When being good is missing the point: Closing the loop

Sir,

We investigated the incidence of 48 h perioperative acute coronary events (PACEs) at our institution between January and December 2014. Based on our National surgical quality improvement Program (NSQIP) data, we performed a chart review of the affected patients to determine our postoperative visit compliance as well as our PACE documentation in these visits.

We determined that a postoperative visit by an anesthesia service team member had occurred in all patients with a PACE, mostly within the first postoperative day and to 100% within the recommended 48 h [Figure 1].

Forty percent of PACE in our patients occurred on or after the second postoperative day and some studies suggest that the most perioperative cardiac events occur at an incidence of 5% within the first 48 h of the surgical procedure.\[1,2\] Therefore, we achieved excellent CMS compliance, but missed very important and potentially anesthesia related outcomes. We are not aware of any literature examining specifically postoperative event capture in anesthesia follow-up notes, but it is conceivable that our experience is not unique. Vacanti et al., showed that a team dedicated to completion of the postoperative anesthesia visit could increase the Centers for Medicare & Medicaid Services (CMS) compliance from 47% to 83% and they also documented an increased number of captured adverse events.\[3\] This seems in contrast to our experience with a 100% CMS compliance for the cases in question but still missing 40% of PACE, although Vacanti et al. did not comment on the overall capture of all postoperative event and their timeframe. Such differences may be explained by the differences of the authors’ healthcare and IT systems, but also by the nature of postanesthesia adverse event evolution over several days.

We currently employ a hybrid system of paper and electronic systems, and the diversity of IT systems in place are not yet sufficiently integrated to seamlessly allow information exchange. The follow-up in our cases did not trigger electronic health record (EHR) access beyond the anesthesia information management system (AIMS), and the interpersonal communication between anesthesia clinicians, patients and their bedside care providers did not reveal the critical events either. Future follow-up information on patient outcomes is rarely reported back to the anesthesia team once the postoperative visit has concluded. The dynamic of future healthcare and the development of IT should allow for a closed loop where systems should be viewed based on a team approach and not in silos.

This observation raises several concerns that point to opportunities:

1. The need for real time integration of the EHR with the AIMS. The need to extend anesthesiology critical information capture for 48 h and possibly even longer postoperatively at least for in-patients, facilitated via health system integrated AIMS alerts.

2. Defining trigger criteria for automated anesthesia team notification about aberrant laboratory values, events or critical clinical results.

Current metrics in health care can promote the quality and safety of care and are multidisciplinary team oriented. It is, therefore, paramount to allow for multidirectional information flow within electronic information systems and to capture most if not all adverse events. We know that anesthetic management can effect the sub-acute outcomes beyond 48 h, and that there may be an extended role for anesthesia care, as demonstrated by the perioperative surgical home model. It behooves us to take the advantage of the increasing possibilities IT will offer now and in the future to more accurately assess our patients postoperatively, gather and document meaningful early outcomes and subsequently improve reporting, research and patient care.

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Conflicts of interest
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Pneumothorax in neonates: Complication during endotracheal intubation, diagnosis, and management

Sir,

Neonatal pneumothorax is a life-threatening condition associated with a high incidence of morbidity and mortality. Its incidence in the Neonatal Intensive Care Unit (NICU) is reported as 1-2% and over 40% in the presence of respiratory distress syndrome. It is more common in ventilated neonates. Mortality rates have varied from 20% to 38%.

Predisposing factors identified in the NICU are male sex, low birth weight neonates, prematurity, neonate born by cesarean section, the presence of respiratory distress syndrome, and meconium aspiration requiring resuscitation after birth. However, perioperative pneumothorax in neonates is an uncommon event, and that occurring during endotracheal intubation has not been reported. If not suspected, it can lead to unwarranted interventions and increasing morbidity including cardiovascular collapse from lack of appropriate treatment.

We present two cases of intraoperative pneumothorax in neonates occurring during endotracheal intubation. Use of transillumination of the neonatal chest facilitated early diagnosis in one neonate, whereas delay in diagnosis in the other neonate necessitated resuscitative measures for cardiovascular collapse.

A 3-day-old neonate, born at 35 weeks gestation, weighing 1.28-kg, with dysmorphic facial features, was scheduled for repair of a lumbosacral meningomyelocele. Due to the potential for a difficult airway, an inhalation induction was performed with 6% sevoflurane in 100% oxygen. Laryngoscopy revealed a grade 3 (Cormack and Lehane classification) glottic view. Rocuronium 1 mg was then administered intravenously. A 2.5 mm reinforced endotracheal tube (ETT) was trailroaded over a bougie (single use 5 CH Portex Tracheal Tube Introducer, SIMS Portex, Hythe, Kent, UK) into the trachea to a depth of 8 cm at the gums after an unsuccessful attempt with a styletted ETT. Correct placement was confirmed by auscultation of equal bilateral breath sounds. Shortly after, SpO₂ decreased to 92%. Repeat chest auscultation revealed decreased breath sounds on the left side. Withdrawal of the ETT by 1 cm, decompression of the stomach and suctioning of the ET tube did not improve the oxygen saturation. The SpO₂ continued to decrease to 85% with increasing peak airway pressures. The baby was reintubated with a 2.5 mm ETT to rule out any obstruction in the ETT. As the diagnosis of pneumothorax was being considered, the baby's heart rate decreased to <80/min. Chest compressions were initiated, and adrenaline, 10 mcg was administered intravenously. A needle thoracocentesis was performed with a 22 g butterfly needle in the second left interspace midclavicular line with immediate improvement in heart rate and SpO₂. A formal chest drain was subsequently inserted. The baby was transferred back to the NICU. The meningomyelocele was closed uneventfully 2 days after resolution of the pneumothorax.

A 34-week-old newborn, weighing 2-kg, was scheduled for repair of gastroschisis a few hours after birth. Anesthesia was induced with sodium thiopentone, fentanyl, and atracurium. The baby's trachea was intubated with a 3.0 mm uncuffed ETT to a depth of 8.5 cm at the gums. Auscultation revealed equal bilateral breath sounds. The baby was hand ventilated with a Jackson-Rees circuit during surgery to help better manage changes in airway pressures when the bowel loops were returned to the abdomen. Intraoperatively, SpO₂ decreased to 88%, which improved to 97-98% when the ETT was suctioned and withdrawn to 8 cm at the gums.

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