Texas Public Health Journal

A quarterly publication of the
Texas Public Health Association (TPHA)

Volume 64, Issue 4 Fall 2012

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Texas Public Health Association
PO Box 201540, Austin, Texas 78720-1540 phone (512) 336-2520 fax (512) 336-0533
Email: txpha@aol.com

Editorial Note: Our Fall, 2012 issue of the TPHJ continues with featured articles chosen to showcase public health practice in Texas. This series leads off with an account of a public health response effort. This article was accepted for publication in September, 2012, on the first anniversary of this tragic event. Many thanks to all on the front lines, working tirelessly to protect and improve the health of Texans!

Public Health Emergency Response to a Massive Wildfire in Texas (2011)

David F. Zane, MS,[1] Russell Jones, MPH,[2] Jon Huss,[3] Katherine Sanches, MPH,[4] Jeff Hoogheem,[5] Bruce Clements, MPH[6]

[1] Epidemiologist, Community Preparedness Section, Texas Department of State Health Services, Austin, Texas USA
[2] Public Health Preparedness Epidemiologist, Texas Department of State Health Services, Health Service Region 7, Temple, Texas USA
[3] Deputy Regional Director, Texas Department of State Health Services, Health Service Region 7, Temple, Texas USA
[4] Program Specialist, Response and Recovery Operations Group, Community Preparedness Section, Texas Department of State Health Services, Austin, Texas USA
[5] Manager, Response and Recovery Operations Group, Community Preparedness Section, Texas Department of State Health Services, Austin, Texas USA
[6] Director, Community Preparedness Section, Texas Department of State Health Services, Austin, Texas USA

ABSTRACT

Wildfires are a growing hazard in most regions of the United States, presenting a threat to property and life. We describe the public health emergency response to the massive and historic wildfire in central Texas of September 4 – October 9, 2011, by the Texas Department of State Health Services (DSHS). DSHS determined that the immediate issues that needed to be addressed during the initial response period included: a) command and control, b) responder safety and health, c) sheltering, d) disaster behavioral health, e) epidemiology and surveillance, f) medical material management and distribution, and g) communication/emergency public information. Public health and medical officials in other jurisdictions may benefit from our experiences and promising best practices as they look to enhance their own public health preparedness and response capabilities for wildfires and other public health emergencies.

Key Words – wildfires, disasters, public health, emergency response

INTRODUCTION

Wildfires are a growing hazard in most regions of the United States, presenting a threat to property and life.[1] In 2011, more than 66,000 wildfires burned over eight million acres across the country; wildfires occurred in every state.[2] In addition, Texas had experienced exceptional drought conditions and unseasonably warm temperatures in 2011, which resulted in an unprecedented number of wildfires accounting for over three million acres burned.[2]

The literature on the public health implications of wildfires have focused on morbidity and mortality surveillance,[3-6] health-care and emergency department utilization,[7-9] acute effects,[10-16] firefighters' exposure and risks,[17-20] sheltering, [21] unmet health-care needs,[22] and other topics.[23-26] We contribute to this body of literature by describing in this article the public health responses of the Texas Department of State Health Services (DSHS) during the historic wildfire of September 4 – October 9, 2011, in central Texas.

THE WILDFIRE

By September 2011, Texas had already endured nine months of the worst drought on record and was also on pace for having the second hottest summer on record. Seventy percent of the state was under "exceptional drought" conditions, leading arborists to predict that the state would lose up to ten percent, or 500 million, of its shade trees. As Labor Day Weekend (September 3-5, 2011) approached, central Texas was bracing for the impact of Tropical Storm Lee; the storm's interaction with a strong cold front to the west was predicted to bring strong dry winds to drought-stricken Texas.[27] As a result, a "critical fire danger" warning was issued on September 4, 2011, for the eastern two-thirds of the state. That weekend there were 57 new ignited wildfires across the state, and burn bans were in effect in almost all of Texas' 254 counties. [27]

On September 4, high winds pushed trees onto power lines, igniting a blaze approximately 30 miles east of Austin, near the city of Bastrop, in Bastrop County (see figure 1).[27] Occurring in an area characterized by rolling hills covered with pine oak forests, along with a singular old growth forest of loblolly pines, the Bastrop Complex fire quickly spread, being driven by 30 mph winds. It jumped the Colorado River twice, and by the second day it had burned nearly 33,000 acres and destroyed nearly 500 homes. Though county officials issued mandatory evacuations orders, the speed of the fire gave little time for residents to gather essential items needed for a lengthy stay away from their homes, and not all residents learned about the evacuation through official channels. In one neighborhood, neighbors went door-to-door notifying those who were at home it was time to leave; a resident noticed a glow in the woods directly behind his home and decided he had waited long enough; and a family attending a movie in Austin was called by a family member in California who had been monitoring reports on the internet. Those who had left for a day in town the morning of the second day were prevented from returning to their Bastrop homes by road blocks set up by local law enforcement.

