In This Issue

President’s Message 2
Commissioner’s Comments 3
West Nile Virus Activity from the Front Lines in Texas 3
Public Health Emergency Response to a Massive Wildfire in Texas (2011) 6
Evaluation of a Health Department Sponsored Community Garden in Houston/Harris County 10
The Texas – Kenya Health Nexus: a Story Over Five Decades in the Making 13
Changes in Texas Poison Center Call Patterns in Response to H1N1 Influenza Outbreak 14
Assessment of a Child Injury Prevention Intervention in the Texas-Mexico Border 19
College Students’ Perceptions of HIV Risk, Importance of Protective Behaviors, and Intentions to Change Behavior after Attending an HIV/AIDS Awareness Event 23
The Relationship between Hurricane Ike Residency Damage or Destruction and Intimate Partner Violence among African American Male Youth 30
Back to School Poison Control Alert: Adverse Effects from Ingestion of Energy Drinks 34
Dr. R. Palmer Beasley Remembered 35
Texas Public Health Training Center News 36
TPHA News and Information 37

Please visit the Journal page of our website at http://www.texaspha.org for author information and instructions on submitting to our journal.

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

Kaye M. Reynolds, MPH

Although I seem to be saying this more and more as the years go by, this is a very busy time for public health! Many of us in the arena have been immersed in the effort to keep public health in the mix of initiatives for the 1115 Waiver (Texas Healthcare Transformation and Quality Improvement Program).

As we draw to the close of the first phase, which involves submission of initiatives to the regional anchors, I caught sight of the posting on my computer hutch of the Ten Essential Public Health Services. The authors of these ten guidelines for what a functional public health system should be about really had a great handle on our function in the various configurations and communities we find ourselves.

Whether we are in local public health, academia, health care systems, health promotion and education or consulting roles, we have all had an opportunity to be challenged and stretched to respond to this transformation program in ways that we perhaps only hoped of before.

The basis of transformation is knowing the community and identifying where the health problems are. In many cases the problems revolve around access to care and use of high end resources such as emergency rooms and inpatient care because of lack of resources or knowledge of community clinics and programs. In addition, many of these local resources could do more with additional resources and support.

*Mobilizing community partnerships* is a key function of public health. Bringing together partners and collaborators for this waiver reminds me of the early years of public health preparedness funding when the local public health department was tasked with identifying and convening partners with whom we had not worked before. Bringing these groups together to identify and solve health problems, developing policies and plans to support individual and community health efforts, ultimately linking people to needed health services and assure the provision of health care when otherwise unavailable is invigorating and exhaust-
In mid-August, two airplanes took off from a Dallas runway as part of the first local effort to use aerial spraying to control the spread of West Nile virus. Local officials had been gearing up for this effort, working around the clock to make sure the Dallas community was prepared about what to expect. Questions had been answered about the science, the effectiveness, the risks, the costs and the rationale of using aerial spraying – unprecedented as a state-supported approach to controlling West Nile virus in Texas.

At the time, the United States was seeing a record level of West Nile disease activity, and most of the cases were in Texas. Most of the Texas cases were in Dallas County. Texas was on track to having our worst year for West Nile virus since the disease first emerged in the state in 2002.

In the summer weeks leading up to the aerial spraying effort, state and local health officials worked together to get a handle on what was fast becoming an outbreak situation. Considering the West Nile virus’ incubation period of up to 14 days – plus the time it takes for a doctor’s exam, lab work and official case verification – it was clear that more cases were in the pipeline, and the case counts would continue to rise. As we gathered data and conferred with our partners, everyone agreed that we needed to consider all possible tools, including aerial spraying, to fight the outbreak.

On Aug. 9, we initiated a formal response using the incident command structure and activated our State Medical Operations Center here in Austin. We had a centralized location to help answer questions and support local efforts. We fielded requests for ground spray chemicals from our local partners and engaged in discussions with health departments from across the state about where we were in the outbreak – and where we may be headed. We worked with local health departments to get data as quickly as possible on both the mosquito and the human side to guide decision making.

In our lab – which supports local vector control groups to identify types of mosquitoes in their areas and the encephalitic viruses they may be carrying – we began using PCR testing of mosquitoes to speed up our response times. By using this method, we were able to reduce processing time from 10 days to two days, allowing us to more quickly provide location information of West Nile positive mosquitoes to local jurisdictions.

Another key aspect of the response was spreading the word about personal precautions: Use insect repellent. Drain standing water. Avoid being outside at dawn and dusk. These are messages we all try to emphasize every time we talk about mosquito-borne disease – and ensuring the messages are delivered is a key part of protecting the public. We developed outreach materials and released public service announcements across the state to raise awareness about the seriousness of disease and the importance of personal precautions. We relied heavily on local health departments and communities to distribute these materials.

Ultimately, local decisions were made to initiate aerial spraying in Dallas and Denton counties, and the state provided consultation and support to combat this deadly disease. The planes would spray thousands of acres in Dallas and Denton counties, areas that had been the hardest hit in our state. The U.S. Centers for Disease Control and Prevention’s preliminary analysis of the effort showed that it worked – mosquito populations decreased dramatically after aerial spraying. Meanwhile, we continued to evaluate the situations in other counties and supported ground spraying efforts in other parts of the state.

Texas now has more than 1,000 human cases of West Nile virus and more than 50 deaths, making it our worst year for the disease. Our hearts go out to the people whose lives have been deeply affected by this illness.

While we are not out of the woods yet on West Nile Virus, it’s safe to say we’ve passed the peak of the season. I want to thank the local jurisdictions that have been dealing with West Nile virus on the front lines. One of my priorities is to make sure you have the support you need to confront outbreaks, emergencies and other public health challenges that may emerge – and that support will continue.

West Nile virus Activity From the Front Lines in Texas

Editorial Note: Our TPHA editorial team asked our members to send us an update of West Nile virus activity in their areas. The “Call” went out at the end of August with a deadline for submission of September 7, 2012. The team thanks all who responded and urges our readers to check each area’s website for updated information.

Region 11 – Updated 9/27/2012

Region 11, has 11 cases of confirmed WNV with 2 deaths as of 9/27/2012. Active mosquito breeding and West Nile virus risk will continue in this region for several more weeks.

Plano - Submitted 9/7/2012

The City of Plano, with a population nearly 270,000 according to U.S. Census Bureau data, has recorded 27 cases (as of September 6, 2012) of West Nile Virus (WNV) illness for an incidence rate of 10 per 100,000 residents. Plano’s Environmental Health Department is following an established Integrated Mosquito Management Program (IMMP). Our IMMP relies on public education, monitoring mosquito populations, habitat reduction, larval control through chemical and biologic methods, and minimizing adult population through limited adulticiding.

Beginning in May, department employees set traps in pre-determined locations to monitor mosquito activity. Sites were selected based on history of increased mosquito activity, previous WNV-positive mosquito samples, and ideal mosquito habitat. When the city received notification of a positive mosquito sample, crews canvassed surrounding neighborhoods to notify residents of results and recommendations to minimize exposure to mosquitoes (the “4 D’s”).
Additionally, those neighborhoods were surveyed and any observed stagnant pools containing larvae were treated. As a final precaution, adulticide was applied in the area to reduce numbers of adult mosquitoes. The city utilized a “reverse 911” system to notify residents of spraying activity.

As more WNV-positive samples were reported to the city, the department increased focus on habitat reduction and personal responsibility information, and continued use of larvicide and targeted spraying. The department’s WNV hotline was updated with current information and allows callers to leave questions that have not been answered.

The department has also collaborated with Plano ISD, neighborhood associations, and other service clubs to educate citizens on personal responsibility to avoid exposure to mosquitoes. A lower rate of incidence in Plano suggests citizens have embraced our message and are working with neighbors to limit mosquito presence. The department is currently reviewing data and working with Collin County Health Services to coordinate mitigation plans for next year with other jurisdictions in the region.

Geoffrey Heinicke, MPH, RS
Environmental Health Manager
City of Plano
972-941-7143
geoffreyh@plano.gov

Houston, Texas (as of September 28, 2012), Confirmed and Probable Reported Cases

The City of Houston is the fourth most populous city in the nation (trailing only New York, Los Angeles and Chicago), the largest in the southern U.S. and Texas, and has the third-largest Hispanic and third-largest Mexican population in the United States. Houston is also home to the Texas Medical Center (TMC), the largest medical center in the world, with a local economic impact of $10 billion. More than 52,000 people work within its facilities, which encompass 21 million square feet. Altogether 4.8 million patients visit the TMC each year. Under the Köppen climate classification, the City of Houston is located in a humid subtropical zone which explains its hot, humid summers and mild to cool winters. This type of climate, in addition to its propensity for rainfall, provides a unique ecosystem for arboviral vectors to persist beyond its expected summer season. As a result, the City of Houston experiences a greater disease burden throughout the year than most other large, metropolitan areas, requiring year-round arboviral surveillance activities.

All data are preliminary and may change as reports/specimens results are received.

Glossary:

Neuroinvasive disease cases, refers to severe cases of disease that affect a person’s nervous system. These include encephalitis which is an inflammation of the brain, meningitis which is an inflammation of the membrane around the brain and the spinal cord and acute flaccid paralysis which is an inflammation of the spinal cord that can cause a sudden onset of weakness in the limbs and/or breathing muscles.

Non-neuroinvasive disease cases refers to typically less severe cases that show no evidence of neuroinvasion—primarily West Nile fever. WN fever is considered a notifiable disease, however the number of cases reported (as with all diseases) may be limited by whether persons affected seek care, whether laboratory diagnosis is ordered and the extent to which cases are reported to health authorities by the diagnosing physician.

Presumptive viremic blood donors (PVDs) are people who had no symptoms at the time of donating blood (people with symptoms are deferred from donating) through a blood collection agency, but whose blood tested positive in preliminary tests when screened for the presence of West Nile virus. Some PVDs do go on to develop symptoms after donation, at which point they would be included in the count of human disease cases by their state.

Salma A. Khuwaja MD, MPH, DrPH
Epidemiologist Manager
Bureau of Epidemiology
Houston Department of Health and Human Services
8000 N. Stadium Drive, Houston, TX 77054
Phone: 832-393-5080; Fax: 832-393-5232
Email: salma.khuwaja@houstontx.gov
Please visit our web site at: http://www.houstontx.gov/health/index.html

---

Table 1: West Nile virus (WNV) human infections in Houston, Texas (as of September 7, 2012), confirmed and probable cases reported cases

<table>
<thead>
<tr>
<th></th>
<th>Neuroinvasive Cases</th>
<th>Non-Neuroinvasive Cases</th>
<th>Total Cases</th>
<th>PVDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>11*</td>
<td>15</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>13</td>
<td>15</td>
<td>28</td>
<td>9</td>
</tr>
</tbody>
</table>

*Three probable WNV related deaths

Table 2: Distribution of WNV cases in Houston, Texas, and in the US (as of September 7, 2012)

<table>
<thead>
<tr>
<th></th>
<th>Houston</th>
<th>Texas</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Of Cases</td>
<td>28</td>
<td>1066</td>
<td>1,993</td>
</tr>
<tr>
<td>Incidence Rate per 100,000 population</td>
<td>1.33</td>
<td>4.24</td>
<td>0.65</td>
</tr>
<tr>
<td>Number Of Deaths</td>
<td>3</td>
<td>43</td>
<td>87</td>
</tr>
<tr>
<td>Case Fatality Rate</td>
<td>10.71%</td>
<td>4.03%</td>
<td>4.37%</td>
</tr>
</tbody>
</table>

West Nile Cases by Year 2002 - 2012, Houston Texas (as of 9/06/2012)
West Nile virus in Tarrant County: the 2012 Season As of 9/13/2012

We knew in late fall of 2001 that we would probably see West Nile virus (WNV) in Tarrant County by the next summer. It had moved across the Deep South to Louisiana that fall so we knew our time was coming. Tarrant County did not have a vector control program. During the winter months, our environmental health staff developed a multi-jurisdictional collaborative approach with emphasis on prevention. The staff invited all 41 municipalities to participate in a training and awareness session in which larvaciding, mosquito traps, standing water pool testing, and the 4Ds were emphasized. At the time 29 municipalities signed up. Five municipalities were already conducting nuisance ground spraying and continued to do so. Over the following years, with fewer and fewer cases of WNV and budget cuts, some municipalities decreased their level of participation. Tarrant County added one vector control position to coordinate the collaborative effort and to serve the unincorporated area. As with many other functions of environmental health, staff members with other responsibilities were called on over time to assist, receive additional training or certification. The program was recognized by NACCHO in 2004 as a model practice. Table 1 illustrates the years leading up to 2012. The 2012 numbers are inclusive to September 13, 2012.

With the exception of those mentioned previously, none of the members of the collaboration used ground spraying between 2002 and 2012. Tarrant County has one truck mounted sprayer (and one on order) and two staff licensed to spray. We have used GIS mapping of cases and pool test results every season. Our lab receives and tests mosquito samples.

The 2012 season began as in other seasons with the emphasis on prevention. But with the number of cases increasing in surrounding counties as well as our own, we began identifying some small clusters of cases with close date of onset and positive mosquito pools. Given this information and the news that one of our neighboring counties who already did ground spraying would begin aerial spraying, we began recommending targeted ground spraying to those municipalities affected. The municipalities determined what their response would be. Some did not spray but increased their larvaciding and education efforts while some did begin targeted ground spraying along with the prevention efforts. We did consider aerial spraying but in consultation with the Texas Department of State Health Services and the Centers for Disease Control and Prevention, we determined that the targeted ground spraying appeared to be having an impact as our numbers were starting to come down. Some of our smaller border municipalities that are located in two counties opted for aerial spraying when the other counties did.

Private contractors were utilized by some local entities including the county to augment our existing resources. We also increased our outreach and education efforts to include the development and distribution of a toolkit that was sent to all ISDS at the beginning of the school year, daycares, senior centers, major businesses, churches, and municipalities. The toolkit is located on our website at http://health.tarrantcounty.com. Click on the WNV button on the right. We mustered our Medical Reserve Corps (MRC) and provided just in time training so that they could educate civic groups and distribute spraying information flyers and road signage. Our staff, MRC, and precinct garage staff posted road signs at the busiest intersections in the unincorporated areas prior to ground spraying. The County elected officials and emergency management office began sending out daily updates to the municipalities and holding weekly conference calls with CDC, DSHS, and local public health reporting the latest information with time for questions and answers.

We have begun work on our after action report and our plan for next year. While this season was difficult to anticipate, we will look for ways to do so in the future, increase our ongoing communication with the municipalities, and identify resources needed for future readiness.

Lou K. Brewer
LKBrewer@TarrantCounty.com
Tarrant County Health Department

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2003</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>53</td>
<td>7</td>
</tr>
<tr>
<td>2007</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>32</td>
<td>3</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>257</td>
<td>7</td>
</tr>
</tbody>
</table>
Public Health Emergency Response to a Massive Wildfire in Texas (2011)
David F. Zane, MS; Russell Jones, MPH; Jon Huss; Katherine Sanches, MPH; Jeff Hoogheem; Bruce Clements, MPH

1 Epidemiologist, Community Preparedness Section, Texas Department of State Health Services, Austin, Texas USA
2 Public Health 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.3

The literature on the public health implications of wildfires have focused on morbidity and mortality surveillance,4 health-care and emergency department utilization,5 acute effects,6–17 firefighters’ exposure and risks,18–20 subsequent exposure,21 sheltering,22 public health,23–25 and other topics.26–29 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...
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...
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 material 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 Wailes, 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.

