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## Reducing Intubation Time in Adult Cardiothoracic Surgery Patients: A Review of Data under the Direction of a Board Certified Critical Care Intensivist

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# Reducing Intubation Time in Adult Cardiothoracic Surgery Patients: A Review of Data Under the Direction of a Board Certified Critical Care Intensivist

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## Background

- RGH Cardiothoracic ICU (CTICU) cares for patients post cardiac surgery (CABGs, AVR/MVR/TVR, aneurysm repairs)
- Society of Thoracic Surgeons (STS) guidelines set a goal for extubation within 24 hours of cardiac surgery. In 2015 they found that only 9% of patients were being extubated in less than 8 hours and that 65% of patients had at least a 2 day ICU stay increasing their overall cost of stay
- CTICU then set a goal for extubation within 0-6 hours post cardiac surgery while maintaining a new protocol introduced by intensivist and Medical Director Dr. Rebecca Gooch
- The purpose of this study was to prove that the change of practice patterns introduced by a critical care intensivist decreased extubation times resulting in decreased length of ICU stay

## Problem

Prolonged intubation can lead to:

- Increased length of stay in the intensive care unit
- Increased risk of complications
- Increased risk of morbidity and mortality
- Increased cost of stay

## Method

- Extubation data was collected from April 2020 – April 2021 prior to the introduction of an intensivist to the CTICU
- Extubation data was collected from April 2021 – April 2022 following the introduction of an intensivist to the CTICU
- Barriers of extubation were identified and proved relevant with our patient population
- Dr. Gooch implemented “FASTHUGS” daily rounding practice
- Collaboration of intensivist, advanced practice providers, OR staff, Anesthesiologists and bedside RN’s to implement new protocols

### Extubations under 6 hours/total cases

April 2020 – April 2021 without intensivist		April 2021 – April 2022 With intensivist	
April	7/36 (19%)	April	8/29 (28%)
May	10/48 (21%)	May	16/45 (36%)
June	11/49 (22%)	June	18/63 (29%)
July	11/49 (22%)	July	19/60 (32%)
August	10/42 (23%)	August	20/53 (38%)
September	12/55 (22%)	September	11/37 (30%)
October	12/57 (21%)	October	15/38 (39%)
November	4/40 (10%)	November	13/35 (37%)
December	11/50 (22%)	December	8/44 (18%)
January	8/45 (18%)	January	12/37 (32%)
February	7/42 (17%)	February	19/44 (43%)
March	13/58 (22%)	March	22/46 (48%)

## Interventions

- Collected information from staff to find the most applicable barriers of extubation occurring on the unit.
- Three major issues that needed to be addressed; Medications, sedation holidays and anesthesia protocol
- **Intervention 1:** Elimination of Morphine and Midazolam as sedative agents
- **Intervention 2:** Introduction of Fentanyl combined with Propofol or Precedex
- **Intervention 3:** Sedation awakening trials done regularly
- **Intervention 4:** Greater attention to vent settings specific to patient BSA
- **Intervention 5:** Anesthesiologist to report last paralytic and reversal agent given out of operating room

## Key Results

Data collected on all cardiac surgery patients over 12 months following the introduction of a critical care intensivist:

- Prior to introduction of intensivist: 116/571 patients extubated <6 hrs
- Overall **14%** increase in extubations < 6 hours
- There were two months with a **25%** greater increase
- There were six months with a **15%** greater increase
- There were eight months with **10%** greater increase

## Conclusion

- Extubation in under 6 hours on the unit **without** an intensivist occurred in **116/571 patients (20.3%)**
- Extubations in under 6 hours **with** an intensivist occurred in **181/531 patients (34%)**
- Over 12 months, under the guidance of an intensivist, along with the implementation of new sedation protocols, early extubation times in the CTICU have increased leading to decreased length of stay, lower cost of stay and lower risk of mortality