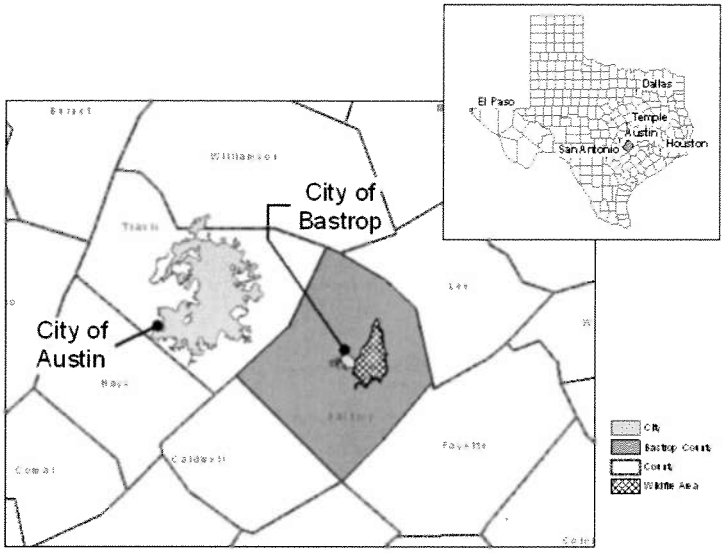
The wildfire ultimately destroyed 1,660 homes and caused two civilian fatalities in the communities (estimated population of 7,069, according to the 2010 U.S. Census).[27] The wildfire received a federal disaster proclamation on September 9, 2011. In terms of property loss, it was the most destructive wildfire in Texas history and resulted in the largest loss of homes from a wildfire in the United States since 2007.[28] The wildfire was declared contained on October 9, 2011, nearly five weeks after it began. [27]

DSHS RESPONSE

DSHS is the lead agency for the Emergency Support Function (ESF) 8 (Health and Medical) response in Texas, and during a disaster incident works under the direction of the Texas Division of Emergency Management (TDEM). In conjunction with local emergency management, DSHS determined that the immediate issues that needed to be addressed during the initial response period included: a) command and control, b) responder safety and health, c) sheltering, d) disaster behavioral health, e) epidemiology and surveillance, f) medical material management and distribution, and g) communication/emergency public information.

Command and Control: On September 5, the DSHS State Medical Operations Center (SMOC) command and section chiefs in Austin began monitoring the wildfire response via the state's emergency management communication system, WebEOC (Augusta, Georgia), and began laying the groundwork for potential response activities. Anticipating that an increase in the TDEM State Operations Center (SOC) response activities would occur, that sheltering operations

Figure 1. Bastrop County (Texas) Wildfire, 2011



would continue for several days, and that a large number of firefighters would be required to contain the wildfire, DSHS officially activated the SMOC on September 6 to support regional public health activities and the state emergency response effort. The SMOC, working with the state agency that licenses nursing homes, also started monitoring the status of nursing homes located in Bastrop County to ensure evacuations, if necessary, were adequately supported.

Likewise, the DSHS regional office in Temple initiated its incident command structure in response to the increasing public health and medical needs of the Bastrop community, which lies within their jurisdiction. A two-person liaison team was deployed to Bastrop to serve in the regional and local emergency operations centers (EOCs); their role was to process requests for health and medical resources and to interface with the local, state, and regional emergency management teams, ensuring that effective communications were in place between ESF-8 response partners. Requests for public health and medical resources were received and processed through the emergency management process, being addressed first with local resources and then with further assistance from the state. The local health authority (LHA) for Bastrop County, a physician who serves as the public health officer for the county, was contacted and was offered assistance to implement public health response activities in conjunction with the local EOC.

Responder Safety and Health: To promote first responder safety and well-being, a fully-staffed ambulance bus (ambus) was deployed on September 5 to the front line of the fire response, where it served as a place of rehabilitation and a source of immediate medical care as necessary. As the number of firefighters making use of the ambus dwindled, it was redeployed to a fire response in a neighboring county.

On September 7, the SMOC deployed a six-person Mobile Medical Team (MMT) with a response trailer and medical supplies to the fire operations base camp where it served as a 24-hour medical aid station. The MMT included four Emergency Medical Technicians (EMTs), and two DSHS personnel who provided logistical support and served as additional liaisons to the SMOC. The MMT provided minor medical assistance and/or over-the-counter medications to treat conditions including blisters, upper respiratory and sinus infections, and dehydration. In total, the MMT treated 107 first responders, which allowed the firefighters to return to the fire line rather than travel to a local facility for medical care. Additionally, the MMT recognized a need for the implementation of basic sanitation practices (e.g., hand sanitizer stations) to prevent the spread of infectious diseases. The ambus and the MMT were demobilized on September 11 and September 14, respectively.

