Incidence, Independent Predictors, and Outcomes of Unplanned, Postoperative Intubation in the Pediatric Patient

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Introduction:
- To date, the independent predictors and outcomes for unplanned postoperative intubation in pediatric patients following non-cardiac surgery have yet to be characterized.
- The authors aimed to identify the incidence and predictors of this event and to evaluate the effect of this event on postoperative mortality.

Methods:
- 58,614 pediatric patients who underwent non-cardiac surgery in the American College of Surgeons National Surgical Quality Improvement Program Pediatric database were analyzed for the incidence of unplanned postoperative intubation.
- Independent risk factors were identified and subsequently validated in 29,306 additional patients.
- A univariable logistic regression model was used to assess for a relationship between unplanned postoperative intubation and all-cause 30-day postoperative mortality.

Results:
- Early, unplanned postoperative intubation occurred with an incidence of 0.2% in both the derivation and validation cohorts.
- Among the 540 patients who experienced an unplanned postoperative intubation, 178 (33.0%) were intubated within the first 72 hours after surgery.
- The final logistic regression model indicated operation time (z-score), severe cardiac risk factors, ASA class ≥ 2, tumor involving the central nervous system, developmental delay/impaired cognitive function, past or current malignancy, and neonate status as independent predictors.
- Having an early, unplanned postoperative intubation was associated with an increased risk for unadjusted, all-cause 30-day mortality, demonstrating an odds ratio of 11.4 (95% CI: 5.8 – 22.4).

Conclusions:
- One third of children who experienced an unplanned postoperative intubation following non-cardiac surgery did so within the first 3 postoperative days, with a subsequent increased likelihood of unadjusted 30-day mortality by over 11 fold.
- Identification of these high-risk patients may allow for the targeted intervention and potential prevention of such outcomes.

Table 1. Independent predictors for unplanned postoperative intubation – derivation data.

Table 2. Incidence of unplanned postoperative intubation by number of risk factors.