

Institution: University of Nottingham		
Unit of Assessment: 3 – Allied Health Professions, Dentistry, Nursing and Pharmacy		
Title of case study: Reducing childhood unintentional injuries in the home		
Period when the underpinning research was undertaken: 2000-2017		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Dr Michael Watson (MW)	Associate Professor Health Sciences	1999 to 2018
Period when the claimed impact occurred: August 2013 to December 2020		
Is this case study continued from a case study submitted in 2014? No		
Summary of the impact		
<p>Hospital admissions for child home injuries in England showed a decrease of 18% between 2013/2014, and 2019/2020 and our research played a major part in this reduction. A 17-year body of research at the University of Nottingham including randomised controlled trials (RCTs), systematic reviews, meta-analyses and decision analyses provides the majority of the evidence underpinning the introduction of UK home safety equipment schemes for preventing child unintentional (accidental) injuries. These schemes have been shown to significantly reduce hospital admissions and have been provided by 43% of local authorities in England and Wales, nationally across Scotland and internationally. In Canada, the implementation of a home safety equipment scheme, based on our evidence, resulted in a reduction in emergency department visits for home injuries.</p> <p>Our research has made major contributions to national and international (New Zealand, Australia) injury prevention strategies and national (NICE, Public Health England) and international (Canada) guidelines on reducing child injuries. Our research has led to production of implementation resources, endorsed by NICE and widely cited in national practitioner guides. Training based on our research and our implementation resources has been provided to more than 550 health and social care practitioners across England, resulting in 90% of practitioners increasing knowledge, 87% increasing confidence and a demonstrated increase in home safety promotion following training.</p>		
2. Underpinning research (<i>refer to section 3 for references (R and number) and grants (lower case letter)</i>)		
<p>Unintentional (accidental) injury is a significant child public health issue in the under-fives. In the UK, these injuries lead to 370,000 emergency department attendances, approximately 40,000 hospital admissions and result in an average of 55 deaths each year in the under-fives (PHE, 2018). Childhood injuries can result in long-term health, educational and social consequences. There are much higher rates of death and serious injury among children from the most deprived areas. Through a public health approach, most unintentional injuries are preventable.</p> <p>Watson, working with Kendrick (School of Medicine), provided specialist child public health expertise to the 17-year programme of research that demonstrated clinical and cost-effectiveness of interventions to promote home safety and prevent childhood injury. Watson led the largest RCT worldwide which evaluated the effectiveness of health visitors providing home safety education, home safety assessments and child safety equipment for the prevention of injuries [R1]. This research showed home safety education and provision of safety equipment by health visitors to families with children aged under five significantly improves uptake and use of home safety equipment (e.g. smoke alarms, stair gates, cupboard locks, socket covers, window locks). The secondary analysis of his RCT [R1] showed that inequalities in use of stair gates could be reduced by providing free or low-cost equipment fitted in the home [R2]. This research made a major contribution to the evidence base which underpinned the successful application to the NIHR Programme Grant for Applied Research (PGfAR) for the 'Keeping Children Safe' programme of research [a].</p>		

As part of the PGfAR, Watson's expertise informed the Cochrane systematic review on home safety education and provision of safety equipment for injury prevention [R3]. This systematic review, which used both individual patient-level data and aggregated data, was the largest systematic review in the field. It provided evidence to underpin home safety equipment schemes nationally and internationally.

The PGfAR programme of research [R4] demonstrated parents of injured children were significantly less likely to undertake a range of safety behaviours including not using safety gates, leaving hot drinks in reach of children, leaving children on raised surfaces, allowing children to play or climb on furniture and not teaching children a range of safety rules. This research provided evidence on the need for home safety equipment schemes which provide education, home safety assessments and the provision of home safety equipment. These schemes have been shown to improve uptake and use of safety equipment and safety behaviours and reduce the burden of child injuries at a population level. Watson led a mixed-methods evaluation of England's national home safety equipment scheme showing extensive reach (282,000 families received home safety education and 66,127 received home safety equipment), improved home safety and high levels of parent satisfaction [R5]. This evaluation led to the University of Nottingham (Watson was co-investigator) conducting a subsequent controlled interrupted time series analysis, which demonstrated a 12.1% reduction in hospital admissions for child injury in scheme areas compared to a 6.7% reduction in areas without the scheme ($p=0.001$ for difference in trends) over the 4 years after the scheme ended (E6).

