

Use of Heated High Flow Humidity with Ventilator and Tracheostomy Weaning

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DESCRIPTION of the PROGRAM or PROCESS

In late 2012 Gaylord Hospital Respiratory Therapy department leadership reviewed the percentage of ventilator patients who successfully weaned from the ventilator and the number of tracheostomy patient who were successfully decannulated. We noted that the tracheostomy population, whether on the ventilator or off, struggled with thick secretions, mucus plugs and difficulty maintaining a patent airway. This translated to longer days on the ventilator. The hospital also had a ventilator associated pneumonia (VAP) rate that the department wanted to decrease. Department leadership decided that in addition to heated humidity on our ventilators, heated high flow humidity would be the standard of care for all ventilator weaning and tracheostomy patients.

UNIQUENESS

When Gaylord began this process change in 2012, most LTACHS provided humidity for tracheostomy patients in the form of a cool mist. This system delivered a cold mist that did not achieve deposition beyond the upper portion of the trachea. The system was cost effective, costing approximately \$10.00 or less per patient. Some facilities also used HME (heat moisture exchanger) devices. HMEs are also cost effective with an average cost of \$2.50. We decided to purchase the Vapotherm precision flow unit, which cost approximately \$4000.00 in 2012/2013. Between 2012 and 2014 we purchased 31 units, in addition to the 3 we owned. Our total cost for this equipment was approximately \$124,000. We felt we could potentially decrease ventilator days, ventilator associated pneumonias and issues with airway clearance and mucus plugging by using heated high flow humidity. This would translate to cost savings and improve care for our patient population.

LESSONS LEARNED

Our hospital learned significant lessons from this process change. We realized cost savings in our decreased metrics. We saw positive results in terms of our increased decannulation rates. We also realized the use of heated high flow humidity on ventilator weaning patients not only provided oxygenation and better humidification, but the ability to increase flow improved patients ability to tolerate a ventilator wean. This translated to better wean rates for our ventilator population. Our ventilator wean rate was 67% in FY '12. In FY '15 the rate was at 73%

Gaylord became the first Vapotherm Center of Excellence for Heated and High Flow Humidity in 2014. We have shared our results with other LTACHS in the hope of changing practice for ventilator weaning and tracheostomy patient care. We hope to influence best practice in the LTACH environment to improve patient outcomes and quality of life.

MEASUREMENT INDICATORS

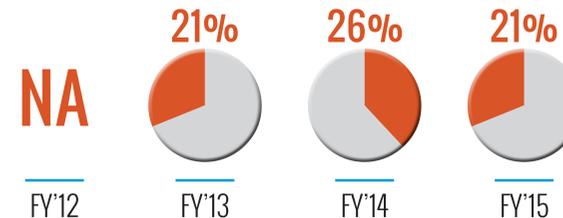
Ventilator Days



Cost (\$1,400/day)



% Decrease from FY'12



Total annual cost for average of 65 patients



VAPS / Ventilator Associated Events



Approximate average annual cost savings

\$394,000

Decannulating tracheostomy patients per year



References

Kollef, MH, Hamilton, CW, Ernst, FR (2012). Economic impact of ventilator-associated pneumonia in a large matched cohort. Infection Control Hospital Epidemiology, 33(3): 250-256.

Critical Care Societies Collaborative (CCSC). VAE: Ventilator Associated Pneumonia, Ventilator Associated Events. <http://ccsconline.org/ventilator-associated-pneumonia>. Accessed 2/10/17.

Guterl, GO. (2013). Cost Implications of VAP: An equation developed by Johns Hopkins helps administrators quantify potential savings by reducing hospital-acquired infections. Advance for Respiratory Care and Sleep Medicine. <http://respiratory-care-sleep-medicine.advanceweb.com/Features/Articles/Cost-Implications-of-VAP.aspx>. Accessed 2/10/17.

Successful decannulation improves patients' quality of life and it positively impacts their discharge disposition. It is often difficult for a patient to discharge to the skilled nursing facility of their choice or to home with a tracheostomy tube in place. Decannulating patients improves their options for the discharge destination of their choice.