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Nonfatal Scald-Related Burns Among Adults Aged ≥65 Years—United States, 2001-2006

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SCALDS, WHICH ARE BURNS ATTRIBUTED TO hot liquids or steam, account for 33%-58% of all patients hospitalized for burns in the United States.[1-3] Adults aged ≥65 years have a worse prognosis than younger patients after scald burns because of age-related factors and comorbid medical conditions,[4] and they are subject to more extensive medical treatment than younger adults. To estimate the number of emergency department (ED) visits for nonfatal scald burns among U.S. adults aged ≥65 years and describe their characteristics, CDC analyzed ED visit data from the National Electronic Injury Surveillance System All Injury Program (NEISS-AIP) for 2001-2006. This report summarizes the results, which indicated that adults aged ≥65 years made an estimated 51,700 initial visits to EDs for nonfatal scald burns during 2001-2006, for an average of 8,620 visits per year and an estimated average annual rate of 23.8 visits per 100,000 population. Two thirds of visits were made by women. Most (76%) of the nonfatal scald injuries occurred at home; 42% were associated with hot food and 30% with hot water or steam. The findings in this report highlight the need for effective scald-prevention programs targeted to older persons.

NEISS–AIP, maintained by the Consumer Product Safety Commission (CPSC), collects data on initial ED visits for all types and causes of injuries. The system uses a nationally representative sample of hospitals from 66 of the 100 NEISS–AIP hospitals that have 24-hour EDs in the United States.[5] Data are collected from the medical records of new ED admissions, and only the most severe injury is recorded for each visit. Data include up to two product codes and a two-line narrative describing the circumstances of the injury.[5]

For this analysis, a visit for nonfatal scald burn was defined as a visit by a patient aged ≥65 years to a hospital ED for scald burns at any time during the study period, 2001-2006. Visits were included if they met all three of the following conditions: (1) the principal diagnosis was "scald," "scald burn," "scald related," or "burn due to hot liquid or steam," or the narrative describing burn circumstance contained a common product involving hot liquid or steam (e.g., pressure cooker, microwave, or bathtub), (2) the ED visit was the first visit for treatment of this scald burn, and (3) the scald-burn incident was not work related. Visits were excluded if the burn involved only smoke, fire, chemical, electrical, radiation, or flash burns. Patients who were dead on arrival or died shortly thereafter were excluded.

All ED narratives associated with nonfatal scald burns were reviewed. NEISS–AIP provides space for coding two products associated with the injury. For visits with two product codes, the code deemed to be more descriptive of the circumstances of the injury was retained in the analysis to create a mutually exclusive set of product categories.* If multiple body parts were injured, only the most serious injury was used to create a set of mutually exclusive categories for analysis.

Visit estimates were based on weighted data from patients aged ≥65 years who were treated for nonfatal scald burns at EDs that reported data to NEISS-AIP. For each scald-related visit, NEISS–AIP assigns a sample weight based on its inverse probability of selection; these weights are summed to provide national estimates of nonfatal scald-related burns. Rates per 100,000 persons were calculated using U.S. Census Bureau population estimates.[6] Subgroup estimates with <20 visits or with a coefficient of variation >30% were considered unstable and were not reported. A direct variance estimation procedure that accounts for the sample weights and complex sample design was used to calculate 95% confidence intervals.

A total of 705 ED visits for nonfatal scald burns were identified during the study period. No consistent temporal variation in the number of visits was observed across the 6 years,† or by hours of the day, days of the week, or seasons of the year. In 536 (76%) of the 705 visits, the nonfatal scald burn occurred at home, most commonly in the kitchen (60%), dining area (20%), and bathroom (11%). Hot food was involved in 42% of burns (rate = 9.9 per 100,000), hot water or steam in 30% (rate = 7.2), and contact with cookware in 9% (rate = 2.2); 8% (rate = 1.9) of nonfatal scald burns were related to home or kitchen appliances, including 3% with microwave ovens. Among the 705 visit narratives, 90% recorded the type of liquids associated with the burn, including hot (boiling) water (42%), hot oil (21%), coffee (15%), food (12%), steam (7%), and tea (3%).

Scald burn visits were more common among females (rate = 27.2) than males (rate = 19.0). The most commonly affected body parts were upper extremities (arm/hand) (42%) and lower extremities (leg/foot) (38%), followed by head/neck (8%) and lower trunk (7%). Overall, 93% of ED visits resulted in discharge after treatment; 4.2% of the patients were hospitalized, and 2% of the patients were transferred to other hospitals for more specialized care.

