

Albicans spp. These findings have important implications in designing prevention strategies and optimizing candidemia management, particularly in the community setting where increased intravenous drug use and the availability of home healthcare may be important factors.

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Presentation Type:

Poster Presentation

Subject Category: VAE

Does a Starting Positive End-Expiratory Pressure of 8 cm H₂O Decrease the Probability of a Ventilator-Associated Event?

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Background: Mechanical ventilation is commonly seen in critical ill patients. The vulnerability of these patients is high, and a wide range of associated conditions can stem from this intervention. To objectively identify nosocomial respiratory conditions and provide conformed surveillance definitions of these events, the Centers for Disease Control and Prevention (CDC) established the ventilator-associated event (VAE) criteria. They denote 3 categories of increasing progression in mechanically ventilated patients from a ventilator-associated condition (VAC) to an infection-related ventilator-associated complication (IVAC) and finally to a possible ventilator-associated pneumonia (PVAP). Manipulation of ventilator set-

tings, such as starting on higher values to not trigger VAC criteria, has been criticized by some experts as not only ‘gaming the system,’ but potentially harming patients. In October 2018, our institution began a baseline of 8 cm H₂O as the starting positive end-expiratory pressure (PEEP) protocol for mechanical ventilation but exempting neurosurgical patients. We sought to determine whether an 8 PEEP protocol is an effective strategy for reducing VAEs in our institution. **Methods:** We retrospectively examined patient data at our institution from January 2014 through February 2020. VAEs were separated by VAC only and IVAC positive (+), which are a combination of IVACs and PVAPs. Using the days between VAEs, a daily event probability can be calculated based on the geometric distribution. Furthermore, as VAEs occur, the likelihood of the event can be assessed as expected or unexpected using a strict probability limit of 0.99865 to reduce type 1 errors. **Results:** In total, 307 patients were identified in our hospital’s VAE surveillance. Of those, 180 met CDC-defined VAC-only criteria, and 127 patients met IVAC+ definitions. After implementation of an 8-PEEP protocol, the daily event probability for VACs decreased from 0.083 to 0.047. The last event occurred 162 days after the previous VAC, which was unexpected, because the probability of occurrence extended beyond the probability limit. With regard to IVAC + events, the daily event probability decreased from 0.057 to 0.039 without significant reduction in the IVAC+ rate. **Conclusions:** Although a change in the VAC-only rate occurred, signified by a longer time between events, it took more than a year to achieve in our institution. Additionally, we did not see a reduction in the IVAC+ rate. These findings suggest that an 8-PEEP protocol may be able to reduce VAEs due to noninfectious etiologies, such as congestive heart failure and atelectasis.

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Presentation Type:

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Subject Category: VAE

Knobmanship: Dialing Up Understanding of VAE Triggers

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Background: Mechanical ventilation is a lifesaving therapy for critically ill patients. Hospitals perform surveillance for the NHSN for ventilator-associated events (VAE) by monitoring mechanically ventilated patients for metrics that are generally thought to be objective and preventable and that lead to poor patient outcomes. The VAE definition is met in a stepwise manner; initially, a ventilator-associated condition (VAC) is triggered with an increase in positive end-expiratory pressure (PEEP, >3 cm H₂O) or fraction of inspired oxygen (FIO₂, 0.20 or 20 points) after a period of stability or improvement on the ventilator. We believe that many reported VAEs could be avoided by provider and respiratory therapy attention to “knobmanship.” We define knobmanship as knowledge of the VAE

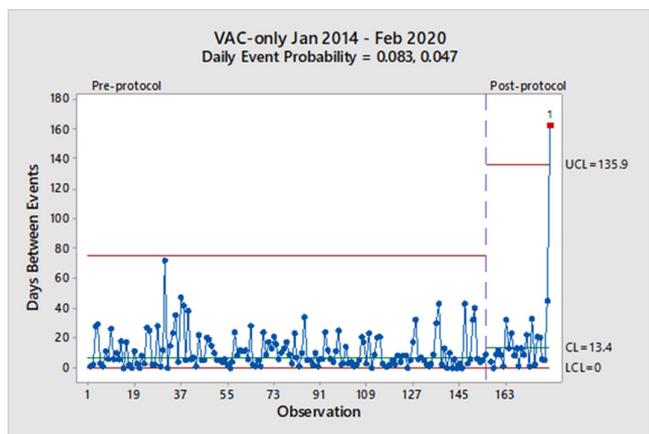


Figure 1.

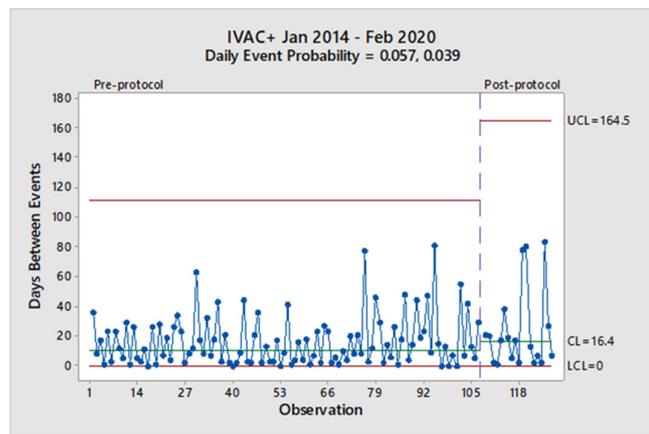


Figure 2.

