
INJURY UPDATE

*A Report to Oklahoma Injury Surveillance Participants**

September 11, 2002

Lawnmower-Related Burn Injuries in Oklahoma, 1988 - 2000

Fire and burn-related injuries were the sixth leading cause of unintentional injury death in the United States from 1996 to 1998 for persons of all ages. In November 1986, the Oklahoma State Department of Health made burn/smoke inhalation injuries that resulted in hospitalization or death a reportable condition. Collection of such information began in September 1987 and has continued since. During the 13-year period 1988 to 2000, 6,373 Oklahomans were hospitalized in a burn center or died as a result of an unintentional burn or smoke inhalation injury. Of these, 42 (including 5 deaths) were due to injuries incurred from a lawnmower. This report describes the occurrence and characteristics of lawnmower-related burn injuries.

Lawnmower Safety Quiz

1. How fast can a stick or toy fly out of a lawnmower discharge chute?
 - a. 10 miles per hour
 - b. 20 miles per hour
 - c. 200 miles per hour
 - d. 500 miles per hour
2. Always mow across slopes and inclines when using a walk-behind mower.
True or False
3. What kind of shoes should you wear when operating a walk-behind mower?
 - a. Sandals
 - b. Canvas athletic shoes
 - c. Bare feet
 - d. Leather shoes
4. What is the most important thing to do before doing any service work on a mower?
 - a. Put on gloves
 - b. Drain fuel tank
 - c. Disconnect spark plug
5. One gallon of gasoline combined with the correct amount of air is equal to 83 pounds of dynamite.
True or False

Answers on the page 4.

*The INJURY UPDATE is a report produced by the Injury Prevention Service, Oklahoma State Department of Health. Other issues of the INJURY UPDATE may be obtained from the Injury Prevention Service, Oklahoma State Department of Health, 1000 N.E. 10th Street, Oklahoma City, Oklahoma 73117-1299, 405/271-3430 or 1-800-522-0204 (in Oklahoma). INJURY UPDATES and other IPS information is also available at www.health.state.ok.us/program/injury.

Half (21/42) of all lawnmower injuries occurred among persons age 15 to 34 years of age with an average age of 37 years (Figure 1); six injuries occurred among children less than 15 years of age. Males accounted for 86% (36/42) of the injuries, with a 6:1 male to female ratio. African Americans had the highest average annual injury rate (0.2 per 100,000 population) followed by whites and Native Americans (0.1 per 100,000 population, each).

Filling a hot gas tank on a lawnmower accounted for 45% of all lawnmower injuries (19/42) followed by contact with a heated part of the mower (14%), lawnmower explosions (10%), smoking around lawnmowers, and rollovers (both accounting for 5% of injuries). Twenty-four percent (10/42) of injured persons had some portion of their clothing catch fire, including at least four of the five persons that died (information was unknown on the fifth deceased person). One person reported using alcohol before the injury, but blood alcohol levels were not reported. There were no cases with a positive blood alcohol or drug screen.

Injuries were basically distributed evenly during the week (Figure 2) and two-thirds occurred from 8:00 a.m. to 12:00 p.m. and 4:00 p.m. to 8:00 p.m. (Figure 3). Seventy-four percent of the injuries occurred from March to July and peaked in May (9/42, 21%) (Figure 4).

Among survivors, the average length of stay in a burn center was 14 days with a range of 1 to 40 days. Seventy-six percent (28/37) of survivors were burned on 20% or less of their body. Table 1 shows the relationship between percentage of the body burned and the length of stay in a hospital. Of the 11 cases with insurance information, 55% had private insurance, 18% Medicaid and self-pay, and 9% had Medicare.

CASE BRIEFS

- A 60-year old man died of thermal burns received after being trapped under his lawnmower. He was trying to remove a tree stump when he attempted to go up a steep incline and the mower turned over on top of him. He was hospitalized for 2 days before his death with burns over 95% of his body.
- A 9-year old boy sustained second and third degree burns after his mother put gasoline into a hot lawnmower and it caught fire and flashed onto him. He was transferred to Shriner’s Hospital the same day.

