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# Readiness for Extubation for Pediatric Patients (<http://paediatricsurgeryessentials.com/extubation/>)

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## Readiness for Extubation for Pediatric Patients

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### Why Should Surgeons Care?

Assessing the readiness for extubation for pediatric patients is not just the decision of the PICU doctors. It *must* require discussion and agreement of a multi-disciplinary team that includes the operating surgeon and intensivist for the best outcomes. Spontaneous breathing trials are the mainstay of assessing a patient's readiness for extubation – the entire team must pay close attention to fully understand the readiness for extubation for pediatric patients.

Of course, there are the 'straight forward' patients intubated temporarily to obtain imaging, to undergo a necessary procedure, or for protecting an airway during an altered mental state. However, more complicated patients with significant comorbidities, substantial pulmonary contusions following chest trauma, or even a delicate proximal anastomosis, the decision to extubate from a ventilator cannot be taken lightly and must be approached in a multi-disciplinary fashion.

We know patients who require reintubation following a failed attempt at extubation tend to have longer PICU length of stay, longer hospital length of stay, more likely to develop ventilator-associated complications, more likely to require discharge to rehab or long-term care facilities, and have a higher risk of mortality. Even though there has been a significant advancement in the development of respiratory rescue therapies ([link to HFNC article](#)) to support patients who are struggling to breathe on their own adequately, their success is not 100%.

### Extubation Indices

The risk of a failed extubation in the pediatric population is 2-20%, comparable to adults at 10-23%. It's pretty standard for patients in both groups to undergo a spontaneous breathing trial (SBT) to make sure they can maintain adequate ventilation and oxygenation, stable hemodynamics, and remain calm before attempting extubation. Indices like the rapid shallow breathing index (RSBI) and negative inspiratory force (NIF) are used regularly in adult intensive care units where RSBI is the most accurate predictor of adult post-extubation success, and NIF has a high negative predictive value. Unfortunately, none of these has held up in children, which makes the multi-disciplinary care of an intubated surgical patient even more imperative.

Outside of sound clinical judgment, a systematic review of weaning and extubation of pediatric patients from mechanical ventilation failed to identify a single index, hint, or suggestion to make a surgeons' job easier in improving the likelihood of extubation success. Paying close attention to any signs of cardiovascular compromise, increased respiratory effort with hypoxia or increases in end-tidal CO<sub>2</sub>, and any other signs of distress during an SBT are all cues that prognosticate failure.

With approximately 30% of North American pediatric surgery training programs providing accredited critical care fellowships for trainees, pediatric surgeons are positioning themselves to contribute in the area of the critical care of infants and children. It is a mistake for surgeons to abdicate their role in critical decisions like the extubation of surgical patients.

## References

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