NIDRR Model Systems for Burn Injury Rehabilitation
Child Facts, Figures and Selected Outcomes

University of Washington, University of Texas Southwestern, Johns Hopkins University, Galveston Shriners Burns Hospital
Prepared by: University of Colorado Health Sciences Center

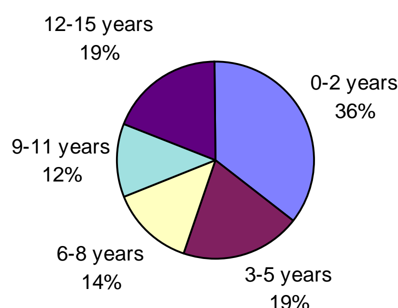
Since May of 1994, five burn centers have participated as Model Systems for Burn Injury Rehabilitation funded by the National Institute of Disability and Rehabilitation Research (NIDRR) in the Department of Education. Four Model Systems are currently collecting data and the University of Colorado Health Sciences Center also contributed data from 1994 to 1997. Each center currently collects data on both adults and children. Data on children have been collected by the group since 1997 and the largest contributor of subjects under 16 is the Galveston Shriners Burn Hospital. Data presented here were collected through **January 2005** and **include 1602 children** who visited one of the four current Burn Model Systems clinical centers. 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 treatment at a Burn Center.

Demographics

Age

Of the total combined burn population, 66% are adults (16 and older), and 34% are children (under 16). The mean age at injury for children is 6.4 years. The breakdown of subjects by age group is shown below in Figure 1.

Figure 1: Age at Injury



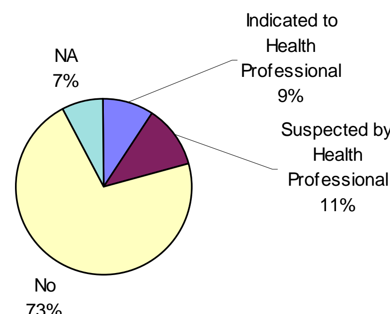
Gender

Sixty-five percent of all child subjects in the model systems are male.

Risk Factors

Data on several risk factors in the burn patients' family environments are collected by the Model Systems. Involvement of Child Protection Services is summarized in Figure 2 below. Only 4% of patients or their families indicated that substance abuse was a problem in the family environment, and in 2% of cases substance abuse in the family was suspected by a health care professional. Five percent of burn patients or their families indicated that psychiatric illness existed within the family environment. In 1% of cases, psychiatric illness was suspected by the health care professional.

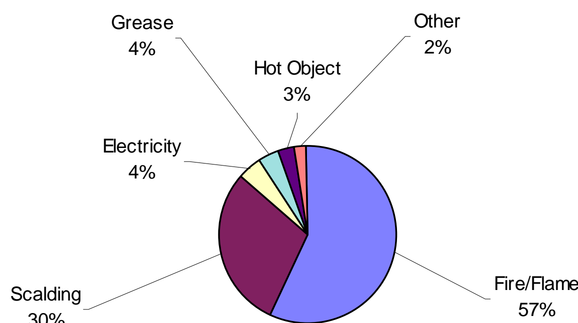
Figure 2: Child Protection



Primary Etiology of Injury

The most common burn etiologies are shown in Figure 3. The category labeled 'Other' in the figure consists of flash burns (~0.57%), tar burns (<0.5%), chemical burns (<0.5%), UV light (<0.5%), frostbite (<0.5%), skin disease (~0.83%), abrasions (<0.5%), and other causes (<0.5%).

Figure 3: Primary Etiology



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 an inhalation injury occurred. The mean TBSA for all patients under 16 is 30%, and of all burn etiologies, skin disease had the highest mean TBSA (53%). Table 1 lists the mean and standard deviation for TBSA by burn etiology. Seventy-four percent of children in the Model Systems required grafting on some area of their body (this calculation excludes patients who survived fewer than 3 days). Burn patients who sustain inhalation injuries have a significantly reduced chance of survival. Eighteen percent of the Model Systems patients under 16 suffered an inhalation injury.

Table 1: Total Body Surface Area Burned

Burn Etiology	Mean	Standard Dev.
All burns	30%	22%
Skin Disease	53%	27%
Fire/Flame	35%	23%
Electricity	32%	22%
Scald	23%	16%
Grease	21%	19%
Flash	16%	8%
UV Light	11%	(n=1)
Chemical	10%	6%
Contact with Hot Object	9%	9%
Abrasion	6%	(n=2)
Tar	5%	(n=1)
Frostbite/Cold	2.50%	(n=1)
Other	14%	7%

Health Status (as measured by the CHQ)

The Child Health Questionnaire (CHQ) family of instruments are used to measure quality of life in children. The CHQ Child form and the CHQ Parent form are collected at pre-burn, discharge, 6, 12 and 24 months post burn injury. Figures 4 and 5 show agreement between parent and child perceptions of mental and physical health. Figures 6 and 7 show summary scores for the mental and physical components by TBSA for each collection point.

