

Improving Patient Safety Through Early Extubation after Cardiac Surgery

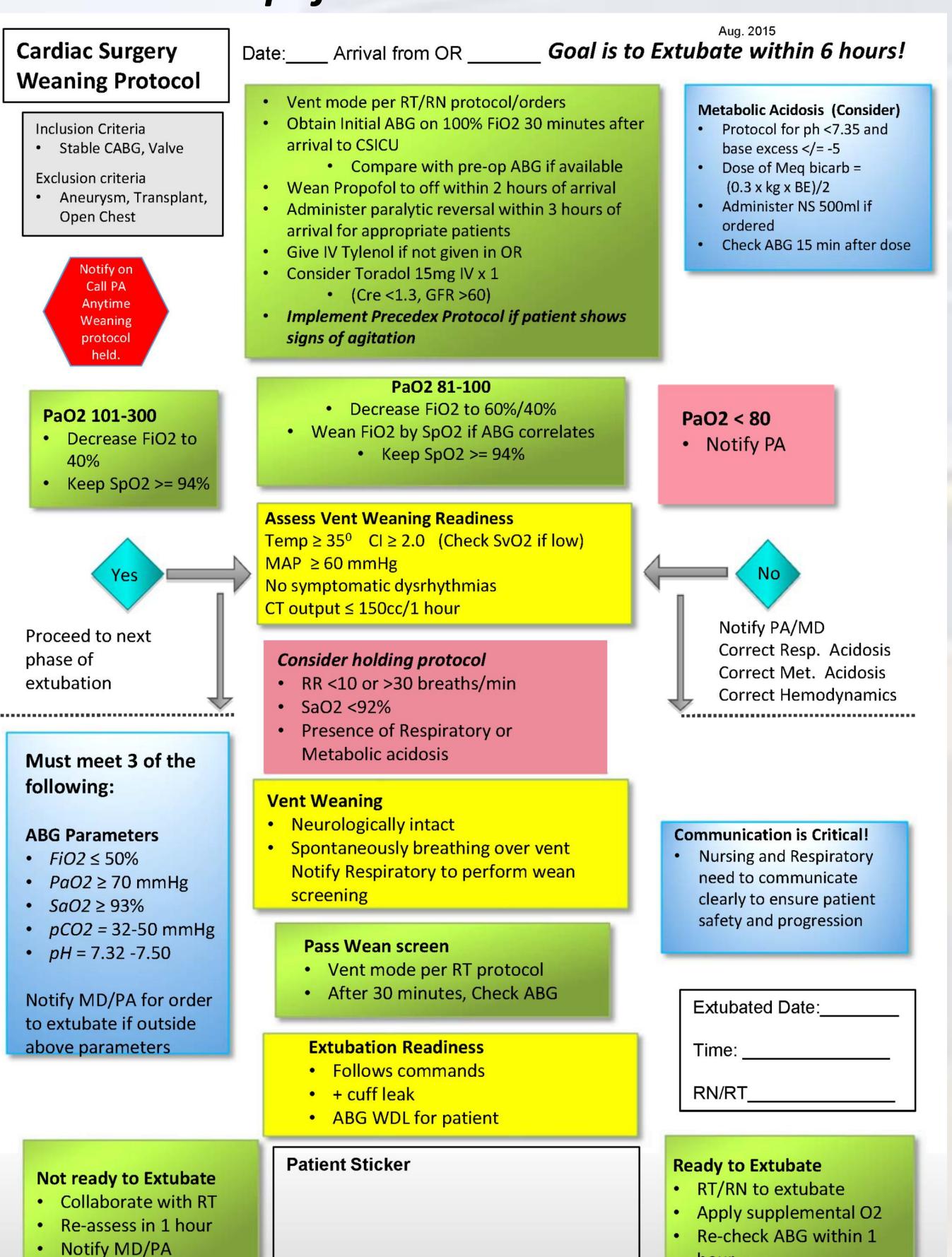
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Introduction: With health care reform, there is continued focus to improve patient outcomes while reducing costs. As a clinical provider, it is important to facilitate this process to ensure best practice standards are utilized while patient safety is enhanced. The clinical and organizational need to decrease intubation time and decrease respiratory complications in post-operative open heart patients is well documented in the literature. Ensuring best practices and patient safety through early extubation after open heart surgery is a critical component of fast track protocols, decreasing the development of pulmonary complications in the post-operative period while decreasing overall length of stay (LOS). This project was a multidisciplinary endeavor which combined early extubation protocols with enhanced rounding initiatives to help decrease overall length of ventilation time in a Cardiac Surgery Intensive Care unit.

Background: This project was conducted in a 16-bed Cardiac Surgery ICU (CSICU) at a 500+ bed medical center in the southeastern United States. This health system performs more than 1,700 cardiac surgeries annually.