Sheltering: On September 4, emergency managers in surrounding counties activated five emergency shelters for evacuees; two each in the cities of Bastrop and Smithville, and one in Elgin. With the continuing efforts to contain the wildfire pointing towards a long-term sheltering issue, DSHS personnel visited the two shelters in Bastrop on September 6 to perform a rapid assessment on general sanitation, food preparation, potential clean air rooms, and medication/equipment needs. The largest shelter operating at the time was in the Bastrop Middle School, and there the local health authority had organized health-care providers to establish an infirmary in the school cafeteria. The most common need seen at this infirmary on the first day of the wildfire was for diabetes medications, the second day was for cardio-vascular medications, and the third day was for respiratory complaints.

On September 8, DSHS deployed a public health team comprised of a sanitarian, a public health nurse, an epidemiologist, a social worker, and a physician to assess each shelter. The two larger shelters, both in Bastrop, were consolidated into a single shelter site on that day, and the public health team reviewed that facility as well. Activities in the assessment included reviewing food safety, waste disposal, bathing facilities, and sleeping arrangements, and reporting of illness and injury, infirmary operations, medication needs with specific information distributed for Medicaid recipients' three-day emergency supply, and access to mental health services.

Disaster Behavioral Health (DBH): DBH response activities began soon after the wildfire started and continued for weeks after it was contained. After an initial needs assessment, the local mental health authority began providing crisis counseling services to impacted staff, survivors, first responders and disaster workers on September 6. State-level DBH staff traveled to the Bastrop EOC on September 7 to ensure that requests for local behavioral health services were integrated into the emergency management process. The integration took approximately five days from the onset of the fires. Once the SMOC received a request for DBH services from local emergency management officials, two DBH staff coordinated the provision of

these services, utilizing local and voluntary organizations. Through this process, DSHS was able to track the services being provided by individual entities at shelters and staging areas and within the incident command. This ensured that duplication of services did not occur, services were scheduled and delivered in an organized manner, and expenses were tracked. There were 656 crisis counseling encounters by September 20.

Epidemiology and Surveillance: To monitor the acute health effects of the wildfire, a surveillance system monitoring wildfire-related injury and respiratory conditions was implemented with area hospitals. Using a web-based system hosted by the Capitol Area Trauma Regional Advisory Council (CATRAC), an organization charged with improving central Texas' comprehensive trauma system, hospitals were asked to provide daily reports on the number of people presenting with respiratory complaints such as shortness of breath, asthma, and smoke inhalation, as well as injuries that could be attributed to the wildfire. In addition, the Austin-Travis County Health Human Services Department monitored data from their syndromic surveillance system for any increases in respiratory complaints, as well as pharmaceutical sales information from the National Retail Data Mart. Information from each source was compiled and reviewed each day by regional epidemiologists and reported to the local health authority and the DSHS SMOC.

On September 24-25, twelve days after the first and nine days after the last areas were reopened for residents to return to their homes, a Community Assessment for Public Health Emergency Response (CASPER) was conducted in the affected area.[29] Eleven two-person teams, drawn from state, regional, and local public and mental health department professionals and including a Center for Disease Control and Prevention Epidemic Intelligence Service Officer, approached over 400 households to interview residents on topics ranging from the residents' current physical and mental health to how they were currently receiving information from local officials. The report from the assessment was shared with local county officials to assist their understanding of the immediate needs of their community and was used by the state to request federal funding for mental health response and recovery grants.

Medical Material Management and Distribution: Once shelters were established, the SMOC began receiving requests to provide pharmaceuticals, durable medical equipment, and other medical supplies. In consultation with the LHA, on September 9 the decision was made to activate four state-level contingency pharmacy contracts to improve access to prescription medications for people affected by the wildfire. SMOC staff worked with the state's Medicaid Vendor Drug program and the Texas Association of Health Plans to address any policy barriers connected with prescription medicines. For example, Medicaid-eligible clients were allowed a three-day emergency supply of medications, and DSHS worked with the state Medicaid Vendor Drug office to extend this time frame. In addition, medical resources including bariatric equipment, nebulizers, glucometers, and test strips were either taken out of DSHS's emergency response inventory or purchased and delivered to shelters on September 8.

Communication/Emergency Public Information: Beginning on September 6, DSHS began to issue statewide press releases, in English and Spanish, to address public health issues associated with wildfire. The press releases covered the topics of what to bring during evacuations, precautions about smoke, advisories about the potential risks when returning home to begin the recovery process, and information about the community public health assessment.

