific target audiences and the general public, as appropriate.	DSHS will continue to evaluate communication needs and respond appropriately based on facts at hand and using available methods.	Evaluation Planning	Kirk Cole	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.2	Role of Department of State Health Services in Information Management	3. DSHS should develop a plan for keeping response partners at all levels informed of strategy changes throughout a response.	DSHS will keep partners better informed.	Planning	Kirk Cole	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.3	Statewide Public Awareness Campaign	1. Identify components of the media campaign that were effective (e.g., television spots and the school-based Flu Fighters campaigns) and could be used in future events.	Incorporate feedback from the H1N1 after action review (AAR) into future planning as appropriate.	Planning Evaluation Corrective action	Luis Morales	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.3	Statewide Public Awareness Campaign	2. Identify opportunities to push forward the development and release of a future media campaign, especially public service announcements related to non-pharmaceutical interventions.	Explore the possibilities of restructuring the current procurement process. Review what DSHS can do contractually regarding a contingency contract to shorten the timeline to launch a public awareness campaign.	Planning	Luis Morales	1-Aug-10	31-Dec-10		

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				Determine how to structure current funding for a public awareness campaign.						
Emergency Public Information and Warning	4.5.3.1.3	Statewide Public Awareness Campaign	3. Involve local and regional entities in the planning of campaigns, as appropriate, so as to maximize effectiveness of media buys and available funding.	Work with health service regions to identify how they can participate in the planning process recognizing limited windows of opportunity.	Planning	Luis Morales	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.4	Texasflu.org Website	1. Modify the home page to have less clutter and more white space.	Modify the home page to have less clutter and more white space.	Equipment and systems					Completed
Emergency Public Information and Warning	4.5.3.1.4	Texasflu.org Website	2. Consider having tabs or buttons on the home page to take the user to guidance documents and other information pertaining to a particular user group such as schools.	Review current tabs/buttons on the website home page regarding the need to build additional segmentation.	Equipment and systems	Luis Morales	1-Aug-10	1-Jan-11		
Emergency Public Information and Warning	4.5.3.1.4	Texasflu.org Website	3. Provide advance notice of website redesign to users.	DSHS will provide to users advance notice of future website redesign.	Equipment and systems	Luis Morales	1-Aug-10	1-Jan-11		
Emergency Public Information and Warning	4.5.3.1.4	Texasflu.org Website	4. Have guidance documents available in languages other than Spanish and English.	Look at the feasibility of having documents targeted to the public available in languages other than English and Spanish.	Equipment and systems	Luis Morales	1-Aug-10	1-Jan-11		
Emergency Public Information and	4.5.3.1.4	Texasflu.org Website	5. Have bulleted summaries of guidance documents	Evaluate the feasibility of simplifying guidance	Evaluation	Luis Morales	1-Aug-10	1-Jan-11		

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Warning			available on the website.	documents.						
Emergency Public Information and Warning	4.5.3.1.4	Texasflu.org Website	6. Identify specific updates to the website in email alerts.	Identify specific updates to the website in email alerts.	Equipment and systems	Luis Morales	1-Aug-10	31-Dec-10		
Emergency Public Information and Warning	4.5.3.1.5	Messaging to the General Public	1. Evaluate the effectiveness of the methods used to distribute information to the public, review best practices, and identify methods to be included in planning for future events.	Evaluate the effectiveness of the methods used to distribute information to the public, review best practices, and identify methods to be included in planning for future events.	Evaluation Planning	John Burlinson	1-Aug-10	1-Jan-11		
Emergency Public Information and Warning	4.5.3.1.6	Distribution of Information to Physicians and Other Health Care Providers	1. Continue work at the state level with professional organizations to identify the optimum vehicles for sharing information with physicians, nurses, pharmacists and other health care professionals.	Working at the state level with professional organizations, identify the optimum vehicles for sharing information with physicians, nurses, pharmacists and other health care providers.	Planning	Kirk Cole	1-Aug-10	1-Jan-11		
Emergency Public Information and Warning	4.5.3.1.6	Distribution of Information to Physicians and Other Health Care Providers	2. Evaluate at the local and regional levels the methods used during the H1N1 response to provide information to health care providers.	Evaluate at the local and regional levels the methods used during the H1N1 response to provide information to health care providers. Identify additional methods that could be used and include these in future planning efforts.	Evaluation Planning	John Burlinson	1-Aug-10	1-Jan-11		
Emergency Public Information and	4.5.3.1.6	Distribution of Information to Physicians and	3. Identify additional methods that could be used and include	Identify additional methods that could be used and include	Planning	Luis Morales	1-Aug-10	1-Jan-11		

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Warning		Other Health Care Providers	these in future planning efforts.	these in future planning efforts.						
Emergency Public Information and Warning	4.5.3.1.6	Distribution of Information to Physicians and Other Health Care Providers	4. Consider working with state licensing entities to use their databases for distribution of information.	Evaluate different licensing databases that may be available for distribution of information.	Equipment and systems	Rick Bays	1-Aug-10	1-Jan-11		
Emergency Public Information and Warning	4.5.3.1.7	H1N1 Call Center / 211	1. Consider educational campaigns in targeted geographical areas to enhance public awareness of a call center during a public health response.	Incorporate the use of a call center in the DSHS overall communications plan.	Planning	Luis Morales	Should be consistent with overall communications plan	To be determined		
Emergency Public Information and Warning	4.5.3.1.7	H1N1 Call Center / 211	2. Refine the existing process to be utilized consistently across the state so that 211 has access to critical information for a public health event and can share this information with local entities.	Review and modify the current process to include a template as appropriate, recognizing that the template will likely change for each event. Provide the template as early as possible in the event Share information on the process with local response partners.	Planning	Teena Edwards	1-Aug-10	1-Oct-10		
Emergency Public Information and Warning	4.5.3.1.7	H1N1 Call Center / 211	3. Consider providing to local health departments and other local jurisdictions reports on the number of calls from their geographical area and on the types of questions asked by callers.	Survey local health departments and health service regions to understand what data they need from a call center environment; evaluate the feasibility of providing	Evaluation Equipment and systems	Teena Edwards	1-Aug-10	15-Jan-11		

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				information/ reports to local health departments and local jurisdictions during an event; communicate the feasibility results to response partners.						
Emergency Public Information and Warning	4.5.3.1.8	State Operations Center H1N1 Call Length	1. Work with the Texas Division of Emergency Management (TDEM) to identify efficiencies in calls in a public health event by: a. Consider limiting state agency briefings to new information only b. Consider requesting that questions be submitted in advance or through a filter to group questions and avoid repeat questions	Work with the Texas Division of Emergency Management to identify efficiencies in calls in a public health event by: a. Determining how best to present state agency briefings (e.g., limiting state agency information to new information) b. Identifying a method for questions to be submitted in advance by email or posted to a website prior to a call.	Planning Equipment and systems	Rick Bays	1-Aug-10	1-Sep-11		
Emergency Public Information and Warning	4.5.3.1.8	State Operations Center H1N1 Call Length	2. Provide a summary of calls on a website or public forum.	Provide a written summary of calls (e.g., notes) on a website or public forum.	Organization and leadership	Rick Bays	1-Aug-10	1-Sep-11		
Emergency Operations Center Management	4.6.3.1.1	Multi-Agency Coordination Center Coordination of Assignments	1. Bring together key individuals from across DSHS to develop a process to coordinate assignments for persons serving in the MACC structure, whether serving in the physical MACC	Bring together key individuals from across DSHS to develop a process for all-hazards events to coordinate assignments for persons serving in the MACC structure, whether serving in	Organization and leadership Planning	Rick Bays	1-Aug-10	1-Feb-11		

