



TENNESSEE DEPARTMENT OF HEALTH  
HEALTHCARE-ASSOCIATED INFECTIONS  
AND ANTIMICROBIAL RESISTANCE PROGRAM



HAI Surveillance Definitions

**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

*(Revised January 1, 2019)*

***Introduction:***

The Pediatric Ventilator-Associated Event (VAE) Surveillance Definition Checklist, a tool developed by the TN Department of Health, is designed to facilitate identification of the elements required to meet PedVAE surveillance criteria page13. The checklist supplements, the PedVAE surveillance definition algorithm and the PedVAE Calculator, other instruments used to assist in making the PedVAE determinations.

Note: This document contains excerpts from the NHSN PedVAE Protocol. For PedVAE numerator and denominator reporting instructions and data analyses see Chapter 11: VAE Protocol (2019) accessible online at <https://www.cdc.gov/nhsn/pdfs/pscmanual/pedvae-current-508.pdf>

**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)****DEFINITIONS:**

**PedVAE:** PedVAEs are identified by: deterioration in respiratory status after a period of stability or improvement on the ventilator. The following pages outline the criteria that must be used for meeting the PedVAE surveillance definitions.

**NOTE:**

Patients must be mechanically ventilated for at least 4 calendar days to fulfill PedVAE criteria (where the day of intubation and initiation of mechanical ventilation [MV] is day 1). The earliest date of event for PedVAE (the date of onset of worsening oxygenation) is day 3 of MV. The baseline period of stability or improvement on the ventilator is defined as the 2 calendar days immediately preceding the first day of increased daily minimum MAP or FiO<sub>2</sub>, and must be characterized by ≥ 2 calendar days of stable or decreasing daily minimum FiO<sub>2</sub> or MAP values (specifically the daily minimum MAP or FiO<sub>2</sub> on the second day of the baseline period of stability or improvement must be equal to or less than the daily minimum MAP or FiO<sub>2</sub> on the first day of the baseline period of stability or improvement). The definitions of “daily minimum MAP” and “daily minimum FiO<sub>2</sub>” are included below. Note that the daily minimum MAP is the lowest value documented during a calendar day, and the daily minimum FiO<sub>2</sub> is the lowest value documented during a calendar day that was maintained for >1 hour (see daily minimum FiO<sub>2</sub> definitions for exception to >1 hour requirement).

For the purposes of surveillance, in patients <30 days old, MAP values of 0-8 cmH<sub>2</sub>O are considered equivalent; therefore, any day on which the daily minimum MAP was 0-8 cmH<sub>2</sub>O would be assigned a daily minimum value of 8 cmH<sub>2</sub>O, and an increase in the daily minimum MAP to at least 12 cmH<sub>2</sub>O, sustained for 2 calendar days, would be needed to meet the PedVAE definition.

For the purposes of surveillance, in patients ≥30 days, MAP values of 0-10 cm H<sub>2</sub>O are considered equivalent; therefore, any day on which the daily minimum MAP was 0 to 10 cm H<sub>2</sub>O would be assigned a daily minimum value of 10 cmH<sub>2</sub>O, and an increase in the daily minimum MAP to at least 14 cmH<sub>2</sub>O, sustained for 2 calendar days, would be needed to meet the PedVae definition.

## PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)

### EXAMPLES:

In the example below, in a patient <30 days old, the baseline period is defined by mechanical ventilation (MV) days 1 through 4 (shaded in light gray), and the period of worsening oxygenation by MV days 5 and 6 (shaded in darker gray), where the daily minimum MAP is  $\geq 4$  cm H<sub>2</sub>O greater than the daily minimum MAP during the baseline period (keeping in mind that daily minimum MAP values of 0-8 cm H<sub>2</sub>O in a patient <30 days should be considered to be equal to 8 cm H<sub>2</sub>O for the purposes of surveillance).

MV Day	Daily minimum MAP (cmH <sub>2</sub> O)	Daily minimum FiO <sub>2</sub> (oxygen concentration, %)	PedVAE
1	7 (8)	1.00 (100%)	
2	7 (8)	0.50 (50%)	
3	8	0.50 (50%)	
4	8	0.50 (50%)	
5	12	0.50 (50%)	✓
6	12	0.50 (50%)	

In the example below, the baseline period is defined by mechanical ventilation (MV) days 3-4 (shaded in light gray), and the period of worsening oxygenation by MV days 5 and 6 (shaded in darker gray) where the daily minimum FiO<sub>2</sub> is  $\geq 0.25$  (25 points) over the daily minimum FiO<sub>2</sub> during the baseline period.