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunday, September 4 (wildfire started):</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Monday, September 5:</strong> (~ 25,000 acres burned, 0% contained)</td>
<td>- State Medical Operations Center (SMOC) virtual activation</td>
</tr>
<tr>
<td></td>
<td>- Deployed ambulance bus (ambus)</td>
</tr>
<tr>
<td><strong>Tuesday, September 6:</strong> (~ 33,089 acres burned, ~ 500 homes destroyed, 0% contained)</td>
<td>- Activated the SMOC</td>
</tr>
<tr>
<td></td>
<td>- Issued statewide news releases on “Wildfire Evacuations: Here’s What to Bring” and “Wildfire Smoke Precautions”</td>
</tr>
<tr>
<td></td>
<td>- Initiated epidemiology and surveillance activities</td>
</tr>
<tr>
<td></td>
<td>- Monitored the status of nursing homes located in affected area to ensure any evacuations were adequately supported</td>
</tr>
<tr>
<td></td>
<td>- Local Disaster Behavioral Health response activities began</td>
</tr>
<tr>
<td><strong>Wednesday, September 7:</strong> (~ 789 homes destroyed, 0% contained)</td>
<td>- Deployed the Mobile Medical Team</td>
</tr>
<tr>
<td><strong>Thursday, September 8:</strong> (~ 1,386 homes destroyed, 30% contained)</td>
<td>- Started delivering medical resources to local shelters</td>
</tr>
<tr>
<td><strong>Friday, September 9:</strong> (2 civilian deaths discovered)</td>
<td>- Issued statewide news release on “Use Caution During Wildfire Recovery”</td>
</tr>
<tr>
<td><strong>Tuesday, September 11:</strong> (50% contained)</td>
<td>- Activated pharmacy contracts</td>
</tr>
<tr>
<td></td>
<td>- Demobilized ambulance bus (ambus and assigned crew)</td>
</tr>
<tr>
<td><strong>Tuesday, September 13:</strong> (~ 1554 homes destroyed, 70% contained)</td>
<td>- Deactivated the SMOC</td>
</tr>
<tr>
<td></td>
<td>- Deployed the Mobile Medical Team</td>
</tr>
<tr>
<td><strong>Saturday and Sunday, September 24 and 25:</strong> (~95% contained)</td>
<td>- Conducted community public health assessment</td>
</tr>
<tr>
<td>**Tuesday, October 9 (~1,660 homes destroyed, 100% contained)</td>
<td>- Deployed ambulance bus (ambus)</td>
</tr>
</tbody>
</table>

Evaluation of a Health Department Sponsored Community Garden in Houston/Harris County

Biru Yang, MPH, PhD1,2, Maria P. Brietzke, MPH1,2, Faith Foreman, MPH, PhD1, Adebowale Awasika-Olomo, MPH, MD1, Toral F. Sindha RD, LD1, Zahyrah C. Blakeney, BBA Management1, Janet Aikins, PhD, MPP1,2
1Houston Department of Health and Human Services (HDHHS)
2University of Texas School of Public Health (UTSPH)
3University of North Carolina at Chapel Hill, Gillings School of Global Public Health

Houston Community Garden: A collaboration between local health department and the community

Community gardens became prominent during and after both World Wars, in order to increase food supplies using minimum transportation.1 Research on community gardens suggests a variety of benefits, for both individuals and for communities utilizing the gardens. Individual benefits include greater consumption of fruits and vegetables, improved access to food, improved nutrition, increased physical activity, decreased cholesterol levels, and grocery savings ranging from $50-$250 per season for garden users.2-3 Community benefits include greater neighborhood pride, increased communication, decreased crime rates and increased community cohesion.3-4

Situated in the inner-city, the Southwest Multi-Service Center (SW-MSC) serves a geographic area that has been noted as a low literacy 5, high crime, and high poverty region in the city—with a median household income of $18,733 as of 2006.5 Nevertheless, this diverse three square-mile region is the home of people from at least 42 countries. In fact, due to its largely foreign-born population, it has been referred to as Houston’s “Ellis Island”.7 The SW-MSC, along with other non-profit organizations, serves this region by providing community health and social resources. Primarily, the SW-MSC Community Garden was developed to improve the community’s quality of life by increasing access to and consumption of fruits and vegetables (FV), while increasing physical activity. Second motivation was for Houston Department of Health and Human Services (HDHHS) to improve its reach and relationship with the community. The steps taken to develop the garden included partnership development, recruitment of community garden participants, and planning of the garden program. This commentary addresses the garden program and describes its evaluation as facilitated by the University of Texas School of Public Health (UTSPH) students of the Health Program Planning, Implementation and Evaluation course in partnership with the staff of the HDHHS Division of Health Panning, Evaluation, and Promotion (HDHHS HPEP), and staff of the Neighborhood Services Division (NSD) Southwest Region.

From the inception of this garden program, the HDHHS staff engaged stakeholders including program planners, implementers, academic evaluators and residents in planning and executing of the program. Selected stakeholders were invited to attend meetings, provide funding, and technical assistance. Residents living in the SW MSC surrounding community were invited to participate in the garden program through advertisement via flyers and at outreach events. The UTSPH resources were brought in to provide technical assistance on evaluation methods.

The evaluation tools used for this program include a logic model, pre-implementation, process and post-implementation surveys. Each survey was conducted using a one-page bilingual (English/Spanish) semi-structured questionnaire. The pre-implementation survey was conducted during the kick-off event in spring 2009; the process evaluation happened four months after the kick-off, and the post-implementation survey happened in spring a year later.

Findings and implications from the pre-implementation survey were reported to key program stakeholders in spring 2009 Recommendations were made to improve future HDHHS community garden implementation processes.

What did we discover?
Through the evaluation, we identified the HDHHS’s objectives to: (1) introduce the concept of Community Gardening into the community; (2) prepare and mobilize the community towards change; (3) maintain the changed behavior over individual’s lifetime utilizing a sound process logic model as an adaptable guide. The expected outcomes in a broad sense included frequent use of the garden, increased knowledge and self-efficacy in gardening and FV consumption, increased FV consumption and physical activity, increased use of the SW-MSC, and an improved quality of life.

In order to identify stakeholders expectations, at the SW MSC Community Garden kick-off event, a total of 51 persons were invited to participate in a pre-implementation survey, 45 persons (23 community participants and 22 stakeholders) accepted, however, six individuals (two community participants, four stakeholders) refused to be interviewed. The response rate was over 92%. We then compared the demographics of the 23 community participants to that of the 22 stakeholders. The majority (61%) of the community participants were English speaking, females (57%), of Hispanic race/ethnicity (83%), and aged less than 18 years (43%) or over 50 years old (43%).

TPHA Journal Volume 64, Issue 4
In contrast, over 90% of the stakeholders were English speaking, mostly females (59%), African American (46%), working adults between age 19 and 49 years old (68%). Questions were designed to elicit participants’ opinions on overall garden benefits to community, community togetherness, anticipated frequency of garden use, anticipated types of physical activity, current fruit and vegetable intake, and anticipated use of garden products.

Approximately four months after the initial planting kick-off, at the subsequent summer planting event, we conducted qualitative process evaluation surveys for stakeholders and garden participants using semi-structured questionnaires. We interviewed 6 stakeholders and 16 community participants. The stakeholders at the summer planting event were employees from different divisions and programs within the HDHHS. All stakeholders felt that this is a successful program and it truly mobilized the community. All community participants except one were community residents. All stated that they had thus far benefited from having the garden. The garden had brought the community together, and it had helped them become more active. More than four-fifths felt the community garden had prevented crime in their community. More than half of the community participants said they ate more vegetables now that vegetables are available in the garden. They also indicated their overall enjoyment of their garden especially harvesting produce, learning to use the garden produce in the scheduled cooking classes, and being introduced to the health education classes and exercise sessions at the SW MSC, including Tai Chi.

Guided by SW MSC staff, and later the SW Community Garden Evaluation Team, the 16-member community garden participants organized themselves into a garden club, taking ownership of the program. Two garden club members volunteered as chair and co-chair, developed biweekly meeting schedules, distributed tasks, and track club membership. Garden club members are responsible for maintaining the garden, weeding, planting, harvesting and distributing produce. Members share information with family, friends and neighbors to enhance recruitment of new members. The SW MSC staff aid in recruitment and ensure that resources are available to the club members.

A year later, post implementation surveys were conducted. Eight then-current participants and six stakeholders were interviewed. Half of the community participants were English speaking. The large majority of the participants were female (87%), of Hispanic race/ethnicity (75%), and aged over 50 years old (87%). In the stakeholder survey most of the stakeholders were English speaking (80%), females (60%) and working adults under 50. The top three crops produced by the Community Garden over the study period were okra (85 pounds), eggplant (62 pounds), and herbs (61 pounds). Other fruits and vegetables include carrots, cucumbers, chili, beans, squash, celery, collard greens, lettuce, mustard greens, spinach, onions, peppers, tomatoes and cantaloupes. Herbs planted include rosemary, thyme, mint, basil, sage, cilantro and parsley. The produce were shared among the Community Garden members, distributed in outreach activities, or bagged for pickup in the Multi-Service Center.

The SW MSC Community Garden is a joint project between the SW MSC surrounding community and HDHHS. The project was initiated by HDHHS and was later adopted by the community. Based on the results of the surveys, stakeholders and community participants agree that the project was successful in accomplishing most of its expected outcomes. All community participants increased their knowledge and self-efficacy about gardening and FV. They were also motivated by cooking with the garden produce to increase their FV consumption even to the extent that some started using garden produce that were previously unknown to them. For example, the community participants initially were not familiar with okra and therefore it was not part of their routine diet. Planting okra was first suggested by HDHHS staff because it can yield bountifully. This idea was adopted and approved by the community participants. During the post-implementation survey (one year later), several community participants were very pleased to have had the opportunity to grow okra, and learn to cook dishes using okra through the cooking classes at the SW-MSC. Now they have incorporated okra into their regular diet, and are particularly pleased with the health benefits of okra, which include enhancing one’s digestion and also helping to maintain normal blood sugar level. Increase in participant physical activity was reported as most club members said they enjoyed the physical activities associated with the garden. An additional source of physical activity was the Tai Chi class sponsored by the SWMSC during the gardening hours.

The surveys also indicated that cross-cultural and social connections were fostered as people of different demographic and cultural background teamed up to accomplish garden tasks. Contrary to expectations, intergenerational participation, for example, interactions between grandparents and grandchildren, were not found to be an important factor for garden participation. The majority of consistent community participants were Hispanic females 50 years or older.

The SW-MSC community garden is unique in many ways most especially its initiation by a governmental agency. HDHHS applied a three-prong approach involving garden experts, HDHHS employees, and Community residents, to develop a sustainable partnership. Different roles were played by members of the collaboration. Garden experts such as City of Houston Parks and Recreation, and Urban Harvest provided expertise in gardening with classes and advice for garden planners and consumers. HDHHS provided facilities – garden space, tools, seed, soil, and staff who volunteered their time. Community residents provided garden ownership, governance, care and maintenance. Recruitment of the SW Community Garden Participants by the HDHHS staff at MS-SWC, involved inviting outreach event participants and circulating of flyers in the community that asked residents to participate.

Until the end of 2011, regular meetings were held twice a month in conjunction with garden maintenance activities. These meetings were organized by community participants to discuss issues relating to the SW-MSC Community Garden. Agenda, attendance and minutes were initially maintained by HDHHS staff but then by Community Chair and Co-chairs for almost two years. A group of community participants usually volunteer for around six months, and then another group of participants become more active. An increase in membership is noticed when Spring Fling event was organized by HDHHS in recognition of the work of the community participants.

Currently, one health department staff serves as the community liaison and supports the garden activities. The responsibilities of the health department staff include scheduling workshops, organizing monthly meetings, working side-by-side with the community participants in the garden and bring new gardening ideas to the community. The official leadership role is taken by the health department. The official meeting happens once a month. The community participants consist of 6 to 7 regular members who meet Monday, Wednesday and Friday mornings. Periodic planting events happen in accordance to the seasons.

The fundamental assumption underlying this project from the beginning has been that, if people have access to a community garden, they will be more likely to eat more fresh fruits and vegetables. Additional benefits include improved quality of life, and even a greater sense of community. Theoretical models of health behavior as well as findings from other garden evaluations support the validity of these
activities for successful community gardening. Hence, the collaboration of community leaders and organizations (private and public), providing garden-related training, and city-level support seem to have been successful for prior community gardens. Such has been experience of the SW MSC Community Garden.

In its first year, the garden project was not successful in its recruitment of younger participants. Much of this is attributed to the community barriers such as lack of transportation since younger people are very dependent on their parents’ ability to transport them. While we did have a much larger number of youth during the kick-off event, many of these participants were there for community service hours only and not for purposes of becoming ongoing gardeners.

**Challenges and Recommendations:**

Although the community garden is deemed successful by stakeholders and participants, there are some challenges and recommendations.

The Southwest Gulfton area is not known to have the deep roots of a multi-generational community, but rather young single immigrant working families with infants and younger children. This limited the ability to build community cohesion. Accordingly, during its first year of evaluation, the garden was not able to retain all of its original participants. In the post-implementation survey, many of the participants communicated the need to recruit more members. Many of the community’s barriers (lack of transportation, cultural differences, language, fear and lack of trust) have been some of the same challenges that have contributed to a decrease in membership. Although the gardening task force offered planning meetings and interactive gardening workshops prior to the initial kick-off day, our recruitment and retention of participants might have been more successful if we had allowed the program more time for community outreach and engagement. Consequently, we recommend planning for a full 3 to 4 months of outreach, recruitment, and engagement prior to an initial kick-off event.

Second, offering more hands-on workshops as an engagement tool could help sustainability. We observed that the community became more enthusiastic about gardening when hands-on workshops were offered. Due to time constraints and a limited budget, only two workshops occurred.

Third, establishing a gardening schedule prior to the kick-off event should be considered. While the gardening task force did develop a gardening schedule for participants to follow, it was not put into place until after the initial kick-off event. Establishing a gardening schedule prior to the kick-off event could improve participants’ understanding of the time commitment and workload expectations, and allow the group to identify participants with leadership qualities before kick-off day.

Once the garden was put in place, the garden participants continued to look to the experts for ongoing educational support and guidance. This need was met by ensuring that the community had access to an expert master gardener from HDHHS who would visit the site on a daily basis and at every monthly meeting, planting, and harvesting event. Educational workshops were not as many as the community needed and wanted. The SW MSC staff were successful in partnering with local community providers who periodically offered educational session in nutrition. However, these were very limited and sporadic due to funding and time limitations. Thus, as a fourth recommendation, group educational support should be an ongoing component of a community garden. It is through these group workshops that participants feel that they are learning new concepts to improve themselves and ultimately their community. This in turn translates into self-sufficiency and community sustainability for the garden.

Community gardens can provide numerous benefits to the communities and individuals that have access to them. Increased diet quality as well as physical activity, improved social networks, community involvement, and financial incentives are just a few of the gains of past community gardens. We also learned from this and past community gardens that ongoing training and establishment of community leaders are key to program success.

Finally, ongoing collaboration and resources are needed to maintain a successful community garden. In particular, as funds for public agencies become less available, strategies need to be adopted for these agencies to do business effectively in the communities they serve. Prioritization of services as well as partnership development among public health organizations with similar goals will ensure that public agencies continue to deliver services most effectively and efficiently to communities they serve.

**ACKNOWLEDGEMENTS**

The authors would like to acknowledge Sandra Rodriguez for her leadership and support in the project, and Dr. Linda Lloyd for her guidance in program evaluation.

**REFERENCES**


On July 14, 2012, the Amara Charitable Trust hosted the joint dedication of 5 new classrooms of the Kwa Katusya Primary School and a building to house the new medical clinic in Lukenya, a mining community on the arid plains about two hours southeast of Nairobi, the bustling capital of Kenya. While the facilities are modest by western standards, they are crucial to the educational and health needs of the local population and are a source of local pride. In particular the health clinic is badly needed -- there are no other medical facilities within 50 kilometers.

The Clinic has a rich connection to Texas. It is a gift of Dr. Sulabha Hardikar, in honor and memory of her late husband, Dr. Vasant Hardikar, an anesthesiologist who practiced at Ben Taub Hospital in Houston and retired from Baylor College of Medicine. He passed away in 2009. The Doctors Hardikar received medical training in India and after their marriage worked as the only physicians in a country clinic in Maharashtra before embarking on an African adventure that would take them to three countries, to England, and eventually to the United States. In this life journey they spent seventeen years from 1957 to 1974 practicing in east Africa, including an 8-year stint as physicians in Kenya. At the dedication in Lukenya, Dr. Hardikar delivered her dedication speech in Swahili, the lingua franca of east Africa, a part of the world for which she and her late husband maintained a deep and abiding affection through the decades since they left.

Dr. Sulabha Hardikar spent her career as a family and public health physician, and holds both the MD and MPH degrees with a keen interest in Maternal and Child Health. She was Chief of Family Health Services in the City of Houston Department of Health for a number of years. In this connection she is remembered for her role on the Houston Childhood Lead Poisoning Prevention Project among many others. She retired from the Department of Health in 2000 at the age of 74. She was joined at the ceremony by two of her daughters, and her granddaughter, Anissa Meher-Homji. Anissa has chosen to maintain the family tradition and is now a third-year medical student of 74. She was joined at the ceremony by two of her daughters, and her granddaughter, Anissa Meher-Homji. Anissa has chosen to maintain the family tradition and is now a third-year medical student. In 1972, when the dictator, Idi Amin, arrived, the family moved to Dar-es-Salaam, Tanzania, where she worked for the University Student Health Center.