This body of evidence has made a major contribution to NICE and PHE guidance on the prevention of injuries in childhood. Watson's surveys [R6, R7] have shown these guidance documents are extensively used by local authorities and health boards in England and Wales.

3. References to the research University of Nottingham researcher in bold

- R1. **Watson M**, Kendrick D, Coupland C et al. Providing child safety equipment to prevent injuries: randomised controlled trial. *BMJ*. 2005; 330: 178-181. doi:10.1136/bmj.38309.664444.8F
- R2. Kendrick D, Mulvaney C, **Watson M**. Does targeting injury prevention towards families in disadvantaged areas reduce inequalities in safety practice? *Health Education Research*. 2009; 24(1): 32-41 doi:10.1093/her/cym083
- R3. Kendrick D, Young B, Mason-Jones AJ et al (**MW is an author**). Home safety education and provision of safety equipment for injury prevention. *Cochrane Database of Systematic Reviews*. 2012; Issue 9. Art. No.: CD005014. doi: 10.1002/14651858.CD005014.pub3
- R4. Kendrick D, Ablewhite J, Achana F et al. (**MW is an author**). Keeping Children Safe: a multicentre programme of research to increase the evidence base for preventing unintentional injuries in the home in the under-fives. *Southampton (UK): NIHR Journals Library*. 2017; Jul. doi:10.3310/pgfar05140 (Lists 36 publications arising from Keeping Children Safe; see pp 358-361)
- R5. Errington G, **Watson M**, Hamilton F et al. Evaluation of the National Safe At Home Scheme. Final Report for the Royal Society for the Prevention of Accidents. 2011. Available from: <https://www.rosipa.com/rospaweb/docs/advice-services/home-safety/final-evaluation-report-safe-at-home.pdf>
- R6. Chisholm A, **Watson MC**, Jones SJ, Kendrick D. Child injury prevention: a survey of local authorities and health boards. *International Journal of Health Promotion and Education*. 2017; 55: 205-214 doi:10.1080/14635240.2017.1312479
- R7. **Watson M.**, Mulvaney CA, Kendrick D, Stewart J, Coupland C, Hayes M, and Wynn P, on behalf of the Keeping Children Safe programme team. National Survey of the Injury Prevention Activities of Children's Centres. *Health & Social Care in the Community* 2014; 22 (1): 40–46. doi: [10.1111/hsc.12059](https://doi.org/10.1111/hsc.12059)

Grants: (Chief Investigator (ChI))

- a. National Institute for Health Research, GBP2,124,754, Keeping children safe at home: a multicentre collaborative research programme to reduce childhood injuries. 2009-2014. Kendrick (ChI), **Watson (co-investigator)**.
- b. Department of Health GBP69,368. Does the effect of home safety counselling or education with or without the provision of safety equipment differ between social groups? A systematic review and meta-analysis. 2004–2005. Kendrick (ChI); **Watson (co-investigator)**.
- c. The Royal Society for the Prevention of Accidents (RoSPA). GBP309,597. Evaluation of Safe at Home – The National Home Safety Equipment Scheme. 2009-2011. **Watson (ChI)**.
- d. NIHR School for Primary Care Research (NSPCR) GBP62,211. Evaluation of the impact of the national ‘Safe At Home’ scheme on injury rates in children under 5 using secondary care data. 2017–2019. Orton (ChI), Kendrick and **Watson (co-investigators)**

4. Details of the impact (R=research reference; E=evidence source)

Research from the University of Nottingham has led to significantly reduced unintentional injuries in the home for children under the age of five. This has been achieved through influencing national (England, Wales and Scotland) and international (Australia, New Zealand and Canada) policy and home safety strategies including local authority provision of home safety equipment; and by informing and training practitioners.

a. Influencing policy in England, Scotland and Wales on provision of home safety equipment (E1-E4)