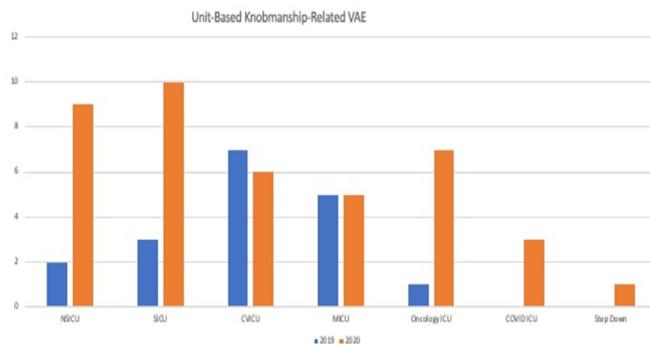


Figure 1.

definition and trigger points combined with appropriate clinical care for mechanically ventilated patients while avoiding unnecessary triggering of the VAE definition by avoiding small unneeded changes in PEEP or FIO₂. **Methods:** We performed a chart review of 283 patients who had a reported VAE to the NHSN between January 1, 2019, and December 31, 2020. We collected data including type of VAE, VAE triggering criteria, and clinical course. **Results:** Of the 283 VAEs, 59 were triggered by a PEEP increase from 5 to 8 with stable or decreasing FIO₂. Of the 59 VAEs, 33 were VACs, 18 were infection-related ventilator-associated complications (IVACs), and 8 were possible ventilator-associated pneumonia (PVAP). Most of these transient changes in PEEP were deemed clinically unnecessary. A 21% reduction of VAEs reported to the NSHN over the 2-year review period could have been avoided by knobmanship. **Conclusions:** The VAE definition may often be triggered by provider bias to the ventilator settings rather than what the patient's clinical-condition requires. Attention to knobmanship may result in substantial decrease in reported VAE.

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Subject Category: Viral Infections

Impact of a Comprehensive SARS-CoV-2 Infection Prevention Bundle on Rates of Hospital-Acquired Respiratory Viral Infections

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Background: We evaluated the impact of a comprehensive SARS-CoV-2 (COVID-19) infection prevention (IP) bundle on rates of non-COVID-19 healthcare-acquired respiratory viral infection (HA-RVI). **Methods:** We performed a retrospective analysis of prospectively collected respiratory viral data using an infection prevention database from April 2017 to January 2021. We defined HA-RVI as identification of a respiratory virus via nasal or nasopharyngeal swabs collected on or after hospital day 7 for COVID-19 and non-COVID-19 RVI. We compared incident rate ratios (IRRs) of HA-RVI for each of the 3 years (April 2017 to March 2020) prior to and 10 months (April 2020 to January 2021) following full implementation of a comprehensive COVID-19 IP bundle at Duke University Health System. The COVID-19 IP bundle consists of the following elements: universal masking; eye protection; employee, patient, and visitor symptom screening; contact tracing; admission and preprocedure testing; visitor restrictions; discouraging presenteeism; population density control and/or physical distancing;

Table 1.

Period	HA-RVI Cases	Hospital Days	Incident Rate (per 1,000 patient days)	IRR	lower 95% CI	upper 95% CI	p-value
4/2017-3/2019	278	452,043	0.615	2.73	2.14	3.49	< 0.001
4/2018-3/2019	194	464,320	0.418	1.86	1.44	2.40	< 0.001
4/2019-3/2020	175	466,734	0.375	1.67	1.28	2.16	0.0001
4/2020-1/2021	83	368,899	0.225	1			

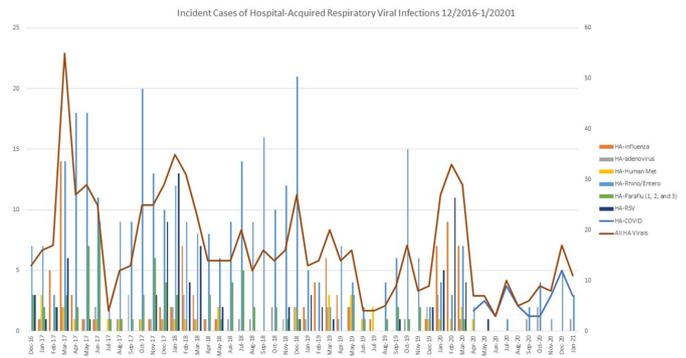


Figure 1.

and ongoing attention to basic horizontal IP strategies including hand hygiene, PPE compliance, and environmental cleaning. **Results:** During the study period, we identified 715 HA-RVIs over 1,899,700 inpatient days, for an overall incidence rate of 0.38 HA-RVI per 1,000 inpatient days. The HA-RVI IRR was significantly higher during each of the 3 years prior to implementing the COVID-19 IP bundle (Table 1). The incidence rate of HA-RVI decreased by 60% after bundle implementation. COVID-19 became the dominant HA-RVI, and no cases of HA-influenza occurred in the postimplementation period (Figure 1). **Conclusions:** Implementation of a comprehensive COVID-19 IP bundle likely contributed to a reduction in HA-RVI for hospitalized patients in our healthcare system. Augmenting traditional IP interventions in place during the annual respiratory virus season may be a future strategy to reduce rates of HA-RVI for inpatients.

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