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			or serving virtually.	the physical MACC or serving virtually.						
Emergency Operations Center Management	4.6.3.1.1	Multi-Agency Coordination Center Coordination of Assignments	2. Develop standard operating procedures to document this process.	Develop standard operating procedure(s) (SOP) to document this process.	Planning	Rick Bays	1-Aug-10	1-Feb-11		
Emergency Operations Center Management	4.6.3.1.1	Multi-Agency Coordination Center Coordination of Assignments	3. Educate and train on the standard operating procedure and periodically evaluate the process to determine if modifications are needed.	Educate/train on the SOP and periodically evaluate the process to determine if modifications are needed.	Training and/or exercises Evaluation	Rick Bays	1-Aug-10	1-Feb-11		
Emergency Operations Center Management	4.6.3.1.1	Multi-Agency Coordination Center Coordination of Assignments	4. Evaluate the effectiveness of using WebEOC mission tasking boards as a way of making assignments in a virtual MACC.	Evaluate the effectiveness of using WebEOC mission tasking boards as a way of making assignments in a virtual MACC.	Evaluation Equipment and systems	Rick Bays	1-Aug-10	1-Feb-11		
Emergency Operations Center Management	4.6.3.1.2	Virtual Operations	1. Develop a policy or directive that directs personnel working under a virtual response organizational structure to give priority to assignments and responsibilities related to the response.	Develop a policy or directive that directs personnel working under a virtual response organizational structure to give priority to assignments and responsibilities related to the response.	Planning Personnel Organization and leadership	Rick Bays	1-Aug-10	1-Feb-11		
Emergency Operations Center Management	4.6.3.1.2	Virtual Operations	2. Conduct training related to such policies or directives.	Conduct training related to such policy(s) or directive(s).	Training and/or exercises	Rick Bays	1-Aug-10	1-Feb-11		
Emergency Operations Center Management	4.6.3.1.2	Virtual Operations	3. Develop and implement a communication plan on the	Develop and implement a communication plan on the	Planning	Rick Bays	1-Aug-10	1-Feb-11		

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			policy/directive.	policy/directive.						
Emergency Operations Center Management	4.6.3.1.3	Medical Countermeasure Distribution Branch Staffing	1. Formalize the Medical Countermeasure Branch structure with an organizational chart and job action sheets.	Formalize the Medical Countermeasure Branch structure with an organizational chart and job action sheets.	Organization and leadership	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Emergency Operations Center Management	4.6.3.1.3	Medical Countermeasure Distribution Branch Staffing	2. Consider a position on the Medical Countermeasure Branch to serve as a liaison with the DSHS pharmacy.	Evaluate the need for a position in the Medical Countermeasure Branch to serve as liaison with the DSHS pharmacy.	Evaluation Personnel	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Emergency Operations Center Management	4.6.3.1.3	Medical Countermeasure Distribution Branch Staffing	3. Develop operational procedures and training for each position.	Develop operational procedures and training for each position.	Planning Training and/or exercises	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Emergency Operations Center Management	4.6.3.1.3	Medical Countermeasure Distribution Branch Staffing	4. Identify a primary and two backups for each position.	Identify a primary and two backups for each position	Personnel Organization and leadership	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Emergency Operations Center Management	4.6.3.1.3	Medical Countermeasure Distribution Branch Staffing	5. Identify a position responsible for documentation and modification of procedures as the event progresses. This position could have lead responsibility for shift change briefings and continuity of activities.	The need for documentation is not unique to the Medical Countermeasures Branch and is addressed through the MACC structure. Do not move forward with this recommendation.	Organization and leadership					Not to be addressed.
Emergency Operations Center Management	4.6.3.1.3	Medical Countermeasure Distribution Branch Staffing	6. Develop shift change protocols that allow for comprehensive briefings.	Refine existing protocols.	Planning	Jeff Hoogheem	1-Aug-10	1-Nov-10		
Emergency	4.6.3.1.4	213 Resource	1. Evaluate the 213	Improvements have	Evaluation	Mike Widtfeldt	1-Aug-10	Evaluate		