In 1957, after responding to a “Wanted” advertisement, Sulabha and Vasant Hardikar, borrowed money from a relative and sailed across the Indian Ocean to Mombasa, Kenya. From 1957 to 1965, they ran the Visa Oshwal Community Outpatient Clinic and Maternity Home in Mombasa, where they learned to speak fluent Kiswahili.

In 1965, the family moved to Kampala, Uganda, where Dr. Sulabha Hardikar worked as a physician in the City Council health clinics. In 1972, when the dictator, Idi Amin, arrived, the family moved to Dar-es-Salaam, Tanzania, where she worked for the University Student Health Center.

Sulabha and her family moved to London, England in 1974, where she worked as a Community Medical Officer, dealing mainly in developmental pediatrics and some general practice. While in London, she also studied for and obtained her Diploma in Public Health.

In 1980, Sulabha moved to Houston, Texas. After passing her ECFMG and Texas Medical Board exams, she joined the Health Department of the City of Houston. From 1981 to 2000, until she retired at age 74, Dr. Sulabha Hardikar was the Chief of Family Health Services for the City of Houston.

With her determination and significant accomplishments despite very humble beginnings, Dr. Sulabha Hardikar has been an inspiration to her granddaughter, Anissa and many of her nieces and nephews who have followed her footsteps into the medical profession. Today, Dr. Sulabha Hardikar lives in Sugar Land, Texas. She has three daughters and three grandchildren. Sadly, her husband passed away in June 2009, but Sulabha continues to live her life in a way that would make him proud.
Changes in Texas Poison Center Call Patterns in Response to H1N1 Influenza Outbreak
Mathias B. Forrester, B.S.
Department of State Health Services, Austin, Texas, USA

ABSTRACT

Background: As a consequence of the H1N1 influenza outbreak first reported in April 2009, numerous recommendations were made to reduce the risk of or manage infection. This investigation examined whether the H1N1 outbreak changed the pattern of exposures reported to poison centers.

Methods: This retrospective study used data collected by Texas poison centers. The monthly number of exposures during 2008-2010 was determined for the following exposures: total exposures, cough/cold medications, neuraminidase inhibitor drugs, adamantane drugs, influenza vaccines, and hand sanitizers. The monthly number of exposures in 2009 was then compared to that reported in 2008 and 2010.

Results: Monthly total exposures and cough/cold medication exposures reported in 2009 were similar to the other years. Monthly adamantane exposures in 2009 were similar to 2008 and 2010. Monthly neuraminidase inhibitors in 2009 were higher than the other years for July-December. Monthly influenza vaccine exposures were higher in 2009 in September-December. Hand sanitizer exposures were higher in 2009 than in 2008 and 2010 for April-July and September-December.

Discussion: After the H1N1 outbreak was first reported, the number of neuraminidase inhibitor, influenza vaccine, and hand sanitizer exposures reported to Texas poison centers increased. A similar trend was not observed for total exposures, cough/cold medications, and adamantanes. These exposures might be of limited use as surrogates for conducting influenza surveillance because even those exposures that increased would likely only do so after an influenza outbreak is already recognized.

Key words: H1N1 influenza; neuraminidase inhibitors; influenza vaccine; hand sanitizers; poison centers

INTRODUCTION

Since the novel influenza A (H1N1) virus first emerged in April 2009, it has sickened millions and resulted in thousands of deaths in the US. Among the numerous recommendations made to reduce the risk of infection were avoiding shaking hands; frequent hand washing with soap and water or alcohol-based hand sanitizers; keeping hands away from the eyes, nose, and mouth; using tissues and covering the mouth when coughing or sneezing; and wearing face masks by infected or susceptible people. Sick individuals and their relatives were told to remain home and not go to the emergency department unless their symptoms became severe. The Centers for Disease Control and Prevention (CDC) recommended that the antiviral drugs oseltamivir and zanamivir (neuraminidase inhibitors) be used to treat H1N1 patients. Because novel H1N1 viruses are resistant to adamantane and rimantadine (adamantanes), the CDC did not recommend that they be used. It was recommended that H1N1 influenza vaccination should be obtained once the vaccine was available.

As a result of these recommendations, hand sanitizer sales in the summer of 2009 were 19% higher than a year earlier, and sales increased 54% during the four-week period ending on September 6, 2009. Shortages of the children’s version of oseltamivir were reported. More Americans received seasonal influenza vaccinations in the autumn of 2009 than ever before at that time of year, leading to the possibility of shortages of the vaccines. This shortage was attributed to an increased supply of the vaccine at that time of year and to more interest in influenza vaccination because of H1N1.

US poison centers receive calls involving exposures to a wide variety of substances such as medications, illicit drugs, household and industrial products, and plants and animals. Previous studies have demonstrated that the pattern of exposures reported to poison centers might change in the event of public health emergencies. The intent of this investigation was to determine whether the H1N1 outbreak affected the pattern of exposures reported to a group of poison centers. H1N1 exposures were not included in this investigation but are the focus of separate studies.

METHODS

Data for this retrospective study were obtained from the Texas Poison Center Network (TPCN), a statewide system comprised of six poison centers that service a population of over twenty million. All of the poison centers use a common database to collect information on all calls received in a consistent manner. Among the information collected is the substance the call was about. This information is recorded as both a text field and numeric code.

All exposures reported during 2008-2010 were identified for the following groups: total exposures, cough/cold medications, neuraminidase inhibitors (oseltamivir and zanamivir), adamantanes (amantadine and rimantadine), influenza vaccines, and hand sanitizers. The monthly number of exposures for each year for each group was graphed and 2009 was compared to the previous year (2008) and the following year (2010). No analyses of statistical significance were performed because of annual and seasonal trends in the number of many of the exposures studied and because only three years of data were included in the investigation.

The Texas Department of State Health Services (DSHS) institutional review board considers this investigation exempt from ethical review.

RESULTS

The monthly number of total exposures and cough/cold medication exposures reported to Texas poison centers during 2009 did not appear to deviate from that reported during 2008 or 2010 (Figure 1 and Figure 2, respectively).

Figure 3 presents the monthly number of neuraminidase inhibitor exposures. For 2008 and 2010, most of the exposures were reported during January-March, with few reported during the rest of the year. In 2009, a similar number of exposures were reported in January-March. However, more exposures were reported during May-August than in the previous or following years, and a much higher number of exposures were reported during September-October.

Monthly adamantane exposures (Figure 4), demonstrated no clear seasonal trend in any year, and the number of exposures reported during 2009 did not clearly differ from those in 2008 or 2010.

Figure 5 shows the monthly number of influenza vaccine exposures. Few such exposures were reported during 2008 and 2010, and most of those exposures were reported during September-January. In contrast, in 2009 many more exposures were reported, with most of those reported during September-December.

Figure 6 presents the monthly number of hand sanitizer exposures. The number of exposures were slightly higher in 2009 than 2008 for January-March but increased markedly in April, reaching a peak in May before declining again, although remaining much higher during June-December than the previous year. The monthly pattern of hand sanitizer exposures was not distinct from those in 2008 or 2010.
Figure 1. Monthly number of total exposures reported to the Texas Poison Center Network

Figure 2. Monthly number of cough/cold medication exposures reported to the Texas Poison Center Network

Figure 3. Monthly number of neuraminidase inhibitor exposures reported to the Texas Poison Center Network

Neuraminidase inhibitors: oseltamivir (Tamiflu) and zanamivir (Relenza)
Figure 4. Monthly number of adamantane exposures reported to the Texas Poison Center Network

Adamantane: amantadine (Symmetrel) and rimantadine (Flumadine)

Figure 5. Monthly number of influenza vaccine exposures reported to the Texas Poison Center Network

Figure 6. Monthly number of hand sanitizer exposures reported to the Texas Poison Center Network
hand sanitizer exposures in 2010 tended to resemble that from 2008 although the numbers tended to be slightly higher.

**DISCUSSION**

This investigation examined whether the pattern of exposures reported to Texas poison centers changed in relation to the H1N1 outbreak first reported in April 2009. Such information is useful because it allows poison centers and other emergency care providers to anticipate the types of exposures they might have to manage during similar outbreaks in the future. This is important because some of these exposures may be comparatively uncommon during regular periods. Thus, staff may not maintain familiarity as to how to handle these exposures. In order to prepare for future outbreaks, poison centers may plan to already have clear guidelines for the management of expected exposures and information that can be disseminated quickly to the public and healthcare providers at the first report of an outbreak to both minimize potentially adverse exposures and to educate what to expect should such exposures occur.

It should be noted that reporting of most exposures to Texas poison centers is not mandatory. Thus, all potentially adverse exposures are not likely to be reported to the poison centers. Furthermore, reporting of exposures to poison centers depends on the awareness of the poison centers. Public education campaigns may alter poison center call volume.14 Thus, changes in call volume may be due to public awareness campaigns and not a change in the number of exposures that occur. On April 25, 2009, the DSHS had set up a toll-free telephone hotline where people who had questions about H1N1 could contact the agency. The hotline was only operational during 7am-7pm. When it was closed, an automated message instructed callers when to call back to speak with DSHS staff. The TPCN was notified about this and offered to take calls when the DSHS hotline was closed. On May 5, 2009, the DSHS hotline automated message was altered to mention that callers could contact Texas poison centers if they wished.17 In addition, in November 2009, local news services reported that Texas poison centers were handling H1N1 vaccine calls. Although both of these potential public awareness sources were specifically about H1N1, the public might also have been more likely to call Texas poison centers about other types of exposures.

The pattern of reported exposures to Texas poison centers did deviate in 2009 from 2008 and 2010, but only in some of the types of exposures that were examined. There was no obvious change in the total number of calls in 2009. This might be because Texas poison centers receive approximately 500 exposure calls each day involving a wide variety of substances. Those types of exposures that may have changed as a result of the H1N1 outbreak appear to represent a fraction of the total exposures and thus might have limited impact on total call volume.

Monthly cough/cold medication exposures did not seem to increase in 2009 when compared to the other years. This was surprising since cough/cold medications might be expected to be used to relieve the more common symptoms of influenza infection, as evidenced by the observation that each year cough/cold medication exposures were more frequently reported during November-March, which is the height of the US cold and influenza season. An investigation of calls to poison centers in the United Kingdom found that the number of inquiries about cough/cold medications did not increase after the H1N1 virus outbreak.19

Monthly adamantane exposures in 2009 did not differ greatly from 2008 and 2010. This might be expected because novel H1N1 viruses are resistant to adamantanes, and the CDC does not recommend that they be used for treatment or prophylaxis of H1N1 infection.6 In contrast, an obvious change was observed in neuraminidase inhibitor exposures, with much higher numbers of neuraminidase exposures reported during September-November of 2009 than in the corresponding months in the previous and following years. An increase in neuraminidase inhibitor exposures would be anticipated because the CDC had recommended that neuraminidase inhibitors be used to treat H1N1 patients.19 The study of calls to poison centers in the United Kingdom reported that the number of inquiries regarding oseltamivir and zanamivir increased after the H1N1 outbreak.19

Although relatively few influenza vaccine exposures were reported to Texas poison centers during 2008 and 2010, many more such exposures were reported in 2009, with most of those reported during September-December. This is not surprising since it was recommended that H1N1 vaccinations should be obtained once the vaccine was available.6

In 2009, the number of hand sanitizer exposures increased greatly in April, reaching a peak in May before declining again, although remaining much higher during June-December than in corresponding months in the previous and following years. This was consistent with the recommendations that people use hand sanitizers to prevent infection. Studies found that the number of hand sanitizer exposures reported to the Norway and Finland poison centers increased after the H1N1 outbreak and government recommendation of hand disinfectant use.2,10

The increase in hand sanitizer exposures was not directly caused by the H1N1 outbreak but could be considered an unintended consequence of the recommendations for reducing risk of H1N1 infection. If more people used hand sanitizers, as was recommended, then more potentially adverse exposures might occur, resulting in more exposures reported to the poison centers.

As a result of this investigation, it might be suggested that neuraminidase inhibitor, influenza vaccine, and hand sanitizer exposures might be useful as surrogates when attempting to conduct surveillance of future serious influenza outbreaks. However, these exposures might be of limited use because any observed increase would likely only occur after an influenza outbreak is already recognized.

In conclusion, the H1N1 outbreak, and the response by public health officials, healthcare providers, and the public, appeared to change the pattern of exposures reported to Texas poison centers beyond the primary focus of the public health emergency.

**REFERENCES**


Invitation to participate in a special issue of the Texas Public Health Journal

Call for Papers
CPRIT-FUNDED PREVENTION PROJECTS

The Texas Public Health Association Journal® is currently seeking original articles from CPRIT-funded Prevention Projects for a special focus issue. Public health best practices from the first cycles of CPRIT-funded Prevention Projects will be featured and published in the Winter 2013 issue due out mid-January. Articles of interest should be cancer prevention and outreach focused:

- Be relevant to Texas public health and cancer prevention
- Add to existing public health practice
- Be well written and scholarly

Special Guest Editors:
- Dr. Barbara Pence
  Texas Tech U. HSC
- Ramona Magid
  CPRIT

Featured Cancer Prevention Topics Will Include:
* Barriers to cancer screening, * Challenges of implementation, * Models for implementation in special populations, * How CPRIT prevention projects have impacted public health in Texas

DEADLINE: November 1, 2012

Complete manuscript guidelines can be found on the TPHA journal page at http://www.texaspha.org
Submit manuscripts electronically to BOTH tphajournal@gmail.com AND Txpha@aol.com
Insert “TPH Journal submission” in the subject line.
Assessment of a Child Injury Prevention Intervention in the Texas-Mexico Border
Norma Garza, BS, MPH,1 Genny Carrillo Zuniga, M.D., M.P.H., M.S.P.H., Sc.D.,2 Luohua Jiang, Ph.D.,1 Nelda Mier, PH.D.,4 John Hellsten, Ph.D.,5 Antonio Rene, Ph.D., M.P.H.6
1Department of Health Policy and Management at Texas A&M Health Science Center, McAllen, TX.
2Department of Environmental and Occupational Health, School of Rural Public Health Texas A&M Health Science Center, McAllen, TX.
3, 4Department of Epidemiology and Biostatistics School of Rural Public Health Texas A&M Health Science Center, College Station, TX.
5Department of Social and Behavioral Health, School of Rural Public Health Texas A&M Health Science Center, McAllen, TX.
6Epidemiology Studies & Initiatives Branch, at the Texas Department of State Health Services, Austin, TX.

ABSTRACT
Unintentional injury is the leading cause of mortality and morbidity among young children in the United States and it disproportionately affects low income families. The purpose of this study was twofold: 1) to investigate the effectiveness of injury prevention training for Mexican American households living in impoverished areas along the Texas-Mexico border, known as colonias (neighborhoods), and 2) to conduct a home hazards assessment. This was a non-randomized, cross sectional one group, pre-post-test design that included 58 households with children ages 14 years and under. Certified promotoras conducted face-to-face educational interventions, applied a questionnaire and used a direct observation assessment survey. Descriptive and inferential analyses were used for data analyses. There was a statistically significant increase in child injury-related knowledge among participants at post-test in all four global categories measured: Infant safety (ages 0-2 years) (p=0.0001), child safety (ages 2-8 years) (p=0.0001), road safety (p=0.0001), and home safety (p=0.0001). Hazards found in the homes of participants were lack of safety caps on electric outlets and no smoke alarms. This study suggests a culturally-appropriate intervention is effective in increasing injury prevention knowledge of U.S. border residents living in low-income areas. There is a need for culturally-appropriate interventions for this population.

Key words: Promotoras, Community Health Workers, Injury Prevention, Safety Education, children safety.

INTRODUCTION
Unintentional injuries are the leading causes of non-fatal injury among young children in the United States.1 While motor vehicle crashes, suffocation, drowning, fires and burns are the leading causes of injury-related deaths among children ages 14 years and under, falls are the leading cause of nonfatal injury in this group.1,2,3 Children from ethnic minority groups are more likely to suffer unintentional injuries than non-Hispanic white children.4,5 Research also shows that black children (1-9 years of age) and adolescents have the highest rates of fire/burn injury deaths compared to children from other ethnic groups.6 Injury-related ethnic disparities are linked to economic factors, poor housing, and substandard electrical and heating systems.7 Hispanic families in South Texas more often do not have home safety devices, including smoke detectors, fire extinguishers, stove guards, and safety caps on electrical outlet plugs.8 Most childhood injuries occur in the home and are preventable through home safety modifications (e.g., smoke detectors and safety caps on electrical outlet plugs).9 Research shows that educational interventions reduce poisoning-related injuries related to safe storage of medicines and harmful products in the home,1 develop awareness, and increase home safety practices.10,11 The purpose of this study was twofold: 1) to investigate the effectiveness of injury prevention training for Mexican American households; and, 2) to conduct a home hazard assessment.