MV Day	Daily minimum MAP (cmH <sub>2</sub> O)	Daily minimum FiO <sub>2</sub> (oxygen concentration, %)	PedVAE
1	12	1.00 (100%)	
2	11	0.50 (50%)	
3	9	0.40 (40%)	
4	9	0.40 (40%)	
5	11	0.70 (70%)	✓
6	11	0.70 (70%)	

In the example below, there is no PedVAE, because the FiO<sub>2</sub> MV day 4 is higher than the FiO<sub>2</sub> on MV day 3 (and therefore not stable or decreasing) – even though the FiO<sub>2</sub> on MV days 3 and 4 meets the 25-point threshold when compared with the daily minimum FiO<sub>2</sub> on MV days 5 and 6.

MV Day	Daily minimum MAP (cmH <sub>2</sub> O)	Daily minimum FiO <sub>2</sub> (oxygen concentration, %)	PedVAE
1	12	1.00 (100%)	
2	11	0.50 (50%)	
3	9	0.35 (35%)	
4	9	0.40 (40%)	
5	11	0.70 (70%)	No event
6	11	0.70 (70%)	

**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

**NOTE:** Patients on extracorporeal life support or paracorporeal membrane oxygenation are EXCLUDED from PedVAE surveillance during periods of time when the support is in place the entire calendar day.

Patients on high-frequency oscillatory or jet ventilation are INCLUDED in PedVAE surveillance. Additionally, patients who are receiving a conventional mode of mechanical ventilation or high frequency oscillatory or jet ventilation while in the prone position are INCLUDED in PedVAE surveillance, and patients who are receiving a conventional mode of mechanical ventilation or high frequency oscillatory or jet ventilation while receiving surfactant, corticosteroids, nitric oxide therapy, helium-oxygen mixtures (heliox) or epoprostenol therapy are also INCLUDED in PedVae surveillance.

PedVAEs are defined by a 14-day period, starting on the day of onset of worsening oxygenation (the event date, day 1). A new PedVAE cannot be identified or reported until this 14 day period has elapsed.

**Date of event:** The date of onset of worsening oxygenation. This is defined as the first calendar day in which the daily minimum MAP or FiO<sub>2</sub> increases above the thresholds outlined in the PedVAE definition algorithm (specifically day 1 of the required ≥2-day period of worsening oxygenation following a ≥2-day period of stability or improvement on the ventilator).

**EXAMPLE:** A patient is intubated in the Emergency Room for severe community-acquired pneumonia and admitted to the PICU (day 1). The patient stabilizes and improves on days 2-5, with a daily minimum FiO<sub>2</sub> of 0.35 (35%) on days 4 and 5. On day 6, the patient experiences respiratory deterioration, and requires a minimum FiO<sub>2</sub> of 0.60 (60%) on days 6 and 7, meeting the criteria for a PedVAE. The date of the PedVAE event is day 6.

**NOTE:** The “date of event” is NOT the date on which all PedVAE criteria have been met. It is the first day (of a ≥2-day period) on which either of the worsening oxygenation thresholds (for MAP or FiO<sub>2</sub>) is met.

**Mean Airway Pressure (MAP):** The average pressure exerted on the airway and lungs from the beginning of inspiration until the beginning of the next inspiration. In patients on mechanical ventilation, MAP is the most powerful influence on oxygenation and is determined by peak end-expiratory pressure (PEEP), peak inspiratory pressure (PIP), inspiratory time and frequency. A sustained increase in the daily minimum MAP of ≥4 cm H<sub>2</sub>O following a period of stability or improvement on the ventilator is one of two criteria that can be used in meeting the PedVAE definition.

## PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)

**Fraction of inspired oxygen (FiO<sub>2</sub>):** The fraction of oxygen in inspired gas. For example, the FiO<sub>2</sub> of ambient air is 0.21; the oxygen concentration of ambient air is 21%. In patients on mechanical ventilation, the FiO<sub>2</sub> is one of the key parameters that can be adjusted depending on the patient's oxygenation needs, and is typically in the range of 0.21 (oxygen concentration of 21%) to 1.0 (oxygen concentration of 100%). A sustained increase (defined later in this protocol) in the daily minimum FiO<sub>2</sub> of  $\geq 0.25$  (25%) following a period of stability or improvement on the ventilator is the second of the two criteria that can be used in meeting the PedVAC definition.

**Daily minimum MAP:** The lowest value of MAP during a calendar day. When determining the daily minimum MAP value, round MAP reading in the following manner: a MAP of 10.00-10.49 is rounded to 10 and map of 10.50 – 10.99 is rounded to 11. For example, a patient who is intubated and started on mechanical ventilation at 9:30 p.m. on June 1, with a MAP of 10.35 cm H<sub>2</sub>O and a MAP of 10.54 at 11:30 p.m. would have a daily minimum MAP of 10 cm H<sub>2</sub>O on June 1 for the purpose of PedVAE surveillance.

**EXAMPLE:** The patient (<30 days old) is intubated at 6 pm. MAP values through the remainder of the calendar day are as follows:

Time	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
MAP (cmH <sub>2</sub> O)	12	11	9	9	11	11

In this example, the daily minimum MAP for the purposes of PedVAE surveillance is 9 cm H<sub>2</sub>O.

**EXAMPLE:** The patient is intubated at 6 pm. MAP values are as follows the remainder of the calendar day:

Time	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
MAP (cmH <sub>2</sub> O)	12	12	10	12	10	12

In this example, the daily minimum MAP for the purposes of PedVAE surveillance is 10 cm H<sub>2</sub>O. This is the lowest value recorded during the calendar day. When making daily minimum MAP determinations the value does not need to be maintained for > 1 hour.

**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

**EXAMPLE:** MAP values are as follows through the course of a calendar day for a patient <30 days old:

Time	1 am	4 am	8 am	12 pm	4 pm	8 pm
MAP (cmH <sub>2</sub> O)	9	11	9	11	11	12

In this example, the daily minimum MAP is 9 cm H<sub>2</sub>O.

**EXAMPLE:** You are reviewing a <30 day old patient's ventilator data on Wednesday morning to determine the daily minimum MAP values for Monday and Tuesday. The PICU monitors and records MAP every 30 minutes. You see that the lowest MAP setting on Monday (9 cm H<sub>2</sub>O) was recorded at 11:30 pm when the episode of mechanical ventilation was initiated for this patient. The patient remained at this MAP for an additional 30 minutes on Tuesday morning, and was then at MAP 12 cm H<sub>2</sub>O for the rest of the day on Tuesday. What do you record as the daily minimum MAP for Monday and for Tuesday? The lowest (and only) value of 9 cm H<sub>2</sub>O is recorded as the daily minimum MAP for Monday. On Tuesday, the daily minimum MAP should also be recorded as 9cm H<sub>2</sub>O, as it is the lowest value recorded on Tuesday.

Day	Time	MAP (cmH <sub>2</sub> O)
Monday	23:30	9
Tuesday	00:00	9
Tuesday	00:30	9
Tuesday	01:00	12
Tuesday	01:30	12
Tuesday	02:00 through 23:30	12

## **PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

**Daily minimum FiO<sub>2</sub>:** The lowest value of FiO<sub>2</sub> during a calendar day that is set on the ventilator and *maintained for >1 hour*. This requirement that the daily minimum FiO<sub>2</sub> be the lowest setting maintained for >1 hour will ensure that units monitoring and recording FiO<sub>2</sub> settings hourly or more frequently than once per hour are able to apply the PedVAE surveillance FiO<sub>2</sub> criterion in a standardized way. In the event that ventilator settings are monitored and recorded less frequently than once per hour, the daily minimum FiO<sub>2</sub> is simply the lowest value of FiO<sub>2</sub> set on the ventilator during the calendar day. Similarly, in circumstances where there is no value that has been maintained for > one hour (for example, the lowest value of FiO<sub>2</sub> is set late in the calendar day, mechanical ventilation is discontinued early in the calendar day) the daily minimum FiO<sub>2</sub> is the lowest value of FiO<sub>2</sub> set on the ventilator during the calendar day.

