

Time for a paradigm shift in paediatric anaesthesia in Europe

Minimising the risks of critical events and cardiac arrest associated with anaesthetising infants and children have been global challenges. Many countries have reported their cardiac arrest statistics in the past decade,^{1,2} but there have been no reports on a continental basis. In this issue, Walid Habre and colleagues³ conducted a well-designed and comprehensive observational study to document perioperative morbidity and mortality after paediatric anaesthesia in Europe. What distinguishes this publication from previous reports is that it presents a population-based analysis of paediatric perioperative morbidity and mortality from an international perspective in Europe. These results should comprise a framework for future quality improvement strategies in paediatric anaesthesia across Europe.

The frequency of severe critical respiratory and cardiovascular events varied between 20-times and 30-times among the 33 European countries included in the study. Explanations for this variance remain speculative. For example, the large frequency of laryngospasm in some countries was 2-to-10-times greater than in others, which could reflect local environmental factors such as a greater prevalence of smoking at home, and other non-anaesthesia factors known to predispose to laryngospasm. Alternatively, this difference could reflect inadequately trained or less experienced anaesthesiologists in centres with higher incidences, raising concerns that those providing care for children in some countries are less adept at managing airway problems. Multivariate analysis revealed that senior anaesthesiologists had 1% fewer critical respiratory events per year of experience. Additionally, the frequency of critical events from centres that reported these events was inversely associated with the number of children anaesthetised, consistent with evidence from France.⁴

With 261 institutions from 33 countries, the breadth and depth of the surveillance is quite impressive. However, a detailed analysis of the demographic data revealed that 84% of the institutions from 9 (27%) countries contributed 69% of the cases. The remaining 16% of the institutions from 24 (73%) countries yielded 31% of the data, a disproportionate contribution by comparison with the remaining countries. Are the statistics from these 24 countries reflective of the overall frequency of events, or should their contributions be

analysed separately? A follow-up analysis would help to clarify this notion.

Numerous themes in this Article warrant emphasis. The incidence of severe critical events, 5-2%, far exceeds previous findings,^{4,5} because either the frequency truly is greater or the reporting is more accurate than before. However, respiratory and cardiovascular events were the most common critical events and the frequency of cardiac arrest and 30-day mortality were consistent with those reported previously.^{2,6,7}

The authors found that inhalational inductions triggered critical respiratory events more frequently than intravenous inductions. Although this seems intuitive, one might wonder how large a difference should be expected in experienced hands? From personal experience, a five-times difference in the frequency of critical respiratory events, including laryngospasm and bronchospasm, seems excessive. Why might such different experiences exist? Are reactive airway diseases in children not as aggressively managed in some parts of Europe as in North America? Are paediatric anaesthesiologists manipulating the airways during lighter levels of anaesthesia (eg, at reduced concentrations of sevoflurane out of fear of triggering seizures) rather than at deeper levels and with adjunct medications such as propofol? Or is fundamental training in airway management in children deficient in some jurisdictions? Although some factors might be beyond anaesthesia training,

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manipulating an airway at a light level of anaesthesia and inexperience in airway management are amenable to practice-improvement programmes.

Several factors could account for the variability in severe critical events among the 33 countries, including inadequate training or experience in paediatric anaesthesia, ill-prepared patients, and inadequate support infrastructure. In many countries, paediatric anaesthesia is a recognised and certified subspecialty. The purpose of specialty training is to ensure that candidates receive adequate teaching, clinical experience, and decision making, and scholarly (research) activity in managing neonates, infants, and children, to ensure the best possible care for children.⁸ I strongly support the recommendation³ that a single European examination and licensing body should implement standardised training programmes in paediatric anaesthesia, with documentation of the number of neonates, infants, and children anaesthetised, types of anaesthesia, and type of surgical and genetic defects all being managed by trainees and the trainees' education, as well as examinations that ensure that those who are successful will deliver a consistent, high standard of paediatric anaesthesia throughout Europe. Similar national bodies already exist in many countries to oversee training and certify paediatric anaesthesia graduates, which should simplify and accelerate the implementation of such a programme. Furthermore, continuing medical education in paediatric anaesthesia

after graduation and re-certification should be mandated by an accountability process to maintain licensure in paediatric anaesthesia. Only then will consistently high quality care for children in the perioperative period begin to be ensured throughout Europe.

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