

# NIDRR Model Systems for Burn Injury Rehabilitation Adult Facts and Figures

February 2004

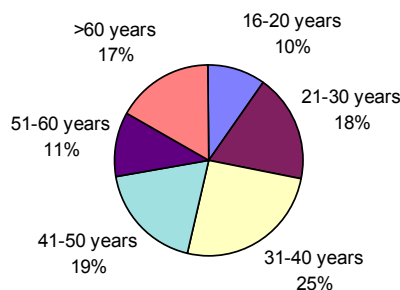
Since May of 1994, five burn centers have participated as Model Systems for Burn Injury Rehabilitation funded by the National Institute of Disability and Rehabilitation Research (NIDRR) in the Department of Education. Four Model Systems are currently collecting data: the University of Washington (1994-2004), the University of Texas Southwest (1994-2004), Johns Hopkins University (1997-2004) and Shriners Burn Hospital in Galveston (1997-2004). The University of Colorado Health Sciences Center also contributed data from 1994 to 1997. Each center collects data on both adults and children, although the largest contributor of subjects under 16 is the Shriners Burn Hospital. Data presented here were collected through December 1, 2003 and include 2936 adult patients (ages 16 and older). In order to be eligible for the study, Model Systems patients must consent to follow-up for at least two years, and must meet the American Burn Association criteria for a major burn injury. The ABA defines a major burn injury as a burn covering at least 5%, 10% or 20% of the body (depending on burn severity and age), a burn causing a functional or cosmetic threat, an electrical burn, a burn with inhalation injury, or a circumferential burn.

## Demographics

### Age

Of our entire combined burn population, 67% are adults (16 and older), and 33% are children (under 16). The mean age at injury for adult subjects (16 and older) is 43 years. The breakdown of adult subjects by age groups is shown below in Figure 1. The largest number of subjects (25%) were ages 31-40 at the time of injury, and the second largest group (19%) were in the 21-30 when injured.

Figure 1: Age at Injury



### Gender

Seventy-five percent of all adult subjects in the Model Systems are male. When examined by age group, the gender distribution varies from a low of 60% male in patients over 60 years old, to a high of 80% male in the 21-30 year old age group.

### Employment Status

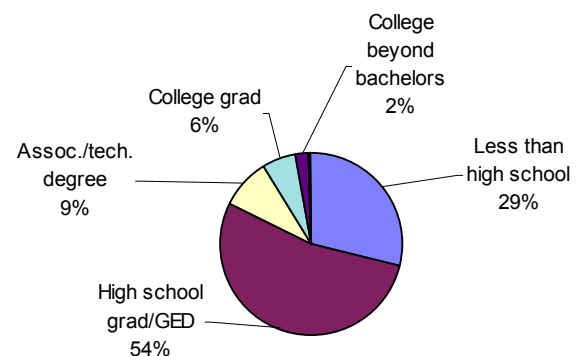
Over half (59%) of adult patients were working prior to their burn injury. Twenty-seven percent of the subjects reported being unemployed at time of injury and the remaining 14%

were retired, working as homemakers, or doing volunteer work.

### Education Level

The distribution of highest level of education attained is shown in Figure 2 below. Over half (54%) of the Model Systems patients had received a high school diploma or GED at the time of their injuries. Twenty-nine percent had less than a high school education. Most of the remaining subjects (17%) had some schooling beyond high school.

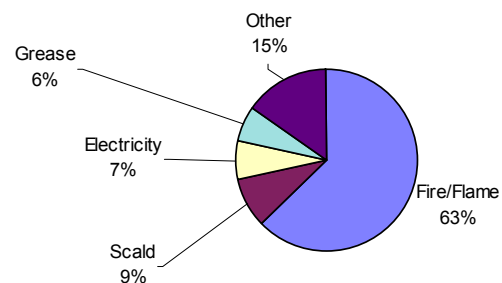
Figure 2: Education Level



### Primary Etiology of Injury

Fire/flame was the most common cause of injury for Model Systems patients; 63% of injuries were caused by fire or flame. Scalds accounted for 9% of burn injuries in our population and electricity caused injury in 7% of patients. A chart displaying the most common burn etiologies is shown in Figure 3. The 'Other' category in the figure consists of flash burns (5.0%), contact burns (3.8%), tar burns (1.8%), chemical burns (2.3%), skin disease (1.6%), and other causes (<1%).