Figure 1. Burn Injuries Due to Lawnmowers by Age Group and Sex, Oklahoma, 1988-2000

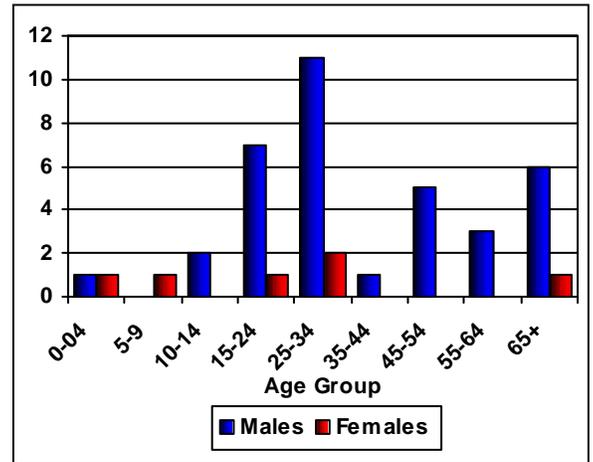


Figure 2. Lawnmower Burn Injuries by Day of Week, Oklahoma, 1988 - 2000

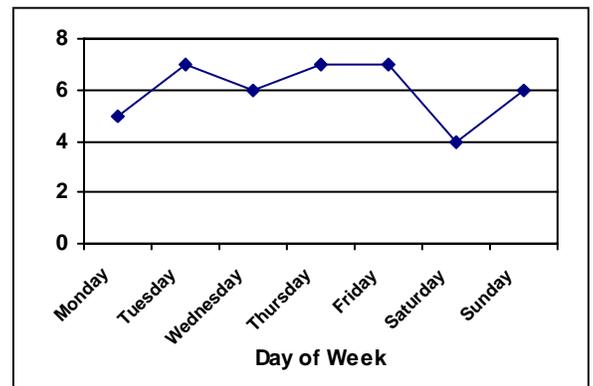
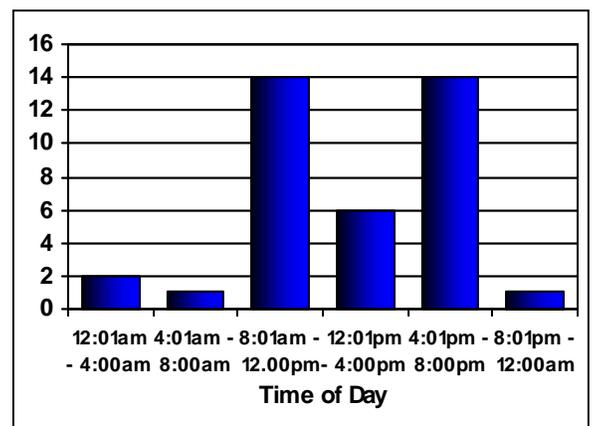


Figure 3. Burn Injuries Due to Lawnmowers by Time of Day, Oklahoma, 1988 - 2000



- A 49-year old man spent 16 days in the hospital after his gas can broke while trying to fill a lawnmower that had a hot engine. The lawnmower caught fire and burned 17% of his body.
- A 72-year old woman was hospitalized for 13 days with burns on more than 70% of her body before she died. She was on a riding lawnmower and ran over a propane hose, which caused the lawnmower to explode and catch her clothing on fire.
- A 32-year old woman died after spending 12 days in the hospital with burns on more than 50% of her body. She was trying to drive a lawnmower up a ramp and it rolled over and spilled gas on the hot tank and ignited.
- A 2-year old girl was burned after her older sister accidentally put the lawnmower in reverse instead of forward and ran over her. There was no blade on the machine, but the girl was burned from the heat and was hospitalized for 17 days.

