Hidden dangers: Tap water scalds in Australia & New Zealand

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For Noelene & Bob
Outline

Overview of the Burn Registry of Australia and New Zealand

Incidence and characteristics of people burnt from hot tap water

The Plumbers Code of Australia: hot water temperature regulations

What next?
Burn care in Australia & New Zealand

- 24.6 million Australians
- 4.8 million New Zealanders
- 17 designated burn centres
- 3600 acute admissions annually
Burn Registry of Australia & New Zealand

Clinical Quality Registry
Epidemiological, treatment, quality of care & outcome data
All acute burns admitted to all 17 Burn Centers:
  • more than 24 hrs
  • less than 24 hrs but has surgery
  • less than 24 hr but patient dies

Collaborators:
Monash University Dept of Epi. & Prev. Medicine
ANZBA
Australian & NZ Burn Centers
Process

Admissions between
July 1 2009 – June 31 2018

Data from 17 BRANZ sites

n=670
Number of adult vs paediatric cases by year
Size of burn characteristics

The bar chart shows the distribution of burn sizes in terms of Total Burn Surface Area (TBSA). The x-axis represents different burn size groups in percentage ranges, and the y-axis indicates the number of cases for each group. The bars are color-coded, with the highest number of cases (462) falling in the 0-9% TBSA burn size group. Other groups have significantly fewer cases, with the 10-19% group having 132 cases and the 20-29% group having 41 cases. The 30-39%, 40-49%, and >=50% groups have much fewer cases, with 14, 7, and 14 cases respectively.
Defining burn size
Number of male vs female cases by age group

[Bar chart and pie chart showing the distribution of male and female cases across different age groups.]

Gender
- Female
- Male

Monash University, BRANZ, ANZBA logos are present.
Fall and scald in an elderly male
Place of injury

Home 606 (90.5%)
Schools 7 (1%)
Residential institutions 4 (0.4%)
Activity at the time of injury

Bathing
557 (83.1%)
Fall in shower & scald
Did the patients require surgery?
Did the patient require intensive care admission?

- Yes: 13.73%
- No: 85.67%
- Not stated: 0.60%
Survival at hospital discharge

- Died: 3.73%
- Survived: 96.27%
### Patient characteristics according to survival status

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>Survived (n = 645)</th>
<th>Died (n = 25)</th>
<th>P - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, median (IQR) years</td>
<td>14.0 (1.0, 63.0)</td>
<td>75.0 (59.5, 87.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Male n (%)</td>
<td>359 (55.7%)</td>
<td>9 (36.0%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>% TBSA Burns, median (IQR) %</td>
<td>5.0 (2.0, 10.0)</td>
<td>15.05 (10.0, 31.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>% TBSA Deep burns</td>
<td>0.0 (0.0, 3.0)</td>
<td>10.5 (2.3, 31.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Inhalation Injury, N (%)</td>
<td>1 (4.0%)</td>
<td>1 (0.2%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ICU admission</td>
<td>20 (20.0%)</td>
<td>72 (11.2%)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Survival status by age group
Survival status by %TBSA burn group
Hospital length of stay by %TBSA Burn group
The true cost of burn treatment

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ABSTRACT

It is difficult to define the true cost of a burns injury, however there has always been consensus that the costs associated with burns care are high. This study aims to achieve accurate calculation of the cost of acute burns care in an Australian context.

A retrospective review of 20 adult burn patients treated at our centre was performed. A市级 price list was prepared based on items, services and equipment actually utilized by the care of burns patients. Case records were reviewed for a count of quantities to calculate costs for each item. Regression analysis was performed to produce a cost vs %TBSA cost prediction. A cost breakdown was also performed for analysis of the most significant areas of expenditure and their trends with %TBSA.

The cost calculated for an average adult burns patient was AUD71,056 (US$73,533) total cost of all treatments was AUD29,444 (US$30,648). %TBSA related cost was AUD26,012 (US$27,885).

Chart 1 – Cost of burns treatment vs %TBSA.
Total % burn for 670 patients: 5754.2%

$36,042,640.10 (AUD)

$400,474,780 annually (AUD)
Summary..

High risk groups are the extremes of age

Majority of incidents occurred at home whilst bathing

Current regulation effective to reduce injury in school and aged residential settings

Mortality higher in tap scald group VS rest of the burn population (3% vs 1.5%)

   lower physiological reserve to cope with stress of injury

Significant personal and healthcare costs
Plumbers Code of Australia

Part B2 Plumbing Regulations 2008

60C storage temperature to minimise water borne disease

45C temperature bathroom water delivery for schools, nursing homes etc

50C temperature bathroom water delivery for other buildings

Tempering and thermostatic mixing valves

Laundry & kitchen temperature is optional

State based legislation
How can we protect our most vulnerable?
Change legislation so that all living premises have tempering valves installed?
The blind men and the elephant
Other stakeholder groups

- State and federal governments
  - health care, aged care

- Gas and electricity industry

- Seniors organisations

- KIDSAFE
  - Antenatal health
  - Mothers groups

- Public health policy

- Injury Prevention networks
It's not just Australia and New Zealand

- National Burn Repository American Burn Association
- Global Burn Registry World Health organisation
- Burn Data Repository British Burn Association
- Burn Registry of Australia & New Zealand
Alone we can do so little; together we can do so much.