BJA/RCoA Project Grant 2009(2) NIAA Grant Round
FINAL REPORT 2014

Applicant: Dr Suellen Walker
Portex Unit: Pain Research and Department of Anaesthesia and Pain Medicine
UCL Institute of Child Health & Great Ormond Street Hospital NHS Trust

Title: Opioid analgesia for neonatal surgery: long term impact on responses to future injury and analgesic efficacy

Award: £48,065 Jan 2010–July 2013

This grant assessed long-term interactions between neonatal surgery and analgesia in a laboratory model. These translational studies were based on previously identified long-term changes in sensory processing identified in preterm children, that were more marked in those who also required surgery during the neonatal period. Our studies identified:

i) mechanisms underlying long-term effects of pain and analgesia in early life that include both alterations in baseline sensory thresholds and descending brainstem modulation and enhanced hyperalgesia and microglial reactivity following repeat injury;

ii) evaluated the spinal toxicity of analgesic and local anaesthetic interventions; and

iii) identified mechanism-based analgesic interventions that prevent or selectively target alterations in pain processing following neonatal surgical injury.

Research support from the BJA/RCoA has been presented and acknowledged in:

Awards
Macintosh Professorship awarded by Royal College of Anaesthetists, Dec 2012.
1. Macintosh Lecture. Royal College of Anaesthetists Annual Congress. Cardiff, UK. May 2014

Invited and plenary lectures at national and international meetings:
2. IASP Pain in Children SIG New Investigator Award Plenary. 8th International Symposium on Pediatric Pain. Mexico City, Mar 2010
3. Campus Research Week. University of Melbourne, Murdoch Children’s Research Institute, Royal Children’s Hospital Melbourne, Australia October 2010
4. Paediatric Anaesthetists Group of Wales. 8th Annual Meeting. Llangammarch Wells, UK. Nov 2010
6. Association of Paediatric Anaesthetists of Great Britain 38th Annual Scientific Meeting. Torquay, UK. May 2011
11. Visiting Professor, Dept of Pain Medicine, Children’s Hospital Boston, May 2012
15. 9th International Symposium on Pediatric Pain. Stockholm, Sweden, June 2013
Publications during the grant period:

Research Manuscripts
1. Walker SM, Fitzgerald M, Hathway G. Surgical injury in the neonatal rat alters the adult pattern of descending modulation from the rostroventral medulla (under review)

Review Articles
10. Walker SM, Taksh TL. Neuropathic pain in neonates and infants: Review of clinical and preclinical strategies for the development of safety and efficacy data *Anesth Analg* 115 (3); 2012 PMID: 22798528

Edited Textbook and Book Chapters

Editorials

National Clinical Practice Guidelines