32. Fletcher D, Martinez V. opioid-induced hyperalgesia in patients after surgery: a systematic review and a meta-analysis. *Br J Anaesth* 2014; **112**: 991–1004
33. Beloeil H. Opioid-free anesthesia. *Best Pract Res Clin Anaesthesiol* 2019; **33**: 353–60
34. Bakan M, Umutoglu T, Topuz U, et al. Opioid-free total intravenous anesthesia with propofol, dexmedetomidine and lidocaine infusions for laparoscopic cholecystectomy: a prospective, randomized, double-blinded study. *Braz J Anesthesiol* 2015; **65**: 191–9
35. Brandal D, Keller MS, Lee C, et al. Impact of enhanced recovery after surgery and opioid-free anesthesia on opioid prescriptions at discharge from the hospital: a historical-prospective study. *Anesth Analg* 2017; **125**: 1784–92
36. PROSPECT Procedure Specific Postoperative Pain Management. Better postoperative pain management. Available from: http://www.postoppain.org/. [Accessed 09 December 2020].
37. ANZCA. Position statement on the use of slow-release opioid preparations in the treatment of acute pain. Available from: http://www.anzca.edu.au/resources/endorsed-guidelines/position-statement-on-the-use-of-slow-release-opioid [Accessed 08 December 2020].
38. Hill MV, McMahon ML, Stucke RS, Barth Jr RJ. Wide variation and excessive dosage of opioid prescriptions for common general surgical procedures. *Ann Surg* 2017; **265**: 709–14
39. Hasak JM, Bettlach CL, Santosa KB, et al. Empowering post-surgical patients to improve opioid disposal: a before and after quality improvement study. *J Am Coll Surg* 2018; **226**: 235–240.e3
40. Prabhu M, McQuaid-Hanson E, Hopp S, et al. A shared decision making intervention to guide opioid prescribing after cesarean delivery. *Obstet Gynecol* 2017; **130**: 42–6
41. Vu JV, Howard RA, Brummett CM, et al. Statewide implementation of postoperative opioid prescribing guidelines. *N Engl J Med* 2019; **381**: 680–2
42. Prescribing opioids for postoperative pain – supplementary guidance. Available from: http://www.agencymeddirectors.wa.gov/Files/FinalSupBreeAMDGPostopPain091318wcover.pdf. [Accessed 01 December 2020].
43. Molero Y, LarssonH, D'Onofrio BM, et al. Associations between gabapentinoids and suicidal behaviour, unintentional overdoses, injuries, road traffic incidents, and violent crime: population based cohort study in Sweden. *BMJ* 2019; **365**: l2147
44. Hah J, Mackey SC, Schmidt P, et al. Effect of perioperative gabapentin on postoperative pain resolution and opioid cessation in a mixed surgical cohort: a randomized clinical trial. *JAMA Surg* 2018; **153**: 303–11

British Journal of Anaesthesia, 126 (6): 1092–1094 (2021)
doi: 10.1016/j.bja.2021.02.019
Advance Access Publication Date: 26 March 2021

Assessing 'desire for more pain treatment' reveals much room for improvement after tonsillectomy and appendectomy in children

Mark Alcock[1,2,*] and George Chalkiadis[3,4,5]

[1]Department of Anaesthesia and Pain Management, Queensland Children's Hospital, Brisbane, Australia, [2]Children's Health Queensland Clinical Unit, University of Queensland, Brisbane, Australia, [3]Department of Anaesthesia and Pain Management, Royal Children's Hospital, Melbourne, Australia, [4]Murdoch Children's Research Institute, Melbourne, Australia and [5]Department of Paediatrics, University of Melbourne, Melbourne, Australia

*Corresponding author. E-mail: Mark.Alcock@health.qld.gov.au

This editorial accompanies: 'Desire for more analgesic treatment': pain and patient-reported outcome after paediatric tonsillectomy and appendectomy by Stamer et al., *Br J Anaesth* 2021:126:1182–1191, doi: 10.1016/j.bja.2020.12.047

Keywords: appendectomy; non-opioid analgesics; opioids; paediatric; patient-reported outcomes; postoperative pain; tonsillectomy

In this issue of the *British Journal of Anaesthesia*, Stamer and colleagues[1] highlight that not all centres routinely administer intraoperative multimodal analgesia for open or laparoscopic appendectomy or tonsillectomy in children. They conclude that they should. They reached this conclusion by asking if children (or their parent if the child was too young) desired more analgesia during the first 24 h after surgery.

Research in how best to assess pain in children has given rise to various pain intensity measurement tools for a range of developmental, cognitive, and communication needs.[2,3] These tools are based on physiological parameters, observed

DOI of original article: 10.1016/j.bja.2020.12.047.

behaviours, biomarkers (e.g. HR variability, cortical responses to noxious stimuli) or, when possible, self-report, and continue to be psychometrically evaluated and evolve. However, pain intensity measurement tools that are validated and useful for research purposes fail to answer the more important clinical question, is analgesia sufficient? In clinical settings, measurement of pain intensity should complement a multidimensional assessment of function[4] and requires contextual interpretation by the clinician. Asking if a patient desired more analgesia doubles as a patient-focused, pain-related outcome measure and more directly leads us to the clinical answer we are seeking when asking a patient to rate their pain.