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Operations Center Management		Requests	resource request process to determine how to expedite review of requests, establish an expected timeline, review the mechanism for tracking, provide feedback to the submitter on the status of the request, and provide explanation of the decision when requests are denied.	already been made.	Corrective action			quarterly		
Emergency Operations Center Management	4.6.3.1.4	213 Resource Requests	2. Conduct training for staff responsible for submitting 213 resource requests to the MACC.	Training related to such policy(s) or directive(s) is in progress.	Training and/or exercises Personnel	Mike Widtfeldt	1-Aug-10	Evaluate quarterly		
Emergency Operations Center Management	4.6.3.1.4	213 Resource Requests	3. Periodically evaluate all processes related to the 213-resource request system and make any necessary changes.	Findings are evaluated quarterly.	Evaluation	Mike Widtfeldt	1-Aug-10	Evaluate quarterly		
Emergency Operations Center Management	4.6.3.1.4	213 Resource Requests	4. Involve submitters in the evaluation process.	Completed	Evaluation	Mary Evan	NA	1-Aug-10		
Emergency Operations Center Management	4.6.3.1.5	Clarification of Multi-Agency Coordination Center Operational Reports	1. Evaluate the operational reports generated by the MACC to identify clearly the objective(s) and target audience for each report.	Standard distribution list for all events completed. Additional names to be added as needed for event.	Evaluation	Mary Evan	Will occur at beginning of each event	Ongoing		
Emergency Operations Center	4.6.3.1.5	Clarification of Multi-Agency Coordination	2. Develop a distribution list for each report and	Completed	Organization and leadership	Mary Evan	NA	1-Aug-10		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
Management		Center Operational Reports	review and update this list periodically.							
Emergency Operations Center Management	4.6.3.1.5	Clarification of Multi-Agency Coordination Center Operational Reports	3. Develop a standard operating procedure for developing operational reports.	Train all MACC staff on the SOP.	Planning	Mary Evan	In process	1-Jan-11		
Emergency Operations Center Management	4.6.3.1.5	Clarification of Multi-Agency Coordination Center Operational Reports	4. Train all MACC staff on the procedure.	Completed	Training and/or exercises	Mary Evan	N/A	1-Aug-10		
Emergency Operations Center Management	4.6.3.1.5	Clarification of Multi-Agency Coordination Center Operational Reports	5. Include development of the operational reports in future exercises/drills.	Include development of the operational reports in future exercises/drills.	Planning Training and/or exercises	Jeff Hoogheem	1-Aug-10	1-Sep-11		
Emergency Operations Center Management	4.6.3.1.6	Contract Staff	1. Consider requiring that contract staff participating in a response have a specified level of Incident Command Structure (ICS) certification.	Assess the need for ICS training for contract staff.	Training and/or exercises Personnel	Michael McElwain	1-Aug-10	1-Nov-10		
Emergency Operations Center Management	4.6.3.1.6	Contract Staff	2. Develop just-in-time ICS training modules for volunteers and contract staff.	Communicate with health service regions and local entities regarding incorporating into local plans the provision of just-in-time training for contract staff as needed.	Planning Training and/or exercises	Michael McElwain	1-Aug-10	1-Nov-10		
Emergency Operations Center Management	4.6.3.1.7	Mobilization and Demobilization	1. Develop guidelines for the mobilization and demobilization of the	Develop guidelines, including levels 1, 2, etc., for mobilization and demobilization.	Planning	Jeff Hoogheem	1-Aug-10	1-Dec-10		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			MACC for an infectious disease response.							
Emergency Operations Center Management	4.6.3.1.7	Mobilization and Demobilization	2. Train on the guidelines.	Train on the guidelines.	Training and/or exercises	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.7	Mobilization and Demobilization	3. Develop drills and exercises to use the guidelines.	Develop drills and exercises to use the guidelines.	Training and/or exercises	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.7	Mobilization and Demobilization	4. Periodically evaluate the guidelines to determine if changes are needed.	Periodically evaluate the guidelines to determine if changes are needed.	Evaluation	Jeff Hoogheem	1-Aug-10	Ongoing, at least annually		
Emergency Operations Center Management	4.6.3.1.8	Contract Staff Management Authority	1. Clarify whether DSHS or the contract agency has supervisory authority over contract staff when the contract staff are responding for DSHS, and include this clarification in the staffing contract.	Clarify with contracting agencies who has supervisory authority over contract staff. Identify possible issues when contract staff from several agencies report to a team lead with one of the contracting agencies.	Organization and leadership Personnel	Michael McElwain	1-Aug-10	1-Dec-10		
Emergency Operations Center Management	4.6.3.1.8	Contract Staff Management Authority	2. Educate DSHS and contract staff on the supervisory policy.	Educate DSHS and contract staff on the clarification.	Personnel Training and/or exercises	Michael McElwain	1-Aug-10	1-Dec-10		
Emergency Operations Center Management	4.6.3.1.9	DSHS Leadership and Multi-Agency Coordination Center Incident Command	1. Review the key roles and responsibilities of agency executive leadership and MACC ICS during a response.	Continue DSHS strategy meetings to include agency executive leadership and MACC leadership.	Planning Organization and leadership	Rick Bays	1-Aug-10	Ongoing		
Emergency Operations Center	4.6.3.1.9	Department of State Health Services	2. Continue DSHS strategy meetings to include agency	Continue DSHS strategy meetings to include agency	Planning Organization and	Rick Bays	1-Aug-10	Ongoing		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
Management		Leadership and MACC Incident Command	executive leadership and MACC leadership.	executive leadership and MACC leadership.	leadership					
Emergency Operations Center Management	4.6.3.1.9	Department of State Health Services Leadership and Multi-Agency Coordination Center Incident Command	3. Have meetings to align with MACC operational periods and to support implementation of policy directives in a timely and efficient manner.	Have meetings to align with MACC operational periods and to support implementation of policy directives in a timely and efficient manner.	Planning	Rick Bays	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.10	Management of Tasks Following Demobilization	1. Develop a plan and process to manage MACC responsibilities, tasks and activities after the MACC is demobilized for a response. The plan and process should have an all-hazards focus.	At the beginning of each event develop a demobilization plan for the event to address the time when the emergency response ends and moves to recovery.	Planning	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.10	Management of Tasks Following Demobilization	2. Consider whether temporary contract staff should be used to assist with this work.	Consider whether temporary contract staff should be used to assist with this work.	Personnel	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.10	Management of Tasks Following Demobilization	3. Train on the plan and process.	Share the demobilization plan.	Training and/or exercises Planning	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.10	Management of Tasks Following Demobilization	4. Develop drills and exercises on the plan and process.	Develop drills and exercises on the plan and process.	Training and/or exercises Planning	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.10	Management of Tasks Following Demobilization	5. Periodically evaluate the plan and process.	Evaluate the plan for each event.	Evaluation Planning	Jeff Hoogheem	1-Aug-10	Ongoing		
Emergency Operations Center Management	4.6.3.1.11	Sustaining a long-term response	1. Develop a plan for sustaining a long-term response involving the MACC.	Refine the existing plan for short-term events to address a protracted response.	Planning Personnel	Rick Bays and Jeff Hoogheem	1-Aug-10	1-Dec-10		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			This plan should include whether temporary contract staff will be used in this effort.							
Medical Surge	4.7.3.1.1	Health and Medical Surge - Guidance Documents	1. Consider convening a multi-disciplined workgroup to develop guidance documents for strategic and operational planning and decision-making frameworks for health and medical surge topics as appropriate.	Identify key existing federal and other resource documents and post on DSHS website. Include a DSHS contact person and contact information for questions and additional information.	Planning	Beverly Ray	1-Nov-10	30-Nov-10		
Medical Surge	4.7.3.1.1	Health and Medical Surge - Guidance Documents	2. Consider a corrective action plan that includes participation or a process to seek input from local / regional Emergency Support Function (ESF) 8 response partners.	Post resources / links and a contact person for questions on the DSHS website. Discuss resources at upcoming Public Health Emergency Preparedness (PHEP) / Hospital Preparedness Program (HPP) meetings.	Equipment and systems	Beverly Ray	1-Nov-10	30-Nov-10		
Medical Surge	4.7.3.1.1	Health and Medical Surge - Guidance Documents	3. Consider developing a process to identify and report on best practices for primary and tertiary care surge for possible replication.	Identify hospital best practices in HPP year-end report and share with HPP contractors and hospitals. Bring in DADS representative to discuss long-term care surge issues at an upcoming PHEP/ HPP meeting.	Planning Evaluation	Beverly Ray	1-Jul-10	Ongoing		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
				Enhance coordination with DADS on long-term care surge.						
Medical Surge	4.7.3.1.2	N-95 Respirators – State Guidance	1. In instances where federal guidance is inconsistent on issue related to a public health emergency, consider: a. Continue to outline discrepancies in this guidance and initiate a conversation with federal partners to express the concerns and impact this has on response workers; and b. Develop guidance specific to Texas, when appropriate (i.e. when state authority is not superseded by federal authority), that addresses the conflicting issues with a goal to seek a common ground and common sense solution workers.	Texas cannot override federal guidance. This issue is highly situational based on the event. In the future, the ICS structure will be sensitive to this type of issue and will continue to coordinate with federal officials regarding inconsistencies in guidance. No corrective action recommended at this time.	Planning					Not to be addressed.
Medical Surge	4.7.3.1.3	Health and Medical Preparedness and Response Training	1. Consider developing continuing education and training on health and medical preparedness and response topics for local elected	Explore content and optimal delivery for public health and medical training for public officials, EMCs and other first responders; develop content; attach	Evaluation Organization and leadership	Martha Gonzalez	2-Aug-10	1-Apr-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			officials, EMCs and other response partners.	continuing education credit to training.						
Medical Surge	4.7.3.1.3	Health and Medical Preparedness and Response Training	2. Provide the names and contact information of the current HPP contractors to EMC.	Share HPP contractor and Trauma Service Area Regional Advisory Committee contact information with Texas Department of Public Safety (TXDPS), Regional Liaison Officer to provide to local EMCs.	Planning Organization and leadership	Beverly Ray	2-Aug-10	1-Oct-10		
Medical Surge	4.7.3.1.3	Health and Medical Preparedness and Response Training	3. Invite EMC to hospital planning committee meetings to discuss and learn about medical surge capacity and capability in their jurisdiction.	Recommendation already in place - will provide a reminder at HPP contractor meetings.	Planning	Beverly Ray	2-Aug-10	1-Oct-10		
Medical Surge	4.7.3.1.3	Health and Medical Preparedness and Response Training	4. Convene a statewide conference on preparedness issues for local elected officials, EMC, HPP contractors, public health partners, and others as appropriate.	Convene a statewide conference on preparedness issues for local elected officials, EMC, HPP contractors, public health partners, and others as appropriate.	Planning	Bruce Clements	Complete			
Medical Surge	4.7.3.1.4	Integrated Public Health and Hospital Preparedness Planning	1. Consider developing a corrective action plan that addresses the need to integrate better hospital preparedness and response activities with other ESF 8	Continue hosting PHEP / HPP contractor meetings. Continue inviting local public health to RAC meetings. Include overview of HPP program in training developed	Corrective action Planning Training and/or exercises					Completed