### **NOTE:**

In units tracking FiO<sub>2</sub> settings every hour or more frequently than every hour, there must be sufficient consecutive recordings of a specific FiO<sub>2</sub> setting to meet the minimum required duration of >1 hour. For example, in units tracking FiO<sub>2</sub> every 15 minutes, 5 consecutive recordings of FiO<sub>2</sub> at a certain level would be needed to meet the required >1 hour minimum duration (for example, 09:00, 09:15, 09:30, 09:45 and 10:00). In units tracking FiO<sub>2</sub> every 30 minutes, 3 consecutive recordings of FiO<sub>2</sub> at a certain level would be needed to meet the required >1 hour minimum duration (for example, 09:00, 09:30, and 10:00). In units tracking FiO<sub>2</sub> every hour, 2 consecutive recordings of FiO<sub>2</sub> at a certain level would be needed to meet the required >1 hour minimum duration (for example, 09:00 and 10:00).

**EXAMPLE:** The patient is intubated at 6 pm. FiO<sub>2</sub> is set at the following values through the remainder of the calendar day:

<b>Time</b>	<b>6 pm</b>	<b>7 pm</b>	<b>8 pm</b>	<b>9 pm</b>	<b>10 pm</b>	<b>11 pm</b>
<b>PEEP (cmH<sub>2</sub>O)</b>	1.0	0.8	0.5	0.5	0.8	0.8

In this example, the daily minimum FiO<sub>2</sub> for the purposes of Ped VAE surveillance is 0.5. FiO<sub>2</sub> settings are being monitored and recorded every hour. There are two consecutive hours where the FiO<sub>2</sub> setting is noted to be 0.5 (8 pm and 9 pm), and therefore required minimum duration of >1 hour is met.

**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

**EXAMPLE:** The patient is intubated at 6 pm. FiO<sub>2</sub> is set at the following values through the remainder of the calendar day:

Time	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
FiO <sub>2</sub>	0.8	0.8	0.5	0.8	0.5	0.8

In this example, the daily minimum FiO<sub>2</sub> for the purposes of VAE surveillance is 0.8. FiO<sub>2</sub> settings are being monitored and recorded every hour. Although the lowest FiO<sub>2</sub> is 0.5, it is recorded at two non-consecutive time points only (8 pm, and then 10 pm), and so the required >1 hour minimum duration is not met. There are two consecutive hours where the FiO<sub>2</sub> setting is noted to be 0.8 (6 pm and 7 pm), and therefore the required minimum duration of 1 hour is met to allow use of this setting as the daily minimum value for PedVAE surveillance.

**EXAMPLE:** FiO<sub>2</sub> is set at the following values through the course of a calendar day:

Time	2 pm	4 pm	6 pm	8 pm	10 pm	12 am
FiO <sub>2</sub>	1.0	0.60	0.40	0.50	0.55	0.60

In this example, the patient was intubated at 2 pm. The daily minimum FiO<sub>2</sub> is 0.40. FiO<sub>2</sub> settings are being monitored and recorded every 2 hours; therefore, the lowest recorded FiO<sub>2</sub> setting for the calendar day is the value used in PedVAE surveillance.

## **PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

**EXAMPLE:** You are reviewing a patient's ventilator settings on Friday morning to determine the daily minimum FiO<sub>2</sub> value for Thursday. The patient was intubated and initiated on mechanical ventilation at 21:45 hours on Thursday. The ICU monitored and recorded FiO<sub>2</sub> settings for the patient every 15 minutes during the remainder of the day on Thursday. Based on the information recorded in the table below, what should you record as the daily minimum FiO<sub>2</sub> for Thursday? In this example, since there is no setting that is maintained for >1 hour during the calendar day, the daily minimum FiO<sub>2</sub> for Thursday is 0.70 (70%). This is the lowest value of FiO<sub>2</sub> set on the ventilator during the calendar day.