METHODS
Study design and participants: This was a cross-sectional, non-randomized one group, pre-post-test intervention study based on a questionnaire and an observational home assessment survey. It was conducted in South Texas from April to November, 2011. Participants were located in colonias in Hidalgo County, Texas, which is considered one of the poorest counties in the United States.12 Eligibility criteria included: being Mexican American 18 years of age and older; having one or more children (14 years of age and younger); residing in one of the colonias in Hidalgo county; and willingness to participate in this study. Certified promotoras are also known as community health workers (CHW) and frequently reside in the colonias they serve. To receive certification, they are required to undergo comprehensive training which consists of 160 hours of instruction in such areas as interpersonal skills, communication, service coordination, teaching, advocacy, and capacity building.13 For the purpose of this study, the promotoras received additional training on how to recruit participants, deliver the intervention, and collect measurement data, as well as training using an injury prevention curriculum, which was provided in collaboration with the Texas A&M University - College of Architecture Center for Housing and Urban Development Colonias Program. This study was approved by the Texas A&M University Institutional Review Board (IRB).

Measurements: The curriculum used for the intervention was “Raising Safe Kids: One Stage at a Time” from Safe Kids USA. It was adapted by the researchers as an educational module at a sixth grade language level with pictures for easy understanding, and included: 1) falls, 2) motor vehicle occupancy injuries, 3) non-fire burns, 4) home fires, 5) poisoning, 6) drowning, and 7) safe sleep. Participants had one-hour injury training conducted in Spanish, which was offered in their homes. A pre- and post-test questionnaire with 24 true-false questions was developed by researchers. The questionnaire was administered before and after the intervention. In addition, a second questionnaire was administered to gather demographic information.

Household assessment: An observation assessment survey was developed by researchers and used to assess home hazards. When visiting each household, promotoras performed an assessment to identify hazards present in the home. The promotoras asked permission of the resident to walk in and around the house to conduct the observational survey (every room in the house was assessed). The household assessment observation survey consisted of specific hazardous items that might be found in each room of the house: living room (5 items), kitchen (12 items), bedrooms (9 items), bathroom (5 items), and general home safety (5 items). Among the hazardous items listed in the observation survey are included: use of safety caps on electric outlets; having smoke alarms; storing sharp objects, medicines, and cleaning supplies out of children’s reach; use of stair gates; and having window blind cords secured. See Appendix 1, Observational Survey.

Data and statistical analysis: Descriptive statistics were completed to summarize demographic characteristics of the respondents as well as frequencies of their correct and incorrect answers at pre- and post-test. Child injury-related knowledge questions at pre- and post-test were summarized as four composite scores: infant safety (7 questions), child safety (8 questions), road safety (2 questions), and home safety (6 questions). Each of the composite scores is the mean of all the questions included in that category, representing the proportion...
of correctly answered questions in that area. Paired t-tests were used to compare the four child injury-related knowledge composite scores before and after intervention.

RESULTS
Table 1 shows the demographic characteristics of participants. A total of 58 participants were included in the study. All participants were female with an age range of 19-54 years. A majority of the participants (80%) were married, over half had an elementary school education (56.8%), and more than half of the respondents had an annual income of less than $9,999.

Table 2 presents knowledge scores at pre- and post-intervention. After receiving the educational intervention, participants’ knowledge significantly increased in all four composite scores. More specifically, the average proportion of correctly answered infant safety questions was 88% at pre-test, with an increase to 98% at post-test. The difference in the proportions of correctly answered infant safety questions between pre-test and post-test was significantly different from 0, with a p-value < 0.0001. Similarly, the average proportion of correctly answered road safety questions was 97% at post-test, which was significantly higher than that at pre-test (81%; p < 0.001). The average proportion of correctly answered home safety questions was 99.7%, which was also significantly higher than that at pre-test (89%; p < 0.001). Finally, the average proportion of correctly answered child safety questions was 90% at pre-test, which increased significantly to 99% at post-test (p < 0.0001).

The frequencies of correct and incorrect answers for each of the child injury-related knowledge questions are shown in Table 3. Consistent with the results in Table 2, except the first question (the use of baby walkers is safe for toddlers), the percentage of correct answers for each question was higher at post-test than at pre-test.

The home assessment survey results (Table 4) indicate that overall 89% of households did not use safety caps on electric outlets in any room around the house; and 86% did not have smoke alarms inside the house. Almost all respondents (98%) reported storing their knives and sharp objects out of children’s reach; 89% reported having the floor cleared of small objects and toys; and 89% did not use window blinds in their bedrooms, which decreases the risk of injury. Ninety-eight percent (98%) of participants have electrical appliances...
burns; and scalds. And smoke alarms and studies, including absence of safety caps on electric outlets, lack of
in the homes of participants were similar to those found in previous
Results from the household assessment indicate that hazards found
ances in bathrooms close to water was identified as a hazard and
in the bathroom near the water, which creates a safety hazard, and
89% reported not having a family fire escape plan.

**DISCUSSION**

This study assessed the impact that the injury prevention training had on Mexican American households living in the border region. Our findings indicate that training on child injury prevention delivered by promotoras is effective in improving the injury prevention and home safety knowledge level among Mexican American households living in impoverished neighborhoods along the Texas-Mexico border region. Results showed that the injury prevention and home safety education provided by the promotoras had a positive outcome in the household, resulting in knowledge increase in all four composite scores: infant safety, child safety, road safety, and home safety. There were some statements (do not leave toys inside cribs, hazardous substances should be locked in cabinets, as well as medicines) where residents showed previous knowledge related to the educational intervention. They improved further as indicated in the post-test. Our results are consistent with previous research which shows that home safety and health education significantly increases knowledge of fire and food safety, smoke alarm awareness, injury risks related to burns; and scalds.

Results from the household assessment indicate that hazards found in the homes of participants were similar to those found in previous studies, including absence of safety caps on electric outlets, lack of smoke alarms and fire escape plans. The use of electric appliances in bathrooms close to water was identified as a hazard and observed in 98% of the households visited. However, other safety issues such as locking away hazardous substances and medicines as well as keeping hot liquids and matches out of reach of children had already been implemented by the participants. A follow-up will be conducted to determine the impact that the educational training had in relation to household changes participants may have made to decrease the number of hazards present in their homes.

A limitation of this study was the small sample size, thus limiting the generalizability of results. Another limitation was that the knowledge was measured using self-report instruments, which could have led to some bias. It is important to note that despite these limitations this study is significant as it shows that training parents can lead to significant changes in knowledge in a short period of time. Another important issue worth noting is the poor housing conditions of this population. They often lack electricity and portable or running water, which can cause hazardous conditions affecting the health and safety of residents. This area bears further investigation.

The need for home safety training among low-income minority households is significant. To achieve this, a culturally appropriate home safety and injury prevention curriculum can be used to train parents and caregivers. The training can be delivered and implemented by promotoras at community and Head Start centers to increase awareness and knowledge of risky hazardous behaviors in the home.

**REFERENCES**

5. Swart L, van Niekerk A, Seedat M, Jordaan E. Paraprofessional home visitation program to prevent childhood unintentional injuries in low-in-

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% C.I.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Safety</td>
<td>Pre-Test 0.877</td>
<td>0.121</td>
<td>0.845, 0.907</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Test 0.980</td>
<td>0.056</td>
<td>0.965, 0.995</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference -0.103</td>
<td>0.128</td>
<td>-0.137, -0.070</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Road Safety</td>
<td>Pre-Test 0.810</td>
<td>0.243</td>
<td>0.747, 0.874</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Test 0.971</td>
<td>0.094</td>
<td>0.946, 0.996</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference -0.161</td>
<td>0.252</td>
<td>-0.227, -0.094</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Home Safety</td>
<td>Pre-Test 0.885</td>
<td>0.113</td>
<td>0.855, 0.915</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Test 0.997</td>
<td>0.022</td>
<td>0.991, 1.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference -0.112</td>
<td>0.118</td>
<td>-0.143, -0.081</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Children Safety</td>
<td>Pre-Test 0.903</td>
<td>0.107</td>
<td>0.875, 0.931</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Test 0.994</td>
<td>0.028</td>
<td>0.986, 1.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difference -0.091</td>
<td>0.112</td>
<td>-0.120, -0.061</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Table 2. Paired t-test results comparing child injury-related knowledge, composite scores at pre- and post-test (n=58)
Table 3. Pre- and post-test results comparing injury related knowledge (n=58)

<table>
<thead>
<tr>
<th>QUESTIONS BY VARIABLE</th>
<th>Pretest Correct</th>
<th>Posttest Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infant Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The use of baby walkers is safe for toddlers.</td>
<td>96.5%</td>
<td>94.8%</td>
</tr>
<tr>
<td>Caregivers should use safety straps when changing an infant’s diaper.</td>
<td>96.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Children can drown in 2 inches of water.</td>
<td>82.7%</td>
<td>100%</td>
</tr>
<tr>
<td>You can leave the room and leave the baby unattended (for example when bathing your baby).</td>
<td>89.6%</td>
<td>98.2%</td>
</tr>
<tr>
<td>Sleeping with my baby is secure.</td>
<td>81.0%</td>
<td>98.2%</td>
</tr>
<tr>
<td>The crib of an infant can have his/her toys, blankets, pillows without any problem.</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Babies should always be placed on their back.</td>
<td>67.2%</td>
<td>94.8%</td>
</tr>
<tr>
<td><strong>Road Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The use of a helmet and protective gear while biking or playing is not important.</td>
<td>63.7%</td>
<td>91.3%</td>
</tr>
<tr>
<td>Your child should never be left alone in a car.</td>
<td>96.5%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Home Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When cooking, pots should be placed on back burners with handles turned away from the front of the stove.</td>
<td>96.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Rugs need to have a plastic surface on the back so they stay in place.</td>
<td>63.7%</td>
<td>100%</td>
</tr>
<tr>
<td>If the clothes you are wearing catch fire, you must STOP DROP and ROLL.</td>
<td>91.3%</td>
<td>100%</td>
</tr>
<tr>
<td>Smoke detectors in a house need to be working and checked yearly.</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Fire escape plans are a waste of time.</td>
<td>89.6%</td>
<td>100%</td>
</tr>
<tr>
<td>Frayed or damaged electric cords can be repaired with tape and continue to be used.</td>
<td>89.6%</td>
<td>98.2%</td>
</tr>
<tr>
<td><strong>Child Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is not problematic or dangerous to have matches within a child’s reach.</td>
<td>77.5%</td>
<td>98.2%</td>
</tr>
<tr>
<td>Hazardous substances, such as medicine and beauty supplies must be in closed cabinets out of the reach of children.</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>It is dangerous to leave medicine within children’s reach.</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Swimming pools need to have a gate and a fence to avoid access to children.</td>
<td>94.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Children can be around small objects without any problem.</td>
<td>94.8%</td>
<td>98.2%</td>
</tr>
<tr>
<td>Children don’t reach for hazardous substances in their homes.</td>
<td>60.3%</td>
<td>98.2%</td>
</tr>
<tr>
<td>Dangerous objects such as knives, scissors, and firearms MUST be in a locked cabinet.</td>
<td>96.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>It is important to have the window cords secured and out of the reach of children.</td>
<td>98.2%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

ABSTRACT

Objective: To assess the influence of an informal HIV awareness-raising event on college students’ perceived risk for contracting HIV, perceived importance of HIV-related protective behaviors, and intentions to modify HIV-related protective behaviors.

Design: A questionnaire-based survey of college students who attended the annual The Catwalk for HIV/AIDS Awareness.

Setting: One hundred and six college students were surveyed after attending a campus-wide three-hour HIV education event with an associated health fair.

Methods: Human subjects approval was obtained from a university Institutional Review Board. The questionnaire sought the following data: participant demographics, sexual behaviors, perceived HIV knowledge, perceived HIV risk, perceived importance of protective sexuality-related behaviors, and intentions to change sexual behaviors. No incentives were provided for research participation.

Results: Participants who were African American (OR=9.68) or reported having oral and vaginal sex (OR=24.44) were more likely to perceive themselves to be at moderate/extreme risk for contracting HIV when compared to their counterparts, respectively. Female students were over 14 times more likely than male students to perceive full importance in HIV protective behaviors such as being abstinent, being monogamous, consistently using condoms, and getting tested for HIV. Participants who had were Hispanic (OR=9.90), perceived themselves to be at risk for contracting HIV (OR=2.36), or perceived more importance in protective behaviors (OR=5.39) were significantly more likely to intend to alter their sexual behaviors after attending the event.

Conclusions: Among formal education about sexual behaviors, informal HIV awareness events can potentially disperse accurate information in a non-judgmental atmosphere.

Keywords: College student, HIV/AIDS, HIV risk, behavior change

INTRODUCTION

Unprotected oral, vaginal, and anal sexual activity among undergraduate students often leads to negative consequences including contracting human immunodeficiency virus (HIV). According to the Centers for Disease Control and Prevention (CDC), unprotected oral, vaginal, and anal sexual activity are the leading causes of HIV transmission. Male-to-male sexual contact and high-risk heterosexual contact (e.g., unprotected oral, vaginal, and/or anal intercourse, multiple sex partners) comprises over 80% of HIV diagnoses in America.1 HIV is considered an epidemic of young people between the ages of 13 and 29 and accounts for substantial social and financial costs for affected individuals as well as their friends and families.2

For many undergraduate students, the college years encompass the first experience of living away from parents or close family members for a prolonged period of time. The university environment allows students to interact with diverse individuals and presents opportunities to engage in sexual activities. In 2009, 66% of undergraduate students had engaged in penile-vaginal intercourse, 67% had oral sex, and 21% reported having anal sex.3 Several authors have documented that undergraduate students engage in risky sexual behaviors such as using drugs or alcohol before or during a sexual encounter, engaging in sexual behaviors with multiple partners, and/or not using condoms properly during every act of intercourse.4-12

In the last decade, hooking up (i.e., a brief sexual encounter between two people who are strangers or brief acquaintances)13 has become the normative heterosexual relationship on college campuses and is associated with the previously mentioned risky sexual behaviors.13-18 The prevalence of undergraduates hooking up, combined with empirical observations of unsafe sexual activity among students, has led to an increased HIV/AIDS awareness and prevention efforts on college campuses nationwide.19 Although the availability and accessibility of HIV-related information through multiple channels has enabled undergraduates to understand how HIV is transmitted, higher levels of HIV knowledge may result in a misguided confidence that they cannot contract HIV because they perceive themselves to be of low personal risk or place inappropriate trust in friends and partners.19-25 These misconceptions, in the presence of elevated HIV-related knowledge, are of great concern to health educators because HIV knowledge obtained solely through information dissemination does not necessarily translate into the engagement in safer sex practices or increased awareness of personal risk for contracting HIV. The goal of this study is to assess the influence of an informal HIV awareness-raising event on specific HIV-related perceptions in a student sample. Specifically, the purposes of this study were to: (1) identify characteristics of college students who attended the Catwalk for HIV/AIDS Awareness; (2) assess factors associated with participants’ perceived risk for contracting HIV; (3) assess factors associated with participants’ perceived importance of HIV-related protective behaviors; and (4) determine the characteristics associated with changes in intentions to modify HIV-related protective behaviors immediately after attending the event. The innovation of this study is its focus on an “informal” and multi-media-style event, rather than a formal and more traditionally didactic intervention. Figure 1 illustrates the model utilized for examining the associations between variables included in this study.

METHOD

Program description

The Catwalk for HIV/AIDS Awareness is a free annual event developed and hosted by the Health Education division of the university health center. This three-hour event was open to university faculty, staff, students and community members and combined a health fair with a charity fashion show. The health fair component was held for one hour before and one hour after the fashion show component. The Catwalk for HIV/AIDS Awareness incorporated factual information that resonated with college students across sex, sexual orientation, racial/ethnic boundaries to educate college participants about HIV in an informal, non-judgmental, and non-threatening setting. The specific goals of the awareness event were to: (1) increase participants’ awareness about the magnitude of the HIV/AIDS epidemic locally, nationwide, and worldwide; (2) increase participants’ knowledge about credible resources for HIV/AIDS information nationwide and within the community; (3) increase participants’ knowledge about the modes of HIV transmission; (4) increase participants’ knowledge...
about effective prevention behaviors and strategies; and (5) engage community and university organizations/agencies to raise awareness about HIV/AIDS issues as they relate to local, national, and worldwide populations.