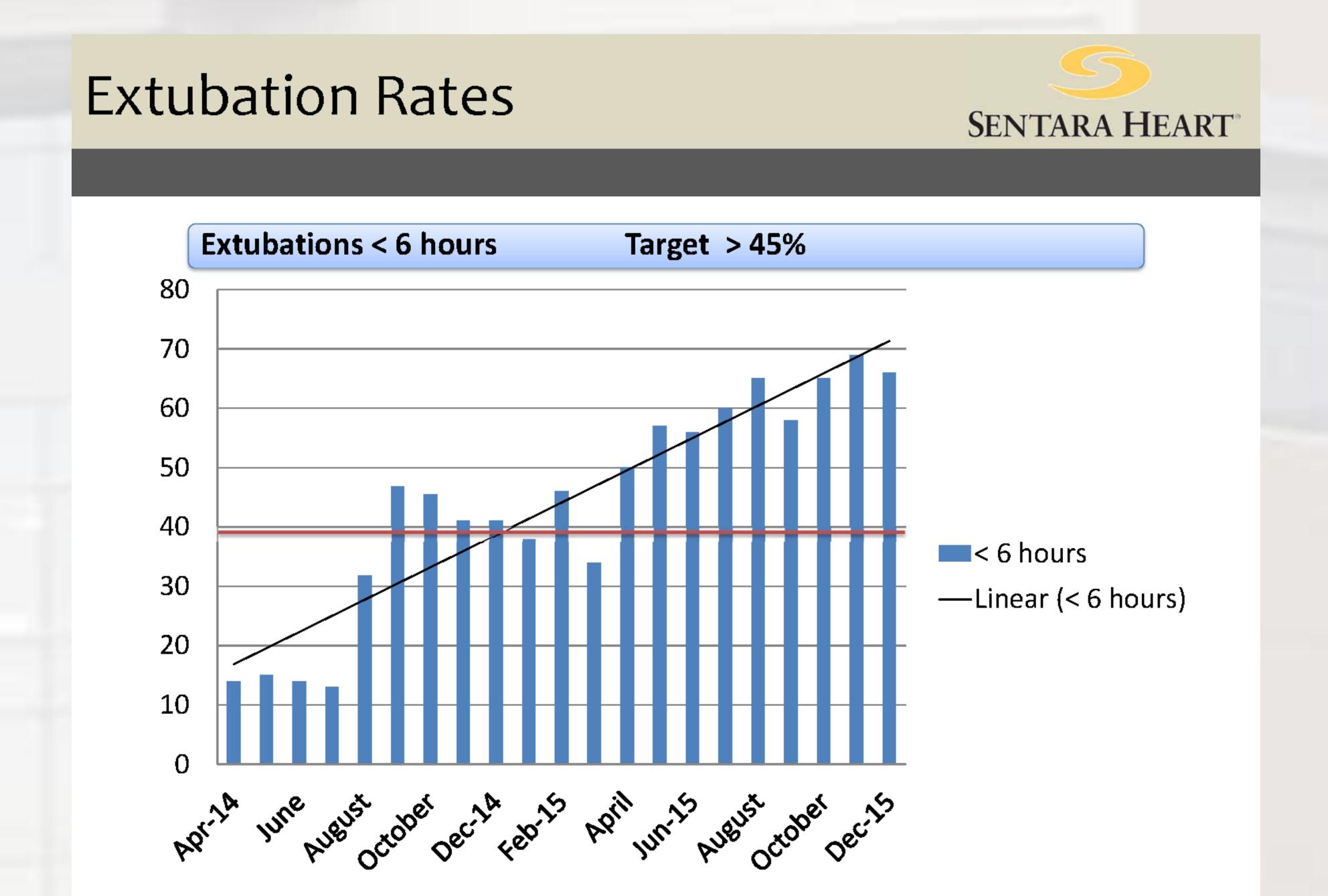
Objective: To decrease pulmonary complications and related costs through shorter extubation times (within 6 hours or less) for cardiac surgery patients.