Day	Time	FiO <sub>2</sub>
Thursday	21:45	Intubated; 1.0
	22:00	1.0
	22:15	0.90
	22:30	0.90
	22:45	0.70
	23:00	0.80
	23:15	0.85
	23:30	0.85
	23:45	0.85

**Ventilator:** Any device used to support, assist or control respiration (inclusive of the weaning period), through the application of positive pressure to the airway when delivered via an artificial airway, specifically oral/nasal endotracheal or tracheostomy tube.

**NOTE:**

Ventilation and lung expansion devices that deliver positive pressure to the airway (for example: CPAP, BiPAP, bi-level, IPPB and PEEP) via non-invasive means (for example: nasal prongs, nasal mask, full face mask, total mask, etc.) are not considered ventilators unless positive pressure is delivered via an artificial airway (oral/nasal endotracheal or tracheostomy tube).

**Episode of mechanical ventilation:** Defined as a period of days during which the patient was mechanically ventilated for some portion of each consecutive day.

**NOTE:**

A break in mechanical ventilation of at least one full calendar day, followed by reintubation and/or reinitiation of mechanical ventilation during the same hospitalization, defines a new episode of mechanical ventilation.

## PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)

**EXAMPLE:** A patient is intubated and mechanical ventilation is initiated at 11 pm on hospital day 1. The patient remains intubated and mechanically ventilated from hospital days 2-10. The patient is extubated at 9 am on hospital day 11, and remains extubated on hospital day 12. The patient is re-intubated and mechanical ventilation is reinitiated on hospital day 13. The patient remains intubated and mechanically ventilated from hospital day 14-18. This patient has had two episodes of mechanical ventilation (days 1-11 and days 13-18), separated by at least one full calendar day off of MV.

**Location of attribution:** The inpatient location where the patient was assigned on the date of the VAE, which is further defined as the date of onset of worsening oxygenation.

**EXAMPLE:** Patient is intubated and ventilated in the Operating Room on hospital day 1, and then is admitted post-operatively to the NICU on hospital day 1, still on the ventilator. On hospital day 3, the patient experiences the onset of worsening oxygenation, manifested by an increase in the daily minimum FiO<sub>2</sub> of  $\geq 0.25$  (25%). On day 4 (also the 4<sup>th</sup> day of mechanical ventilation) the patient meets criteria for PedVAE. This is reported as a PedVAE for the NICU.

**EXCEPTION – Transfer Rule:** If a PedVAE develops on the day of transfer or the day following transfer from one inpatient location to another in the same facility or to a new facility (where the day of transfer is day 1), the event is attributed to the transferring location. This is called the Transfer Rule, and examples are shown below:

- Patient is extubated in the PICU and transferred to the medical stepdown unit on hospital day 6. The next day, while in the stepdown unit (day 7), the patient experiences worsening oxygenation and is re-intubated and transferred back to the PICU. Criteria for PedVAE are met the next day (day 8). In this case, the day prior to extubation and the day of extubation (hospital days 5 and 6) count as the required 2 day period of stability or improvement. The day of reintubation (day 7) and the following day (day 8) count as the required 2 day period of worsening oxygenation. Because the onset of worsening oxygenation occurred on the day following transfer out of PICU, the event is reported as a PedVAE for the PICU.
- Patient intubated and mechanically ventilated for 8 days in the NICU of Hospital A is transferred for further care on day 8 to the NICU of Hospital B. The patient was stable on the ventilator in Hospital A from days 3-8. On the day of transfer to Hospital B (day 1 in Hospital B), the patient's respiratory status deteriorates. The day after transfer (day 2 in Hospital B), the patient meets criteria for PedVAE. The date of the event is day 1 in Hospital B, the first day of the period of worsening oxygenation meeting PedVAE MAP or FiO<sub>2</sub> thresholds. The infection preventionist (IP) from Hospital B calls the Hospital A IP to report that this patient was admitted to Hospital B with a PedVAE. This PedVAE should be reported by Hospital A, and attributed to the Hospital A NICU. No additional ventilator days are reported by Hospital A.



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**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)**

**Pediatric Ventilator-Associated Event (VAE) Calculator Version 1.0**

Welcome to Version 1.0 of the PedVAE Calculator. Version operates based upon the currently posted PedVAE protocol. The Calculator is a web-based tool that is designed to help you learn how the PedVAE surveillance definition algorithm works and assist you in making PedVAE determinations.

