EVALUATION OF A STATEWIDE CAMPAIGN TO PREVENT SCALDS IN YOUNG CHILDREN

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This article describes the results of the evaluation of the first two phases of the NSW Scalds Prevention Campaign. The evaluation took several approaches, including surveys with parents, reviews of sales data for a leading scalds prevention product, and a review of hospital separations data before and after the campaign period. For a more detailed account of each set of findings, refer to the full report, *Hot Water Burns Like Fire.*[1]

BACKGROUND

Each year, approximately 450 children in NSW under the age of 15 are hospitalised as the result of scalds (burns resulting from exposure to hot water or steam). It is estimated that a further 900 seek Emergency Department care for such injuries and up to 1,800 seek medical care from a general practitioner.[2] While few deaths are associated with scalds to young children, there can be lifelong consequences for those who have suffered severe injuries.

Data from Childsafe, a surveillance system that was part of the national Injury Surveillance Information System (ISIS) that was in place in 12 NSW hospitals from 1990 to 1994, and evidence from the international literature indicate four major causes of scalds to young children in the home:[1–5]

- hot beverages
- hot tap water
- saucepans
- kettles.

Hot tap water scalds tend to be among the most serious because they usually involve a large surface area of the child's body and there is often a longer exposure before the child is rescued from the hot water.

CAMPAIGN STRATEGIES

When planning the NSW Scalds Prevention Campaign to reduce scalds in young children, a review of the literature found few studies with rigorous evaluation designs. Despite this, promising strategies included using multimedia approaches,[6] legislative controls of the temperature of hot tap water,[7] distributing hot water temperature testing cards,[6] considering design changes in products linked with scalds,[4,8] reaching high-risk groups through primary health care providers,[9] and other community-based approaches.[10,11]

The first phase of the campaign, implemented in 1992, focused on increasing the awareness of the four main hazards associated with causing scalds in the home and on creating an environment for change through supportive policies and products. The second phase, implemented in 1994, focused particularly on the risk of hot tap water—educating parents and industry (energy authorities, and manufacturers of hot water heaters and scald safety products) and trade groups (builders, plumbers and electricians)—and on policy changes that address the temperature of hot tap water delivered in the home. Both phases had a social marketing strategy (including the use of television and print media) in addition to working with industry, policy makers, health workers and other groups in contact with parents and carers of young children. Details of the planning, consultation, and the specific strategies incorporated into the campaign are described in the final report on the campaign.[1]

EVALUATION COMPONENTS

The scalds campaign has been evaluated by collecting and analysing data from a number of different sources. This article reports on the following elements of the evaluation:

- a telephone survey with a random sample of parents of children aged 0 to 4 years. This was done three times (September 1992, November 1992 and May 1995) in both New South Wales (intervention group, N = 800) and Victoria (the control group, N = 400);
- a summary of sales data for tempering valves (which mix cold with hot water before its released through a hot tap);
- an analysis of NSW hospital separations data for scalds (selected on the code for 'burns due to liquids and steam', ICD-9-CM E924.0) among children aged 0 to 4 years for the eight year period1988–89 through 1995–96.

FINDINGS

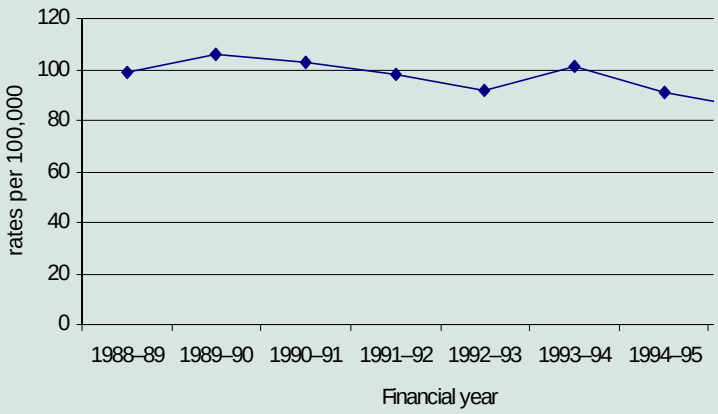
Knowledge and self-reported behaviour

Because Victoria (the intended control state) implemented its own scalds prevention campaign within the evaluation period, little can be made of the comparison between the two states. Therefore, looking just at the baseline and 30-month follow-up for NSW respondents, significant changes in knowledge occurred relating to a number of items. At the follow-up, significantly more parents ($p < 0.05$):