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			planning and response activities at the local, regional, and state levels	as part of 4.7.3.1.3 above. No further corrective action needed.						
Fatality Management	4.7.4.1.1	Mass Fatality Planning	1. Develop scalable operational guidance on mass fatality planning.	Identify or develop Texas specific operational guidance on mass fatalities that is scalable based on population size and send to local response partners for review.	Planning	Pricilla Boston	2-Aug-10	1-Feb-11		
Medical Supplies Management and Distribution	4.7.5.1.1	Local / Regional Health and Medical Supply Caches	1. Develop an inventory management system that can be used to manage all local / regional / state medication, supply and equipment caches.	Develop an inventory management system that can be used to manage all local / regional / state medication, supply and equipment caches.	Equipment and systems	Brice Brandon	1-Sep-10	31-Aug-10		
Medical Supplies Management and Distribution	4.7.5.1.1	Local / Regional Health and Medical Supply Caches	2. Develop a long-term storage, maintenance, and rotation plan for pharmaceutical, supply, and equipment caches.	Develop a long-term storage, maintenance, and rotation plan for pharmaceutical, supply, and equipment caches.	Equipment and systems Planning	Beverly Ray	1-Sep-10	31-Aug-10		
Medical Supplies Management and Distribution	4.7.5.1.1	Local / Regional Health and Medical Supply Caches	3. Consider surveying hospitals participating in the HPP to document brand and model preferences for N-95 respirators and other supplies and equipment.	Consider surveying hospitals participating in the HPP to document brand and model preferences for N-95 respirators and other supplies and equipment.	Evaluation Equipment and systems	Beverly Ray	1-Sep-10	31-Aug-10		
Planning	4.8.2.1.1	Consequences of School Closure	1. Continue to work with the Texas Education Agency and independent	Combine with 4.8.3.1.8. Work with subject matter experts to revise	Planning	Martha Gonzalez	2-Aug-10	1-Feb-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			school districts on issues of school closure related to public health events like pandemic influenza.	plans.						
Planning	4.8.2.1.1	Consequences of School Closure	2. Continue to work with local and regional health and medical entities to be aware of the impact of school closures and to consider this impact in planning activities.	Combine with 4.8.3.1.8. Work with subject matter experts to revise plans.	Planning	Martha Gonzalez	2-Aug-10	1-Feb-11		
Planning	4.8.2.1.1	Consequences of School Closure	3. Include strategies in pandemic influenza plans to meet educational, nutritional, and child care activities impacted by pandemic influenza related school closure.	Include strategies in pandemic influenza plans to meet childcare needs (e.g., educational, nutritional, and childcare) for school closures related to pandemic influenza.	Planning	Strategic Preparedness	1-Sep-10	31-Aug-10		
Planning	4.8.2.1.1	Consequences of School Closure	4. Encourage ongoing communication and education on issues related to school closure as a public health intervention for emergency situations.	Encourage ongoing communication and education on issues related to school closure as a public health intervention for emergency situations.	Planning	Strategic Preparedness	1-Sep-10	31-Aug-10		
Planning	4.8.2.1.1	Consequences of School Closure	5. Work with the Texas Education Agency and the Texas Department of Agriculture to address the school lunch waiver process issue in future events, as	Work with the Texas Education Agency and the Texas Department of Agriculture to address the waiver process issue in future events, as appropriate.	Planning	Strategic Preparedness	1-Sep-10	31-Aug-10		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			appropriate.							
Planning	4.8.2.1.2	The Use of Contract and Volunteers to Support Response Activities	1. Consider a mixed-model plan of using both volunteers and contract staff, with an emphasis on volunteers to support immediate response needs and contract staff to support long-term response needs.	Convene a group to consider issues related to a mixed model of using volunteers and contract staff for emergency response activities.	Evaluation Personnel	Bruce Clements/Mike Czepiel Include Dr. Valadez, Eric Epley, HSRs 6/5S and 7.	2-Aug-10	1-Apr-11		
Planning	4.8.2.1.3	Rural Issues	1. When developing plans that may impact or include rural issues, consider including representatives from the health service regions who can speak to these issues and offer constructive solutions and dialogue.	When developing plans that may impact or include rural issues, consider including representatives from the health service regions who can speak to these issues and offer constructive solutions and dialogue.	Planning Evaluation	Bruce Clements/ Mike Czepiel	2-Aug-10	ongoing		
Planning	4.8.2.1.4	International Border Issues	1. Continue to promote dialogue between health and medical officials on both sides of the border, especially with regard to disease surveillance and outbreak control.	Identify how five international guidelines/ agreements relate to infectious disease and determine how Texas can work in compliance with these guidelines/ agreements. Agreements include 1) International Health Regulations 2) Guidelines for United States (US)-Mexico Coordination on Epidemiologic Events of Mutual	Planning	Allison Banicki	1-Aug-10	1-Apr-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
				Interest 3) Declaration among the Department of Health and Human Services of the USA, the Department of Health of Canada, the Public Health Agency of Canada and the Ministry of Health of the United Mexican States 4) National Health Security Strategy of the United States of America 5) National Strategy for Countering Biological Threats. Office of Border Health, working with health service regions; defining the roles when communication from health service regions to Mexican states moves to communication between the State of Texas and the country of Mexico.						
Planning	4.8.2.1.5	Data Gathering and Reporting	1. Identify opportunities to harmonize data collection so as not to have multiple requests for the same data and to be aware of the time needed for local response partners to	Convene a multi-disciplinary and jurisdictional work group to identify opportunities to streamline data collection and two-way data sharing. Include epidemiology and	Evaluation Equipment and systems	Bruce Clements	2-Aug-10	1-Apr-11		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
			collect, assimilate, and report data.	Commissioner information needs.						
Planning	4.8.2.1.5	Data Gathering and Reporting	2. Identify opportunities to have single data stream reporting in which multiple agencies (e.g., local health departments, health service regions, and DSHS Austin) can utilize the same data sets.	Convene a multi-disciplinary and jurisdictional work group to identify opportunities to streamline data collection and two-way data sharing.	Evaluation Planning	Bruce Clements	2-Aug-10	1-Apr-11		
Planning	4.8.2.1.5	Data Gathering and Reporting	3. Consider creating standardized data definitions across local, regional, and state entities. This would include identifying the types of data to be standardized.	Convene a multi-disciplinary and jurisdictional work group to identify opportunities to streamline data collection and two-way data sharing.	Planning Evaluation	Bruce Clements	2-Aug-10	1-Apr-11		
Planning	4.8.2.1.6	Strengthening Response Partnership with Public Health and Medicine	1. Work with state professional medical associations and their members to explore this issue more fully, to understand why the dichotomy exists, then develop and implement a plan for beginning to strengthen this partnership.	Work with state professional medical associations and their members to explore more fully this issue, to understand why the dichotomy exists, then develop and implement a plan for beginning to strengthen this partnership.	Planning	Kirk Cole/Beverly Ray	1-Sep-10	31-Aug-10		
Planning	4.8.2.1.7	Opportunity to Utilize Health Service Region Expertise	1. Recognize the expertise and leadership that health service region leadership and staff can provide in planning and response activities.	Recognize the expertise and leadership that health service region leadership and staff can provide in planning and response activities.	Organization and leadership Planning	Bruce Clements / Mike Czepiel	2-Aug-10	Ongoing		

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Capability	Obs. No.	Observation Title	Recommendation	Corrective Action Description	Capability Element	Agency POC	Estimated Start Date	Estimated Completion Date	Internal Tracking No.	Current Status
Planning	4.8.2.1.7	Opportunity to Utilize Health Service Region Expertise	2. Develop a plan that promotes inclusion of this expertise and leadership in planning and response activities.	Develop a plan that promotes inclusion of this expertise and leadership in planning and response activities.	Planning Organization and leadership	Bruce Clements / Mike Czepiel	2-Aug-10	Ongoing		
Planning	4.8.2.1.8	Revise Plans to Support Scalability and Multiple Options	1. Undertake a process to revise DSHS emergency plans based on lessons learned during the H1N1 influenza pandemic. a. Involve local and regional health and medical response partners in all planning phases b. Outline the organizational entity responsible to update specific plans c. Outline how input from local and regional health and medical response partners will be included in the planning process d. Address a variety of scenarios to include mild, moderate, and severe pandemic planning scenarios e. Include a communication plan	Undertake a process to revise DSHS emergency plans based on lessons learned during the H1N1 influenza pandemic.	Planning Evaluation Corrective action	Martha Gonzalez	2-Aug-10	1-Feb-11		
Planning	4.8.2.1.8	Revise Plans to Support Scalability and Multiple Options	2. Develop a sensitivity analysis within each scenario type to further assist in planning efforts. A	Explore the feasibility of conducting a planning conference.	Evaluation Planning	Strategic Preparedness	1-Sep-10	31-Aug-10		

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			sensitivity analysis is used to look at how performance will vary based on changes in key assumptions.							
Planning	4.8.2.1.8	Revise Plans to Support Scalability and Multiple Options	3. Have planning conferences to allow for thoughtful deliberation of roles, responsibilities and planning elements.	Schedule exercises to include participation from staff at the leadership level within DSHS and partner agencies.	Training and/or exercises Planning	Martha Gonzalez	2-Aug-10	1-Feb-11		
Planning	4.8.2.1.8	Revise Plans to Support Scalability and Multiple Options	4. Have exercises to include participation from staff at the leadership level within DSHS and partner agencies.	Include in plans multiple options and backup plans for key components of the response.	Planning Training and/or exercises	Martha Gonzalez	1-Feb-11	On-going		
Planning	4.8.2.1.8	Revise Plans to Support Scalability and Multiple Options	5. Have plans to include multiple options and backup plans for key components of the response and these backup plans should be exercised with key stakeholders.	Include in plans multiple options and backup plans for key components of the response.	Planning Training and/or exercises	Martha Gonzalez	2-Aug-10	1-Feb-11		

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7.4 After Action Report Data Collection Methodology

7.4.1 Purpose

The Department of State Health Services (DSHS) was the lead response agency in Texas for the 2009 novel H1N1 pandemic influenza outbreak. To assess this response, DSHS contracted with The Litaker Group to conduct a final after action review. This review provides DSHS the opportunity, in collaboration with key response partners, to evaluate and examine the response in its entirety. In addition, this after action review provides DSHS the information necessary to revise operational plans to respond better to future pandemics or other infectious disease outbreaks.

7.4.2 Objectives

Specific objectives for the comprehensive after action evaluation included:

1. To evaluate the DSHS response to this event with regard to:
    - Antiviral medication allocation and distribution
    - Vaccine allocation and distribution
    - Communications
    - Local and regional planning and response
    - Other health and medical preparedness and response activities
2. To understand the DSHS, state, regional, and local perspectives as they relate to this response
3. To make Texas better prepared to respond to future emerging infectious diseases
4. To make Texas better prepared to respond to future health and medical emergencies
5. To identify preparedness and response issues to possibly be considered by the Texas legislature

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7.4.3 Four-Phase Process

This comprehensive after action assessment of the novel H1N1 health and medical response was conducted using the four-phase process discussed below (see Figure 7.1).

