

Impact case study (REF3)

Institution: University of Bath		
Unit of Assessment: A4 Psychology, Psychiatry and Neuroscience		
Title of case study: Improving Adolescent Chronic Pain Management		
Period when the underpinning research was undertaken: 2003 - 2019		
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:
Christopher Eccleston	Professor, previously Reader	September 1992 - present
Emma Fisher	Research Fellow, previously Lecturer and Research Assistant	May 2011 - June 2012; June 2014 - March 2016; September 2017 - June 2018; February 2019 - present
Abbie Jordan	Senior Lecturer, previously Lecturer, Research Fellow and Teaching Fellow	August 2006 - August 2008; April 2014 - August 2014; March 2015 - present
Edmund Keogh	Professor, previously Reader and Senior Lecturer	May 2003 - present
Period when the claimed impact occurred: August 2013 - December 2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact		
<p>Children with pain are able to live full lives because of the University of Bath's Centre for Pain Research (BCPR) which has:</p> <ul style="list-style-type: none"> • Led the uptake of evidence based novel treatments in the UK and internationally; • Improved pain assessment through the adoption of Bath Adolescent Pain Questionnaires (BAPQ) in the UK, USA, Australia and New Zealand between August 2013 and December 2020 to enable optimal diagnosis and treatment; • Influenced national and international policy on treating children's pain, informed guidance produced by the Scottish Government in 2018, and the World Health Organisation (WHO) in 2020. 		
2. Underpinning research		
<p>Chronic pain is a global public health problem, with 20% of adolescents reporting a significant chronic episode of pain, distress and disability, which for 8% continue to suffer into adulthood and causes personal and economic hardship across the lifetime. Research in the Bath Centre for Pain Research (BCPR) has demonstrated that the number of viable pharmacological treatment options for children and adolescent pain is small and there is no significant development [3.6]. The original research, conducted by BCPR was amongst the first to focus on adolescents in pain and their families, and within an age-appropriate developmental context. Research at Bath has identified the psychosocial mechanisms most relevant to paediatric pain populations [3.1-3.3] and determined which approaches work best for this patient group [3.4-3.6]. BCPR have produced new measurement tools for targeted</p>		

assessment and classification of chronic pain, and developed novel intensive Cognitive Behavioural Treatments for pain management for international use. Specifically:

Psychosocial mechanisms: The Centre's research has focused on improving understanding of the cognitive-affective and social mechanisms of pain in children and adolescents. BCPR have identified fear-related vigilance to pain and avoidance of pain cues as drivers of chronic pain behaviour [3.1-3.3]. Therapeutic targets should therefore be on decreasing anxiety and increasing flexibility in how pain is attended and responded to. BCPR have found that individual (sex) differences exist in how these mechanisms affect pain [3.1], and shown they operate within an interpersonal (family) context [3.2-3.3]. This mechanism discovery work provides novel targets for translation in both psychological and pharmacological interventions, with a focus on altering the rigidity of pain avoidant behaviours.

New methods of assessment [3.2, 3.3]. Although pain requires interdisciplinary treatment, prior to the Centre's research there were no clinical measures reflecting the multidimensional nature of pain for children. BCPR used the knowledge of psychosocial mechanisms (e.g., fear, family context) to develop the first multi-dimensional measure of the impact of chronic pain on adolescents, the Bath Adolescent Pain Questionnaire (BAPQ) [3.2]. The BCPR also developed an associated measure of the impact of a child's pain on the parent, the Bath Adolescent Pain – Parent Impact Questionnaire (BAP-PIQ) [3.3].

Research on pain treatment. The identification of psychosocial mechanisms and assessment methods was used to develop new treatment approaches, which BCPR have evaluated [3.4]. In addition, BCPR produced and maintain the evidence base for all treatments for paediatric pain, pharmacological and non-pharmacological [3.5-3.6]. For example, the evidence review of psychological interventions for children and adolescents with pain is presented in reference [3.5]. Additionally, the BCPR established the Chronic Pain in Children research programme, which produced 10 Cochrane Systematic Reviews, the leading journal and database for systematic reviews in health care, and an overview review on the efficacy of pharmacological interventions [3.6]. This overview highlighted the lack of available evidence across all drugs in relieving pain in children.