The health fair component of the event was comprised of nine vendor booths hosted by university and community agencies (e.g., the county health department, the university health center, student organizations, and local HIV-related service providers). Each booth focused on, and disseminated information about, a specific HIV-related topic (e.g., international prevalence rates, at-risk groups, safer sex practices, national and local resources). Free anonymous rapid HIV testing was available on-site for event attendees.

The fashion show featured popular music and student models wearing designer clothing donated by local retailers (a total of 6 retail donors participated). During the show, models walked the catwalk and verbally delivered HIV/AIDS-related facts and statistics. As a visual aid to complement the information verbalized by the models, a HIV/AIDS-related slide show provided local, national, and global prevalence and incidence rates to raise participants’ awareness; change perceptions of behavioral risk and importance; identify HIV/AIDS-related resources; and increase intentions to change HIV-related behaviors.

Data collection procedures
Data were collected from college students who attended the Catwalk for HIV/AIDS Awareness. Participants were recruited to the program through a campus-wide advertising initiative including the distribution of emails, flyers, and word-of-mouth. Survey instruments were completed by participants as a formal evaluation at the conclusion of the event. Study investigators distributed evaluation instruments to all participants with verbal instructions to complete them at any location they desired on the premise. Completed evaluation instruments were returned in designated drop-boxes located near the event’s exit. Identifying information was not collected from participants, thus anonymity was maintained. Although these precautions were taken to reduce potential bias related to social desirability, such biases may never be fully overcome among college students completing assessments in public settings. Participation in this study was voluntary and participants could withdraw from the study at any time. Institutional Review Board approval was obtained at Texas A&M University.

Instrument
Participants were surveyed using an instrument developed by the event coordinators; a partnership between an evaluation specialist on faculty at the university, university health center personnel, and college students with leadership roles in university-sanctioned student organizations. The investigators designed the instrument for this intervention because an existing instrument had not been previously created to assess the specific purposes of this event. Questionnaire items were created by first creating measurable intervention objectives; then identifying program content associated such objectives hypothesized influence knowledge, attitudes, perceptions, and intentions; then tailoring questions and response categories to appropriately measure participants knowledge, attitudes, perceptions, intentions, and behaviors. The resulting self-report questionnaire was three pages, paper-based, and consisted of 35 items. Survey instrument items included Likert-type scales, yes/no, closed-response, and open-ended formats. Instrument items were intended to measure participant’s personal characteristics, sexual behaviors, HIV-related knowledge, susceptibility, perceived risk of contracting HIV, perceived importance of HIV protective behaviors, intentions to change behavior following the event, and programmatic satisfaction. The evaluation instrument took participants approximately 15 minutes to complete. The questionnaire developed to assess knowledge, attitudes, and perceptions associated with this event was not validated prior to mass dissemination; this was the first time the event had been implemented, thus this evaluation served as the pilot assessment.

MEASURES
This study analyzed data collected from 106 college students who attended the Catwalk for HIV/AIDS Awareness. Two types of variables were included: personal characteristics of the participants and variables hypothesized to be influenced by attending the event (i.e., knowledge, misconceptions, perceptions, and intentions to change behavior). Personal characteristics of participants utilized in this study were age, sex, race/ethnicity (i.e., categories included non-Hispanic White, Hispanic, African American, and other/multiple races), and sexual activity (i.e., reporting no sexual activity compared to having engaged in both oral and vaginal sex).

The event variables utilized in this study were HIV risk behavior knowledge (i.e., composite score of correctly ranking needle sharing, anal sex, vaginal sex, and oral sex in order from “most risky for transmitting HIV” to “least risky for transmitting HIV;” higher
scores indicate more knowledge), HIV transmission misconception (i.e., composite score of correctly identifying misconception statements from a list of nine statements; higher scores indicate more misconception); perceived self HIV risk (i.e., 4-point Likert-type scale item; higher scores indicate more risk), and perceived importance of HIV protective behaviors (i.e., composite score of 5 4-point Likert-type scale items; higher scores indicate more importance), and intent to change HIV protective behaviors (i.e., composite score of 5 3-point Likert-type scale items; higher scores indicate more intention). The five HIV protective behaviors used to assess perceived importance of HIV and intention to change behavior included: being abstinent, being monogamous, limiting your number of sex partners, using condoms during intercourse, and getting tested for HIV.

Dependent variables used in this study were the dichotomized values for perceived self HIV risk (“no/slight risk” compared to “moderate/extreme risk”), perceived importance of HIV protective behaviors (“less than extremely important” compared to “extremely important”), and intent to change HIV protective behaviors (“same level of intention” compared to “more intention to change behavior”).

Data Analysis

Data were analyzed using SPSS Statistical Software (version 17.0). Descriptive, nonparametric bivariate, and multivariate analyses were performed. Frequencies were calculated for participant personal characteristics and event-related variables of interest. Pearson’s chi-square tests were performed to assess the goodness of fit for frequency distributions and the independence between categorical participant personal characteristics. Independence was also examined between males and females. Three logistic regression analyses were performed to explain the associations of participants’ personal characteristics, behaviors, knowledge, and misconceptions on the dependent variable of interest (i.e., perceived self HIV risk, perceived importance of HIV protective behaviors, and intent to change HIV protective behaviors).

RESULTS

Sample Characteristics

The study sample included 106 college students. The mean age of participants was 21.93 years (SD = 6.26). The majority of participants were female (78.3%) and non-Hispanic White (38.7%). Overall, 31.3% of respondents reported engaging in no sexual activity, 10.4% reported having oral sex only, 52.1% reported having both oral and vaginal sex, and 16.5% reported having anal sex. Of these participants, 33.6% had less than full HIV risk behavior knowledge, 32.7% had some HIV transmission misconception, 20.8% reported being at moderate/extreme risk for contracting HIV, and 30.9% reported perceiving HIV protective behaviors as less than fully important. Almost half of the sample, 47.3% of participants reported intention to change at least one HIV protective behavior. In this sample, females were significantly more likely to perceive more importance for HIV protective behaviors (t = 2.67, p=0.01). Sample characteristics of study participants are presented in Table 1.

To assess the representativeness of our sample, the sociodemographic distribution of event participants was compared to that of the uni-

Table 1. Personal characteristics, sexual behaviors, and HIV-related indicators

<table>
<thead>
<tr>
<th></th>
<th>Male (n=23)</th>
<th>Female (n=83)</th>
<th>Total (n=106)</th>
<th>t or X²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age*</td>
<td>20.57 ±2.35</td>
<td>22.33 ±6.96</td>
<td>21.93 ±6.26</td>
<td>1.94</td>
<td>0.06</td>
</tr>
<tr>
<td>Race / Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>6 (26.1%)</td>
<td>35 (42.2%)</td>
<td>41 (38.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>8 (34.8%)</td>
<td>24 (28.9%)</td>
<td>32 (30.2%)</td>
<td>2.66</td>
<td>0.45</td>
</tr>
<tr>
<td>African American</td>
<td>6 (26.1%)</td>
<td>19 (22.9%)</td>
<td>25 (23.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other / Multiple Races</td>
<td>3 (13.0%)</td>
<td>5 (6.0%)</td>
<td>8 (7.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Activity</td>
<td></td>
<td></td>
<td></td>
<td>3.84</td>
<td>0.28</td>
</tr>
<tr>
<td>No Sexual Activity</td>
<td>6 (30.0%)</td>
<td>24 (31.6%)</td>
<td>30 (31.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Sex Only</td>
<td>4 (20.0%)</td>
<td>6 (7.9%)</td>
<td>10 (10.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal Sex Only</td>
<td>0 (0.0%)</td>
<td>6 (7.9%)</td>
<td>6 (6.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral and Vaginal Sex</td>
<td>10 (50.0%)</td>
<td>40 (52.6%)</td>
<td>50 (52.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV Risk Behavior Knowledge*</td>
<td>3.09 ±1.44</td>
<td>3.04 ±1.44</td>
<td>3.06 ±1.42</td>
<td>0.15</td>
<td>0.88</td>
</tr>
<tr>
<td>HIV Transmission Misconception*</td>
<td>1.87 ±3.24</td>
<td>1.45 ±3.03</td>
<td>1.51 ±3.03</td>
<td>0.56</td>
<td>0.58</td>
</tr>
<tr>
<td>Perceived Self HIV Risk*</td>
<td>0.67 ±0.91</td>
<td>0.70 ±0.99</td>
<td>0.69 ±0.96</td>
<td>-0.13</td>
<td>0.90</td>
</tr>
<tr>
<td>Perceived Importance of HIV Protective Behaviors*</td>
<td>4.05 ±1.15</td>
<td>4.75 ±0.47</td>
<td>4.58 ±0.76</td>
<td>2.67</td>
<td>0.01</td>
</tr>
<tr>
<td>Intent to Change HIV Protective Behaviors*</td>
<td>1.39 ±1.98</td>
<td>1.42 ±1.85</td>
<td>1.41 ±1.86</td>
<td>0.54</td>
<td>0.96</td>
</tr>
</tbody>
</table>

*Means and standard deviations reported
**Frequency values differ due to missing data

TPHA Journal  Volume 64, Issue 4  25
iversity population enrolled at the time of this study. Comparisons are presented in Table 2. Although the sample was seemingly representative based on age, the study sample contained substantially higher proportions of females relative to the university population (i.e., 78.3% compared to 46.4%, respectively). Further, the distribution differed in terms of race/ethnicity; study sample was underrepresented in terms of non-Hispanic white participants (i.e., 38.7% compared to 67.1%) and overrepresented in terms of Hispanic (i.e., 30.2% compared to 14.3%) and African American (i.e., 23.6% compared to 3.5%) participants.

Perceived Self HIV Risk

This logistic regression model has a Nagelkerke R-square of 0.280. Participants who were African American were over 9 times more likely to perceive themselves to be at moderate/extreme risk for contracting HIV (p<0.05; OR = 9.68, 95% CI = 1.12-83.56). Participants who reported having both oral and vaginal sex were over 24 times more likely to perceive themselves to be at moderate/extreme risk for contracting HIV, when compared to their counterparts who reported engaging in no sexual activity (p<0.05; OR = 24.44, 95% CI = 1.78-335.76). These and other predictors are presented in the model in Table 3.

Perceived Importance of HIV Protective Behaviors

This logistic regression model has a Nagelkerke R-square of 0.322. Participants who were female were over 14 times more likely to perceive full importance in HIV protective behaviors, when compared to their male counterparts (p<0.01; OR = 14.47, 95% CI = 2.87-72.94). These and other predictors are presented in the model in Table 4.

Intent to Change HIV Protective Behaviors

This logistic regression model has a Nagelkerke R-square of 0.438. Participants who were Hispanic were over 9 times as likely to report intention to change HIV protective behaviors after attending the event, when compared to their non-Hispanic White counterparts (p<0.05; OR = 9.90, 95% CI = 1.68-58.42). With every one unit increase in perceived self HIV risk, participants were over 2 times more likely to intend to change HIV protective behaviors after at-

Table 2. Sociodemographic comparisons between event participants and the university population

<table>
<thead>
<tr>
<th>Variable</th>
<th>Study</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>M = 21.93</td>
<td>61.0% (ages 18 to 21)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>21.7%</td>
<td>53.6%</td>
</tr>
<tr>
<td>Female</td>
<td>78.3%</td>
<td>46.4%</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>38.7%</td>
<td>67.1%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>30.2%</td>
<td>14.3%</td>
</tr>
<tr>
<td>African American</td>
<td>23.6%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Other/Multiple Races</td>
<td>7.5%</td>
<td>15.1%</td>
</tr>
</tbody>
</table>

Table 3. Logistic regression explaining perceived self HIV risk

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>OR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.05</td>
<td>0.08</td>
<td>0.96 [0.82, 1.11]</td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-0.15</td>
<td>1.13</td>
<td>0.86 [0.09, 7.93]</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.54</td>
<td>0.94</td>
<td>1.71 [0.27, 10.86]</td>
</tr>
<tr>
<td>African American</td>
<td>2.27</td>
<td>1.10</td>
<td>9.68 [1.12, 83.56]</td>
</tr>
<tr>
<td>Other Race</td>
<td>1.01</td>
<td>1.46</td>
<td>2.73 [0.16, 47.39]</td>
</tr>
<tr>
<td>Had No Sexual Activity</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Oral and Vaginal Intercourse</td>
<td>0.03</td>
<td>0.34</td>
<td>24.44 [1.78, 335.76]</td>
</tr>
<tr>
<td>HIV Risk Behavior Knowledge</td>
<td>0.10</td>
<td>0.12</td>
<td>0.97 [0.50, 1.88]</td>
</tr>
<tr>
<td>HIV Transmission Misconception</td>
<td>0.82</td>
<td>0.68</td>
<td>1.11 [0.88, 1.41]</td>
</tr>
<tr>
<td>Perceived Importance of HIV Protective Behaviors</td>
<td>0.23</td>
<td>2.27</td>
<td>2.27 [0.60, 8.53]</td>
</tr>
</tbody>
</table>

Nagelkerke $R^2 = 0.280$

p<.05*, p<.01**
tending the event (p<0.05; OR = 2.36, 95% CI = 1.04-5.34). With every one unit increase in perceived importance of HIV protective behaviors, participants were over 5 times more likely to intend to change HIV protective behaviors after attending the event (p<0.05; OR = 5.39, 95% CI = 1.25-23.36). These and other predictors are presented in the model in Table 5.

**DISCUSSION**

This study examined aspects of individuals who attended an HIV awareness fashion show at a large American university. The authors collected data after the event to identify the personal characteristics of attendees and measure their HIV knowledge, misconceptions, perceptions, and intentions to alter HIV-protective behaviors. Generally, students in our sample understood the modes of HIV transmission and how to protect themselves against the virus. A majority of students reported having no or slight perceived self HIV risk, although most (52.1%) respondents self-reportedly engaged in oral and vaginal sex. The discrepancy between engaging in sexual acts, comprehending HIV transmission modes, and reporting no or slight perceived risk for contracting HIV represents a fundamental disconnect between students’ perceptions of risk and sexual risk-taking behaviors. The combination of an elevated level of knowledge about HIV and low perceptions of contracting the virus coincides with findings in current literature. The multifaceted factors contributing to college students’ low perceptions of risk include feelings of invincibility, knowledge about advances in HIV treatments, and a false sense of security within social networks.21-25 Therefore, identifying culturally appropriate and efficacious methods to deliver HIV content is needed to reduce inconsistencies between students’ HIV-related knowledge, self-risk perceptions, and risky sexual behaviors. To complement the exposure to credible and reliable sources of information, relatable resources should be incorporated in future HIV awareness events to convey the severity of an HIV diagnosis for individuals across diverse populations. This aspect will increase the likelihood that HIV-

### Table 4. Logistic regression explaining perceived importance of HIV protective behaviors

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>OR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.07</td>
<td>0.08</td>
<td>1.07 [0.92, 1.25]</td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2.67</td>
<td>0.83</td>
<td>14.47 [2.87, 72.94]**</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.84</td>
<td>0.75</td>
<td>2.33 [0.54, 10.09]</td>
</tr>
<tr>
<td>African American</td>
<td>0.54</td>
<td>0.86</td>
<td>1.72 [0.32, 9.25]</td>
</tr>
<tr>
<td>Other Race</td>
<td>-0.96</td>
<td>1.12</td>
<td>0.38 [0.04, 3.46]</td>
</tr>
<tr>
<td>Had No Sexual Activity</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Oral and Vaginal Intercourse</td>
<td>-1.15</td>
<td>0.73</td>
<td>0.32 [0.08, 1.32]</td>
</tr>
<tr>
<td>HIV Risk Behavior Knowledge</td>
<td>0.10</td>
<td>0.25</td>
<td>1.10 [0.68, 1.78]</td>
</tr>
<tr>
<td>HIV Transmission Misconception</td>
<td>0.07</td>
<td>0.10</td>
<td>1.08 [0.89, 1.30]</td>
</tr>
</tbody>
</table>

Nagelkerke $R^2 = 0.322$

p<.05*, p<.01**

### Table 5. Logistic regression explaining intent to change HIV protective behaviors

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>OR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.06</td>
<td>0.06</td>
<td>1.06 [0.94, 1.20]</td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-0.48</td>
<td>1.08</td>
<td>0.62 [0.07, 5.17]</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>2.29</td>
<td>0.91</td>
<td>9.90 [1.68, 58.42]*</td>
</tr>
<tr>
<td>African American</td>
<td>1.16</td>
<td>0.97</td>
<td>3.17 [0.48, 21.08]</td>
</tr>
<tr>
<td>Other Race</td>
<td>1.74</td>
<td>1.48</td>
<td>5.67 [0.31, 103.96]</td>
</tr>
<tr>
<td>Had No Sexual Activity</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Oral and Vaginal Intercourse</td>
<td>1.32</td>
<td>0.85</td>
<td>3.74 [0.70, 19.89]</td>
</tr>
<tr>
<td>HIV Risk Behavior Knowledge</td>
<td>-0.24</td>
<td>0.25</td>
<td>0.79 [0.48, 1.28]</td>
</tr>
<tr>
<td>HIV Transmission Misconception</td>
<td>0.20</td>
<td>0.11</td>
<td>1.22 [0.97, 1.52]</td>
</tr>
<tr>
<td>Perceived Self HIV Risk</td>
<td>0.86</td>
<td>0.42</td>
<td>2.36 [1.04, 5.34]*</td>
</tr>
<tr>
<td>Perceived Importance of HIV Protective Behaviors</td>
<td>1.69</td>
<td>0.75</td>
<td>5.39 [1.25, 23.36]*</td>
</tr>
</tbody>
</table>

Nagelkerke $R^2 = 0.438$

p<.05*, p<.01**
Results from our study revealed that African American students were over nine times more likely to consider themselves at moderate or high risk for contracting HIV. This discrepancy in our sample may be attributed to insurgence of HIV/AIDS education and awareness campaigns targeting African Americans during the last decade.23-29 In addition to educational media campaigns, African American churches have emerged as a primary source of HIV education.30-34 Current information from the CDC supports that HIV/AIDS remains a leading cause of death among African Americans in the United States and recommends that specified programs should continue to target these individuals.35 This finding highlights the aforementioned disconnect between students’ perceptions of risk and sexual risk-taking behaviors in this sub-group. Despite their recognition of being at risk for contracting HIV, African American students were neither significantly more likely to perceive protective behaviors as important nor more likely to intend to change protective behaviors following the event. Additional research is needed to further examine the factors contributing to HIV-related contradictions within this population.