Asking this simple question across multiple institutions allowed the authors to compare this patient-focused outcome across 12 hospitals in four countries with different analgesia practices. It showed better analgesia when multimodal analgesia was administered intraoperatively during appendectomy or tonsillectomy. The robustness of the outcome measure was confirmed by higher composite pain scores and greater pain interference in children who desired more analgesia. It could be anticipated that other factors such as pain tolerance, risk or concern for adverse effects, and perception, beliefs, or cultural meaning of pain and analgesia influence a child's or carer's desire for more analgesia.

Unpicking the details of the optimal multimodal regimen should follow. Of note, the authors referred to three different non-opioid medications (paracetamol, an NSAID, metamizole) and highlighted that metamizole is not available in all countries, that some centres administered rectal intraoperative analgesia, a route with variable absorption,[5] and that paracetamol may not provide clinically relevant analgesia. The latter point is interesting given that regular paracetamol is the foundation for analgesia regimens in many centres.[6] Furthermore, use of regional/local anaesthetic techniques as part of a multimodal analgesia approach for appendectomy was rarely reported, despite their potential benefit to reduce dosing of systemic drugs,[7] and the numerous techniques studied in the setting of both open and laparoscopic appendectomy.[6]

Although multimodal analgesia is frequently recommended,[8] attempts to examine its effectiveness are often inconclusive.[6] Conducting large RCTs to compare various multimodal analgesia regimens is expensive, time consuming, and difficult to power sufficiently and coordinate. The *PAIN OUT infant* registry, linking perioperative pharmacological data with patient/carer-reported outcomes, has enabled continuous multisite data collection from the clinical setting that can be rapidly analysed periodically, even with changes in clinical practice. By limiting the number of operative procedures to two commonly performed paediatric surgeries and asking if children desired more analgesia in the first 24 h postoperatively, Stamer and colleagues[1] elegantly demonstrated the benefits of multimodal analgesia. Whilst a registry cannot control for confounding variables or substitute for RCTs, it can increase visibility and scrutiny of variability in daily clinical practice, and may help guide which research questions will be of most value to invest the resources required to conduct an RCT.

Measuring pain scores added richness to the data collected and showed that the intraoperative administration of non-opioid analgesics reduced worst pain in the tonsillectomy group and movement-evoked pain in those undergoing appendectomy, with children being less likely to have desired more pain relief during the first postoperative day.

The authors also found that pain after laparoscopic or open appendectomy was similar, debunking the myth that minimally invasive surgery is less painful in the immediate postoperative period. This is not surprising given results from previous data from the *PAIN OUT* registry in adults that showed pain in the first 24 h postoperatively after laparoscopic or open colonic surgery was similar.[9]

The desire for more pain treatment was assessed 24 h after surgery. For children having appendectomy or tonsillectomy, this is a key time that would typically coincide with the day of discharge, and provides insight into the quality of analgesia administered intraoperatively and in the early postoperative period. However, there is a need to extend research into analgesia beyond the first 24 h and into the post-discharge period where the responsibility for assessing pain and administering analgesia is transferred to the patient/carer, and activity increases as recovery progresses. This need is particularly relevant for tonsillectomy patients in whom pain peaks on the second or third postoperative day.[10]

Global satisfaction outcome measures are not a new concept, but despite a recommendation to include these measures in paediatric acute pain trials more than a decade ago,[11] their uptake has been slow. Including the desire for more pain treatment as a dichotomous outcome measure in the *PAIN OUT infant* registry is to be applauded. It draws attention to a group of patients who we must strive to do better for, but who often remain hidden in the literature when point estimates of mean/median pain severity are primarily reported. Stamer and colleagues[1] have highlighted that this group is not small: nearly one in four children or their carers reported a desire for more pain treatment during the first 24 h after appendectomy or tonsillectomy, and a similar incidence has been reported in adult tonsillectomy patients.[12] Questions that arise regarding children who desired more pain treatment include: can we predict, either preoperatively or intraoperatively, who these children will be, and how modifiable is this outcome? The finding that after surgery, children who desired more pain treatment received higher doses of opioids, the most powerful analgesics we have, suggests that improving care for this group of patients requires more than optimising pharmacological intervention alone. This is not surprising given the biopsychosocial nature of pain. Factors that may influence desire for more pain treatment such as incident pain, and the emotional and social aspects of the pain experience that occur alongside the sensory component are not easily amenable to analgesics. Stamer and colleagues[1] found that pain-related sleep disturbance increased the probability for desire of more pain treatment. This link should prompt us to consider how we can promote sleep in the early postoperative setting, a setting where it is actively undermined. The timing of surgery (morning, afternoon, or evening), the impact and value of how routine postoperative observations are taken, and environmental noise and lighting are some examples of modifiable factors that may influence sleep. These considerations are important for a deeper understanding of patient needs and the development of more tailored and effective non-pharmacological interventions that complement the use of analgesics to improve overall patient care.