University of Nottingham research has provided evidence of effectiveness of home safety education and equipment provision in improving home safety and reducing child injuries. This research [R1,R2] has informed the National Institute for Health and Care Excellence (NICE) PH29/30 “Preventing unintentional injuries among under 15s: Strategies (PH29) and Home (PH30)” and the evidence review of this guidance in 2015 [R4] (E1). The Chief Medical Officer in October 2013 cited our research [R3] as evidence of effectiveness and cost-effectiveness of education and safety equipment provision, making a new policy recommendation for implementing home safety recommendations in NICE PH29/30 (E2). This research also informed Public Health England’s (PHE) 2018 local authority guidance “Reducing unintentional injuries in and around the home among children under five years” [R3,R6,R7] (E3). The PHE 2018 guidance uses evidence from the Cochrane review [R3] stating “Research shows that providing safety education and free or low-cost safety equipment is effective in improving home safety and can reduce inequalities in some home safety practices.” (pg19, E3). Our Cochrane review [R3] also informed NHS Health Scotland’s 2017 “Unintentional injuries and home safety guidance” (E4). Our 2015 survey [R6] shows wide use of these documents by local authorities with 75% using NICE PH29/30 and 57% using the PHE guidance in decision making about child injury prevention work.

b. Influencing national and international (England, Scotland, Wales and Canada) provision of home safety equipment (E5-E7)

National Hospital Episode Statistics show a decrease of 18% in England’s child home injury admission rates between 2013/2014 (NHS year, unable to disaggregate further, n=46,895) and 2019/2020 (n=38,571). Home safety equipment schemes contributed substantially to this reduction, as shown by our independent evaluation of the national scheme which demonstrated a significant reduction in hospital admission rates following the scheme (E5). Home safety equipment schemes are widely implemented, with 43% of local authorities in England and Wales having a scheme in 2015 [R6]. Many schemes cite our research [R3,R4]

as underpinning evidence, e.g. the Scottish home safety equipment scheme. The Royal Society for the Prevention of Accidents (RoSPA) confirmed “*research carried out by Nottingham University on home safety education, home safety checks and home safety equipment provided much of the UK evidence on which the Scottish home safety equipment scheme was based.*” (E6.1). Between April 2013 and June 2014, 900 families benefitted from the scheme (unable to disaggregate further) (E6.2). A similar scheme in Ontario, Canada, provided equipment to 3,458 families, from April 2013 to March 2015 (unable to disaggregate), resulting in a significant reduction in emergency department attendances for home injuries ($p=0.01$) (E7). This ongoing programme was explicitly based on our Cochrane systematic review [R3] “*interventions providing safety equipment seem to be more effective than those not doing so. Based on these findings we developed a home safety program*” (p533, E7).

c. Informing national (England and Wales) and international (Canada) practitioner guides and developing resources for practitioners (E8-E13)

Our research has informed influential national and international practitioner guides.

i) The Injury Prevention Briefing (IPB) (E8), an output of the Keeping Children Safe programme of research, [R3,R4,R6] is a guide aimed at practitioners who can help families improve home safety. The IPB has been endorsed by NICE

<https://www.nice.org.uk/guidance/ph29/resources/endorsed-resource-injury-prevention-briefing-2430498925> and linked to NICE guidance PH29/30 (E1).

ii) The Guide for Commissioners of Child Health Services on Preventing Unintentional Injuries Among the Under-Fives (E9) was another output from the Keeping Children Safe programme of research [R3,R4] and informed home safety recommendations in international and national practitioner guides. This has been distributed to upper tier local authorities in England and health boards in Wales in 2016 and by the Child Accident Prevention Trust via targeted mailing to their subscribers.

The IPB and Commissioners guide are extensively cited by PHE’s practitioner guide (2017) (E10). Their usefulness is evidenced by the Child Accident Prevention Trust stating in 2017 “*Our links with public health, health visiting and early years services, for example via our advice, in-house training and consultancy, show that all three of the outputs mentioned above [IPB, commissioners guide and PHE practitioners guide] are useful to practitioners and commissioners, enabling them to easily integrate evidence-based approaches into their work. We continue to promote them as key resources to support child injury prevention in the UK.*” (E11).