In our study female students were over 14 times more likely to perceive of HIV protective behaviors as extremely important, when compared to their male counterparts. This difference could be attributed females perceiving HIV/AIDS to be a more serious health condition than males.21 However, this sex-based difference was not significant for HIV-related knowledge or intentions to change behavior. These findings coincide with previous research22 and may indicate that females in our sample were already practicing safer sex at rates higher than their male counterparts, thus reflecting less need for behavior change. Sex-based differences in this study emphasize the importance for university HIV/AIDS awareness event coordinators to continue to select and create educational materials that resonate with female attendees. Female-targeted materials may address issues of partner negotiation, condom accessibility, and strive to overcome societal stigmas pertaining to females providing condoms during sexual encounters. Additional efforts are required to specifically integrate content to resonate among males. Strategies to effectively raise perceptions of risk behavior importance could include focus groups and guided interviews to tailor programs to targeted audiences.

While this study contributes to our understanding the attendees of an “informal” and multi-media-style event, rather than a formal and more traditionally didactic HIV-awareness-raising intervention, there are limitations of this study that should be acknowledged. The study employed a cross-sectional survey design; therefore causal relationships between variables cannot be inferred and generalizability to the larger population is limited. The relatively small sample size may have limited statistical power. We were able to determine the students’ intent to change HIV protective behaviors but not how much of their intent was motivated by the event. Future studies should use a pre/post-test intervention design to better measure changes in attendee knowledge, perceptions, and intentions to change behavior. Although HIV awareness-raising events can potentially disperse accurate information to college student populations, the absence of baseline data hindered our ability to assess whether participants’ HIV knowledge, perceptions, or intended behaviors improved as a result of the intervention. It is possible that students’ knowledge shifted very little as a result of the intervention, and that the measured states are generalizable to the vast majority of college students who did not attend the HIV educational event. Conversely, it may be that participants’ reported knowledge and behavior were influenced dramatically by the intervention, in which case these results are not generalizable to the broader population of college students from which the sample was obtained.

This study relied on self-reported data which poses the possibility of introducing social desirability bias into the study. By utilizing a non-random sample, there may have been a self-selection/volunteer-related bias present among participants. As previously mentioned, the sociodemographic distribution of the study sample differed from the enrolled university population in terms of sex and race/ethnicity. These differences may indicate selection bias associated with procedures to recruit students to attend the event. Attendees of the event may exhibit different attitudes and behaviors toward HIV prevention than the students who did not attend. Further investigation is warranted to assess factors contributing to the overrepresentation of female, Hispanic, and African American participants. Sexual risk behaviors were not measured in a manner enabling investigators to link participants’ behaviors with their perceptions of or intention to change those behaviors. Items related to sexual risk behaviors only assessed whether participants had ever engaged oral, vaginal, and/or anal sex; however, they did not assess the frequency of such behaviors within a recent timeframe (e.g., prior 6 months), the number and/or type of partners (i.e., main versus casual “hook-ups”), or the type and frequency of protective behaviors (e.g., condom use). The authors did not ask participants about their sexual orientation. Although the fashion show included models of both sexes to appeal to individuals of all sexualities, data concerning differences between heterosexual, homosexual, bisexual, asexual, and sexually uncertain individuals were not obtained. Sexual orientation data should be collected in future HIV awareness event research.

CONCLUSION

The Catwalk for HIV/AIDS Awareness reached a diverse group of college students by incorporating community/university organizations to disseminate accurate and reliable HIV/AIDS-related content. Our study suggests that college students report being knowledgeable about HIV but fail to transmit that knowledge into perceptions of personal risk. Future HIV awareness events should continue to incorporate risk statistics in concordance with factual information to raise HIV-related knowledge and emphasize the importance of protective behaviors to avoid transmission of the virus. Further investigation is needed to determine best practices for the implementation and evaluation of HIV awareness events for college students to link knowledge and perceptions of risk to foster intentions to consistently engage in protective sexual behaviors.

Acknowledgement

The authors would like to acknowledge the A.P. Beutel Health Center, Aggie REACH, and Eta Sigma Gamma for their involvement in this event.

REFERENCES


The Relationship between Hurricane Ike Residency Damage or Destruction and Intimate Partner Violence among African American Male Youth

Angela Meshack, DrPH, MPH\(^1\), Ronald J. Peters, Jr., DrPH, MS\(^2\), Charles Amos, DrPH, MPH\(^3\), Regina Jones Johnson, DrPH, MSN, RN\(^4\), Mandy J. Hill, DrPH, MPH\(^5\), E. James Essien, MD, DrPH\(^6\)

\(^1\)Texas Southern University
\(^2\)The University of Texas School of Public Health
\(^3\)Harris County Hospital District
\(^4\)The University of Texas at Austin School of Nursing
\(^5\)The University of Texas Health Science Center at Houston School of Medicine
\(^6\)University of Houston School of Pharmacy

ABSTRACT
To determine if a relationship exists between damage or destruction to residence in response to Hurricane Ike and intimate partner violence among a sample of African American male teens in Houston, Texas. This study offers secondary analysis of cross-sectional data collected from 152 predominantly African American males through the Fifth Ward Enrichment Program (FWEP) in Houston, Texas, between November 2008 and December 2008. Teenage males who stated that they encountered damage or destruction to their residences due to Hurricane Ike were twice as likely to report intimate partner violence in the past 30 days (OR =2.85, 95% CI: 1.4, 5.7) compared to those who did not. A logistic regression model that controlled for having an intimate partner in the last year and age showed similar significant results (OR =3.1, 95% CI: 1.5, 6.5). This study demonstrates that there may be an increased risk of intimate partner violence among youth following the damage and destruction caused by a natural disaster. Public health professionals may wish to consider programs post-natural disaster that give teens the skills needed to maintain healthy interpersonal relationships.

INTRODUCTION
Hurricane Ike was the third most destructive hurricane to ever make landfall in the United States.\(^1\) Quality of life was greatly impacted due to limited access to essential life services and disruption of social support services.\(^1\) Critical infrastructure such as natural gas, electricity, and water supply as well as education and security services were disrupted.\(^2\) Harris, the county in which Houston is located, experienced extensive loss from wind and storm surge. The effects of Hurricane Ike resulted in an estimated $10 billion in overall damages and $3.4 billion in total damages to housing in the Houston, Texas area.\(^2\) In the City of Houston with a population of approximately 9 million, about 8 percent of households had moderate to extensive damage to the extent that the families residing within them had to be relocated or the homes had to be completely rebuilt. Some businesses and residences were without electricity for as long as one month. The daily routines of countless Houstonians were interrupted, an occurrence that has been reported to have mental health consequences on the people affected and which has the possibility of creating various forms of maladjusted behaviors.\(^3\) Typically, adults are the persons who are responsible for ensuring their families have a safe and comfortable place in which to live and, therefore, they may bear the brunt of the financial, legal, and emotional effects of the damage or destruction created by a natural disaster such as a hurricane. However, children also are affected and their means of coping may manifest the same or differently than the experiences of their parents or other adults.\(^4\) Although there has been some research published on youth post traumatic stress following natural disasters,\(^5\)\(^7\)\(^8\)\(^9\), no research has been conducted on how residency damage or destruction due to natural disaster may affect youths’ relationships with their intimate partners, that is, those persons with whom they have emotional attachment, share intimate feelings, and see on a regular basis.\(^10\)

Not unlike adults, adolescents express a variety of feelings, defense mechanisms, and strategies for coping with natural disasters.\(^11\)\(^15\) According to the National Child Traumatic Stress Network,\(^16\) several factors such as the event’s level of severity, need for evacuation, extent of damage or loss, loss of lives of family members or pets, school closings or school schedule changes, and the age or developmental level of the child affect her or his recovery from a natural disaster such as a hurricane. Learned behaviors may also impact the means by which youth cope with the effects of natural disasters. Those residing in vulnerable environments or who are homeless may learn that violence is an appropriate and acceptable means of resolving conflict in relationships.\(^17\)\(^18\) Overall, African American youth are more likely relative to other racial groups to reside in vulnerable environments.\(^19\)

A national study conducted by Moore and colleagues\(^20\) revealed that African American children were significantly more likely to be exposed to violent and verbal disagreements compared to their White American counterparts.

The link between low socioeconomic status and poor physical and mental health is well established. Over the past two decades, researchers have increasingly recognized the importance of environmental influences on youth development. The U.S. Census Bureau reports that approximately one in six children below age 18 lives in poverty.\(^21\) Living in a disadvantaged neighborhood, typically defined as an area with a high concentration of families below the poverty level, is associated with a wide range of negative outcomes in early childhood and youth development. Adolescents who live in poverty are at an increased risk for conduct problems in school, substance abuse, poverty-related stress and depression.\(^22\)\(^23\)\(^24\)

While studies demonstrate a clear relationship between hurricanes and subsequent coping behaviors,\(^6\)\(^9\) they suffer from two methodological limitations. Firstly, these studies have drawn their respondents primarily from mainstream adolescent groups and, secondly, they do not address how natural disasters affect the dynamics of intimate relations among vulnerable youth. According to Moore and Stuart,\(^25\) there are many models to show the relationship among the correlates and predictors of violent behavior. We could not find current literature or a model that had shown any relationship between damage and destruction to the primary residence or home and intimate partner violence, defined as any form of verbal or physical abuse inflicted on a person by the partner with whom they share a close emotional bond, among African American male youth. The true extent of intimate partner violence is unknown.\(^26\)\(^27\)

In this current cross-sectional study, the relationship between residency damage or destruction due to Hurricane Ike and intimate partner violence among a sample of 152 African American male youth residing in the Fifth Ward of Houston, Texas, is examined. The researchers hypothesized that youth who self-reported residency damage or destruction due to Hurricane Ike would self-report higher intimate partner violence within the 30 days prior to the survey.
METHODOLOGY

Research Methods

Study Sample

This study offers secondary analysis of data collected through the Fifth Ward Enrichment program (FWEP) in Houston, Texas, between November 2008 and December 2008. FWEP is an interactive life skills and sexual responsibility program implemented in middle and high schools in the Fifth Ward, a low-income predominantly African American and Latino section of Houston. Baseline data collection included a cross-sectional survey of 152 sixth through twelfth grade students in a sample of 4 middle schools and 2 high schools located in the Fifth Ward.

According to the United States (U.S.) Census Bureau (2001), Fifth Ward residents have lower high school graduation rates (37.4%) compared to the total U. S. population (80.4%). In addition, one-half of Fifth Ward households have an annual household income of less than $20,000.

Instrumentation

The FWEP Independent Review Board approved the student survey and the use of active consent. A letter explaining the purpose and content of the study was sent to parents before the survey was administered. The signed letters granting approval for participation in the study were required before each student was enrolled in the study. Research staff administered the surveys following standardized instructions. The staff began by explaining to students the importance of the study and the procedures to assure confidentiality. To obtain the maximum number of student responses, at least two attempts within a two-week period of the original study date were made to locate and survey students who were absent during scheduled administration days.

Measures

Boys were asked to self-report intimate partner violence that they inflicted or received in the past 30 days (dependent variable). Intimate partner violence is defined as any behavior within an intimate relationship that causes physical, psychological (e.g., stomping out of the room anger, arguing), or sexual harm to those in the relationship. The scale that measured intimate partner violence included six questions: In the past 30 days, (1) a girlfriend or partner of mine has stomped out of the room, the house, or the yard while arguing with me; (2) a girlfriend or partner of mine has thrown something at me while arguing; (3) a girlfriend or partner of mine has pushed, grabbed, or hit me while arguing; (4) I stomped out of the room, the house, or the yard while arguing with my girlfriend or partner; (5) I threw something at my girlfriend or partner while arguing; (6) I have pushed, grabbed, or hit my girlfriend or partner while arguing. For the purposes of this study, response categories for intimate partner violence history were answered as “yes” or “no”. The internal consistency reliability of the psychometric scale was dependable (Cronbach’s alpha =.74). In addition, using an item adapted from Pfefferbaum and colleagues, respondents were asked about their residency status following Hurricane Ike (independent variable): “During Hurricane Ike, my house was damaged or destroyed.” Responses to this question were either “yes” or “no”. In addition to these measures, the study included age and having a girlfriend or boyfriend in the last year as potential confounding variables.

RESULTS

Descriptive Statistics

Univariate analysis was conducted in order to describe the study population. As shown in Table 1, all boys were African American. Most boys were 12 to 15 years old (75%) and the sample was fairly balanced with 54% of respondents in middle school and 46% in high school. Approximately 37% of the boys reported that during Hurricane Ike, their houses were damaged or destroyed. In addition, 94.1% of boys reported they had a boyfriend or girlfriend in the last year.

Logistic Regression

Unadjusted logistic regression showed Hurricane Ike residency damage or destruction was a significant predictor of those who received or inflicted intimate partner violence in the past 30 days. Male teens who stated that they had Hurricane Ike residency damage or destruction had almost three times the odds of reporting past 30 day intimate partner violence (OR =2.9, 95% CI: 1.4, 5.7). Logistic regression modeling that controlled for intimate relationship in the last year and

| Table 1. Demographic and descriptive sample statistics (n = 152) |
|-----------------|-------------|-----------|
| Age             | N           | Percent   |
| 12              | 22          | 14.5%     |
| 13              | 34          | 22.4%     |
| 14              | 39          | 25.7%     |
| 15              | 19          | 12.5%     |
| 16              | 17          | 11.2%     |
| 17              | 12          | 7.9%      |
| 18+             | 9           | 5.9%      |
| Grade           | N           | Percent   |
| 6th             | 14          | 9.2%      |
| 7th             | 43          | 28.3%     |
| 8th             | 26          | 17.1%     |
| 9th             | 29          | 19.1%     |
| 10th            | 14          | 9.2%      |
| 11th            | 20          | 13.2%     |
| 12th            | 6           | 3.9%      |
| Had a boyfriend or girlfriend in the last year? | 143 | 94.1% |
| During Hurricane Ike, house was damaged or destroyed | 57 | 37.5% |
age showed similar significant results (OR = 3.1, 95% CI: 1.5, 6.5).