Figure 4. Burn Injuries Due to Lawnmowers by Month, Oklahoma, 1988 - 2000

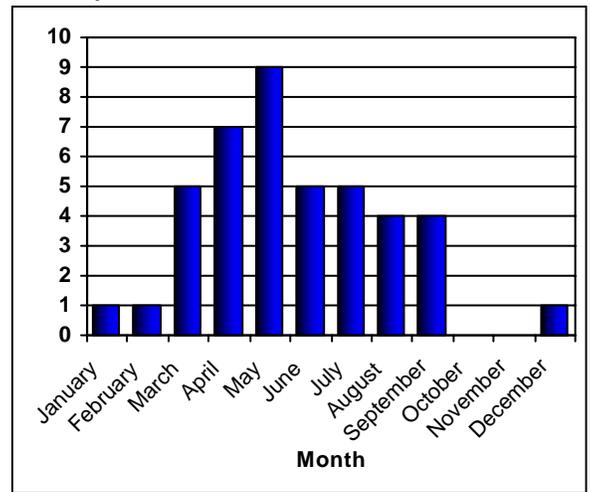


Table 1. Total Body Surface Area Percent by Total Hospital Days with Case-Fatality Rate (CFR), Oklahoma, 1988-2000

	Total Body Surface Area Burned (%)					
	< 20%		21% to 40%		41% to 100%	
Total Days Hospitalized	Number	CFR	Number	CFR	Number	CFR
10 or less days	14	7%	3	0%	2	100%
11 to 30 days	14	0%	2	0%	3	67%
31 or more days	2	0%	1	0%	1	0%

PREVENTION

Burn injuries due to lawnmowers take their toll on quality of life and medical costs for injured persons. Following these tips can prevent lawnmower-related burn injuries.

-  Read all instruction manuals for lawnmowers prior to use.
-  Store gas in a container that is approved by an agency such as Underwriters Laboratories, Inc.
-  Make sure gas containers are clean and in good condition before use.
-  Always use a funnel with the gas container to fill the lawnmower engine.
-  Before starting lawnmower, replace gas cap and lid to fuel container tightly.
-  After refueling gas-powered lawn equipment, move it at least 25 feet away from the refueling location before starting it to avoid igniting fumes.
-  Use the correct starting procedure for your lawnmower found in the instruction manual.
-  Always start a lawnmower outdoors to avoid collection of toxic fumes in confined spaces.

-  Never put gas in a hot lawnmower. Allow the engine to cool down before refueling.
-  Keep body parts away from hot parts by using the appropriate guards and shields.
-  Wear appropriate clothing and shoes to avoid burns from hot surfaces. Keep clothing free of fuel and other flammable liquids.
-  Never use a riding lawnmower where the lawn has steep slopes.
-  Keep children away from gas and lawn equipment before and during use to prevent injury.
-  Do not allow young children to handle lawn equipment.

Quiz Answers:

1. C. 200 miles per hour
The cutting edge of the mower blade travels at speeds up to 200 miles per hour. If an object is hit with the blade it will be expelled from the mower at the same speed if there is no guard. Always make sure the rear guard is in place and in good condition before you begin mowing.
2. True
Mowing across steep slopes decreases the chance that you will come in contact with the lawnmower if you should slip, allowing the lawnmower to roll back on top of you. Never use a riding lawnmower where the lawn has steep slopes. On gentle slopes, drive riding lawnmowers up and down slopes to avoid rollovers.
3. D. Leather shoes
Clothing is very important when using a lawnmower. Long pants and leather shoes protect against flying objects as well as minimizing contact with hot surfaces. Leather shoes also provide better traction on grass.
4. C. Disconnect spark plug
Disconnecting the spark plug will prevent the engine from accidentally being started while it is being serviced. According to Iowa State University, many people are injured each year when mowers start unexpectedly when the blade is turned by hand.
5. True
Gasoline itself is highly flammable but when gasoline vaporizes and combines with air, a mixture is formed that ignites easily. Vaporization does not require high temperatures and can easily occur at temperatures as low as zero degrees. Always clean up spilled gasoline immediately to minimize vaporization.

Quiz: Schwab, CV and Miller, L. *Safe Farm – Promoting Agricultural Health & Safety*. Iowa State University

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