During 2001-2006, an estimated 139,770 initial ED visits by persons aged ≥65 years occurred for nonfatal fire or burn injuries, of which 53,600 (38%) were nonfatal scald burns. After excluding work-related scald burns, the remaining 51,700 visits for nonfatal scald-related burns yielded a national estimated annual incidence of 23.8 per 100,000 persons. During the 6-year period, the estimated average annual number of initial ED vis-

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its for nonfatal scald-related burns in persons aged ≥65 years was 8,620. The highest estimated annual numbers of ED visits were for scald burns to the arm/hand and leg/foot, and the highest number of ED visits were for scald burns caused by food or water/steam.

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CDC Editorial Note: This report provides the first national estimate of ED visits for nonfatal scald burns in older adults. Compared with younger adults, older adults with scald-related burns are more frequently admitted to hospitals, experience longer intensive-care unit and hospital stays, have increased hospital mortality, and are transferred more frequently to rehabilitation and long-term nursing facilities.[3,4] The results of the analysis in this report indicate that, during 2001-2006, older adults made a substantial number of visits to U.S. EDs annually for scald burns. The burns resulted mainly in injuries to the arm/hand and leg/foot, were caused mostly by hot food and hot water or steam, and occurred predominantly in the kitchen, dining area, or bathroom. Greater awareness of the risk for these injuries and the use of simple precautions might help reduce these injuries[7,8] (see BOX).

The closest parallel analysis to the one reported here is the National Burn Registry (NBR).[2] However, NBR collects data on inpatients from burn centers rather than from ED visits to general hospitals, the source for NEISS–AIP data. The NBR results corroborate the findings of this report: the leading causes of nonfatal scald burns were contact with hot food, liquids, and steam. The NBR results also indicate that nonfatal scald burns occurred mainly in the kitchen, dining area, and bathroom. NBR data show that 14% of patients hospitalized with all types of burns were aged ≥60 years, and approximately 35% of these patients sustained nonfatal scald burns from hot liquids, steam, or boiling tap water. Notably, the National Fire Protection Association determined that 41% of all scald burns from cooking equipment in 2006 were caused by microwave ovens.[9]

The findings in this report are subject to at least four limitations. First, the report underestimates the prevalence of nonfatal scald burns because it does not include patients treated outside of hospital EDs (e.g., outpatient clinics, private doctor's offices, and emergency walk-in clinics). Second, the report might underestimate the number of scald burns in patients with multiple injuries because the system records only one injury diagnosis. Third, narrative descriptions from medical records did not always provide details or consistent information on circumstances, products involved, injury severity, or mechanism of nonfatal scald burns. Finally, the number of ED visits in certain subgroups was small and did not support stable national estimates.

This report provides a baseline national estimate that can be used for comparison in future studies. The rapid growth in the U.S. population of older

BOX. Suggested measures to reduce residential scald-related burns in older persons living independently at home*

Kitchen

- Plan ahead before cooking. Wear short- or tight-sleeved garments while cooking. Always ask for assistance if physically challenged.
- Plug ovens and other cooking appliances directly into an outlet. Never use an extension cord for a cooking appliance; it can trip the user, which can cause hot food spills. Keep all appliance cords coiled and away from counter edges.
- When deep frying, prevent contact of water and steam with hot oil; allow hot oil to cool before removal.
- To prevent spills, turn pot handles away from the stove's edge and use the back burner when possible.
- Only use dry oven mitts or potholders when moving hot food from ovens, microwave ovens, or stovetops.
- During meals, place hot items in the center of the table; use nonslip placemats instead of tablecloths.
- Treat a burn right away by putting it in cool water. Cool the burn for 3-5 minutes and immediately seek medical attention.

Use Microwave Ovens Safely

- Place the microwave oven at a safe height, within easy reach of all users, and lower than the face of the person using the microwave.
- Heat foods only in containers or dishes that are safe for microwave use. Never microwave uncracked eggs.
- To prevent steam build-up, remove tight lids on food containers, puncture plastic wraps, or use vented containers.
- Open heated food containers slowly, away from face or hands, to avoid steam scalds. Let cooked food stand for 1-2 minutes before removing from microwave oven.
- Foods heat unevenly in microwave ovens; stir and test before eating.

Bathrooms and Sinks

- Adjust thermostat on water heater to keep hot water <120°F. Install anti-scald tempering valves or thermostatic mixing valves.
- Before using, check water temperature with a kitchen thermometer or test with your elbow, wrist, or hand with spread fingers.
- Start to fill bathtub with cold water and slowly mix with hot water. Avoid running water in other rooms during this time (it might increase the temperature of the water filling the bathtub) and turn off the hot water first.