**DISCUSSION**

Natural disasters are events that may have adverse outcomes on persons who are directly and indirectly impacted by their occurrence. The adverse outcomes may present as anxiety, depression, or anger. The anger may manifest itself in the form of violence between partners. Little research has been conducted to determine the impact of natural disasters such as hurricanes on the behavior of adolescents. The present study showed that natural disasters such as Hurricane Ike can impact youth to the point where they are involved in violence with their intimate partners. After a disaster, it is customary to attend first to basic needs such as food, clothing and shelter. Although public health professionals do provide emotional and psychological counseling, these results suggest that counseling may be needed to help adolescents develop coping skills that do not involve directing their unresolved feelings that result from loss or damage to their primary residence toward persons identified as their intimate partners, that is, their boyfriends or girlfriends.

In the current study, we explored whether any differences could be discerned between male youth who self-reported residency damage or destruction related to Hurricane Ike and those who received or inflicted intimate partner violence in the past 30 days. Males who self-reported residency damage or destruction related to Hurricane Ike were more likely to report intimate partner violence in the past 30 days compared to male youth who did not. This relationship remained significant after adjusting for age and intimate relationship status in the last year.

Once considered the great “balancer” impacting poor and rich alike, we now know that floods, hurricanes, and tornadoes hit some socio-economic and demographic groups more than others. According to Bandura, traumatic events such as hurricanes can cause vulnerable people to become morally disengaged and harm others with a clear conscience. It was hypothesized by the authors that Hurricane Ike residency damage and destruction would change several key social norms that could heighten intimate partner conflicts. Issues such as displacement of social and family networks, perceived lack of partner financial responsibility and support, and perceived partner isolation due to displacement may lead to victim blaming and conflict among either partner in intimate relationships.

In addition, based on our understanding of African American youths, it is possible that the pronounced intimate partner violence may be related to the maladjusted coping skills normalized by populations similar to the study group who have been traumatized. Sadly, many young African American men who are traumatized become victims of their “machismo” social norms and start exhibiting excessive masculinity to cope with their stress. According to Ferrari, African American males are taught by their parents at a young age to suppress the psychological effect of harm or trauma they experience from events such as physical abuse, molestation, verbal abuse, etc., at the hands of their parents or others because talking about or acknowledging it may be seen as non-masculine or weak. Thus, the effects remain and although on the exterior they may appear well-adjusted, they have not learned to effectively cope in the face of traumatic events including natural disasters.

**REFERENCES**


**Table 2. Logistic regression on reported intimate partner relationship conflict and house damaged or destroyed history due to Hurricane Ike (n=152)**

<table>
<thead>
<tr>
<th></th>
<th>Unadjusted (Nagelkerke R^2=.079)</th>
<th>Adjusted (Nagelkerke R^2=.147)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR  95% CI  P</td>
<td>OR  95% CI  P</td>
</tr>
<tr>
<td>During Hurricane Ike, house damaged or destroyed</td>
<td>2.9 (1.4-5.7) .00</td>
<td>3.1 (1.5-6.5) .00</td>
</tr>
<tr>
<td>Had girlfriend or boyfriend in the last year</td>
<td></td>
<td>1.2 (.98-1.5) .08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.3 (1.0-27.9) .05</td>
</tr>
</tbody>
</table>

*Bolded values significant at p<0.05*


“Energy drinks” are beverages marketed to improve energy, stamina, athletic performance, and mental performance. Energy drinks first appeared in the US in 1997. The beverages are sold in a number of locations such as grocery stores, vending machines, and convenience stores. There are currently hundreds of different brands of energy drinks, and their formulations vary widely.

The most common ingredient in energy drinks is caffeine. Energy drinks often contain higher doses of caffeine than are in a cup of coffee or soft drink. Although the Food and Drug Administration (FDA) limits caffeine content in soft drinks, it does not do so for energy drinks. This is because the former are categorized as food while the latter are categorized as dietary supplements. Other potential ingredients of energy drinks include taurine, guarana (a plant product containing concentrated caffeine), ginseng, gingko biloba, L-carnatine, milk thistle, and B vitamins.

Consumption of energy drinks in the US has expanded greatly over the last decade. Per capita consumption of energy drinks in the US increased from 0.5 gallons in 2005 to 1.2 gallons in 2010. Sales of the products in the US increased from $1.2 billion in 2002 to $6.6 billion in 2007 and were projected to be $9 billion in 2011.

Marketing of energy drinks may be tailored to appeal particularly to adolescents and young adults. The product names are often associated with psychoactive drug use or antisocial behavior, and they are promoted at extreme sporting events and music festivals. There is currently no legal age limit for purchasing energy drinks. Surveys suggest that 30-50% of children, adolescents, and young adults consume energy drinks.

When used in moderation, energy drinks produce effects similar to those of other caffeinated beverages (coffee, soft drinks, etc.) such as increased arousal and decreased reaction time. However, because energy drinks may contain higher concentrations of caffeine and other ingredients than in other beverages, individuals may ingest high doses of these substances and experience adverse effects. Adverse symptoms reported with energy drinks include nausea, vomiting, tachycardia, agitation, tremors, dizziness, chest pain, abdominal pain, confusion, hallucinations, seizures, rhabdomyolysis, hypertension, hyperthermia, and death. The number of US emergency department visits involving energy drinks increased during 2005-2009.

During 2000-2011, 1,082 energy drink ingestions were reported to Texas poison centers. Table 1 shows the annual number of energy drink ingestions. The number of exposures increased during the twelve-year period, particularly over the last few years. Over one-quarter of the exposures were reported in 2011 alone. This trend was similar to one seen by Australia poison centers.

The brands of energy drinks most frequently reported were 5-Hour EnergyTM (21.1%), Red BullTM (19.4%), and MonsterTM (12.8%). The age distribution of the patients was 28.7% 5 years or younger, 6.9% 6-12 years, 23.9% 13-19 years, 39.4% 20 years or older, and 1.1% unknown age; 60.7% of the patients were male. In the study of emergency department visits involving energy drinks, the majority of patients were adults and male. In the study of calls to Australia poison centers, most of the patients were also male.

While the majority (84.5%) of the exposures occurred at the patient’s own residence, the next most common exposure site was at school where 9.9% of the exposures occurred. The circumstances of the exposure depended on the patient’s age (Table 2). While the majority of ingestions among children age 12 years or younger were unintentional (e.g., accidentally ingesting someone else’s drink), most of the exposures among adolescents and adults were intentional (primarily intentional misuse or abuse of the energy drink). Moreover, almost one-quarter of the ingestions among adolescents and adults were reported to the poison centers because the patient was having an adverse reaction to the energy drink.

The poison center managed 60.7% of the patients on site (outside of a healthcare facility) and referred 16.9% of the patients to a healthcare facility while 20.8% of the patients were already at or en route to a healthcare facility when the poison center was called and 1.6% were managed at an unspecified site. The exposures was not considered to be serious in 72.4% of the ingestions and serious in 25.1% while in 2.5% the energy drink was not considered to be responsible for the patient’s problems. There were no reported deaths.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>7</td>
<td>0.6</td>
</tr>
<tr>
<td>2001</td>
<td>14</td>
<td>1.3</td>
</tr>
<tr>
<td>2002</td>
<td>17</td>
<td>1.6</td>
</tr>
<tr>
<td>2003</td>
<td>19</td>
<td>1.8</td>
</tr>
<tr>
<td>2004</td>
<td>32</td>
<td>3.0</td>
</tr>
<tr>
<td>2005</td>
<td>49</td>
<td>4.5</td>
</tr>
<tr>
<td>2006</td>
<td>80</td>
<td>7.4</td>
</tr>
<tr>
<td>2007</td>
<td>101</td>
<td>9.3</td>
</tr>
<tr>
<td>2008</td>
<td>166</td>
<td>15.3</td>
</tr>
<tr>
<td>2009</td>
<td>136</td>
<td>12.6</td>
</tr>
<tr>
<td>2010</td>
<td>189</td>
<td>17.5</td>
</tr>
<tr>
<td>2011</td>
<td>272</td>
<td>25.1</td>
</tr>
<tr>
<td>Total</td>
<td>1,082</td>
<td></td>
</tr>
</tbody>
</table>
The most frequently reported adverse effects were tachycardia (18.0%), agitation (16.0%), nausea (12.2%), vomiting (9.3%), dizziness (5.5%), tremors (5.0%), hypertension (4.6%), chest pain (4.2%), and headache (3.7%). These symptoms are consistent with those reported from other studies of energy drinks.\textsuperscript{12,13,14} They are also consistent with acute caffeine poisoning,\textsuperscript{12} suggesting that caffeine may be the primary ingredient in energy drinks of concern when managing potentially adverse exposures to the products.

The most commonly reported treatments were dilution (33.0%), eating food (20.9%), administration of intravenous fluids (9.4%), administration of benzodiazepines (4.8%), and decontamination by activated charcoal (4.4%). This is consistent with the recommended management of caffeine toxicity which consists primarily of supportive care such as intravenous fluids, antiemetics, and benzodiazepines.\textsuperscript{11}

Because of the increase in potentially adverse exposures to energy drinks reported to poison centers and healthcare providers, public awareness campaigns to educate the public about the potential risks associated with energy drinks, particularly by children and adolescents, might be useful.

REFERENCES


Dr. R. Palmer Beasley Remembered

Dr. R. Palmer Beasley, epidemiologist and infectious disease expert, died on August 25 in Houston from advanced pancreatic cancer. In establishing the causative link between hepatitis B and liver cancer, Dr. Beasley was responsible for the first discovery of a virus that leads to a human cancer. His subsequent work determining the means of transmission for the virus and testing the vaccine has dramatically reduced worldwide suffering from hepatitis B related liver disease. He was 76 at the time of his death.

Dr. Beasley was the Ashbel Smith Professor of Epidemiology at The University of Texas School of Public Health. Much of Beasley’s research was conducted internationally in Taiwan and other Asian countries. He was a member of the team that conducted the definitive efficacy trials of the rubella vaccine in Taiwan from 1968 to 1971. From 1972 through 1986, Beasley conducted the epidemiological studies of the hepatitis B virus which discovered the vertical transmission of the virus between mother and child. Through extensive investigations, Beasley and his colleagues proved that hepatitis B virus (HBV) is a primary cause of liver cancer, and that a path of transmission is from mothers to infants during childbirth. As a result of his findings, vaccination programs around the world have prevented untold numbers of deaths.

“Dr. Beasley has saved countless lives from cirrhosis and liver cancer through his work on the epidemiology and prevention of hepatitis B,” said Dr. Herbert L. Du Pont, Director of the Center for Infectious Diseases at The University of Texas School of Public Health. “He is a giant in the field of infectious diseases.”

Dr. Beasley said he had the rare good fortune to see through a complete problem, from establishing the epidemiology of transmission and the connection to liver cancer, to conducting definitive studies on immunization, to leading the effort for worldwide immunization. He also said that ultimately, HBV can be eradicated.

In 1992, the World Health Assembly designated the HBV vaccination as the seventh global vaccine. At that time, it was the only immunization available to prevent a major human cancer. The vaccine is now used in more than 100 countries.

For his work on HBV, Beasley was awarded a series of prestigious international prizes including the King Faisal International Prize in Medicine, the Charles S. Mott GM Prize in Medicine, the Taiwan National Health Prize First Order, the Prince Mahidol International Prize in Medicine, and the Maxwell Finland Award of National Foundation for Infectious Diseases.

From 1987 to 2005, Dr. Beasley was Dean of The University of Texas School of Public Health. During his tenure he established the UT School of Public Health regional campus system. As a result, the school grew to six regional campuses across Texas designed to meet the public health needs of each community. He founded the Center for Infectious Diseases where he continued his research on HBV and other infectious diseases, and he started the Center for International

\textbf{TPHA Journal} \textbf{Volume 64, Issue 4}
Primary care and public health; exploring integration to improve population health, discusses some of these opportunities.

Recognizing that each community differs in the availability of resources and health challenges, the IOM adopted a broad definition of integration as “the linkage of programs and activities to promote overall efficiency and effectiveness and achieve gains in population health”. The report does not prescribe a merger of the two disciplines, rather it sees integration on a continuum ranging from:

- isolation
- mutual awareness
- cooperation
- collaboration
- partnership
- merger

In the 2012 report, the IOM outlined five principles for successful integration:

- A common goal of public health improvement
- Community engagement to define and address population health needs
- Aligned leadership that bridges disciplines, programs and jurisdictions to reduce fragmentation and foster continuity.
- Sustainability, including a shared infrastructure.
- Sharing and collaborative use of data and analysis

Potential opportunities for integration of primary care and public health include:

1. Maternal and child health, specifically the Maternal, Infant and Early Childhood Home Visiting Program;
2. Cardiovascular disease prevention;
3. Cancer screening programs i.e. colorectal cancer screening; and
4. Management of chronic diseases such as asthma and diabetes.

To achieve this integration public health and primary need to work together to: Identify opportunities to leverage and coordinate funding: Create common research and learning networks and Develop the workforce to support integration.

The mission of the TPHTC is to improve the state’s public health system by strengthening the technical, scientific, managerial and leadership competencies and capabilities of the current and future public health workforce. In an effort to support the goals established by the IOM committee, TPHTC continues to work together with local and state health departments to provide workforce development and support accreditation activities. As a third party we also engage community based organizations, school nurses and federally qualified health centers to improve access and coordination of care, decrease costs for emergency care and improve health outcomes. As a Texas Department of State Health Services (DSHS) approved Community Health Worker training site, TPHTC also helps to reach traditionally underserved populations across Texas by providing the160 hour Core Curriculum Class and continuing education to community health workers.


For further information or to schedule onsite training for your organization contact Nancy Crider at nancy.m.crider@uth.tmc.edu; Cara Pennell at clpennel@srph.tamhsc.edu; or Jeffrey Moon at jeff.moon@uthsc.edu Texas Public Health Training Center website www.txphtrainingcenter.org

Integrating Primary Care and Public Health

Nancy Crider, DrPH, RN

Historically, despite sharing a common goal of promoting health and well being to all individuals, public health and primary care, continue to work in separate silos. There are many reasons for this divide; however, in recent years new opportunities to work together, including the Affordable Care ACT (ACA) have emerged. The March 2012 Institute of Medicine (IOM) report, Primary care and public health; exploring integration to improve population health, discusses some of these opportunities.

During his deanship he also served as president of the Association of Schools of Public Health. He led efforts to strengthen the accreditation criteria and procedures used by the Council on Education for Public Health, increase practica as part of MPH level education, establish credentialing for public health professionals, increase funding from the National Institutes of Health (NIH) and the Center for Disease Control and prevention (CDC), reform the CDC to include better funding for extramural investigators, and build closer ties with foreign schools of public health.

After stepping down from the deanship in 2005, Beasley devoted most of his time and effort to global health research and training. In 2004, he created the Center for International Training and Research to provide a training focus for foreign students seeking graduate level proficiency related to HIV research with its initial focus on Vietnam. In 2007, he began a program of summer research internships for American students in international settings.

During his career, Beasley educated a generation of public health researchers that has gone on to high-ranking roles in international health agencies and schools of public health.

R. Palmer Beasley was born in Glendale, CA on April 29, 1936. His father and grandfather were bankers and his mother was a lecturer. He knew his calling was medicine by the time he was in high school. In 1958, Beasley received a degree in philosophy, focusing on causation, from Dartmouth College. After graduating from Harvard Medical School, he received a master’s degree in preventive medicine at the University of Washington (1969).

Beasley interned at King County Hospital in Seattle, and from 1963 to 1965 he worked in the Epidemic Intelligence Service at the CDC in Atlanta. He returned to Seattle in 1965 to serve his residency at the University of Washington Hospital, and in 1967 he became a senior fellow in preventive medicine at the University of Washington School of Medicine.

From 1969 to 1986, he served first as assistant professor, then associate professor, then research professor of preventive medicine in the Department of Epidemiology at the University of Washington. In 1979, he became director of the American University Medical Center in Taipei, Taiwan.

Dr. Beasley is survived by his wife, also a professor of epidemiology, Dr. Lu-Yu Hwang and three children—Fletcher, Monica and Bernice. Reprinted from the UTHSC School of Public Health website with permission from Shon Bower https://sph.uth.tmc.edu/2012/08/dr-r-palmer-beasley-utsp-h-professor-and-former-dean-dies-at-76/
Call for NOMINATIONS for the 2013 TPHA AWARDS: All Nomination materials must be postmarked no later than January 15, 2013 and mailed to TPHA/Awards Committee, PO Box 201540, Austin, Texas 78720-1540. Awards will be presented at the TPHA Annual Conference in San Antonio during the President’s Reception and Awards Presentations event. Questions call TPHA at (512)336-2520 or email txpha@aol.com

HONORARY LIFE MEMBER
One of the greatest distinctions bestowed on a member of the Texas Public Health Association is that of Honorary Membership. Any active member may nominate a prospective candidate for Honorary Membership by writing to the Awards Committee. The following criteria are required of nominees for Honorary Membership:

- Must have been an active continuous member of TPHA for at least 20 years and must have attended ten or more annual meetings.
- Must have served the Association contributing to annual and regional meeting programs, holding office within the Association, and participating on Association committees.
- Supporting documentation such as letters from employers, individuals, public citizens or community groups, schools or colleges, or businesses; news clippings, photographs; journal articles; or other documentation pertinent to the nomination.