3. References to the research

Mechanisms

[3.1] Keogh, E & Eccleston, C 2006, 'Sex differences in adolescent chronic pain and pain-related coping', *Pain*, vol. 123, no. 3, pp. 275-284. <https://doi.org/10.1016/j.pain.2006.03.004>

Assessment

[3.2] Eccleston, C, Jordan, A, McCracken, LM, Sled, M, Connell, H & Clinch, J 2005, 'The Bath Adolescent Pain Questionnaire (BAPQ): development and preliminary psychometric evaluation of an instrument to assess the impact of chronic pain on adolescents', *Pain*, vol. 118, no. 1, pp. 263-270. <https://doi.org/10.1016/j.pain.2005.08.025>

[3.3] Jordan, A, Eccleston, C, McCracken, LL, Connell, H & Clinch, J 2008, 'The Bath Adolescent Pain – Parental Impact Questionnaire (BAP-PIQ): development and preliminary psychometric evaluation of an instrument to assess the impact of parenting an adolescent with chronic pain', *Pain*, vol. 137, no. 3, pp. 478-487. <https://doi.org/10.1016/j.pain.2007.10.007>

Treatment

[3.4] Eccleston, C, Malleson, PN, Clinch, J, Connell, H & Sourbut, C 2003, 'Chronic pain in adolescents: evaluation of a programme of interdisciplinary cognitive behaviour therapy',

Archives of Disease in Childhood, vol. 88, no. 10, pp. 881-885.

<https://doi.org/10.1136/adc.88.10.881>

Evidence for treatment

[3.5] Fisher, E, Law, E, Dudeney, J, Palermo, TM, Stewart, G & Eccleston, C 2014, 'Psychological therapies for the management of chronic and recurrent pain in children and adolescents', *Cochrane Database of Systematic Reviews*, vol. 2014, no. 5, CD003968.

<https://doi.org/10.1002/14651858.CD003968.pub4>

[3.6] Eccleston, C, Fisher, E, Cooper, TE, Grégoire, MC, Heathcote, LC, Krane, E, Lord, SM, Sethna, NF, Anderson, AK, Anderson, B, Clinch, J, Gray, AL, Gold, JI, Howard, RF, Ljungman, G, Moore, RA, Schechter, N, Wiffen, PJ, Wilkinson, NMR, Williams, DG, Wood, C, van Tilburg, MAL & Zernikow, B 2019, 'Pharmacological interventions for chronic pain in children: an overview of systematic reviews', *Pain*, vol. 160, no. 8, pp. 1698-1707.

<https://doi.org/10.1097/j.pain.0000000000001609>

Funding details

PPP Healthcare Medical Trust (UK) GBP102,166. Duration 8/2001 to 11/2004. Development of a measure of the impact of chronic pain on adolescents. Principal Investigator C. Eccleston. Collaborators: L. McCracken, H. Connell, J. Clinch, C. Sourbut, G. Taylor.

BUPA Foundation. GBP130,000. Duration 8/2003 to 8/2006. Developing a multi-dimensional inventory to measure the impact of adolescent chronic pain on parents. Principal Investigator: C. Eccleston. Collaborators: L. McCracken, H. Connell, J. Clinch, C. Sourbut, G. Taylor.

NIHR Cochrane Programme Grant on Chronic Pain, Cancer Pain, and Pain in Children. GBP420,000. Duration 08/2014 to 07/2017. Principal Investigator: C Eccleston. Collaborators: A. Moore, P. Wiffen, C. Stannard.

4. Details of the impact

Changed clinician practice in pain treatment nationally and internationally leading to improved children's quality of life

Between August 2013 and December 2020 BCPR research on psychological mechanisms [3.1-3.3] has been applied to change how clinicians manage children's pain [5.1-5.5], by shifting the focus to cognitive-emotion processes and incorporating measurement into care pathways. As noted by the Lead of the Paediatric Pain Research Group and the Consultant Lead of Paediatric Pain Service at Great Ormond Street Hospital [5.1] the Centre's research has "ensured that psychological constructs and mechanisms such as pain catastrophising, approach-avoidance and attention bias, are [understood by] a range of practitioners involved in paediatric pain management" and "led to major improvements in clinical care" [5.1].

Rather than reduce painful sensations, clinicians now target fear-cognitions in treatment. This was acknowledged by the Managing Director of Paediatric Pain at Stanford University [5.2] who said that "the recognition and codification of Fear of Pain by Bath [has led] to policy changes in formally incorporating measurement into the standard clinical pathways of care of several paediatric pain clinics" including Los Angeles Children's Hospital [5.2]. In turn, this has "improved the lives and health of children in many clinical practices...and continues to inform clinicians regarding the use of...[opioids] in infants and children" [5.2].

Provided new models of healthcare management of childhood pain

Since August 2013 BCPR's treatment approach for childhood pain [3.4] has led to the development of new services and changes in care models [5.2-5.3]. The Head of Service for Paediatric and Adolescent Chronic Pain at Evelina Hospital, London [5.3] said the BCPR

have “*influenced the standards of care of many services, including mine. The assessment or outcome tools have also helped commissioners and colleagues across our networks understand the demands of assessment and management*”. The “networks” refer to clinical services that the Head of Service set up including the service in London established in 2014 (population of 8,000,000), which received 200-300 referrals per annum. He used the Centre’s research “*as a reference for business cases and persuading management teams and commissioners of the rationale for our model of care*” [5.3].

