

Impact case study (REF3b)

<p>Institution: Cardiff University</p>
<p>Unit of Assessment: UoA2</p>
<p>Title of case study: A scientific foundation for the first national clinical standards in the assessment of child abuse.</p>
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Responding to the crisis in confidence amongst clinicians involved in child protection, Cardiff University developed the world’s first research programme to provide the scientific basis for more reliable clinical assessments of child abuse and neglect. The programme, which involves 21 systematic reviews (updated annually) and related primary studies, has directly informed five national clinical guidelines, the National Child Protection training program and the first NICE guidance on child maltreatment. Through the Core-Info website, the evidence base created by the Cardiff team is accessed each year by 100,000 users. Key messages from their research have been published in a series of Core-Info leaflets which have reached more than 250,000 allied professionals nationally. The Cardiff research informs standardised national clinical practice, training and legal decisions, ultimately improving the recognition and protection of children from abuse or neglect.</p> <p>2. Underpinning research (indicative maximum 500 words)</p> <p>Ten years ago there were no evidence-based standards or clinical guidelines to inform clinical assessments of suspected child abuse or neglect. When cases went to court, expert medical opinions were provided by a handful of clinicians who relied on their clinical experience, rather than scientific evidence. Clinicians were accused of misrepresenting evidence and being instrumental in the wrongful prosecution of mothers for causing the deaths of their babies. Media and legal criticism led to a lack of confidence in and amongst clinicians working in child protection.</p> <p>An evidence base for the recognition and assessment of child abuse.</p> <p>In 2002 Professor Alison Kemp (Senior Clinical Lecturer 1993-2005, Reader 2005-2009, Professor / Program Director 2009-present) and Dr Sabine Maguire (Clinical Lecturer 2002-2008, 2008-present Principle Investigator) established Cardiff Child Protection Systematic Reviews (CCPSR), funded by the National Society for the Prevention of Cruelty to Children, to develop a scientific foundation for child protection policies and practice. The research team includes two researchers, an information specialist from SURE (Support Unit for Research Evidence at Cardiff University), a statistician and a national panel of expert reviewers trained in critical appraisal methods.</p> <p>By 2013, CCPSR had completed 21 systematic reviews critically appraising the world literature relating to the recognition and investigation of child abuse. The group has published 28 peer-reviewed papers.</p> <p>Methodological developments have included a novel ranking system for the security of diagnosis of child abuse; this system has been adopted internationally by other child protection research groups.</p> <p>Key findings</p> <p>Some of the most significant findings into clinical approaches and practices regarding suspected cases of child abuse and neglect, are summarised below:</p> <ul style="list-style-type: none"> • Ageing of bruises: In 2005 Maguire and colleagues from CCPSR concluded that it is <i>not</i> possible to age bruises in children accurately with the naked eye [3.1]. • Ageing of fractures: Responding to the paucity of scientific evidence, CCPSR carried out a primary study (2010-12) which concluded that it <i>is possible</i> to age fractures within broad time frames [3.2]. • Characteristics of abusive bruises: In 2005 the Cardiff team showed that in non-mobile infants, bruises over soft tissue areas that carry the imprint of an implement were indicators of abuse, as were multiple bruises of uniform shape [3.3]. This review led to the group’s successful application for the first MRC-funded study on bruising in children (2007-12).

Impact case study (REF3b)

- Abusive fractures: A CCPSR review (2008) found that rib fractures, fractures to the shaft of the humerus in infants and femoral fractures in non-mobile babies have a high probability of being caused by abuse [3.4].
- Abusive head trauma (AHT): The CCPSR created a database of individual patient data collected from six international studies (2009-11). The team developed a method for 'individual patient data analysis' and proposed a model to estimate the probability of AHT (a contentious diagnosis) from clinical features [3.5]. The model has subsequently been validated in clinical practice to improve the early recognition of cases of suspected AHT.
- Retinal haemorrhages are important features of AHT; the AHT systematic reviews identified a lack of internationally recognised reporting standards for haemorrhagic retinopathy in cases of AHT. The CCPSR researchers developed and validated such a tool (2010-12) [3.6].

The quality of the group's work on bruising was cited in a Lancet editorial (Cabinum-Foeller, E. and L. Frasier. 2005. Bruising in Children. *The Lancet* 365(9468), pp1369-1370): "The conclusions are clinically intuitive, but provide a more empiric literature-based review that provides an essential framework for any clinician attempting to determine the cause of bruising." The independent validation and application of several methodologies developed by CCPSR (e.g. the diagnosis security ranking system, the AHT probability model, etc.) also demonstrate the quality of the group's research output.