- were aware of products that reduce the chance of scalds in the home (from 31 to 37 per cent)
- were able to specifically nominate tempering valves as a way to prevent scalds from hot tap water (from eight to 24 per cent)

FIGURE 1

AGED-STANDARDISED HOSPITAL SEPARATIONS DUE TO SCALDS IN CHILDREN AGED 0 TO 4 YEARS, NSW, 1988–89 TO 1995–96



Source: *Hot Water Burns Like Fire: The NSW Scalds Prevention Campaign, Phases One and Two 1992–1994*. Final Report, NSW Department of Health, January 1999.

- nominated (unprompted) keeping hot beverages out of reach as a way to prevent scalds (from 68 to 74 per cent)
- nominated (unprompted) hot bath water as a main cause of scalds in children (from 55 to 63 per cent)
- reported that they would seek medical help if a child in their care for was scalded (from 56 to 70 per cent).

It should be noted that there were also a number of changes in a negative direction, suggesting a decline in awareness, including the nomination, of kettles (from 67 to 48 per cent) and saucepans (from 79 to 70 per cent) as a main cause of scalds. By focusing on hot tap water, the second phase of the campaign may have shifted parental awareness away from other sources of scalds, such as hot beverages, saucepans and kettles.

The temperature testing card

Approximately 24,000 brochures and temperature testing cards were requested via the 1-800 free-call number. A further 80,000 cards were distributed through other means, such as early childhood health centres, shopping centers, and doctors' offices. The telephone survey at the follow-up indicated that 25 per cent of the random sample of parents contacted had received a campaign brochure and temperature testing card. Compared with people who had not received a card and brochure (from any distribution point), people who reported having a card were significantly more likely to have:

- taken some kind of action to prevent scalds in the home (67 versus 49 per cent)
- turned down their hot water system (81 versus 70 per cent).

While clearly a biased sample (those seeking out the card), the card possibly served as an enabling tool for those people predisposed to take action.

Policies

After a series of consultations with industry and other stakeholders, a new NSW Health policy recommending a maximum of 50°C hot water delivery temperature in new bathrooms, was signed by the Chief Health Officer in May 1994. This policy laid the foundation for an amendment to the National Plumbing Code (set down in the Australian Standard AS3500.4), which also adopted a 50°C maximum delivery temperature in new bathrooms.

NSW has recently taken steps to introduce regulations that will enforce this standard for new and renovated bathrooms in homes, matching regulations in all other states in Australia.

Products

The company whose tempering valve won the NSW Health/ Standards Australia Child Safety Design Award (1994)

TABLE 1

NUMBER OF CASES AND HOSPITAL BED DAYS FOR SERIOUS AND LESS SERIOUS SCALDS IN CHILDREN AGED 0 TO 4 YEARS, NSW, 1988–89 TO 1995–96

Financial year	Less serious scalds (1-4 days stay)		Serious scalds (5+ days stay)		Total	
	Cases	Hospital bed days	Cases	Hospital bed days	Cases	Hospital bed days
1988–89	204	396	217	2,431	421	2,827
1989–90	275	471	174	2,299	449	2,770
1990–91	251	440	197	2,477	447	2,917
1991–92	246	437	178	2,257	424	2,694
1992–93	244	445	168	2,143	412	2,588
1993–94	277	452	168	2,183	445	2,635
1994–95	295	506	111	1,430	406	1,936
1995–96	269	434	127	1,624	375	2,058

Source: *Hot Water Burns Like Fire: The NSW Scalds Prevention Campaign, Phases One and Two 1992–1994.* Final Report, NSW Department of Health, January 1999.

advised NSW Health that, during phase two of the campaign (July–August 1994), NSW sales figures for their product increased by 42 per cent (an increase not echoed in other states). From September through December 1994 (after the new Australian Standard had been publicised), their national sales increased significantly for all four models of tempering valves, from approximately a 40 per cent increase in one model to 1,000 per cent (or tenfold increase) in another.