In disadvantaged areas of Nottingham, our research [R3,R4] has informed evidence-based home safety checklists, monthly safety messages and safety weeks for families. Between October 2017 and June 2020, 4,451 families completed checklists, 24,400 home safety messages were distributed, 440 families attended safety week sessions and 950 received home safety visits from family mentors (E12).

Our research informed the Institute of Health Visiting Local Authority Child Public Health Briefing: The Health Visiting contribution to Child Accident Prevention (2016) [R3] (E13.1) and The Canadian Injury Prevention Resource (2015) [R1,R3] (E13.2).

d. Informing national and international injury prevention strategies (E14)

Our research has informed national and international public health strategies, including the 2018 National Accident Prevention Strategy (England) [R3,R6,R7] (E14.1), the 2015 Child Unintentional Deaths and Injuries in New Zealand and Prevention Strategies [R2,R3] (E14.2) and the 2016 New South Wales Child Safety Good Practice Guide: Good investments in unintentional child injury prevention and safety promotion [R1, R2, R3] (E14.3).

e. Training health and social care professionals (E15-E16)

We have developed and delivered child home safety training focussing on use of the IPB for 550 health and social care practitioners and family mentors in four sites in England (Nottingham, Bristol, Newcastle, Norwich) between 2014 and 2016. The 2015 Nottingham evaluation shows 90% of practitioners (health visitors and children centre staff) learnt something new from the session and 87% felt more confident about presenting child injury prevention. Three months later at least 50% had used 9 of the 11 home safety activities and between 100 and 250 families had undertaken each of the 11 activities (E15).

The 2016 Bristol evaluation (p6, E16) showed that practitioners found using the IPB enabled discussions with parents about home safety, e.g. *“nice easily adaptable activities and guidance which get parents to think about dangers through the eyes of a child”* and *“encouraging parents to be aware of child development ... promoting parental observation and encouraging them to be one step ahead”* and increased practitioner confidence, e.g. *“it has filled me with confidence in advising parents and families on how to prevent injury/accidents”*.

5. Sources to corroborate the impact**a. Influencing national policy on provision of home safety equipment**

- E1. NICE Guidance PH29/30 Evidence Review 2015 p 7, 9, 10 [weblink](#)
 E2. [CMO Report. Prevention Pays - Our Children Deserve Better, 2013](#) chapter 3 p13,40, chapter 6 p4, 11
 E3. [PHE Guidance: Reducing Unintentional Injuries in the under 5s 2018](#) , p4-6,18,19,26, 28, 29, 31, 32
 E4. [NHS Scotland Guidance: Unintentional injuries 2017](#) p4,11

b. Influencing national and international provision of home safety equipment

- E5. Final Report National Equipment Scheme Evaluation 2020 p 5
 E6.1 Letter from RoSPA 2017
 E6.2 [Evaluation of Scotland's Home Safety Equipment Scheme](#) 2014 , p23.
 E7. [Stewart et al J Trauma Acute Care Surg 2016](#) doi: 10.1097/TA.0000000000001148 p 533, 535, 536, 540

c. Informing national and international practitioner guides and developing resources for practitioners

- E8. [Injury Prevention Briefing](#) 2014 p75
 E9. [A guide for commissioners of child health services](#) 2016 p 18, 19, 21, 26, 30
 E10. [PHE Preventing unintentional injuries](#). 2017 A guide for all staff working with children under five years, p16,19, 20
 E11. Child Accident Prevention Trust Letter 2017
 E12. Nottingham Citycare Letter 2020
 E13.1. The Health Visiting contribution to Child Accident Prevention 2016 p2-6
 E13.2. The Canadian Injury Prevention Resource 2015 p400, 404-405, 408

d. Informing national and international injury prevention strategies

- E14.1 RoSPA National Accident Prevention Strategy 2018 p15, 19, 26, 27, 59, 60 [weblink](#)
 E14.2 Child Unintentional Deaths and Injuries in New Zealand 2015 p 47, 77, 90, 93 [weblink](#)
 E14.3 New South Wales Child Safety Good Practice Guide 2016 p41, 42, 46, 52, 53, 60, 61 [weblink](#)

e. Training health and social care professionals

- E15 Nottingham training evaluation report 2015 p 2-5
 E16 Bristol practitioner training evaluation report 2016 p 2 and 6 [weblink](#)