

ACCELERATED POST-OPERATIVE EXTUBATION FOLLOWING CARDIOVASCULAR SURGERY: A LEAN APPROACH

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Background/Problem

Mechanical ventilation following open heart surgery is often applied for longer periods of time than necessary according to experts. Risks of short term mechanical ventilation include loss of accurate assessments due to inability to engage patients in conversation and increased agitation requiring extra sedation and/or analgesia. Accelerated post-operative extubation or extubation in the operating room (OR) in certain situations is safe and effective and can reduce length of stays.



Methods

This quality improvement effort used Lean methodology to study, what was actually happening in previously healthy cardiovascular (CV) surgery patients. Anesthesiologists planned a test of change for extubation in the OR of select patients, seeking support from CV surgeons, nurses, respiratory therapists and pulmonologists. Over a three year period, data experts retrospectively identified patients by when extubation occurred; the operating room or the CardioVascular Intensive Care Unit (CV-ICU). The data coordinator measured hospital length of stay from surgery to discharge and examined reintubation rates during 2016, 2017, 2018.

Purpose

The purpose of this retrospective review is to measure what is actually happening for cardiovascular surgical patients that are extubated in the OR and to identify reintubation rates and consider clinical challenges.

Results

Process Metric:

- 52 CV patients were extubated in OR..
- 1111 CV patients were extubated on CV-ICU.
- RNs on CV-ICU noted in some cases more resources were needed for first 60-90 minutes to calm patient when accelerated extubation was used

Outcome Metrics:

Group A Extubated in OR

- 1/52 (1.9%) required reintubation.
- 4.68 day Hospital LOS

Group B Extubated CV-ICU

- 32/1111 (2.9%) required reintubation
- 5.70 day Hospital LOS



Clinical Implications

- Select groups of patients can be safely extubated in the OR following cardiovascular surgery.
- Accelerated extubation for CV patients can reduce hospital length of stay
- Lean approaches are adequate for shedding light upon a problem and testing processes to reach ideal outcomes
- Further scientific rigor is needed to address bias, reliability and validity.

Readings

Chan JL, et al (2018). A multidisciplinary protocol-driven approach to improve extubation times after cardiac surgery. *Annals of Thoracic Surgery*. 105(6). 1684-1690.

Badhwar V. et al (2014). Extubation in the operating room after adult cardiac surgery safely improves outcomes and lowers cost. *Journal of Thoracic and Cardiovascular Surgery*. 148(6). 3101-3109