Figure 3: Primary Etiology of Burn Injury



### Alcohol or Drug Use at Time of Injury

Some burn injuries are associated with substance abuse. For 54% of the adult Model Systems patients, alcohol and/or drug tests were conducted upon admission. Thirty-three percent of those tested were positive for either drugs, alcohol or both. Of those tested for alcohol, 22% were positive and of those tested for drugs, 19% were positive.

### Residence

Most patients (70%) lived in a house at the time of their burns. Eighteen percent lived in an apartment; 7% were living in a mobile home. Almost two percent (1.8%) were homeless at the time of injury. Just over one percent (1.2%) were living in an institution when the burn injury occurred.

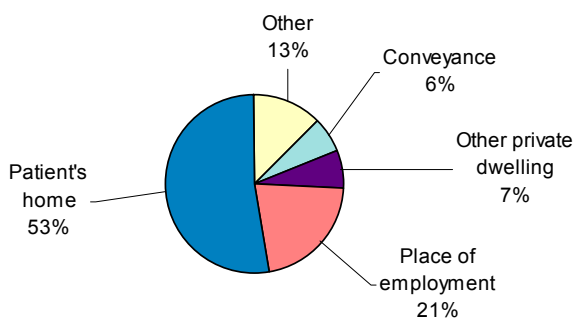
### Indoor/Outdoor Location

Sixty percent of burns occurred indoors in an enclosed space, where the chances of suffering an inhalation injury are much greater.

### Geographic Location

The breakdown of geographic location of burn injury is shown in Figure 4 below. Over half (53%) of the patients in the Model Systems were burned in their own homes. Approximately one fifth (21%) of all burns occurred at work.

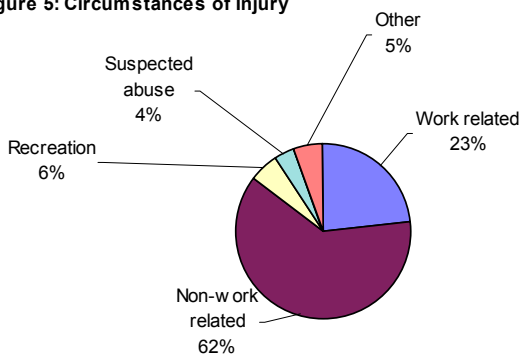
Figure 4: Where Injury Occurred



### Circumstances

Twenty-three percent of all burns were work-related. Six percent of burns occurred during recreational activities. Abuse was suspected in 4% of patients. Patients whose injuries were classified as 'non-work related' made up the majority of the adult subjects. These percentages are shown below in Figure 5.

Figure 5: Circumstances of Injury



### Etiology by Location

When primary etiology of burn injury is broken down by location of injury, one sees a different distribution of primary etiology than that shown above in Figure 3. Of burns occurring at work, only 29% involved fire or flame, while 23% involved electricity. For burns occurring in an automobile, or on a train, or plane (conveyance), 81% were a result of fire or flame.

### Severity of Injury

When measuring the severity of a burn injury, one needs to consider factors such as total body surface area burned (TBSA), whether or not skin grafting was required, and whether the patient suffered an inhalation injury. The mean TBSA for all adult patients is 23%, and of all burn etiologies, skin disease had the highest mean TBSA (44%). Table 1 lists the mean and standard deviation for TBSA by burn etiology. Seventy-four percent of adult patients required grafting on some area of their body (this calculation excludes patients surviving fewer than 3 days). Burn patients sustaining inhalation injuries have a significantly reduced chance of survival than those without inhalation injury. Fifteen percent of the adult Model Systems patients suffered an inhalation injury.

Table 1: Total Body Surface Area Burned (TBSA)

Burn Etiology	Mean	Standard Dev.
All burns	23%	20
Skin Disease	44%	35
Fire/Flame	27%	21
Flash	23%	15
Scald	16%	17
Chemical	16%	15
Abrasion	13%	13
Electricity	12%	13
Grease	11%	10
Tar	8%	8
Contact with Hot Object	6%	8
Frostbite/Cold	6%	2
Other	17%	27

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This Facts and Figures Sheet is published by the Burn Model Systems Data Coordinating Center and is supported by grant number H133A020402 from the National Institute on Disability and Rehabilitation Research, U.S. Department of Education, Washington, D.C.