

Residential Fires

BACKGROUND

National

According to the Centers for Disease Control and Prevention (CDC), fatalities from fires and burns are the fifth most common cause of unintentional injury deaths in the United States. Fire and burn deaths are also the third leading cause of fatal home injury.¹

The National Fire Protection Association (NFPA) estimates that in the United States, a fire department responds to a fire every 20 seconds. In 2007, fire departments responded to approximately 1.6 million fires in the United States. Of the 530,500 structural fires, 78% were in a place of residence.² Eighty-four percent of deaths and 77% of fire-related injuries occurred in the home. Residential fires caused nearly 3,000 civilian deaths and 13,600 injuries resulting in \$7.4 billion in direct damage.³ On average, eight people die due to home fire-related incidents every day.⁴

Kitchens were the leading area of origin for residential fires. Kitchen fires accounted for nearly half of home fires and 36% of home fire injuries among civilians. From 2003 to 2006, the leading cause of residential fires and fire injuries originated from cooking equipment, and smoking was the leading cause of home fire deaths.⁴ Smoking accounts for approximately one-quarter of the 3,000 civilian deaths resulting from house fires each year.⁵

Most home fires and home fire deaths occur in the months of January, February, and December. Home fires primarily occur between 5:00 p.m. and 8:00 p.m.; however, home fires occurring between 11:00 p.m. and 7:00 a.m. caused 52% of all home fire deaths.⁴

Risk of fire injury and death is affected by age, race, location, and community size. Children under the age of 5 and older adults 65 years of age and older are at higher risk for death due to fires than other age groups.⁶ However, young adults are at a greater risk of home fire injury.¹ African American and Native American populations, low-income individuals, persons living in rural areas, and those living in manufactured homes or substandard housing are also more likely to be involved in a fire-related injury or death.²

Oklahoma

From 2000 to 2006, Oklahoma had a higher fire fatality rate (1.9 per 100,000 population) than the national fire fatality rate (1.2 per 100,000).⁷ Unintentional fire-related injuries are the third leading cause of injury death in Oklahoma among children one to nine years of age and the ninth leading cause among all ages combined.⁸

According to burn injury surveillance data from the Injury Prevention Service, the number of fire-related deaths peaked in 2005 with 88 fatalities; there were 69 and 62 deaths in 2004 and 2006, respectively. Two-thirds of all fire-related fatalities were among males. Males had the highest mortality rates among all age groups, except among one to four year olds, where females had a 50% higher rate. Age-adjusted rates for males were over two times higher than those of females. Between 35 and 84 years of age, the risk of fire-related death increased with age. There were no deaths among infants less than one year of age.⁸

For every unintentional fire-related death, there were just over two hospitalizations in a burn center for a fire-related injury. Males also dominated the number and rate of unintentional fire-related hospitalizations. Nearly three-quarters

of hospitalizations were among males (375 out of 521). Rates were particularly discrepant among males and females aged 15 to 34 years, with rates for males being five to six times higher. Unintentional fire-related hospitalizations in burn centers have increased since 2004. The overall age-adjusted rate in 2006 was 59% higher than the 2004 rate; males alone jumped 68%. The highest age-specific hospitalization rates were among individuals 65 years of age and older.⁸

PROGRESS

Funding

Funding for the smoke alarm program has been provided to the Injury Prevention Service (IPS) from the CDC since its implementation in 1989. Current funding for the program will end in September 2011. The CDC is not expected to provide funding to states for this program beyond 2011; however, the IPS will continue to work with fire marshals, fire departments, Oklahoma ABLE Tech, and Oklahoma State University to promote fire prevention and safety throughout the state.

Publications

Peer-Reviewed Publications

- Cost effectiveness analysis of a smoke alarm giveaway program in Oklahoma City, Oklahoma. *Injury Prevention* 2001;7(4):276-281.
- Evaluating injury prevention programs: the Oklahoma City smoke alarm project. *The Future of Children* 2000;10(1):164-174.
- Fatal fires associated with smoking during long-term oxygen therapy – Maine, Massachusetts, New Hampshire, and Oklahoma, 2000-2007. *MMWR* 2008;57(31):852-854.
- Smoke alarms and prevention of house-fire—related deaths and injuries. *Western Journal of Medicine* 2000;173:92-93.