Figure 7.1: The four-phase process to assess the DSHS response to the novel H1N1 influenza pandemic

		Timeframe
1.	**Initial AAR Planning** • Surveys (internally and externally) • Interviews with DSHS officials and key state partners • Phase 2 planning and logistics	January and February 2010
2.	**Data Gathering Sessions** • Hot wash sessions in Austin and in each Health Service Region • Each session will cover vaccines, antiviral medications, external communication, and epidemiology	March and May 2010

Austin Sessions	Regional Partner Sessions	HSR Sessions
1. To obtain feedback from healthcare providers (physicians, pharmacists, etc) 2. To obtain feedback from state agency and state organization partners and central office staff	1. To obtain feedback from local response officials (e.g., emergency management, education, hospitals, LHD, and RAC) from each Health Service Region	1. To obtain feedback from DSHS HSR staff

3.	**Report Writing** • Writing an HSEEP compliant report • Developing an implementation plan	June – August 2010
4.	**Communicating Findings with Stakeholders** • Communicating findings to stakeholders in a series of meetings in Austin • Obtaining input from stakeholders on the implementation plan	Post-August 2010

7.4.4 Phase 1: Initial After Action Report Planning

In the planning phase, logistical and operational activities were conducted. In addition, a series of interviews took place to obtain information from DSHS subject matter experts, DSHS leadership, and leadership from other organizations. Interviews with subject matter experts were designed to obtain background information on areas of programmatic response (e.g., vaccine allocation and distribution) and updates on response activities. Interviews with DSHS and other leadership organizations were designed to identify high-level, strategic input on the response.

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7.4.5 Phase 2: Data Gathering Sessions

In the data-gathering phase, input from a broad range of internal and external stakeholders was obtained. Stakeholder groups were categorized as a professional or state-level partner, regional partner, DSHS Austin staff, and DSHS health service region staff. Data gathering sessions were conducted statewide.

7.4.5.1 *Hot Wash Sessions*

Debriefing sessions, known as hot wash sessions, were conducted in Austin and in each of the eight DSHS health service regions. A total of seven hot wash sessions were conducted with DSHS staff in Austin. Participants included:

1. Executive leadership
2. Multi-Agency Coordination Center response staff
3. Members of the novel H1N1 vaccine incident management team
4. Medical countermeasures staff
5. ImmTrac staff
6. Communications staff
7. Staff in each health service region

Participants in the health service region hot wash sessions typically included the regional medical director, deputy regional director, program managers, and additional response staff. A summary of notes was compiled for each hot wash session.

Following each health service region hot wash, a session was held to discuss and develop a corrective action plan for major issues identified in the hot wash. Issues included in the corrective action process were those that were within the control of the health service region or where the region played a significant role.

7.4.5.2 *Focus Groups*

Eighteen regional partner focus groups were conducted in 17 cities statewide (see Figure 7.2). These all-day focus groups discussed four common topics, plus additional topics of interest to participants. The four common topics were (1) antiviral medication allocation and distribution; (2) vaccine allocation and distribution; (3) communications; and (4) local and regional planning. Additional topics included medical surge capacity, epidemiology, laboratory, policy considerations, and other topics as identified by the regional medical director and focus group participations.

Four additional focus group sessions were held in Austin. The audiences for these focus groups included physicians, pharmacists, state agencies, and state partners. Topics discussed varied based on the audience type but typically included discussion on antiviral medication allocation and distribution, vaccine allocation and distribution, communications, and rural issues.

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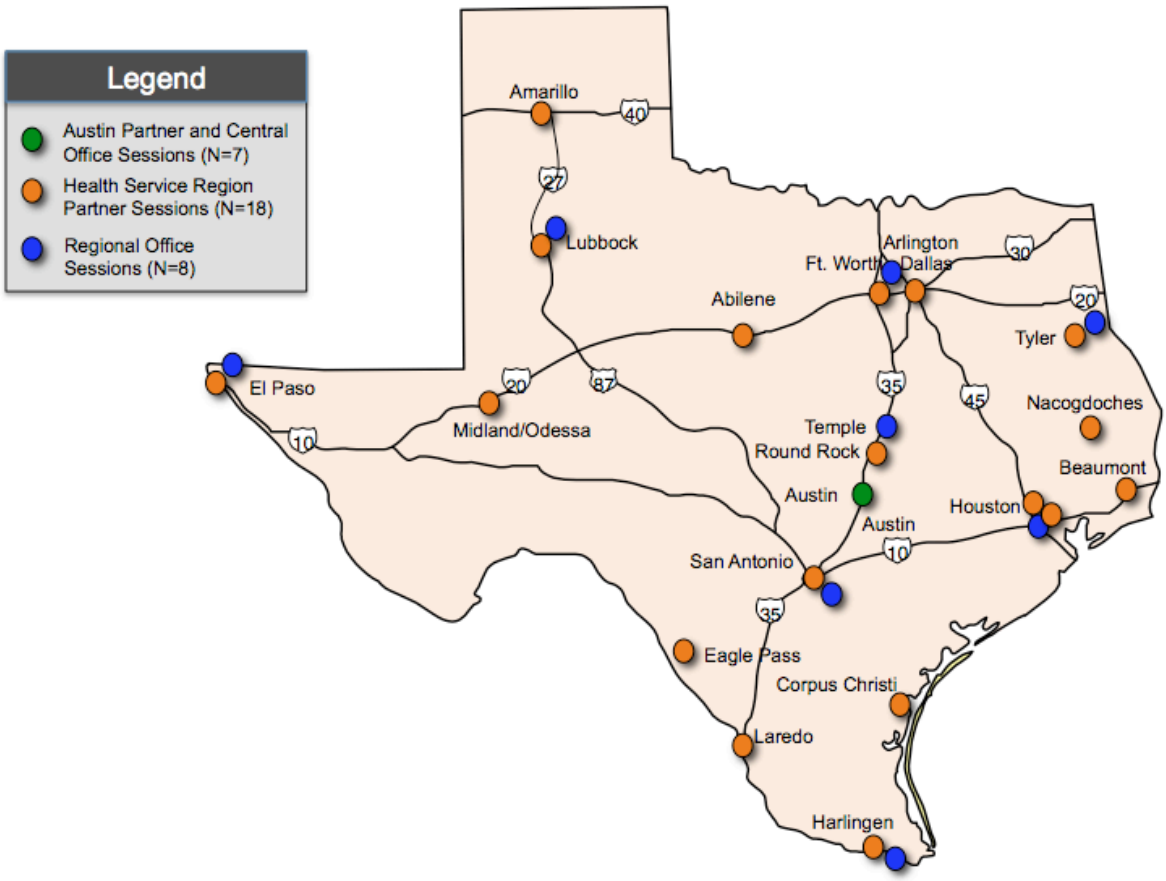
Figure 7.2: Locations of data gathering sessions to obtain input for the novel H1N1 after action report



7.4.5.3 *Surveys*

Additional data were gathered from surveys with focus group participants and with members of the Texas Association of Obstetricians and Gynecologists.

