

BACKGROUND

- In 2016, the CDC announced the pediatric Ventilator Associated Events (VAE) definition that would replace the Ventilator Associated Pneumonia (VAP) events beginning in 2017.
- The internal interdisciplinary VAP committee began work for surveillance and case reviews for this new metric alongside VAP surveillance and sought to estimate the burden of VAE compared to VAP.

OBJECTIVES

- **Determine the incidence and characteristics of Pediatric VAE at a quaternary children's hospital.**
- **Identify trends and opportunities for reduction or prevention of VAE**

DEFINITION

Baseline period of stability: ≥ 2 calendar days (immediately preceding first day of decompensation) of stable or decreasing daily minimum FiO_2 or Paw values.

VAE: at least one of the following indicators of worsening oxygenation:

- ❖ Increase in daily minimum* FiO_2 of ≥ 0.25 (25 points) over the daily minimum FiO_2 of the first day in the baseline period, sustained for ≥ 2 calendar days.
- ❖ Increase in daily minimum* MAP values of ≥ 4 cmH₂O over the daily minimum MAP of the first day in the baseline period, sustained for ≥ 2 calendar days. The MAP recordings should be reflective of ventilator breaths vs. patient breaths

METHODS

- A surveillance report was developed through EPIC in accordance with the CDC definitions for qualifying changes in Paw or FiO_2 for all invasively ventilated patient.
- This query runs at midnight each day and sends the report to the Respiratory Therapy Department Clinical Specialists for review and final determination.
- When a VAE occurs, an interdisciplinary case review occurs.
- Exemption was provided from local IRB.

RESULTS

- From January 2017 – April 2021, 112 VAE's occurred compared to 17 VAP's over the same time period (X^2 $p=0.220$).
- Median age in months at the time of event as 8.85 (IQR 5.15-43.42).
- Forty-two percent occurred in the pediatric ICU, 31% Neonatal ICU, 16% Cardiac ICU, and 11% Progressive Care Unit. Eighty-Four percent were triggered for change in Paw .
- Events deemed associated with the VAE were categorized.
- Of note, **none of the VAE's had a concurrent VAP and only 6 (5%) of the events were thought to have been preventable by the clinical team.**

Category of Association	N (%)
Severe BPD	33 (29)
Progressive Lung Disease	13 (12)
Infectious	13 (12)
ARDS	10 (9)
Airway Disease	10 (9)
Progressive Complex Cardiac Condition	9 (8)
Abdominal Disease	8 (7)
Other	7 (6)
Atelectasis	7 (6)
Reintubation/Planned Extubation	5 (4)
Pulmonary Hypertension	5 (4)
Pulm Hemorrhage/Edema	5 (4)
ARDS	5 (4)
Thoracic Surgery	3 (3)
Reintubation/Unplanned Extubation	2 (2)
Physiology Change	2 (2)
Abdominal Surgery	2 (2)
Met Brain Death Failure	1 (1)
VAP	0 (0)

CONCLUSIONS

- The occurrence of pediatric VAE in a quaternary children's hospital is six-fold higher than the occurrence of VAP, with 100% discordance between the events.
- The pediatric VAE definition does not appear to trigger events of error or harm as the clinical teams perceived them to be non-preventable or predictable but were part of the anticipated clinical disease progression in our patient population.