Other Publications

- *Oklahoma Injury Facts*. September 2003.

Summary Data Reports

- Burns and Smoke Inhalation in Oklahoma, 1988-2001
- Burns and Smoke Inhalation in Oklahoma, 1988-2002
- Burns and Smoke Inhalation in Oklahoma, 1988-2004
- Injuries in Oklahoma, 2004-2006
- Injuries in Oklahoma, 2005
- Injuries in Oklahoma, 2006

Injury Update Reports

- Brush and Trash Fire-Related Injuries in Oklahoma, 1988-2000
- Burn Injuries Due to Cigarette-Related Residential Fires, Oklahoma, 1988-2002
- Burn Injuries Due to Smoking While Using Oxygen Therapy, Oklahoma, 2001-2005
- Burn Injuries Resulting from Working on a Motorized Vehicle, Oklahoma, 1988-2002
- Fire Prevention Week, 2003
- Fireworks-Related Burn Injuries Admitted to a Burn Center, Oklahoma, 1988-2000
- Fireworks-Related Burn Injuries Admitted to a Burn Center, Oklahoma, 1988-2001
- Intentional Fire-Related Injuries in Oklahoma, 1988-2001
- Lawnmower-Related Burn Injuries in Oklahoma, 1988-2000
- Methamphetamine Laboratory-Related Fire and Burn Injuries in Oklahoma, 1988-2002
- Unintentional Campfire-Related Burn Injuries in Oklahoma, 1996-2005
- Work-related Burns Among Restaurant and Food Service Workers, Oklahoma, 1988-2006
- Work-Related Burns Among Roofers, Oklahoma, 1988-2006

Fact Sheets

- Burn Injuries Among Roofers
- Burn Injuries in Teen Restaurant Workers
- Burn Prevention Among Persons with Diabetic Neuropathy

- Chemical Burns
- Fire-Safe Cigarettes Can Save Lives
- Fireworks-Related Burn Injuries
- Gasoline-Related Burns
- Hot Facts About House Fires
- Scald Prevention for Young Children

Pamphlets (also available in Spanish)

- House Fires: Causes and Prevention (Fuegos de Casa: Causas y Prevención)
- LifeSavers: How to Survive a House Fire (Salvavidas: Cómo Sobrevivir en un Incendio de Casa)

Education and Planning Materials

- Injury Prevention Works: Strategies for Building Safe Communities
- LifeSavers: Guide to Smoke Alarm Projects
- LifeSavers II: A Guide to Smoke Detector Projects

Collaboration

The Injury Prevention Service (IPS) collaborates with Oklahoma ABLE Tech and the Oklahoma State University by referring persons who are mobility impaired, deaf, hard of hearing, blind, or have poor vision to the Fire Safety Solutions for People with Disabilities program.⁹ Smoke alarms are installed for these persons at no charge and they receive appropriate safety messages.

Fire marshals and local fire departments provide injury, death, and smoke alarm information on house fires. They work with the IPS to promote smoke alarm use, fire prevention, and fire safety when residential fires occur in their communities. Oklahoma Turning Point coalitions promote the availability of smoke alarms and refer families to their local fire departments.

Smoke Alarm Program

The IPS has had extensive experience in implementing and evaluating residential fire injury prevention programs funded by the National Center for Injury Prevention and Control. The

smoke alarm program includes smoke alarm giveaways/installations, educational efforts on escape plans and common causes of residential fires, as well as information on proper placement and testing of smoke alarms. From 1998 to 2001, a smoke alarm-canvassing project was implemented in five communities in Oklahoma.

Since 2001, approximately 30,000 smoke alarms have been distributed in high-risk rural communities. Smoke alarms were distributed to various community agencies and organizations including fire departments, county health departments, community action groups, and tribal agencies for installation in homes. All community agencies are required to work with their local fire departments to install the alarms in the home, discuss fire escape plans with residents, and provide fire safety education materials to each family who receives an alarm.