Please note that the PedVAE Calculator will not ask you to enter any patient identifiers (other than dates of MV, which you can change as you see fit). The PedVAE Calculator does not determine or calculate the lowest MAP or FiO<sub>2</sub> value. The PedVAE Calculator does not store any patient data that you enter, and it will not report any data that you enter or any PedVAE determinations to the NHSN. You will not be able to export data entered into the Calculator. If you have questions or suggestions about the Calculator, please feel free to send them to the NHSN mailbox, [nhsn@cdc.gov](mailto:nhsn@cdc.gov).

The PedVAE Calculator (Version1.0) can be found at the following URL:

<https://www.cdc.gov/nhsn/pedvae-calculator/index.html>

**Please note that you must have JavaScript enabled in order for the tool to work.**

**PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)****Pediatric Ventilator Associated Events (VAE) Surveillance Algorithm**

Patient has a baseline period of stability or improvement on the ventilator, defined by  $\geq 2$  calendar days of stable or decreasing daily minimum\*  $\text{FiO}_2$  or MAP values. The baseline period is defined as the 2 calendar days immediately preceding the first day of increased daily minimum MAP or  $\text{FiO}_2$ .

\*Daily minimum  $\text{FiO}_2$  is defined as the lowest value of  $\text{FiO}_2$  documented during a calendar day that is maintained for  $> 1$  hour.

Daily minimum MAP is the lowest value documented during the calendar day.

For patients  $< 30$  days old, daily minimum MAP values 0-8  $\text{cm H}_2\text{O}$  are considered equal to 8  $\text{cm H}_2\text{O}$  for the purposes of surveillance.

For patients  $\geq 30$  days old, daily minimum MAP values 0-10  $\text{cm H}_2\text{O}$  are considered equal to 10  $\text{cm H}_2\text{O}$  for the purposes of surveillance.



After a period of stability or improvement on the ventilator, the patient has at least one of the following indicators of worsening oxygenation:

- 1) Increase in daily minimum  $\text{FiO}_2$  of  $\geq 0.25$  (25 points) over the daily minimum  $\text{FiO}_2$  of the first day in the baseline period, sustained for  $\geq 2$  calendar days.
- 2) Increase in daily minimum MAP values of  $\geq 4 \text{ cm H}_2\text{O}$  over the daily minimum MAP of the first day in the baseline period, sustained for  $\geq 2$  calendar days.



**Pediatric Ventilator-Associated Event (PedVAE)**

## PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)

### PedVAE –Pediatric Ventilator-Associated Event

**DEFINITION:** Patient must meet:

**PedVAE Criterion:** (January 1, 2019)

- Patient has **ONE**  $\Delta$  of the following:

- $\Delta$  Baseline period of stability on the ventilator\*
- $\Delta$  Baseline period of improvement on the ventilator\*

**AND**

- After a period of stability or improvement (as above), patient has at least **ONE**  $\Delta$  of the following indicators of worsening oxygenation:

$\Delta$  **BOTH**  $\diamond$  of the following:

- $\diamond$  increase in daily minimum  $FiO_2$  of  $\geq 0.25$  (25 points) over daily minimum  $FiO_2$  of the first day in the baseline period
- $\diamond$  sustained for  $\geq 2$  calendar days

**OR**

$\Delta$  **BOTH**  $\diamond$  of the following:

- $\diamond$  increase in daily minimum MAP values of  $\geq 4$  cm H<sub>2</sub>O over daily minimum MAP of the first day in the baseline period
- $\diamond$  sustained for  $\geq 2$  calendar days

\* Defined by  $\geq 2$  calendar days of stable or decreasing daily minimum\*  $FiO_2$  or MAP values. The baseline period is defined as the 2 calendar days immediately preceding the first day of increased daily minimum MAP or  $FiO_2$ .

+ Daily minimum  $FiO_2$  is defined as the lowest value of  $FiO_2$  documented during a calendar day that is maintained for  $>1$  hour.

Daily minimum MAP is the lowest value documented during the calendar day.

For patients  $<30$  days old, daily minimum MAP values 0-8 cm H<sub>2</sub>O are considered equal to 8 cmH<sub>2</sub>O for the purpose of surveillance

For patients  $\geq 30$  days old, daily minimum MAP values 0-10 cm H<sub>2</sub>O are considered equal to 10 cmH<sub>2</sub>O for the purpose of surveillance.

## PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)

### **REPORTING INSTRUCTIONS:** (New January 1, 2019)

- Conducting in-plan PedVAE surveillance means assessing patients for the presence of events meeting the PedVAE definition.
- If the date of event (date of onset of worsening oxygenation) is on or after the date of documentation of evidence of consent AND the patient is being supported for organ donation purposes, the event should not be reported as a PedVAE.
- Secondary BSIs are not reported or attributable to PedVAE.
- Clinical finding associated with a PedVAE may assist in better understanding the etiology and focusing efforts to prevent PedVAEs. Should a facility choose to provide the following information, the PedVAE form includes optional data fields to report:
  - Clinical diagnoses or events that were associated with the PedVAE. Note that multiple events may be reported for a single PedVAE.
  - Antimicrobial agents listed in the Appendix that are administered on the date of event or within the 2 days before or 2 days after the event. The name of the specific antimicrobial agent and the administration initiation date may also be reported.
  - Pathogens detected by culture or non-culture-based microbiological testing of upper or lower respiratory specimens with a specimen collection date on the date of event or within the 2 days before or 2 days after the date of event or in blood with a specimen collection date within the 2 days before the date of event and up to 13 days after the event.

**Note:** Because organisms belonging to the following genera are typically causes of community-associated respiratory infections, and are rarely or are not known to be causes of healthcare associated infections, they are also excluded, and cannot be reported: *Blastomyces*, *Histoplasma*, *Coccidioides*, *Paracoccidioides*, *Cryptococcus*, and *Pneumocystis*.
  - *Legionella* or *Streptococcus pneumoniae* detected by urine antigen testing with a date of specimen collection on the date of event or within the 2 days before or 2 days after the event.

## PEDIATRIC VENTILATOR ASSOCIATED EVENT (PedVAE)

### List of Antimicrobials Agents Eligible for IVAC, PVAP

*(Revised January 1, 2019)*

Antimicrobial Agent	Antimicrobial Agent (cont.)	Antimicrobial Agent (cont.)
AMIKACIN	CLINDAMYCIN	ORITAVANCIN
AMPHOTERICIN B	COLISTIMETHATE	OSELTAMIVIR
AMPHOTERICIN B LIPOSOMAL	DALBAVANCIN	OXACILLIN
AMPICILLIN	DELAFOXACIN	PENICILLIN G
AMPICILLIN/SULBACTAM	DORIPENEM	PERAMIVIR
ANIDULAFUNGIN	DOXYCYCLINE	PIPERACILLIN
AZITHROMYCIN	ERTAPENEM	PIPERACILLIN/TAZOBACTAM
AZTREONAM	FLUCONAZOLE	POLYMYXIN B
CASPOFUNGIN	FOSFOMYCIN	POSACONAZOLE
CEFAZOLIN	GEMIFLOXACIN	QUINUPRISTIN/DALFOPRISTIN
CEFEPIME	GENTAMICIN	RIFAMPIN
CEFOTAXIME	IMIPENEM/CILASTATIN	SULFAMETHOXAZOLE/TRIMETHOPRIM
CEFOTETAN	ISAVUCONAZONIUM	SULFISOXAZOLE
CEFOXITIN	ITRACONAZOLE	TEDIZOLID
CEFTAROLINE	LEVOFLOXACIN	TELAVANCIN
CEFTAZIDIME	LINEZOLID	TELITHROMYCIN
CEFTAZIDIME/AVIBACTAM	MEROPENEM	TETRACYCLINE
CEFTIZOXIME	MEROPENEM/VABORBACTAM	TICARCILLIN/CLAVULANATE
CEFTOLOZANE/TAZOBACTAM	METRONIDAZOLE	TIGECYCLINE
CEFTRIAZONE	MICAFUNGIN	TOBRAMYCIN
CEFUROXIME	MINOCYCLINE	VANCOMYCIN, INTRAVENOUS ONLY
CIPROFLOXACIN	MOXIFLOXACIN	VORICONAZOLE
CLARITHROMYCIN	NAFCILLIN	ZANAMIVIR