

# Annual tap water scald burns in US exact high personal and financial costs

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Tap water scald burns exact high personal and financial costs every year in the U.S., finds an audit of relevant national data, published online in the journal *Injury Prevention*.

The health care costs alone of treating these burns warrant serious consideration to mandating the fitting of thermostatic mixing valves to all new water heaters, say the researchers.

Manufacturers voluntarily adopted the 120°F preset temperature standard recommended by the Consumer Protection Safety Commission (CPSC) in 1988. Notwithstanding, tap water scald burns still cause about 1 in 4 of all scald burns in the United States, note the researchers.

Exposure to water at 120°F will cause a serious [burn](#) in 9 minutes; at 130°F it will cause a serious burn in 25 seconds, and at 140°F, a serious burn will occur in as little as 3 seconds, they explain.

Thermostatic mixing valves could reduce the risk of these burns by mixing [hot water](#) from the water heater with [cold water](#) before it reaches a household tap, they suggest.

To estimate the national personal and [financial costs](#) of tap water scald burns in the US, to inform future policy, the researchers drew on data from the National Inpatient Sample (NIS) and the Nationwide Emergency Department Sample (NEDS) from the Healthcare Cost and Utilization Project (HCUP) for 2016–18.

The NIS and NEDS data identified 52,088 emergency department visits, 7,270 [hospital admissions](#), and 110 [hospital deaths](#) attributable to tap water scald burns in 2016–2018.

The NIS data revealed that more than half of tap water scald burns involved more men and boys (57.5%) than women and girls; almost half (45%) the patients were aged 18–64, and around 4 in 10 were white (41%).

The NEDS data revealed a preponderance of female (57%) patients,

with more than half (60%) of all patients aged 18–64.

The researchers estimated that the average cost was \$572 for each initial emergency department visit and \$28,431 for each [hospital stay](#).

The total direct health care cost added up to \$206.69 million for all associated inpatient stays and \$29.79 million for associated emergency department visits—the equivalent of \$78.8 million annually.

These costs exclude follow-up care, such as rehab, drugs, and infection treatment and control. Nor do they measure societal costs; impact on future productivity; pain and suffering; or other costs frequently associated with injuries among those severely injured, point out the researchers.

Medicare claims accounted for \$109.54 million of these costs, and Medicaid \$18.3 million, equivalent to 54% of these hospital costs, indicating that scald burns disproportionately affect elderly and poor people, highlight the researchers.

Several body surfaces were involved in more than a third (35.4%) of inpatient treatment episodes and in 16% of emergency department visits.

Validated risk scoring suggests that around half (52%) of patients were at low risk of death and nearly 1 in 5 (19.5%) at major and extreme risk of death.

The researchers note various limitations to their estimates, which didn't include visits to urgent care centers or children receiving care at Shriners burn centers. What's more, their estimates were based on hospital charge data rather than actual bills.

But they emphasize, "Tap water scalds remain a serious and costly public

health burden despite the utilization of educational efforts, voluntary industry actions, warning language requirements, and preset thermostats on water heaters.

"The high injuries, deaths, and overall cost of these scald burns suggest policy proposals are needed to require the use of thermostatic mixing valves."

At a retail cost of around \$30, that would add an estimated \$100 to the cost of a water heater installation. "Ensuring the installation of thermostatic mixing valves during installation of new water heaters is a practical, cost-effective strategy to eliminate tap water scald burns in the United States," the researchers conclude.

**More information:** The cost burden of hospital-treated tap water scald burns in the United States, *Injury Prevention* (2023). [DOI: 10.1136/ip-2022-044622](https://doi.org/10.1136/ip-2022-044622)

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