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Table 7.3: Types of data collection activities for the novel H1N1 after action report

Type of Data Collection	Purpose	Stakeholders Involved	Topics Covered
Meetings with Subject Matter Experts	• Obtain information and situational awareness on current program activities related to the H1N1 response	• DSHS Austin staff	• Internal and external communication • Vaccine allocation and distribution • Antiviral allocation and distribution • Epidemiology and laboratory • DSHS Multi-Agency Coordination Center • Communications • 211 / Call Center
Regional Partner Focus Groups	• Obtain feedback from local and regional response partners on successes and challenges identified during this event • Identify lessons learned • Obtain potential solutions and ideas for improvement	• City / County officials • Education service centers • Elected officials • Emergency management • Emergency medical services • Federally Qualified Health Centers • Fire • Health centers, including hospitals • Higher education • Hospitals • Hospital Preparedness Program Contractors • Independent school districts • Local health departments • Physicians • Pharmacists • Law enforcement • Trauma Service Area -Regional Advisory Councils	• Antiviral medication allocation and distribution • Vaccine allocation and distribution • Communications • Local and regional planning • Medical surge Issues • Other topics as identified by focus group members (e.g., epidemiological surveillance, rural issues, international border Issues and policy issues)
Other Partner Focus Groups	• Obtain feedback from other partners on successes and challenges identified during this event • Identify lessons learned • Obtain potential solutions and ideas for improvement	• Pharmacists • Physicians • State agencies • State associations	• Antiviral medication allocation and distribution • Vaccine allocation and distribution • Communications • Medical surge issues • Partnerships

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Type of Data Collection	Purpose	Stakeholders Involved	Topics Covered
Personal Interviews	• Obtain feedback from the individual perspective on this event and opportunities for improvement	• CDC leadership • Community stakeholders • DSHS executive leadership • DSHS program leadership • TDEM, HHSC, TEA and TDA leadership • Response stakeholders	• Strategic impact of this event • Overall assessment of the response • Leadership • Communications • Specific response strategies
Hot Wash Sessions	• Obtain feedback from DSHS staff on successes and challenges identified during this event • Identify lessons learned • Obtain potential solutions and ideas for improvement	• DSHS Austin staff • DSHS health service region staff	• Antiviral medication allocation and distribution • Vaccine allocation and distribution • Internal and external communication • Local and regional planning • Regional operations centers • Epidemiology • Partnerships
Online Survey	• Obtain feedback from participants in the regional partner focus groups on issues of importance in this event	• Individuals invited to attend the regional partner focus groups	• Questions related to the regional partner focus group topics identified above
Survey	• Obtain feedback from specific stakeholders on response activities	• Members of the Texas Association of Obstetricians and Gynecologists	• Antiviral medication allocation and distribution • Vaccine allocation and distribution • Communications
Email and Phone Comments	• Obtain feedback from persons with comments regarding the DSHS response to the novel H1N1 influenza pandemic	• All persons	• All comments welcomed

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7.4.6 Phase 3: Report Writing

Information obtained from Phases 1 and 2, as well as information from the spring and fall 2009 evaluation reports, was used to develop this comprehensive after action report and improvement plan. In addition, the two previous after action reports from this event are included as appendices to this document. [47,48]

To be consistent with the Department of Homeland Security Exercise Evaluation Program (HSEEP) after action report format, observations based on information gathered from hot washes and focus groups were categorized by specific Department of Homeland Security target capability. However, because this after action report is for an actual event rather than for an exercise, some of the components that are typically included in an HSEEP modeled report are not applicable here. For example, this report does not correlate a particular observation to an exercise objective. Otherwise, this report is consistent with the HSEEP format.

For each response activity, the following information is provided:

1. **Observation:** A statement describing the activity being evaluated
2. **Analysis:** An examination of the issues associated with the response activity
3. **Recommendation(s):** A suggested course of action for improving the activity evaluated
4. **Resources:** Identification of additional resources to support the analysis and recommendations

7.4.7 Phase 4: Communicating Findings to Stakeholders

Findings from the comprehensive after action report and improvement plan will be communicated to stakeholders.

[47] Litaker JR, Ramon MM, McGlothlin M. The Texas Department of State Health Services Response to the Novel H1N1 Influenza Outbreak: April 17 – May 15, 2009, October 2009.
[48] Litaker JR, Ramon MM, Stabeno DS, McGlothlin M, Chou JY. The Texas Department of State Health Services Response to the Novel H1N1 Influenza Outbreak: Mid-Course Evaluation.

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7.5 Regional Partner Focus Group Information

Electronic files listed below are located on the H1N1 After Action Report CD provided to DSHS (see electronic folder 7.5: Focus Group Documents).

7.5.1 Regional Partner Focus Group Survey

- Web-Based Focus Group Survey

7.5.2 Focus Group Handouts

- After Action Review Phases
- After Action Review Data Collection Locations
- Focus Group Agenda
- Evaluation Form

7.5.3 Focus Group Summaries

- Abilene Focus Group Summary, March 22, 2010
- Amarillo Focus Group Summary, March 30, 2010
- Beaumont Focus Group Summary, May 7, 2010
- Corpus Christi Focus Group Summary, March 8, 2010
- Dallas Focus Group Summary, March 25, 2010
- Eagle Pass Focus Group Summary, March 12, 2010
- El Paso Focus Group Summary, April 27, 2010
- Fort Worth Focus Group Summary, March 23, 2010
- Harlingen Focus Group Summary, March 9, 2010
- Houston North Focus Group Summary, April 6, 2010
- Houston South Focus Group Summary, April 7, 2010
- Laredo Focus Group Summary, March 11, 2010
- Lubbock Focus Group Summary, April 1, 2010
- Midland Focus Group Summary, April 29, 2010
- Nacogdoches Focus Group Summary, May 6, 2010
- Pharmacy Focus Group Summary, May 13, 2010
- Physician Focus Group Summary, April 9, 2010
- Round Rock Focus Group Summary, April 23, 2010
- San Antonio Focus Group Summary, April 16, 2010
- State Agency Focus Group Summary, May 12, 2010
- State Partner Focus Group Summary, April 19, 2010
- Tyler Focus Group Summary, May 4, 2010

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7.5.4 Focus Group Participant List

- Focus Group Master Participant List

7.5.5 Focus Group Participant Evaluation Report

- Focus Group Participant Evaluation Report

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7.6 Topical Area Background Information

Electronic files listed below are located on the H1N1 After Action Report CD provided to DSHS (see electronic folder 7.6: Topical Area Background Information).

7.6.1 Antiviral Medication

7.6.1.1 *Texas Antiviral Distribution Network Toolkit*

- Overview of the Texas Antiviral Distribution Network
- Flowchart: Overview of the Texas Antiviral Distribution Network
- Process for Dispensing State-Owned Antiviral Medications by Chain Pharmacies
- Process for Dispensing State-Owned Antiviral Medications by Independent Pharmacies
- Process for Dispensing State-Owned Antiviral Medications by Federally Qualified Health Centers and Community Health Centers
- Process for Dispensing State-Owned Antiviral Medications by Health Service Regions
- Flowchart: Prescribing and Dispensing State-Owned Antiviral Medications
- Sample Letter Inviting Pharmacies to Participate in the Texas Antiviral Distribution Network
- Sample Contract for Pharmacies Participating in the Texas Antiviral Distribution Network
- Process of Notifying Health Care Providers of Locations of Pharmacies with State Stock Antivirals
- Providing Tamiflu Capsules to Pediatric Patients 1 -12 Years Old
    - Sample Sheets Broken Down by Dosage
- Technical Procedure – Managing Inventory in the Event that an Inventory Management System in Unavailable
- Inventory Report Template – Independent Pharmacy
- Inventory Report Template – Chain Pharmacy

7.6.1.2 *Process and Procedures*

- Process for Recruiting /Contracting with Chain Pharmacies
- Process for Recruiting /Contracting with Independent Pharmacies
- Process for Determining How Much Medication to Send Each Entity
- How to Prepare Dosages for Tamiflu for an Infant or a Child Who Does Not Have the Flu but is Being Given Medication to Prevent Him or Her From Catching the Flu
    - 30 mg Tamiflu ONCE a day
    - 45 mg Tamiflu ONCE a day
    - 60 mg Tamiflu ONCE a day
    - 75 mg Tamiflu ONCE a day

- How to Prepare Dosages for Tamiflu for Infants and Children Seeking Treatment for the H1N1Influenza (FLU) Virus
    - 30 mg Tamiflu TWICE a day

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- 45 mg Tamiflu TWICE a day
- 60 mg Tamiflu TWICE a day
- 75 mg Tamiflu TWICE a day

7.6.1.3 *Reports*

- State Stock Antiviral Medication Caches as of March 29, 2010
- Map Location of DSHS State Stock Antiviral Medications as of March 2010

7.6.2 H1N1 Call Center / 211

7.6.2.1 *Information on Call Center*

- Call Center Guide
- Novel H1N1 Call Center Project
- Novel H1N1 Call Center Project – House Public Education
- Information on Call Center for Local Health Departments
- Flu Finder Letter to Area Information Centers
- Staffing Patterns for H1N1 Call Center
- Copy of Joint Call Center Schedule
- Call Distribution (03/31/2010)

7.6.2.2 *Frequently Asked Questions*

- Frequently Asked Questions General Public
- Frequently Asked Questions Medical Providers

7.6.2.3 *Guidance Documents*

- 211 and Immunization Branch Hotline Guidance for Routing Calls about Critical Need for H1N1 Vaccine
- Requirements for Call Center Staff
- Flu Vaccine Locator Contributors Terms of Service