Figure 4: CHQ Mental Health Parent:Child Agreement Means & 95% Confidence Intervals

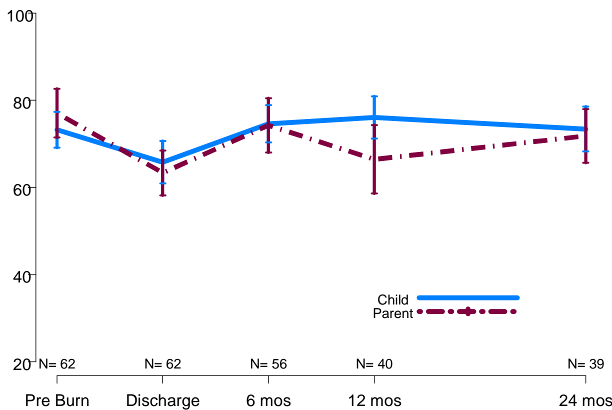


Figure 5: CHQ Physical Functioning Parent:Child Agreement Means & 95% Confidence Intervals

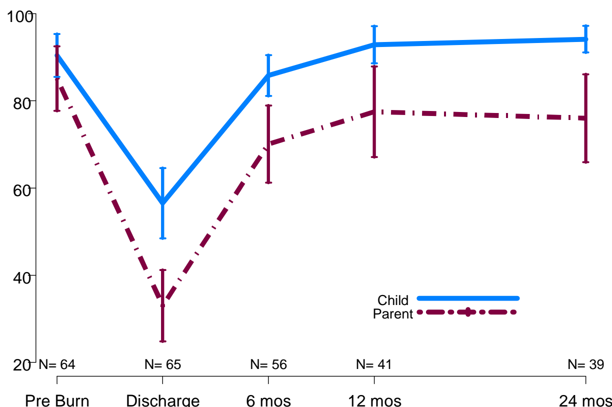


Figure 6: CHQ Mental Health by TBSA

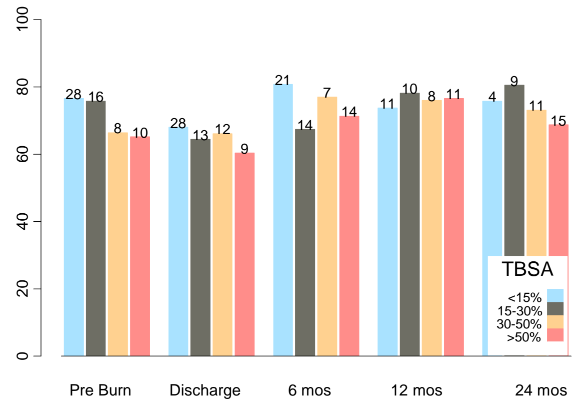
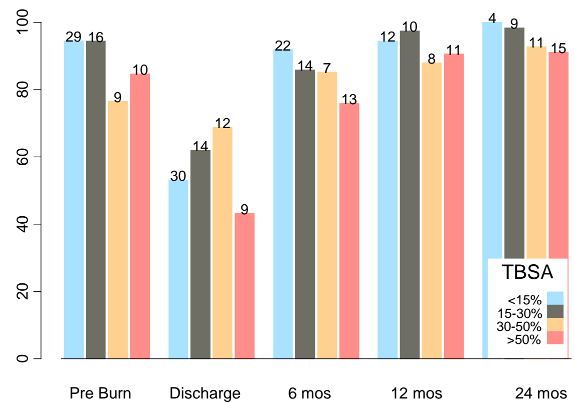


Figure 7: CHQ Physical Functioning by TBSA



National Institute on Disability and Rehabilitation Research
Project Officer: Theresa SanAgustin, M.D.

Burn Model Systems/Data Coordinating Center
Department of Preventive Medicine and Biometrics
University of Colorado Health Sciences Center, Denver CO
Project Director: Dennis Lezotte, Ph.D.
Project Coordinator: Rebecca Sloan, BA (303) 315-0320

North Texas Burn Rehabilitation Model System
University of Texas Southwestern Medical Center, Dallas TX
Project Director: Karen Kowalske, M.D.
Project Co-Director: Phala Helm, M.D.
Project Coordinator: Radha Holavanahalli, Ph.D. (214) 648-3654

University of Washington Burn Injury Rehabilitation Model System
University of Washington, Harborview Medical Center,Seattle WA
Project Director: Loren Engrav, M.D.
Project Co-Director: David Patterson, Ph.D.
Project Coordinator: Gretchen Carrougher, R.N., M.N. (206) 731-2933

Pediatric Burn Injury Rehabilitation Model System
University of Texas Medical Branch/Shriners Burns Hospital, Galveston TX
Project Director: David Herndon, M.D.
Project Co-Director: Patricia Blakeney, Ph.D.
Project Coordinator: Kathy Epperson, R.N. (409) 770-6573

Johns Hopkins University Burn Injury Rehabilitation Model System
Johns Hopkins University, Bayview Medical Center, Baltimore MD
Project Director: James Fauerbach, Ph.D.
Project Co-Director: Barbara deLateur, M.D.
Project Coordinator: Brett Thombs Ph.D. (410) 550-8161

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