Changed how pain treatments are appraised leading to increased effectiveness of treatments

Since August 2013, BCPR assessment tools [3.2, 3.3] have continued to be used to help improve the lives of children in pain and their families in the UK, USA, Australia and New Zealand [5.2-5.4]. Clinical healthcare practitioners used them to assess the effectiveness of their treatment programmes for children’s pain management, leading to better treatment regimes and, as a result, improvements in children’s quality of life [5.2-5.3]. One of the best examples can be found in the adoption of BCPR measures within the electronic Persistent Pain Outcomes Collaboration (ePPOC) system. ePPOC aims to improve the quality of care and outcomes for people with chronic pain in Australia and New Zealand. Over 90 adult and paediatric pain management services currently participate in ePPOC. Since 2014 BCPR scales are one of the standard measurement tools used in all hospital-based paediatric pain centres. The Director of ePPOC [5.4] describes the Centre’s work as “*critical*” to ePPOC, using the BAPQ and BAP-PIQ to “*produce information on the effectiveness of pain management interventions; develop an Australasian benchmarking system to improve pain management outcomes; [and] provide comparative data to pain management services using the benchmarks developed*”. In 2020 the BCPR assessment tools [3.2, 3.3] have been independently verified as having “*utility to audit pain clinic activity and potentially a use in demonstrating beneficial outcomes to commissioners*” [5.6, p. 7].

Influenced policy guidance on treating children’s pain

The BCPR research on treatment efficacy [3.5-3.6] has informed clinical guidance and policy. Nationally, this includes informing recommendations in the Royal College of Anaesthetists Faculty of Pain Medicine’s Core Standards for Pain Management Services in the UK (2015) [5.7, p. 117-118] and in the Scottish Government’s National Clinical Guidelines on the Management of Chronic Pain in Children and Young People (2018) [5.8, p. 16-17, 32, 67]. Internationally, the Director of Pain Medicine at the University of Washington’s School of Medicine [5.5] used the Centre’s research to inform guidance given to US agencies (Food and Drugs Administration), expert testimony to regulators, and contributed to practice guidelines. He said “*A central issue is to provide evidence for when opioids may be useful (or not) in treating recurrent or chronic pain in younger patients. Here again, the aforementioned Cochrane reviews have proven invaluable in these deliberations and the policies and guidelines that resulted*”. In 2020 the WHO published global guidance recommendations on paediatric pain treatment [5.9, p. 32], which drew on BCPR research [3.6]. BCPR also acted as the evidence support team for this document.

5. Sources to corroborate the impact

Individual Testimonials

[5.1] Testimonial: Lead of Paediatric Pain Research Group and Consultant Lead of Paediatric Pain Service, Great Ormond Street Hospital NHS Foundation Trust, London, UK, 24 August 2020.

[5.2] Testimonial: Director, Pediatric pain, Departments of Anesthesiology, Perioperative and Pain Medicine; Department of Pediatrics, Stanford University School of Medicine, USA, 7 September 2020.

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[5.3] Testimonial: Head of Service, Paediatric and Adolescent Chronic Pain, Evelina Hospital, London, UK, 25 August 2020.

[5.4] Testimonial: Director, electronic Persistent Pain Outcomes Collaboration (ePPOC). Australia and New Zealand, 2 September 2020.

[5.5] Testimonial: Director of Pain Medicine, University of Washington School of Medicine, Seattle Children's Hospital, USA, 28 August 2020.

Independent practice-based evaluation of BAPQ

[5.6] Goddard JM, Robinson J, Hiscock R. Routine use of the Bath Adolescent Pain Questionnaire in a paediatric pain clinic. British Journal of Pain (in press). Published online 6 June 2020. <https://doi.org/10.1177/2049463720927067>

Policy/Guidance

[5.7] The Faculty of Pain Medicine. Core Standards for Pain Management Services in the UK. London: Royal College of Anaesthetists; Published October 2015.

<https://fpm.ac.uk/sites/fpm/files/documents/2019-07/Core%20Standards%20for%20Pain%20Management%20Services.pdf>

[5.8] Short Life Working Group for Paediatric Pain. Management of Chronic Pain in Children and Young People: A National Clinical Guideline. Edinburgh: Scottish Government; Published 23 March 2018. Available from:

<https://www.gov.scot/Resource/0053/00533194.pdf>

[5.9] World Health Organisation (WHO) policy guidelines. World Health Organisation Guideline for the management of chronic pain in children. Published online 22 December 2020. <https://www.who.int/publications/i/item/9789240017870>