3. References to the research (indicative maximum of six references)

1. **Maguire S, Mann MK, Sibert J, Kemp A.** Can you age bruises accurately in children? *Archives of Disease in Childhood*. 2005;**90**(2):187-189. <http://dx.doi.org/10.1136/adc.2003.044073>
2. Prosser I, Lawson Z, Evans A, Harrison S, Morris S, **Maguire S, Kemp AM.** A timetable for the radiologic features of fracture healing in young children. *American Journal of Roentgenology*. 2012;**198**(5):1014-1020. <http://dx.doi.org/10.2214/AJR.11.6734>
3. **Maguire S, Mann MK, Sibert J, Kemp A.** Are there patterns of bruising in childhood which are diagnostic or suggestive of abuse? *Archives of Disease in Childhood*. 2005;**90**(2):182-186. <http://dx.doi.org/10.1136/adc.2003.044065>
4. **Kemp AM, Dunstan F, Harrison S, Morris S, Mann M, Rolfe K, Datta S, Thomas DP, Sibert JR, Maguire S.** Patterns of skeletal fractures in child abuse: systematic review. *British Medical Journal*. 2008;**337**:a1518. <http://dx.doi.org/10.1136/bmj.a1518>
5. **Maguire SA, Kemp AM, Lumb RC, Farewell DM.** Estimating the probability of abusive head trauma: A pooled analysis. *Pediatrics*. 2011;**128**(3):e550-e564. <http://dx.doi.org/10.1542/peds.2010-2949>
6. Ng WS, Watts P, Lawson Z, **Kemp A, Maguire S.** Development and validation of a standardized tool for reporting retinal findings in abusive head trauma. *American Journal of Ophthalmology*. 2012;**154**(2):333-339. <http://dx.doi.org/10.1016/j.ajo.2012.02.007>

Note: CCPSR researchers in **bold**. All publications available on request from the HEI.

Key funding sources

- Systematic review of physical abuse. National Society for the Prevention of Cruelty to Children (NSPCC). A Kemp (PI). £788,971. 2003-2013.
- Developing diagnostic tools for clinicians to improve diagnostic accuracy and identify patterns of bruising in physical. Medical Research Council. Research grant ref: G0601638. A Kemp (PI). £1.12 million. 2007-2012.

4. Details of the impact (indicative maximum 750 words)

The first UK child protection clinical guidelines

The Cardiff systematic reviews have directly informed five national guidelines in the field child protection:

- The first NICE evidence-based maltreatment guidelines (2009)[5.1].

Impact case study (REF3b)

- The first joint guidelines published by the Royal College of Radiology and Royal College of Paediatrics and Child Health (RCPCH) in 2008. As a direct consequence of these guidelines, skeletal surveys now routinely include oblique views of the ribs for all children in the UK under the age of two years where physical abuse is suspected [5.2].
- The RCPCH Child Protection Companion – the clinical guidance for all paediatricians (2006) across UK and the second edition of the Companion (Kemp co-edited), published in 2013, to include evidence from all 21 of CCPSR's systematic reviews [5.3].
- National standards for ophthalmological examination in suspected abusive head trauma (2013). The Royal College of Ophthalmologists were preparing guidelines as of July 2013.
- '*Child Protection and the Dental Team: an introduction to safeguarding children in dental practice*' published 2006, updated in 2009 with new developments in the Cardiff research. This live document accessible online (and supported by a website) was commissioned by the Department of Health and distributed to all dental practitioners in the UK to highlight their role and responsibility in child safeguarding, with information on how to recognise suspected child abuse or neglect [5.4].

National compulsory training programme

Cardiff's evidence base informs the national child protection training programme which meets the Intercollegiate National Safeguarding six levels of competences. This training is delivered to all healthcare staff across the UK. Cardiff's research informs the training manuals [5.3] for the RCPCH/NSPCC/ALSG training programmes at:

- Level 2: Child Protection Recognition and Response (accessed by 400 trainers and 4000 trained health practitioners who work with children) [5.7].
- Level 3: Child Protection in Practice (1700 Child protection clinicians registered).

Since 2008 Kemp and Maguire have also delivered over 100 invited lectures to present CCPSR findings and recommendations, reaching an estimated 15-20,000 child protection practitioners in the UK, Europe and US.

International reach – online training and information resources

The publication of national guidelines and the delivery of compulsory training into evidence-based clinical assessment of child abuse has embedded Cardiff's research into UK clinical child protection practice.

Since 2008 the Cardiff group has also disseminated its findings to professionals and practitioners through the Core-Info website (www.core-info.cf.ac.uk) which hosts the findings from the 21 systematic reviews and meta-analyses that are updated annually. Commenting on Core-Info, the former president of the Royal College of Paediatrics and Child Health noted: "*This resource does not only allow easy access for improved clinical decision-making, the evidence base also underpins improved expert evidence in courts around the world*" [5.7]. The influence of Cardiff's work has also been highlighted by the American Academy of Pediatrics [5.6].