7.6.2.4 *Policies and Procedure Documents*

- Novel H1N1 Call Center Medical Call Line – Staffing and Attendance Policies
- Flu Shot Finder Website Procedure
- Call Center – Command Procedures
- Call Center Operations – Command Procedures
- Call Center Operations Mobilization and Demobilization – Command Procedures
- Vaccine Ordering and Reporting System Provider's Orders and Question Escalation Procedures
- H1N1 Reports Login Instructions
- H1N1 Flu Intake System Instructions
  - H1N1 Flu Intake System Main Screen
- Call Center Procedures for Managing ImmTrac Related Questions
- Process for Provision of Answers to Questions Received by Call Center Needing Quick Response

7.6.2.5 *Phone Triage Algorithms*

- Phone Triage Algorithms [English]

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- Phone Triage Algorithms [Spanish]
- Phone Triage Algorithm Adult Chart [English]
- Phone Triage Algorithm Adult Chart [Spanish]
- Phone Triage Algorithm Child Chart [English]
- Phone Triage Algorithm Child Chart [Spanish]

7.6.2.6 *Daily Repots*

- Daily Reports – General Public
- Daily Reports – Medical Provider

7.6.2.7 *Call Center Templates*

- Call Center General Public Staff Tracking Spreadsheet
- Multi-Agency Coordination Center/State Operations Center Master Roster
    - Roster Example

7.6.2.8 *Job Action Sheets*

- Call Center – Administrative Staff
- Call Center – Director
- Call Center – IT Staff
- Call Center - Manager
- Call Center – Program Specialist
- Call Center Professional Call Staff
- Call Center Public Call Staff
- Multi-Agency Coordination Center/Call Center Liaison

7.6.2.9 *Newsletter Articles*

- Public Health Answers Call Newsletter Article

7.6.2.10 *Novel H1N1 Influenza Training Guides*

- Training Guide: Basics of Novel H1N1 Information and Referral Specialist Module #1
- Training Guide: Frequently Asked Questions and Decision Information and Referral Module # 2

7.6.2.11 *Chronology*

- Chronology of H1N1 Call Center Events Timeline

7.6.3 Epidemiology

7.6.3.1 *Texas Pandemic Influenza Regional Conference*

- Surveillance: Detection and Monitoring for Influenza PowerPoint

7.6.3.2 *Process and Procedures*

- Decision Algorithm to Assist with Treatment and Testing of Patients with Influenza
- Procedure for the Aggregate Report of Hospitalizations and Deaths Due to Novel H1N1 Influenza Virus (September 15, 2009)

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- Austin Clinical Epidemiology Team Activation Process

7.6.3.3 *Reports*

- Health Service Region Report Aggregate

7.6.3.4 *Forms*

- Novel Influenza A H1N1 Case Investigation Form

7.6.4 Guidance Documents and Non-Pharmaceutical Interventions

7.6.4.1 *Influenza Information for Families and Individuals*

- Pregnant Women and the Flu
- Returning to Work or School – Guidance for Adults and Children with Seasonal or Novel H1N1 Influenza
- Frequently Asked Questions – General Public
- How to Stay Home Safely
- Proper Cleaning and Disinfection of Surfaces for Non-Clinical Settings
- What You Need to Know About…Avian Influenza
- What You Need to Know About…Pets and the Flu

7.6.4.2 *Influenza Information for Health Care Professionals*

- Screening Questionnaires for Injectable 2009 H1N1 Influenza Vaccine
- Screening Questionnaires for Intranasal 2009 H1N1 Influenza Vaccine
- Influenza ICD-9 Codes and CPT Codes
- Decision Algorithm to Assist with Treatment and Testing of Patients with Influenza
- Texas Guidelines for Clinicians: Emergency Compounding of an Oral Suspension from Tamiflu Capsules
- Interim Guidance for Reducing the Spread of Novel H1N1 and Seasonal Influenza in State Hospitals and State Supported Living Centers
- Texas Guidance for Clinicians: Stress Management
- Enroll in the U.S Outpatient Influenza-like Illness Surveillance Network
- Immunity under Public Readiness and Emergency Preparedness Act
- H1N1 Influenza and Immunity under Public Readiness and Emergency Preparedness Act
- Recommendations for Dental Staff Regarding Provision of Dental Services to Patients with Symptoms of Influenza

7.6.4.3 *Influenza Information for Child Care, Schools, Congregate Settings*

- CDC Guidance for State and Local Public Heath Officials and School Administrators for School (K-12) Responses to Influenza during the 2009-2010 School Year with Texas Specific Notes from DSHS
- Interim Guidance for Reducing the Spread of Novel H1N1 and Seasonal Influenza in Congregate Facilities

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7.6.4.4 *Influenza Information for Communities and Employers*

- Returning to Work or School Guidance for Adults and Children with Seasonal or Novel H1N1 Influenza
- Interim Guidance for Reducing the Spread of Novel H1N1 and Seasonal Influenza during Public Gatherings and Guidance on the Cancellation of Public Events

7.6.5 Laboratory

7.6.5.1 *New Submission Criteria/Process Document*

- Laboratory Testing Protocol for the Surveillance of 2009 H1N1 Influenza and Seasonal Influenza

7.6.5.2 *Change in Number of Positive Specimens After Change in Submission Criteria*

- Texas Pandemic Influenza Regional Conference Laboratory PowerPoint

7.6.5.3 *Maps and Charts*

- Chart Showing Number of Specimens Submitted in April/May 2009
- Texas Laboratory Response Network Locations Map

7.6.6 Multi-Agency Coordination Center Operations

- See Section 7.7: DSHS Response Documentation

7.6.7 Media Campaign

7.6.7.1 *Funding / Contractor / Target Audience*

- Information Chart

7.6.7.2 *Materials*

- Fliers
- Stickers
- Door Hangers
- Billboards
- Flu Fighters
- Link for Flu Fighters
- Link for Materials
- Texas Flu B-roll
- Radio Scripts
- News Media

7.6.7.3 *News Media*

- Media Campaign List
- Flu Surveillance
- H1N1 Vaccine Distribution

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- Background
- OP-EDs (Opinion Editorials)
- News Release

7.6.7.4 *Number of Households Reached and Methods of Delivery*

- Designated Media Areas
- Deliverables List

7.6.7.5 *Chronology*

- Media Campaign Timeline

7.6.8 Personal Protective Equipment

7.6.8.1 *Guidance Documents*

- Guidelines for Distributing Federal Personal Protective Equipment

7.6.8.2 *Allocations*

- Allocations of SNS Personal Protective Equipment Plan
- Personal Protective Equipment Allocation and Shipping Process Flow Chart

7.6.9 Vaccine

7.6.9.1 *Directory*

- Subject Matter Experts and Reports

7.6.9.2 *Novel H1N1 Mass Vaccination Plan*

- Overview
- Introduction
- Goal
- Objectives
- Assumptions
- Stakeholders
- Vaccine Manufacturing Information
- Vaccine Emergency Use Authorization
- Timing of Vaccine Availability
- CDC's Advisory Committee on Immunization Practices Priority Groups for Novel H1N1 Vaccination
- Priority Groups (in no particular order)
- Sub-group Priorities (in no particular order)
- Risk Communication
- DSHS Vaccination Strategy
- Goal
- Provider Methodology
- Health Care Provider Preregistration for Novel H1N1 Vaccine
- Health Care Provider Registration for Novel H1N1 Vaccine
- Vaccine Ordering

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- Allocation and Distribution
- Vaccine Administration
- Reimbursement
- Doses Administered Reporting
- ImmTrac Reporting
- Vaccine Safety
- General Guidelines
- Texas Poison Control Network
- Vaccine Adverse Event Reporting System
- Liability
- Sources

7.6.9.3 *Forms*

- Health Care Provider Preregistration Texas Novel H1N1 Vaccine Form

7.6.9.4 *Reports*

- DSHS 2009-2010 H1N1 Influenza Vaccine Distribution in Texas Report
- Novel H1N1 Status Report – Data Week Ending October 24, 2009
- Novel H1N1 Status Report – Data Week Ending December 12, 2009

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7.7 DSHS Response Documentation

Electronic files listed below are located on the H1N1 After Action Report CD provided to DSHS. This includes all DSHS response documentation provided to The Litaker Group as of August 30, 2010 (see electronic folder 7.7: DSHS Response Documentation).

