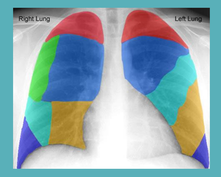
Prevent the Vent Event!

Reducing VAEs: A Safety Program For Mechanically Ventilated Patients

Departments of Respiratory Services and Infection Control & Epidemiology

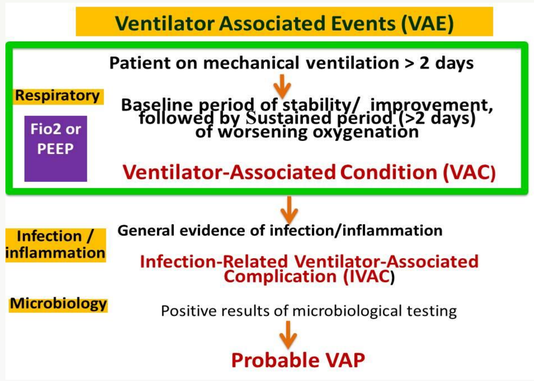
J. Berger MD, A. Logan RRT, R. Rodriguez RRT, S. Abbott-Barcoo RRT, J. Reid RRT, J. Hawkshead DrPH, A. Shah RN, L. Pozzuoli RN, B. Woods RN, M. Smina MD, R. Loganathan MD



AIM

NHSN changed its surveillance definition of adverse Ventilator Associated Events (VAEs) in ICU patients in 2013. The revised definition not only required previous ventilator bundle interventions to reduce ventilator associated pneumonias (VAPs), but also included standardizing ventilator management right upon initiation.

In 2014 SBH Health System formed a multidisciplinary committee tasked with decreasing the number of VAEs. It built upon the prior efforts which included ensuring compliance with the VAP bundle, respiratory hygiene, and closed suctioning systems. Improvements in education and patient care processes were implemented with the goal of dramatically reducing the number of VAEs reported by SBH Health System, and sustain those improvements over the long term.



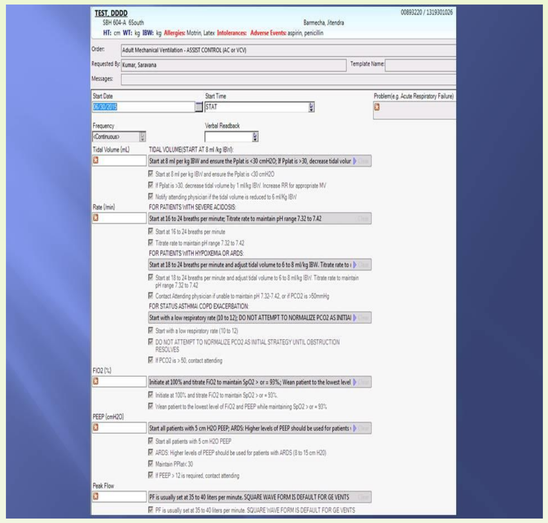
PLAN

*SBH Health System reported **30 VAEs In 2014**. Of those, **6 were possible ventilator associated pneumonias (PVAPs)**, and 1 was a probable VAP. A multidisciplinary committee was formed including representation from Pulmonary/Critical Care, Infection Control, and Respiratory Therapy.*

DO

- ***Educate** staff members (including ED staff in addition to ICU staff) who were accustomed to the previous NHSN VAP paradigm primarily based on microbiologic and radiographic findings that surveillance had changed to an event based paradigm focused on changes in patient oxygenation.*
- ***Implement** 24/7 surveillance for VAE by Infection Control, Respiratory Therapy, and critical care physicians.*
- ***Institute** multiple surveillance methods including a twice daily e-mail alert system to notify physicians and staff across disciplines of a potential reportable VAE that may be prevented without compromising patient care.*
- ***Review and discuss** appropriateness of ventilator settings during multi-disciplinary daily rounds using a redesigned "daily goals sheet."*
- ***Implementation of EMR decision support tools** (order sets and ICU clinical summary tiles) for ventilator patients to minimize variations in care and allow for real time surveillance method for prevention of potential VAEs, including VAPs.*
- ***Respiratory Therapy interventions***
  - *Disinfection of vents*
  - *ATP swabbing to validate the cleaning process*

Adult Mechanical Ventilation EMR Order Set



VENT DISINFECTION PROTOCOL ATP SWAB: 100% PASS RATE

- *All ventilators and BIPAPs are cleaned at the bedside.*
- *The ventilator/BIPAPs are covered and taken to the Respiratory dirty equipment area.*
- *The equipment is disinfected a second time, set up and tested.*
- *If the equipment was on a patient with Multi Drug resistant Organisms(MDROs),The vent is tagged "TO BE SWABBED" including the date, time and room number for ventilator tracking.*
- *The equipment is ATP swabbed for validation and ventilator logging.*
- *All ventilator ID numbers are logged in the EMR for continuous tracking.*

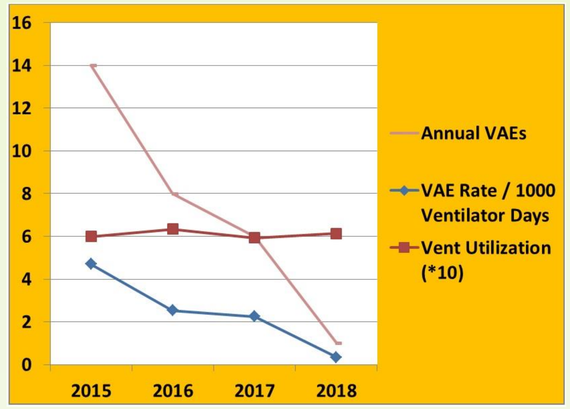
STUDY

Analysis of VAE data before and after the interventions were fully implemented in 2015 showed a significant decrease in VAE incidence — from 30 in 2014 to 1 in 2018.

Year	VAE Count	Vent Days	VAE Rate	Patient Days	Utilization Rate
2015	14	2974	4.71	4963	5.99
2016	8	3164	2.53	4993	6.34
2017	6	2661	2.25	4491	5.93
2018	1	2925	0.34	4773	6.13

SUCCESS

The highlighted project has resulted in substantially reduced number and rate of VAEs reported since full implementation in 2015, despite steady ventilator utilization levels.



ACT

- *Continue to educate new and existing staff members on current best practices.*
- *Continue to report findings to internal and external stakeholders and make improvements to processes that may yield further reductions in VAE incidence.*

REFERENCE

Neuville M et al. Bundle of care decreased ventilator-associated events-implications for ventilator-associated pneumonia prevention. *J Thorac Dis* 2017 Mar; 9(3): 430-433.

AHRQ Safety Program for Mechanically Ventilated Patients: **AHRQ Pub. No. 16(17)-0018-3-EF January 2017** Daily Care Guide 1 – 29.

CDC National Healthcare Safety Network, Device-associated Module: Ventilator- Associated Event (VAE) January 2019.

Poster prepared by J. Curry – Office Coordinator – 4/2019