JAMES E. PEAVY MEMORIAL AWARD
The James E. Peavy Memorial Award is presented annually to the public health worker in Texas who has made significant contributions to the advancement of public health knowledge or practice or who has demonstrated a genuine concern for the health needs of society. This award is the Texas Public Health Association’s highest accolade for outstanding health professionals; it consists of a $500.00 honorarium and plaque. The award serves as a living memorial to James E. Peavy, M.D., who served as Commissioner of Health in Texas from 1959 until his retirement in 1975. Dr. Peavy was an active member of the Texas Public Health Association for 39 years and was made an Honorary Member in 1969. The following criteria are required of all nominations:

- A 250-word (or less) description of why the nominee is deserving of this award. Descriptions should be concise and specific and should demonstrate the nominee’s work over and above job requirement.
- A one-page biographical sketch (or vita) of the nominee and a 4 x 5 glossy, black & white photograph of the nominee.
- No more than 10 pages of supporting documentation such as letters from employers, individuals, public citizen or community groups, schools or colleges, or businesses; news clippings; photographs; journal articles; or other documentation pertinent to the nomination.
- The nominee must be a member of TPHA. Nomination may be made by nominee or a sponsor. If nominated by a sponsor, sponsor must be a TPHA member and sponsor’s name must accompany the nomination.

LEGISLATOR OF THE YEAR AWARD FOR LEGISLATIVE EXCELLENCE
This award may be presented to both a state representative and state senator who has shown special interest in public health issues. Any active TPHA member may nominate a candidate for these awards. The following guidelines have been established for nominees of these awards; nominees must have:

- Demonstrated an interest in public health issues.
- Shown a concern for the recruitment and retention of high quality health care workers.
- Supported legislation which emphasized prevention and health promotion.
- Facilitated legislation supporting preventive health care, health care professionals, and options of health care.

TPHA Executive Board and Governing Council Actions
The TPHA Governing Council and Executive Board met via teleconference on September 7. The following items were recorded during the meetings:

Executive Board
The June Executive Board meeting minutes were approved as were the financial reports as presented by Jim Swan and included the 2012 operating budget, co-sponsored events and fund balances.

Governing Council
The June Governing Council meeting minutes were approved.

Workgroup Committee and Board Reports:
Government Affairs/Legislative/Resolutions-Jackie Dingley submitted a report on the Nursing Legislative Agenda Coalition Meeting she attended on behalf of TPHA on August 25, 2012. The report follows:

Prior to each legislative session, the Texas Nurses Association hosts a series of meetings with other nursing organizations to identify significant health policy issues that affect nursing practice. These nursing organizations make up the Nursing Legislative Agenda Coalition (NLAC). I attended the NLAC meeting in August on behalf of the Texas Public Health Association/Public Health Nursing Section.

The meeting began with an overview of relevant issues related to the upcoming legislative session in Texas. The following is a brief summary:

- Incumbents not returning = 40 Representatives and 5 Senators
- Senate Chairs not returning = 4
- House of Representative Chairs not returning = 13 (including the Speaker pro tem)
- After the general elections in November:
  o The Texas Legislature is expected to be slightly more conservative
  o Republicans are not expected to maintain a supermajority in the House
  o Republicans may obtain a supermajority in the Senate
- While the constitutionality of the Affordable Care Act was upheld by the US Supreme Court, current federal funding cannot be withdrawn if states fail to implement Medicaid expansion. This issue will be a major legislative focus.
- Severe shortages of primary care providers will be a major focus.
- Insurance exchanges/collaboratives may be an issue.
- Something will need to be done about the large number of uninsured and underinsured.
- $4.8 billion in deferred Medicaid payments from the last biennium must be addressed during this session.
- The bottom line is that we will be dealing with a tight budget

Quite a bit of time was devoted to a discussion about the work of the Texas Health Care Information Collection (THCIC).

- The Texas Center for Health Statistics has been convening a committee to assess health care quality and effectiveness.

Some discussion was given to:

- Rights of publicly employed nurses to sue for retaliation
- Violence in the workplace (especially in Emergency Departments)

Much of the remaining time in the NLAC meeting was devoted to legislative efforts needed to implement at least two of the eight recommendations made in the Institute of Medicine’s (IOM) report on the Future of Nursing. These are as follows:

- Remove scope-of-practice barriers for advanced practice registered nurses (APRNs). Much discussion currently is taking place between physicians and APRNs about a collaborative model that will simplify current prescriptive authority requirements.
- Increase the proportion of nurses with a baccalaureate degree to 80 percent by 2020. (Currently, only about 50% of RNs are BSN-prepared.) The Deans of Schools of Nursing have been meeting to discuss how best to meet this goal. Plans must include students enrolled in Associate Degree RN programs, as well as employed RNs without a BSN.

Membership-TPHA has 374 members, 83 of those memberships have lapsed and 119 of them are due to renew between now and December 31st. We’ve had 5 new members (1 active and 4 students) within the last month.

Conferences/Education (included report on APHA Accreditation Grant)-President Kaye Reynolds reported on both the upcoming Accreditation conference and progress of the program planning committee. The Accreditation conference scheduled for September 24-25 is possible through a $4,000 grant from APHA and is being co-sponsored with TALHO, UNTHSC, and TPHTC. The Deans of Schools of Nursing have been meeting to discuss how best to meet this goal. Plans must include students enrolled in Associate Degree RN programs, as well as employed RNs without a BSN.

Conference/education (included report on APHA Accreditation Grant)-President Kaye Reynolds reported on both the upcoming Accreditation conference and progress of the program planning committee. The Accreditation conference scheduled for September 24-25 is possible through a $4,000 grant from APHA and is being co-sponsored with TALHO, UNTHSC, and TPHTC. The Deans of Schools of Nursing have been meeting to discuss how best to meet this goal. Plans must include students enrolled in Associate Degree RN programs, as well as employed RNs without a BSN. The next program planning meeting is scheduled for September 21st. CE paperwork has been distributed and the Call for Papers is online and available for download.

The committee is considering Corpus Christi for the 2014 AEC and President Alex Garcia is drafting a letter of invitation/introduction to the health department.

Editorial Board-President Kaye Reynolds reported that a call had gone out for reviewers and many members had already volunteered. Dr. Kathryn Cardarelli was appointed to the Texas Public Health Journal Editorial Board. Welcome Dr. Cardarelli!

Kathryn Cardarelli, Ph.D. is the Director of the Center for Community Health in the Texas Prevention Institute and Associate Professor of Epidemiology in the School of Public Health at UNT Health Science Center, and Adjunct Associate Professor of Community Health Sciences at UT Southwestern Medical Center.

Dr. Cardarelli’s work is dedicated to enhancing community capacity for prevention. Her research targets working with vulnerable populations in the most underserved areas of Texas and focuses on community-based approaches to reducing health disparities and translating epidemiologic evidence into health policy. Current projects include enhancing informed decision making regarding the HPV vaccine, reducing breast cancer disparities, improving care for HIV positive women, and reducing infant mortality rates.

Dr. Cardarelli completed her Ph.D. in epidemiology from the University of Texas-Houston School of Public Health, with an emphasis in social epidemiology and health disparities research, and completed a two-year Presidential Management Fellowship with the U.S. Department of Health and Human Services, focusing on access to health care issues for vulnerable populations with the Health Resources and Services Administration and the Centers for Disease Control and Prevention.

Terri Pali then reported that the Winter 2013 and one other issue in 2013 will be a focused issue and will focus on CPRIT funded research.

APHA Reports
ARGC Report-Members attending the APHA Annual Meeting in San Francisco, CA were encouraged to participate in Affiliates Day activities including the Affiliates Reception held Saturday evening, October 27th.

Partnerships and Boards
Texas Public Health Coalition-The next Texas Public Health Coalition meeting will take place September 18.

Public Health Museum of Texas-REMINDER: The Texas Medical Association is hosting an exhibit, Don’t Spit on the Sidewalk! Poison the Rat! Cover Your Cough! Visit the exhibit to see how these and other 20th century public health campaigns have added an average 25 years to your life. Journey through the fights against disease, dirty water, spitting, smoking, contaminated food, filthy privies, poor diet, smelly city dumps, and early infant death. Guided tours available. The exhibit will be on display through September 2012.

TPHA Call to Leadership-Respond by October 31st
TPHA is looking for dynamic new leaders and we need your help! Become a voice for public health in Texas. Harness the energy of public health advocacy-run for office in TPHA! We need nominees to run for the following positions:

Governing Council: 3 positions (3 year terms)
GOVERNING COUNCIL
4.01. There shall be a Governing Council which shall consist of the officers of the Association; the Executive Board; nine (9) members to be elected from the membership consistent with Article Two for three (3) year terms that are staggered so that one-third (1/3) retire each year; the Chair of each Section; one (1) representative to be appointed by each affiliated society; and the affiliate representative to the Governing Council of the American Public Health Association.
Such representatives to Governing Council shall be members of the Association.
4.01.1. The President of the Association shall serve as Chair of the Governing Council.
4.02. The terms of the Governing Council members shall begin at the close of the annual meeting at which they are elected and terminate at the close of the annual meeting at which their respective terms expire.

Second Vice President
6.08. Second Vice-President/Membership: For nominations to the office of Second Vice-President/Membership, an individual shall be an Active Member in good standing for the preceding five (5) consecutive years, a current Fellow in the Association, a present or past member of Governing Council, and a participant in two or more annual meetings.
6.08.1. The Second Vice-President/Membership shall oversee and be responsible for the Association’s memberships. (S)He shall function as an ex-officio member of the membership committee.
For more information about either the Governing Council or duties of the Second Vice President read these bylaws. To nominate someone (can be yourself), obtain their permission to be placed on the ballot then submit their name and contact information to: Terri Pali TxPHA@aol.com fax: (512) 336-0533.

Nominees will be asked to submit a short biography along with statements of how they plan to carry out their duties and responsibilities.

Texas Public Health Association
Annual Education Conference - ¡Viva! Public Health
March 20-22, 2013 at The St. Anthony Riverwalk Wyndham Hotel

The upcoming meeting offers presenters and participants a unique opportunity to promote TPHA’s emphasis on continuing education. Abstracts describing original research in a public health area for a paper or poster presentation or educational materials display are now being accepted. Submissions may include graduate student research projects, program evaluations or other original work. Exhibits, descriptions of programs, advertising of products, etc. are not considered to be posters or public health education material.

TPHA and affiliate members, local and regional health departments, hospitals, universities, and students are eligible to submit abstracts. Entrant is not required to be a member of TPHA, but IS required to pay TPHA registration fees for the annual conference and you must attend the conference. A $200 award and a plaque will be presented to the winner in each of the 3 categories. Submissions from each category may be considered for publication in the TPHA Journal.

If you are a graduate student in a School of Public Health or related health science program, you have an ADDITIONAL opportunity to compete for a travel scholarship up to $400. To compete, include a letter of endorsement from a faculty member (can be an email attachment) with your poster abstract and check the box for “wish to compete in student poster abstract competition” on the abstract form. If selected, you then will present your work at our annual meeting. Get forms at www.texaspha.org.

Categories and rules of Competition:

1. Public Health Education Materials: Projects designed to educate the public on a public health topic. Some examples are: pamphlets, brochures, slide shows, videotapes, computer programs, etc. Tables will be provided to display your materials. Each presenter will have 4’ of space. Education Materials presenters must provide and be responsible for their own equipment (TV, VCR, laptop computers, etc.)

2. Research Papers: (Original research of an empirical nature, conceptual or methodological issues or innovative techniques in a public health area) Paper presentations will have a strictly enforced time limit of 15 minutes.

3. Poster Presentations: (Original research of an empirical nature, conceptual or methodological issues or innovative techniques in a public health area) Posters must present original work with a problem statement and results presented in poster form. Poster must be displayed on the 3 foot by 5 foot poster foam board on easel provided by TPHA. Bring your own push pins.

Judging of all presentations is weighted most heavily on Evidence of public health contribution but is also judged on clarity, overall plan and organization of material, delivery of research paper, ability to answer questions and knowledge of topic.

All Presentations (posters, research papers and education materials projects) are automatically eligible for the additional $100 “Members’ Choice” award. The winner of this award is chosen by majority vote of meeting attendees.

NOTE: An individual creation may only be entered once. Presenters may enter more than one paper or poster, provided each covers a different topic. Both a paper and a poster may be presented, provided that each covers a different topic.

DEADLINE for submission of abstracts for all categories is December 1, 2012 and must be submitted in Microsoft Word format ONLY in Times New Roman 12 point font. No exceptions. Please contact P. Diana Brooks if you are not notified by January 15, 2013. Email abstracts and submission forms to Txpha@aol.com AND abstractspdb@yahoo.com

For more details go to www.texaspha.org.
TPHA HONORARY LIFE MEMBERS

1948 V. M. Ehlers*
1949 George W. Cox, MD*
1951 S. W. Bohls, MD*
1952 Hubert Shull, DVM*
1953 J. W. Bass, MD*
1954 Earle Sudderth*
1956 Austin E. Hill, MD*
1957 J. V. Irons, ScD*
1958 Henry Drumwright
1959 J. G. Daniels, MD*
1960 B. M. Primer, MD*
1961 C. A. Purcell*
1962 Lewis Dodson*
1963 L. P. Walter, MD*
1964 Nell Faulkner*
1965 James M. Pickard, MD*
1966 Roy G. Reed, MD*
1967 John T. Warren*
1968 D. R. Reilly, MD*
1969 James E. Peavy, MD*
1970 W. Howard Bryant*
1970 David F. Smallhorst*
1971 Joseph N. Murphy, Jr.*
1972 Lola Bell*
1972 B. G. Loveless*
1973 Barrie A. Young*
1974 Ardis Gaither*
1975 Herbert F. Hargis*
1975 Lou M. Hollar*
1976 M. L. McDonald*
1977 Ruth McDonald
1978 Maggie Bell Davis*
1978 Albert Randall, MD*
1979 Maxine Geeslin, RN
1979 William R. Ross, MD*
1980 Ed L. Redford*
1981 W. V. Bradshaw, MD*
1981 Robert E. Monroe
1982 William T. Ballard*
1983 Mike M. Kelly, RS
1983 Hugh Wright*
1984 Hal J. Dewlett, MD*
1984 C. K. Foster
1985 Edith Ehlers Mazurek
1985 Rodger G. Smyth, MD*
1986 Helen S. Hill*
1986 Henry Williams, RS*
1987 Frances (Jimmie) Scott*
1987 Sue Barfoot, RN
1988 Jo Dimock, RN, BSN, ME
1988 Donald T. Hillman, RS*
1989 Marietta Crowder, MD
1990 Robert Galvan, MS, RS
1991 Wm. F. Jackson, REHS*
1992 Charlie Norris*
1993 T. L. Edmonson, Jr.
1994 David M. Cochran, PE
1995 JoAnn Brewer, MPH, RN*
1996 Dan T. Dennison, RS, MT, MBA
1997 Mary McSwain, RN, BSN
1998 Robert L. Drummond
1999 Nina M. Sisley, MD, MPH
2000 Nancy Adair
2001 Dale Dingley, MPH
2002 Stella Flores
2003 Tom Hatfield, MPA
2004 Janet Greenwood, RS
2005 Charla Edwards, MPH, RN
2006 Janice Hartman, RS
2007 Jennifer Smith, MSHP
2008 Catherine D. Cooksley, DrPH
2009 Hardy Loe, M.D.
2010 John R. Herbold, DVM, PhD
2012 Bobby D. Schmidt, M.Ed
*deceased

TPHA Life Members
Ron Anderson, MD
Minnie Bailey, PhD
Ned V. Brookes, PE
Oran S. Buckner, Jr., PE, RS
Burl Cockrell, RS

Exa Fay Hooten
Robert MacLean, MD
Sam Marino
Annie Lue Mitchell
Laurance N. Nickey, MD

Eduardo Sanchez, MD, MPH
David R. Smith, MD
Kerfoot P. Walker, Jr., MD
Alice V. White