Unfortunately, efforts to promote regulations in regard to 'curly cords' with electric kettles (as the standard cord sold with kettles) and the manufacture of a scalds-reducing coffee mug did not succeed.

Scalds outcomes

Figure 1 shows age-standardised data for hospital separations due to scalds in children aged 0 to 4 years for the financial year period 1988–89 to 1995–96. These data show a downward trend, most pronounced in the last two year period, following phase two of the campaign.

Length of stay is a useful index of severity for an injury like a scald burn. As Table 1 shows, there was no clear change in the number of cases or total bed days due to less serious scalds over the eight years (and perhaps a slight increase in numbers in the last two data years). However, there was a sizable decrease (36 per cent) in the number of cases and the total number of bed days (35 per cent) due to serious scalds for the period 1994–95 and 1995–96 compared to the previous six years. This finding is consistent with the focus of phase two of the campaign, commencing July 1994, on tap water scalds, which are responsible for the majority of serious (or long-stay) cases.

Across all levels of severity, there was a 10 per cent reduction in the total number of cases in the last two financial year periods (1994–95 and 1995–96) compared to the preceding six years, and a 27 per cent reduction in the total number of bed days. Personal communication with Dr Hugh Martin, the head of the Burns Unit, New Children's Hospital, indicated that there were no notable changes in efficiency of treatment or hospital processing of patients during this two year period to explain the size of the reduction in hospital bed days. This suggests that fewer severe scalds were presenting for treatment.

Cost savings

In an unpublished but widely quoted paper, Kidsafe Australia has estimated that a serious scald (hospital stay of five or more days) has direct medical costs in the range of $60,000 to $100,000.[12] These costs include repeat hospital visits for skin grafts, physiotherapy and other rehabilitation, medications and medical checkups. Before phase two of the campaign, an average of 184 children aged 0 to 4 years were hospitalised in NSW for serious scalds each year (1988–89 to 1993–94). For the last two years of available data (1994–95 to 1995–96), this average has fallen to 119 cases per annum. In dollar terms, this represents a cost saving between $3.8 to $6.467 million per annum, or $7.6 and $12.934 million across both years.

DISCUSSION

The evaluation of the first two phases of the NSW Scalds Prevention Campaign was conducted under the constraints of a statewide community-based campaign with a limited budget. There was little opportunity to place controls on implementing the campaign within NSW because it was taken up to varying degrees by key stakeholders including trade, health and community groups, manufacturers, electricity and gas authorities. Furthermore, Victoria, the intended non-intervention comparison state, together with the rest of Australia, adopted scalds prevention campaigns of their own and were heavily influenced by the development of the 1994 amendment to the Australian Standard for safer residential hot water temperatures. This made clear identification of the components of the intervention difficult and assessment of its effect problematic.

Data on many of the intended indicators of the impact of the campaign were patchy. There was limited information on sales figures for scalds prevention devices, funds were not available to conduct the post-test hot water temperature check in a random sample of homes with young children, and process evaluation (what was done where, and how it was received) was scant. While none of the available indicators on their own imply the effectiveness of the campaign, the strength of the findings lies in the overall picture they create.

In considering the findings as a whole, it appears that the Scalds Prevention Campaign was highly successful. There are many indications of increased awareness of and action taken regarding the issue by parents, industry, trade groups and policy makers. Furthermore, there was a concomitant reduction in scalds presentations by young children, most particularly for serious scalds. There can be little argument that the campaign was successful if it succeeded in reducing the number of serious scalds, both in terms of health care savings and preventing enormous pain and suffering on the part of young children and their families.

The challenge lies in maintaining the level of awareness among parents, industry, and trade groups; in passing legislation for safer hot water temperatures in new homes in NSW; and in finding ways to reduce the number of less severe scalds (such as those caused by hot beverages and electric kettles).

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Copies of the NSW Department of Health publication *'Hot Water Burns Like Fire: The NSW Scalds Prevention Campaign'*, is available from the Better Health Centre, (02) 9816 0452. Please quote State Publication Number HP 980086.