*Adapted from recommendations of the American Burn Association and the National Fire Protection Association.

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persons[10] makes monitoring of these injuries especially important. To reduce scald burns among older persons, further development of education and prevention strategies is needed, and these strategies should be evaluated for effectiveness.

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10 Available.

*If one of the two codes listed food, the other product code was recorded. For example, if the two codes referred to a microwave and food, microwave was recorded. If one of the two codes was water or steam, the other product code was recorded; water/steam was only assigned when no other information was available, because all scald burns involve a heated liquid or steam. For visits with two nonwater or nonfood product codes, the narratives were reviewed to choose which product was most descriptive of the injury circumstances.

†Number of visits by year: 2001 (110), 2002 (142), 2003 (92), 2004 (123), 2005 (122), and 2006 (116).

Neurologic Complications Associated With Novel Influenza A (H1N1) Virus Infection in Children—Dallas, Texas, May 2009

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1 table omitted

NEUROLOGIC COMPLICATIONS, INCLUDing seizures, encephalitis, encephalopathy, Reye syndrome, and other neurologic disorders, have been described previously in association with respiratory tract infection with seasonal influenza A or B viruses,[1,2] but not with novel influenza A (H1N1) virus. On May 28, 2009, the Dallas County Department of Health and Human Services (DCHHS) notified CDC of four children with neurologic complications associated with novel influenza A (H1N1) virus infection admitted to hospitals in Dallas County, Texas, during May 18-28. This report summarizes the clinical characteristics of those four cases. Patients were aged 7-17 years and were admitted with signs of influenza-like illness (ILI) and seizures or altered mental status. Three of the four patients had abnormal electroencephalograms (EEGs). In all four patients, novel influenza A (H1N1) viral RNA was detected in nasopharyngeal specimens but not in cerebrospinal fluid (CSF). Antiviral therapy included oseltamivir (four patients) and rimantadine (three patients). All four patients recovered fully and had no neurologic sequelae at discharge. These findings indicate that, as with seasonal influenza, neurologic complications can occur after respiratory tract infection with novel influenza A (H1N1) virus. For children who have ILI accompanied by unexplained seizures or mental status changes, clinicians should consider acute seasonal influenza or novel influenza A (H1N1) virus infection in the differential diagnosis, send respiratory specimens for appropriate diagnostic testing, and promptly initiate empirical antiviral treatment, especially in hospitalized patients.

Case Identification

Since April 22, DCHHS has requested all hospitals in Dallas County to report details concerning patients admitted with novel influenza A (H1N1) virus infection. As of July 20, DCHHS had identified 405 persons with laboratory-confirmed novel influenza A (H1N1) virus infection in the greater Dallas area, including 44 hospitalized patients. No deaths had been reported. Of confirmed novel influenza A (H1N1) virus infections, 83% were in patients aged <18 years. Among these pediatric cases, 145 children, including 26 who were hospitalized, were identified through the Children's Medical Center of Dallas (CMCD) laboratory-based surveillance program. Medical records from admission and discharge for all hospitalized H1N1 patients are routinely screened by DCHHS epidemiology staff. Characteristics of hospitalized patients are compiled on an ongoing basis, with further investigation of cases noted to have unusual features and severe illness.

A patient with acute neurologic complications associated with novel influenza A (H1N1) virus infection was defined as having laboratory-confirmed novel influenza A (H1N1) virus infection of the respiratory tract associated with seizures, encephalopathy, or encephalitis within 5 days of ILI symptom onset, without evidence of an alternative etiology. Encephalopathy was defined as altered mental status lasting ≥24 hours. Encephalitis was defined as encephalopathy plus two or more of the following: fever ≥100.4°F (≥38.0°C), focal neurologic signs, CSF pleocytosis, EEG indicative of encephalitis, or abnormal neuroimaging indicative of infection or inflammation.[1,2]

During April 22–July 20, seven possible cases of neurologic complications associated with novel A (H1N1) virus infection were identified. Three cases were excluded because the neurologic complications were determined to have alternative etiologies (e.g., hypocalcemia and apnea related to prematurity) or did not meet the case definition (e.g., altered mental status for <24 hours). Of the remaining four cases described in this report, one patient (patient A) was initially reported by a community hospital in Dallas on May 18. The three other cases were reported by CMCD to DCHHS during May 23-27. No additional cases had been reported in Dallas County through July 20.

Nasopharyngeal swab specimens collected from all three patients admitted to CMCD were tested for influenza A and B antigens by either Directigen EZ Flu A+B rapid enzyme immunoassay (EIA) (BD [Becton, Dickinson, and

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