Core-Info analytics show that the website is used by 100,000 health professionals, social workers, law enforcement, the judiciary and researchers from 40 countries annually. A recent survey of child protection paediatricians in the UK and Australia confirms that Core-Info is used by 60% of these professionals to inform clinical decisions, provide continuing professional development and education material, inform legal reports and give scientific validation to expert opinion. It is considered to be "*one of the most important developments in the field, supporting better clinical decision making, training and expert opinion in court, and increasing overall confidence of paediatricians*" [5.5].

Six Core-Info leaflets developed jointly by the Cardiff team and the NSPCC (2007-2013) translate key research findings into practice for allied professionals in child protection. Since 2008, approximately 200,000 hard copies (plus numerous downloaded copies) have been sold to non-specialists who work with, or come into contact, with children. The Core-Info leaflets are regularly updated to reflect the latest evidence and are widely used for national training (Levels 1-2) and as a quick reference source for health visitors, social services, general practitioners and police.

Impact on practitioners and services – an evidence base for clinical practice

As a consequence of the wide-spread national and international dissemination of CCPSR's research findings through national guidelines and training, child health professionals now base assessments, diagnoses and court evidence on scientifically informed and clinically validated models and practices. The significance of this shift in practice is summarised by the National Clinical Director for Children at the Department of Health: *"This work is at the forefront in supporting evidence based practice in a sensitive clinical field of great importance"* [5.8].

The evidence base provided by the Cardiff group has helped child protection professionals and expert witnesses to re-establish trust. The standardised evidence-based practice means that convictions in court and child-protection interventions are more reliable, with a lower likelihood of wrongful convictions.

Impact on child health and welfare

The ultimate beneficiaries of this work are the children who are being abused. Through the adoption of national guidelines and the implementation of standardised evidence-based practice across the UK, it is now more likely that abuse will be recognised and appropriately investigated and abused children are more likely to be protected from future harm.

The Deputy High Court Judge in the Family Division and Recorder in the Crown and County Court states that one of the major benefits of Cardiff's work has been the improvement in the scientific validation and quality of expert opinion presented in Family and Criminal Child Protection Court Cases, in particular the eradication of police and paediatricians using colour to estimate the age of a bruise [5.9].

In 2013 the CCPSR group won the BMJ Child Health Team of the Year in the BMJ Improving Health Awards [5.10].

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. NICE guideline 2009: When to Suspect Child Maltreatment, <http://www.nice.org.uk/nicemedia/pdf/CG89FullGuideline.pdf> (pp v, 107, 142-143) [Also saved as a pdf on 24.04.13 and available from HEI on request].
2. Standards for the radiological investigation of suspected Non Accidental Injury 2008 http://www.rcr.ac.uk/docs/radiology/pdf/RCPCH_RCR_final.pdf (pp 5, 6, 51, 52, 55) [Also saved as a pdf on 24.04.13 and available from HEI on request].
3. Child Protection Companion: RCPCH 2013 (2nd edition) <http://www.rcpch.ac.uk/child-health/standards-care/child-protection/publications/child-protection-publications> (pp 238, 244, 245, 246, 247, 248, 249, 260, 261) [Also saved as a pdf on 24.04.13 and available from HEI on request].
4. Child Protection and the Dental Team: An introduction to safeguarding children in dental practice. Cardiff research directly cited pp 5.2, 5.5. [Also saved as a pdf on 24.04.13 and available from HEI on request].
5. Individual corroboration from the President Royal College of Paediatrics and Child Health. Confirms the Core-Info website has been used to improve clinical decision making and the standard of expert testimony.
6. Contactable individual: Chair, Committee for Child Abuse and Neglect, American Academy of Pediatrics. Can confirm the Core-Info website has been used to improve clinical decision making and the standard of expert testimony internationally.
7. Individual corroboration from the President RCPCH. Confirms the Core-Info website has been used to improve clinical decision making and the standard of expert testimony.
8. Individual corroboration from the National Clinical Director for Children, Young People and Maternity, Department of Health. Confirms the importance of the research in supporting evidence based practice in UK and internationally.
9. Contactable individual: Deputy High Court Judge in the Family Division and Recorder in the Crown and County Court. Can confirm the use of the research in several court cases regarding the colour of bruises over time and the inability to age bruises accurately due to their colour has been crucial to the case outcome and the future care of the child.
10. BMJ Improving Health Awards: <http://thebmjawards.bmj.com/previous-winners/2013/child-health-team-of-the-year> [Also saved as a pdf on 17.06.13 and available from HEI on request].