Examining the data collected in the *PAIN OUT infant* registry has served as an important quality improvement exercise that should lead to better clinical practice and pain-related outcomes, particularly in those centres that did not routinely use intraoperative multimodal analgesia. Sharing this knowledge should inform practice outside of the participating hospitals.

Ongoing data collection and analysis has the potential to help guide future research in the field of paediatric acute pain management.

Authors' contributions

Drafted, revised, and finalised the manuscript: both authors.

Declarations of interest

The authors declare that they have no conflicts of interest.

References

1. Stamer U, Bernhart K, Lehman T, et al. Desire for more analgesic treatment: pain and patient-reported outcome after paediatric tonsillectomy and appendectomy. *Br J Anaesth* 2021; **126**: 1182–91
2. Berde CB, Walco GA, Krane EJ, et al. Paediatric analgesic clinical trial designs, measures, and extrapolation: report of an FDA scientific workshop. *Pediatrics* 2012; **129**: 354–64
3. Walco GA, Kopecky EA, Weisman SJ, et al. Clinical trial designs and models for analgesic medications for acute pain in neonates, infants, toddlers, children, and adolescents: ACTTION recommendations. *Pain* 2018; **159**: 193–205
4. Von Baeyer CL. Self report: the primary source in assessment after infancy. In: McGrath PJ, Stevens BJ, Walker SM, Zempsky WT, editors. *Oxford textbook of paediatric pain*. Oxford, UK: Oxford University Press; 2013
5. Anderson BJ. The non-steroidal anti-inflammatory drugs and acetaminophen. In: McGrath PJ, Stevens BJ, Walker SM, Zempsky WT, editors. *Oxford textbook of paediatric pain*. Oxford, UK: Oxford University Press; 2013
6. Palmer GM, Alcock MM. Chapter 10, The paediatric patient (volume 2). In: Schug SA, Palmer GM, Scott DA, Alcock MM, Halliwell R, Mott J, editors. *Acute pain management: scientific evidence*. 5th Edn. Melbourne: Australian and New Zealand College of Anaesthetists and the Faculty of Pain Medicine; 2020. p. 922–1247
7. Wiegele M, Marhofer P, Lonnqvist P. Caudal epidural blocks in paediatric patients: a review and practical considerations. *Br J Anaesth* 2019; **122**: 509–17
8. Howard R, Carter B, Curry J. Good practice in postoperative and procedural pain management, 2nd edition. *Pediatr Anesth* 2012; **22**(Suppl 1): 1–79
9. Allvin R, Rawal N, Johanzon E, Backstrom R. Open versus laparoscopic surgery: does the surgical technique influence pain outcome? Results from and international registry. *Pain Res Treat* 2016; **2016**: 4087325
10. Stewart DW, Ragg PG, Sheppard S, Chalkiadis GA. The severity and duration of postoperative pain and analgesia requirements in children after tonsillectomy, orchidopexy or inguinal hernia repair. *Pediatr Anesth* 2012; **22**: 136–43
11. McGrath PJ, Finley GA, Walco GA, et al. Core outcome domains and measures for pediatric acute and chronic/recurrent pain clinical trials: PedIMMPACT recommendations. *J Pain* 2008; **9**: 771–83
12. Guntinas-Lichius O, Geissler K, Komann M, Schlattmann P, Meissner W. Inter-hospital variability of postoperative pain after tonsillectomy: prospective registry-based multicentre cohort study. *PLoS One* 2016; **11**, e0154155

British Journal of Anaesthesia, 126 (6): 1094–1097 (2021)
doi: 10.1016/j.bja.2021.03.003
Advance Access Publication Date: 6 April 2021

New evidence to inform decisions and guidelines in difficult airway management

Alistair F. McNarry[1,*] and Takashi Asai[2]

[1]Department of Anaesthesia, NHS Lothian, Edinburgh, UK and [2]Department of Anesthesiology, Dokkyo Medical University Saitama Medical Centre, Koshigaya, Japan

*Corresponding author. E-mail: althegasman@btinternet.com

This editorial accompanies: Ventilation strategies for front of neck airway rescue: an *in silico* study by Laviola et al., *Br J Anaesth* 2021:126:1226–1236, doi: 10.1016/j.bja.2021.01.030

Keywords: airway management; cricothyrotomy; difficult airway; emergency front-of-neck airway; simulation; tracheal intubation

In the event of failed tracheal intubation and difficult face mask ventilation after the induction of general anaesthesia, guidelines for 'difficult airway management'[1–4] recommend the insertion of a supraglottic airway. However, if this does

DOI of original article: 10.1016/j.bja.2021.01.030.