Legislation

The IPS developed a legislative fact sheet to support fire-safe cigarette legislation in Oklahoma. The fact sheet used IPS burn injury surveillance data to present the number of serious injuries and deaths due to cigarette-related residential fires. The bill had strong support and was passed in the 2008 Oklahoma legislative session. This piece of legislation will be an important additional prevention strategy for cigarette-related fires. A bill prohibiting the sale of novelty lighters was introduced in the 2009 legislative session; however, it failed to pass.

GOALS/OBJECTIVES

Goals

- Increase the number of functioning smoke alarms in single and multi-family dwellings.
- Implement smoke alarm installation programs in at least five Oklahoma communities.

Objective

- Reduce residential fire-related deaths by 15% by 2012.
Baseline: 2006 IPS data for Oklahoma: residential fires=1.43 per 100,000 population; 2006 CDC WISQARS data for Oklahoma: residential fires=1.62 per 100,000 population.

ACTION PLAN

- Choose two to three Oklahoma communities annually to commit to a year-long smoke alarm installation project through 2011.
- Smoke alarms will be installed in homes by a firefighter.
- Smoke alarms will be installed on each level of the home, outside sleeping areas, and in the bedrooms of smokers.
- Smoke alarm applications will be completed for each home that receives an alarm. All applications will be sent to the IPS.
- At the time of installation, educational information will be given to residents on fire prevention, safety, and developing and practicing a fire escape plan. Educational brochures will be provided by the IPS.
- IPS staff will conduct follow-up evaluations six to twelve months after the smoke alarm is installed to inquire if smoke alarms are still present and functional.

- Collaborate and partner with community organizations to further educate high risk groups, and distribute and install smoke alarms to persons in need through 2011.
- Health department organizations and programs including: Children First, Oklahoma Child Abuse Prevention, Sooner Start, Oklahoma Lead Poisoning Prevention Program, Turning Point Coalitions, and other programs that involve home visits to high risk populations.
- Community organizations and programs including: Meals on Wheels, Mobile Meals, American Association of Retired Persons (AARP), senior citizen centers, community centers, faith-based organizations, churches, schools, and cultural and ethnic groups.
- Encourage county health department staff to provide fire safety and prevention education to clients and the community through 2015.
 - Promote smoke alarm use among health department clinic patients.
 - Promote/conduct smoke alarm canvassing events in communities.
- Prepare and disseminate fact sheets related to fire safety and prevention through 2015.
- Continue to support fire safety legislation by providing partners and legislators with relevant data, reports, fact sheets, and educational information through 2015.
- Research local smoke alarm ordinances and determine if they include all new, existing, or sold homes.

REFERENCES

¹Centers for Disease Control and Prevention. Fire Deaths and Injuries: Fact Sheet. Retrieved 13 January 2009, from: <http://www.cdc.gov/ncipc/factsheets/fire.htm>.

²National Fire Protection Association. An Overview of the U.S. Fire Problem. Retrieved 13 January 2009, from: http://www.nfpa.org/assets/files//PDF/Research/Fire_overview_2009.pdf.

³National Fire Protection Association. Fires in the United States During 2007. Retrieved 13 January 2009, from: <http://www.nfpa.org/assets/files//PDF/firelossfacts2.pdf>.

⁴National Fire Protection Association. U.S. Home Structure Fires. Retrieved 13 January 2009, from: <http://www.nfpa.org/assets/files//PDF/Homesfactsheet.pdf>.

⁵Centers for Disease Control and Prevention. Press Release: Reductions in Smoking Show Promise for Reducing Home Fire Deaths. 8 August 2008.

⁶National Fire Protection Association. Socioeconomic Factors and Fire: December 2008. Retrieved 13 January 2009, from: <http://www.nfpa.org/assets/files//PDF/OS.SocFactors.pdf>.

⁷Centers for Disease Control and Prevention. WISQARS. Retrieved 19 August 2009, from: <http://www.cdc.gov/injury/wisqars/index.html>.

⁸Injury Prevention Service, Oklahoma State Department of Health. Injuries in Oklahoma, 2004-2006.

⁹Oklahoma ABLE Tech. Fire Safety Solutions FAQ. Retrieved 5 August 2009, from: http://www.ok.gov/abletech/Fire_Safety/index.html.