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Are Opioids Pediatric Anesthesiologists' Sword of Damocles?

With great power comes great responsibility and risk.

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Should paediatric anaesthesiologists change their practice regarding opioid use in children perioperatively? Societal concerns regarding the “opioid epidemic” have led some anesthesiologists **to advocate for** opioid-free anesthesia; this is not the solution to that problem.

There are numerous factors that underpin the safe and effective use of opioids for perioperative pain in children including the availability of different opioid preparations, protocols for titration and delivery systems such as patient-controlled analgesia, improved knowledge about the developmental pharmacodynamic and pharmacokinetic profiles of opioids, and increasing evidence related to the relative benefit and harm in different patient populations and clinical settings. The latter are well summarised in the Society for Pediatric Anesthesia (SPA) evidence-based recommendations for perioperative use of opioids in children¹ in this issue of *Pediatric Anesthesia*.

It is an undisputed fact that adequate perioperative analgesia is essential to minimise acute stress responses and physiological instability, and facilitate mobilisation and recovery. There is increasing awareness of potential long-term effects of pain and tissue injury on developing pain pathways, and the risk of persistent post-surgical pain following major surgery in later childhood². The benefits of multimodal analgesia techniques to improve analgesia and/or minimise opioid requirements and dose-related side-effects are well-established and outlined in the SPA document and in previous international evidence-based guidelines.^{1,3,4} However, there is a need to distinguish between ‘opioid-sparing’ and ‘opioid-free’ anesthesia. Avoiding opioids at the cost of uncontrolled pain is unacceptable. Alternative analgesia modalities may not be adequate or feasible for all patients, and the use of opioids remains an essential part of pain management regimens for many children.⁵

Increased numbers of opioid-related deaths in recent years have prompted some to coin the terms “opioid crisis” and “opioid epidemic”, with significant political and media attention focussing on the

potential for misuse or diversion of prescription analgesics. Increases in opioid-related deaths have been reported in children of all ages, particularly related to heroin and illicit synthetic opioids in 15-19 year olds,⁶ but the limitations of data indicating an 'epidemic' have been recently summarised.⁷ This is not to underplay the public health issues related to opioid misuse, the potential impact on care and well-being of children and/or families with substance abuse disorders,⁸ or the lack of childproof packaging and risk of accidental overdose with access to drugs prescribed for adults in the household.⁶ However, health care professionals or families should not fear appropriate medical use of opioids. The evidence that use of intraoperative opioids causes, or is even associated with long-term abuse in adults is scant and, to our knowledge, completely lacking in children. It is certainly inappropriate to propose a change of intra-operative anesthesia practice without such evidence. We could also find no evidence that judicious and responsible prescribing of opioids for children in the acute postoperative period when acetaminophen and NSAIDs provide insufficient analgesia, leads to substance use disorder.

There is no doubt that opioids can be associated with significant and potentially life-threatening adverse effects. Regular assessment with titration of analgesia against individual response is an essential component of ongoing perioperative care, particularly in those at increased risk of respiratory depression (e.g., preterm-born neonates, obstructive sleep apnoea, co-morbidities, and potential sedative adjunct interactions).^{9,10} The dose and duration of each drug modality should be matched to the type, time-course and severity of pain. Reports of respiratory depression following use of oral morphine for a relatively brief procedure in neonates,¹¹ and worse neurodevelopmental outcome following infusion of morphine contributing to hypotension in ventilated neonate¹² highlight the need for judicious use and monitoring when opioids are used in high-risk populations. They should not be misinterpreted as a lack of safety or efficacy of opioids for perioperative pain.

An important potential source of prescription opioids is discharge medication. Local governance and education systems need to ensure that: discharge prescriptions are written by medical staff with adequate training and knowledge that should include psychosocial risk assessment; an appropriate formulation, dose, and limited number of doses are dispensed³; and parents have instructions for the safe storage of opioids and safe disposal of unused medication. This is an opportunity for pediatric anesthesiologists to continue to lead in ensuring responsible prescribing and dispensing of all analgesics both within the hospital and upon discharge. Improved knowledge of expected pain trajectories after commonly performed surgeries helps guide how much, what type and for how long analgesia will be necessary. It is desirable to provide regular follow-up of post-surgical patients, in

particular those undergoing surgeries where postoperative pain is expected to last several weeks and where adequate analgesia may facilitate rehabilitation and functional restoration. In line with this, secure electronic and real-time prescribing¹³ may help identify aberrant pain outcomes and inappropriate analgesic use or prescription to facilitate earlier intervention.

The SPA guidelines for the perioperative use of opioids support the appropriate and responsible use of opioids by pediatric anaesthesiologists for pediatric surgical patients. The opioid *sword of Damocles* places great power in the hands of the pediatric anesthesiologist; it can be appropriately drawn with noble purpose and without undue fear provided the potential risks are recognized, respected and managed responsibly.

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