At the local level, risk communication messages were developed and distributed via media updates, postings at the City of Bastrop conference center where the public was urged to go to obtain public information, and flyers given out at re-entry points and at schools. The messages covered topics such as respiratory protection, injury prevention, preventing heat-related injury, injuries from clean-up activities, and the need for up-to-date tetanus vaccinations. At the request of the LHA, DSHS worked with the CATRAC to provide professional health-care providers that staffed a telephone hot line answering medically-related questions from citizens.

Table 1 presents a chronological list of selected above-mentioned DSHS activities up through twenty days post wildfire.

PROMISING BEST PRACTICES

In our after action review, we identified several promising practices in this response. These included:

1. WebEOC is an effective tool for communicating, maintaining situational awareness, requesting resources, and tracking shelter clients.
2. Development of contingency pharmacy contracts prior to the incident allowed for quick access to pharmaceuticals during the response, and activating them enabled DSHS to rapidly meet the needs of individuals affected by the wildfire.
3. Deploying the MMT to the fire base operations camp allowed firefighters to receive care for minor injuries and return to the line quickly. It also mitigated a potential surge at local hospital emergency rooms keeping those facilities open to treat injuries from the community at large.
4. Deploying state-level DBH staff to coordinate DBH services proved effective in assessing need, coordinating the services of multiple mental health partners, ensuring consistent service provision, and tracking expenses.
5. Selecting CASPER team members with prior CASPER training and experience led to a quicker response; teams were fielded within 3 days of activation.

CONCLUSION

The wildfire that started in a rural area of central Texas on September 4, 2011, which resulted in the largest destruction of homes from a wildfire in the nation in five years, triggered a sizable public health emergency response. The response activities which we described involved addressing command and control issues, responder safety and health concerns, sheltering, disaster behavioral health, epidemiology and surveillance practices, medical materiel management and distribution, and communication/emergency public information. With wildfires projected to be a growing hazard in most regions of the country, public health and medical officials in other jurisdictions may benefit from our experiences as they look to enhance their own public health preparedness and response capabilities.

Acknowledgments

We acknowledge the following individuals in the response: L Cornelius, MD, MPH, staff at Health Service Region 7 (Temple), DSHS; D Walkes, MD, local health authority, M Fischer, emergency management coordinator, and local officials (Bastrop County); R Bays, T Haywood, S Burnham, DVM, members of the Response and Recovery and Resource Coordination Teams, members of the CASPER team (Austin), C Freeman, Disaster Behavioral Health Services (Austin), S Sykes (San Antonio), and colleagues in other responding programs at DSHS; N Nagel and D Bass, In-SERT; D Reimer, RN, R Wiatrek, MPH, Capitol Area Trauma Regional Advisory Council; J Henry, PhD, Austin-Travis County Health Human Services Department, and colleagues at the Health Studies Branch, National Center for Environmental Health, Centers for Disease Control and Prevention.

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Table 1. Selected Texas Department of State Health Services Wildfire Response Activities by Date (2011) (and wildfire status/timeline)

Sunday, September 4 (wildfire started):

Monday, September 5: ***(~ 25,000 acres burned, 0% contained)***
- *State Medical Operations Center (SMOC) virtual activation*
- *Deployed ambulance bus (ambus)*

Tuesday, September 6: ***(~ 33,089 acres burned, ~ 500 homes destroyed, 0% contained)***
- *Activated the SMOC*
- *Issued statewide news releases on "Wildfire Evacuations: Here's What to Bring" and "Wildfire Smoke Precautions"*
- *Initiated epidemiology and surveillance activities*
- *Monitored the status of nursing homes located in affected area to ensure any evacuations were adequately supported*
- *Local Disaster Behavioral Health response activities began*

Wednesday, September 7: ***(~ 789 homes destroyed, 0% contained)***
- *Deployed the Mobile Medical Team*

Thursday, September 8: ***(~ 1,386 homes destroyed, 30% contained)***
- *Started delivering medical resources to local shelters*

Friday, September 9: ***(2 civilian deaths discovered)***
- *Issued statewide news release on "Use Caution During Wildfire Recovery"*
- *Activated pharmacy contracts*

Sunday, September 11: ***(50% contained)***
- *Demobilized ambus and assigned crew*

Tuesday, September 13: ***(~ 1554 homes destroyed, 70% contained)***
- *Deactivated the SMOC*

Wednesday, September 14:
- *Demobilized the Mobile Medical Team*

Friday, September 23:
- *Issued statewide news release on upcoming community health assessment in Bastrop County*

Saturday and Sunday, September 24 and 25: ***(95% contained)***
- *Conducted community public health assessment*

Tuesday, October 9 ***(~1,660 homes destroyed, 100% contained)***

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