Estimating the incidence of paediatric burns in the UK

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INTRODUCTION

• There are no published ‘comprehensive’ UK incidence figures for childhood burns.
• Estimates are predominantly derived from Hospital Admissions (HA), yet children present to Emergency Departments (ED), Primary Care and are treated at home (non-medically attended).

AIMS

To estimate the annual incidence of childhood burns amongst UK children (aged 0-15 years) which were medically attended, according to the setting where they were treated, and those which were non-medically attended.

METHODS

Data were collected from routine healthcare datasets and available epidemiology data collection systems.

Non-medically attended burns

Self-reported household burns were derived from ALSPAC, a birth cohort study, that provided data for children 0-11 years. from 1991-2002 (10). Following a RCT measuring the effect of the Family Nurse Partnership (Building Blocks Trial) (11), self-reported non-hospitalised burns were obtained from a retrospective analysis of data for children 0-2 years, born to first-time teenage mothers between 2009 and 2014.

ED attended burns

All invited members of the Paediatric Emergency Medicine Research Network (PERUKI), (44 EDs) contributed data from England, Scotland and Northern Ireland for burns in children aged 0-15 years for the calendar year 2014.

Wales: Data were obtained from all 24 EDs in Wales from National Wales Informatics Services (NWIS) for children aged 0-15 years for financial year 2014-15.

Hospital Admissions

Data across all hospital’s provided by Health and Social Care Information Centre (HSCIC, England), National Services Scotland for children 0-15 yrs. NWIS (Wales) and Northern Irish Social Services and Public Safety for children 0-15 years for financial year 2014-15.

HAs to burn services of children 0-15 years were from IBID (International Burn Injury Database) for England and Wales for financial year 2014-15

Deaths


RESULTS

Non-medically attended burns

The ALSPAC cohort (n=5089) gave an estimated incidence of burns of 299/10,000 person-years for children aged 0-11 years, with a peak incidence of 719/10,000 person-years for 0-2 year olds. Building Blocks data for children aged 0-2 years recorded 840,100 children/year.

ED attended burns

• In Wales burns account for 0.8% (1600/203144) of all 0-15 year old children attending ED, of which 61.3% (990/1600) were aged 0-4 years
• In 38 English PERUKI EDs (representing 15.6% of all 244 English EDs), burns accounted for 0.9% (9356/1,004,965) of all 0-15 year old children attending ED. HSCIC estimate 3,877,983 annual child ED attendances in 0-15 yr olds.
• In 5 Scottish PERUKI EDs (representing 15.6% of all 32 Scottish EDs), burns accounted for 0.85% (1214/142,561) of all children aged 0-15 years attending ED. National Services for Scotland estimate 264,392 total ED attendances in children 0-15 years old.
• In 1 Northern Irish PERUKI ED (representing 9.1% of all 11 ED in Northern Ireland), burns accounted for 0.9% (232/24,641) of all children aged 0-15 years attending ED. There were no data available for total ED attendances for Northern Ireland.

Hospital admissions

• England had the highest rates of HA at 6.0 per 10,000 children per year compared to an estimated 3.0 per 10,000 children in Scotland and Wales and 2.8 in N Ireland (NB in N Ireland data were only available for children aged <20 years).
• Across the UK 6,776 children were admitted to hospital as a result of a burn in 2014-15.
• In England 2208 and in Wales 69 children aged 0-15 years were admitted to burn services; rates of 2.1 and 1.2 /10,000 children/year respectively

Deaths

Between 2013 and 2014 there were 6 fatal burns in England and Wales and 1 in Scotland amongst children aged 0-14 years.

CONCLUSION

• Whilst different coding systems, sources, ages and time periods were used, conservative estimates suggest that 1-6 UK children <15 years old die, 6,780 are hospitalised, (one third in burns units/centres) and 40,000 attend ED due to burns annually.
• This represents significant morbidity with potential long term health consequences, and extensive health service utilisation.
• Burns are preventable and knowledge of the rates of childhood burns can inform, and provide a baseline, for monitoring prevention efforts.

ACKNOWLEDGEMENTS

• Burns Collective and the Healing Foundation for financial support
• Data administrators from NHS Wales Informatics Services, Health and Social Care Information Centre, National Services Scotland, Northern Irish Social Services and Public Safety and ONS
• ALSPAC team, IBID and the PERUKI sites that kindly provided data
• The Building Blocks trial was commissioned and funded by the Policy Research Programme in the Department of Health (Reference: 006/0060). The views expressed here are not necessarily those of the Department.

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(2) http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)00393-9/abstract

Table 1. Estimated annual incidence rates of paediatric burns by UK region

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<th>England</th>
<th>Wales</th>
<th>Scotland</th>
<th>Northern Ireland</th>
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| Non-medically attended /10,000 person-years (1991-2002) | 299 |
| ED attendances/10,000 children/year (2014) | 33.9 | 28.8 | 26.1 |
| Hospital Admission/10,000 children/year (financial year 2014/2015) | 6.0 | 3.1 | 3.0 | 2.8 |
| Deaths/1,000,000 children/year (2013-2014) | 6 | 1.2 | 0 |

Figure 1. UK annual incidence estimates for childhood burns per 10,000 child population, mortality/million *Non-medically attended rates for 0-11 years are self-reported from the ALSPAC cohort 1991-2002 and 0-2 years from Building Blocks (2).