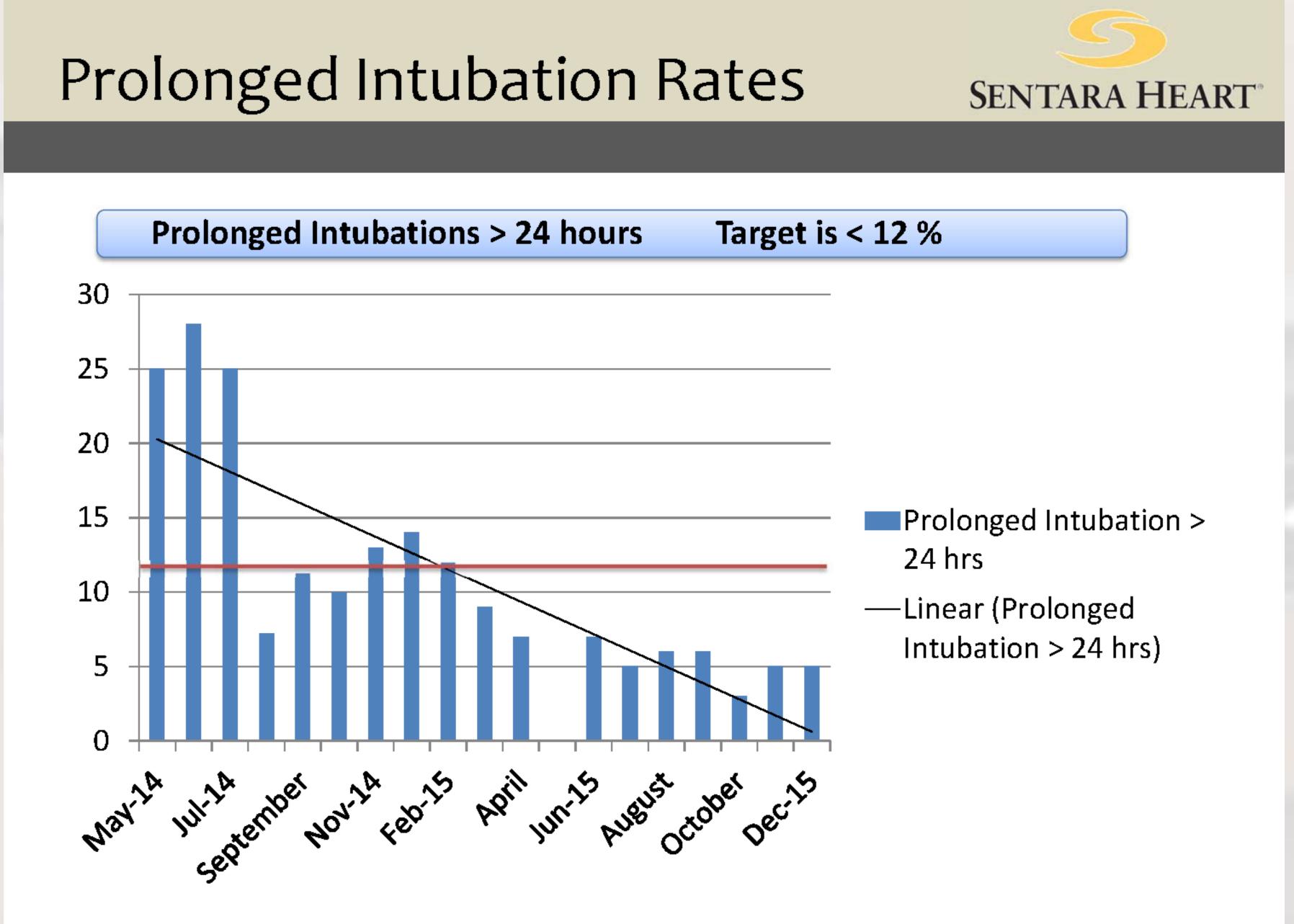
Simplified Extubation Protocol



Methods: After evaluating the data from the Society of Thoracic Surgeons (STS) reports, we noted an increase in prolonged ventilatory time lasting greater than 24 hours during the post-operative period after open-heart surgery. Our data also indicated the number of patients who were extubated within 6 hours after surgery was only 14% through June 2014, compared to a national average of 40%. Based on best practice recommendations from the STS and review of our post-operative cardiac surgery data, our CSICU interdisciplinary team decided to initiate a performance improvement project to improve extubation rates. The team, along with our registered nurses and respiratory therapists (RTs) looked at our existing extubation protocol and discussed changes with the surgeons, advanced practice providers and intensivists, which resulted in a new respiratory extubation protocol to improve the weaning process.

Key areas of focus included expedited weaning of sedation upon arrival to CSICU, the use of reversal agents for any residual paralytics, the use of Precedex for agitation, and the use of IV acetaminophen for pain management to help minimize the amount of opioids required in the immediate post-operative period.





Results: Our partnership to promote early extubation resulted in a significant increase in the number of patients extubated in less than 6 hours from our baseline of 14% to more than 40 % in only 3 months. Our target for early extubation in 2015 was to exceed more than 50% of our patients. We have successfully continued to see our early extubation rates **above 60% for the 4th quarter of 2015.** A secondary outcome to this project is the number of patients intubated greater than 24 hours has decreased by more than half from our baseline of approximately 25% to 8%. We did not experience any failed extubations which could have required emergent reintubation, which indicates we were able to improve patient outcomes without compromising patient safety.

Conclusions: Successful implementation for any change in practice starts with communication and collaboration. Developing a strong team that encompasses the entire scope of the patient experience is critical to success. We achieved improved patient flow by allowing for earlier transfers to the progressive care unit, which increased availability of more ICU rooms to ensure the operating room could transfer patients post-operatively in a timely fashion. Additionally, qualitative studies have shown that common themes from the patient perspective during ventilatory weaning include physical discomfort for the patient, impaired communication capabilities, and fear/anxiety related to the weaning process. Earlier extubation can result in improved psychological well-being for patients and can be achieved safely when following established guidelines and protocols. The success of this project is directly related to the engagement of the team and their enthusiasm for improving patient care.

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