7.7.1 Meeting Minutes

- H1N1 Response Team Meeting August 24, 2009
- H1N1 Response Team Meeting August 27, 2009
- H1N1 Response Team Meeting August 31, 2009
- H1N1 Response Team Meeting September 3, 2009
- H1N1 Response Team Meeting September 10, 2009
- H1N1 Response Team Meeting September 14, 2009
- H1N1 Response Team Meeting September 17, 2009
- H1N1 Response Team Meeting September 21, 2009
- H1N1 Response Team Meeting September 24, 2009
- H1N1 Response Team Meeting September 28, 2009
- H1N1 Response Team Meeting October 1, 2009
- H1N1 Response Team Meeting October 5, 2009
- H1N1 Response Team Meeting October 8, 2009
- H1N1 Response Team Meeting October 12, 2009
- H1N1 Response Team Meeting October 15, 2009
- H1N1 Response Team Meeting October 19, 2009
- H1N1 Response Team Meeting October 22, 2009
- H1N1 Response Team Meeting October 26, 2009
- H1N1 Response Team Meeting November 2, 2009
- H1N1 Response Team Meeting November 9, 2009
- H1N1 Response Team Meeting November 16, 2009
- H1N1 Response Team Meeting November 23, 2009
- H1N1 Response Team Meeting November 30, 2009
- H1N1 Response Team Meeting December 7, 2009

7.7.2 Incident Action Plans

- DSHS Incident Action Plan 04-26-09 1646
- DSHS Incident Action Plan 04-27-09 2100
- DSHS Incident Action Plan 04-28-09 2230
- DSHS Incident Action Plan 04-29-09 2030
- DSHS Incident Action Plan 04-30-09 2030
- DSHS Incident Action Plan 05-01-09 2030
- DSHS Incident Action Plan 05-02-09
- DSHS Incident Action Plan 05-03-09
- DSHS Incident Action Plan 05-04-09

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- DSHS Incident Action Plan 05-05-09
- DSHS Incident Action Plan 05-06-09
- DSHS Incident Action Plan 05-07-09
- DSHS Incident Action Plan 05-08-09
- DSHS Incident Action Plan 05-09-09
- DSHS Incident Action Plan 05-10-09
- DSHS Incident Action Plan 05-11-09
- DSHS Incident Action Plan 05-12-09
- DSHS Incident Action Plan 08-24-09
- DSHS Incident Action Plan 08-31-09
- DSHS Incident Action Plan 09-07-09
- DSHS Incident Action Plan 09-14-09
- DSHS Incident Action Plan 09-21-09
- DSHS Incident Action Plan 09-28-09
- DSHS Incident Action Plan 10-05-09
- DSHS Incident Action Plan 10-12-09
- DSHS Incident Action Plan 10-19-09
- DSHS Incident Action Plan 10-26-09
- DSHS Incident Action Plan 11-02-09
- DSHS Incident Action Plan 11-09-09
- DSHS Incident Action Plan 11-16-09
- DSHS Incident Action Plan 11-23-09
- DSHS Incident Action Plan 11-30-09
- DSHS Incident Action Plan 12-07-09
- DSHS Incident Action Plan 12-14-09

7.7.3 Situation Reports

- Swine Flu Situation Report Number 4 04-24-09 1800
- Swine Flu Situation Report Number 5 04-25-09 1630
- Swine Flu Situation Report Number 6 04-26-09 1630
- Swine Flu Situation Report Number 7 04-27-09 1630
- Swine Flu Situation Report Number 8 04-28-09 1630
- Swine Flu Situation Report Number 9 04-29-09 1630
- Swine Flu Situation Report Number 10 04-30-09 1800
- Swine Flu Situation Report Number 11 05-01-09 1930
- Swine Flu Situation Report Number 12 05-02-09
- Swine Flu Situation Report Number 13 05-03-09
- Swine Flu Situation Report Number 14 05-04-09
- Swine Flu Situation Report Number 15 05-05-09
- Swine Flu Situation Report Number 16 05-06-09
- Swine Flu Situation Report Number 17 05-07-09
- Swine Flu Situation Report Number 18 05-08-09
- Swine Flu Situation Report Number 19 05-09-09
- Swine Flu Situation Report Number 20 05-10-09
- Swine Flu Situation Report Number 21 05-11-09

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- Swine Flu Situation Report Number 22 05-12-09
- Swine Flu Situation Report Number 23 05-13-09
- Swine Flu Situation Report Number 24 05-14-09
- Swine Flu Situation Report Number 25 05-15-09
- H1N1 Situation Report Number 1: 8-28-09
- H1N1 Situation Report Number 2: 9-4-09
- H1N1 Situation Report Number 3: 9-11-09
- H1N1 Situation Report Number 4: 9-18-09
- H1N1 Situation Report Number 5: 9-25-09
- H1N1 Situation Report Number 6: 10-02-09
- H1N1 Situation Report Number 7: 10-09-09
- H1N1 Situation Report Number 8: 10-16-09
- H1N1 Situation Report Number 9: 10-23-09
- H1N1 Situation Report Number 10: 10-30-09
- H1N1 Situation Report Number 11: 11-06-09
- H1N1 Situation Report Number 12: 11-13-09
- H1N1 Situation Report Number 13: 11-20-09
- H1N1 Situation Report Number 14: 12-4-09

7.7.4 Dashboard Reports

- Novel H1N1 Status Report: September 21, 2009
- Novel H1N1 Status Report: September 28, 2009
- Novel H1N1 Status Report: October 5, 2009
- Novel H1N1 Status Report: October 12, 2009
- Novel H1N1 Status Report: October 19, 2009
- Novel H1N1 Status Report: October 26, 2009
- Novel H1N1 Status Report: November 2, 2009
- Novel H1N1 Status Report: November 9, 2009
- Novel H1N1 Status Report: November 16, 2009
- Novel H1N1 Status Report: November 23, 2009
- Novel H1N1 Status Report: December 27 2009
- Novel H1N1 Status Report: December 14, 2009
- Novel H1N1 Status Report: December 21, 2009
- Novel H1N1 Status Report: December 28, 2009
- Novel H1N1 Status Report: January 4, 2010
- Novel H1N1 Status Report: January 11, 2010
- Novel H1N1 Status Report: January 18, 2010
- Novel H1N1 Status Report: January 25, 2010
- Novel H1N1 Status Report: March 1, 2010

7.7.5 Commissioner's Weekly H1N1 Report

- Commissioner's Weekly H1N1 Report: February 8, 2010
- Commissioner's Weekly H1N1 Report: February 16, 2010

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- Commissioner's Weekly H1N1 Report: February 22, 2010
- Commissioner's Weekly H1N1 Report: March 3, 2010
- Commissioner's Weekly H1N1 Report: March 23, 2010

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7.8 Response Documentation from Other State Agencies

Electronic files listed below are located on the H1N1 After Action Report CD provided to DSHS (see electronic folder 7.8: Response Documentation of Other State Agencies).

7.8.1 Texas Department of Agriculture

- H1N1 Fact Sheet
- Letter from Todd Staples
- Texas Department of Agriculture – Square Meals

7.8.2 Texas Division of Emergency Management

- Swine Flu Situation Report 1 042609
- Swine Flu Situation Report 2 042709
- Swine Flu Situation Report 3 042809
- Swine Flu Situation Report 4 042909
- H1N1 Situation Report 5 043009
- H1N1 Situation Report 6 050109
- H1N1 Situation Report 7 050409
- H1N1 Situation Report 8 050509
- H1N1 Situation Report 3 092409
- H1N1 Situation Report 4 100109
- H1N1 Situation Report 5 100809
- H1N1 Situation Report 6 101509
- H1N1 Situation Report 7 102209
- H1N1 Situation Report 8 102909
- H1N1 Situation Report 9 050609

7.8.3 Texas Education Agency

- Letter to Superintendents (042709)
- Letter to Administrators (050109)
- H1N1 Correspondence
- H1N1 Flu Information Site
- H1N1 Frequently Asked Questions
- School Pre-Closure Form – H1N1 Flu
- School Re-opening Form – H1N1 Flu

7.8.4 Texas Animal Health Commission

- Novel H1N1_2009 Attachment Guidelines

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7.9 Other Documents

Electronic files listed below are located on the H1N1 After Action Report CD provided to DSHS (see electronic folder 7.9: Other Documents).

7.9.1 OB/GYN Practitioner Survey

- OB/GYN Practitioner Survey Tool
- OB/GYN Practitioner Survey Results

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