



NHSN Device-Associated Modules: VAE & PedVAE

Housekeeping

- **This call is being recorded and the recording and slides will be posted to the State HAI website.**
- **Please use the chat-box for any questions.**
- **Upcoming Trainings:**
 - **Thursday, February 17th, 8 am – 12 pm CST**
 - **Friday, February 18th, 8 am- 12 pm CST**
- **Next week's NHSN user call will be on Tuesday, February 22nd at 10 am due to President's Day.**

Outline

- **NHSN background**
- **Reporting requirements**
- **Surveillance Definitions**
- **Denominator data**
 - Definitions & data entry
- **Numerator data**
 - HAI Definitions
 - VAE Definitions
 - PedVAE Definitions
- **Resources**

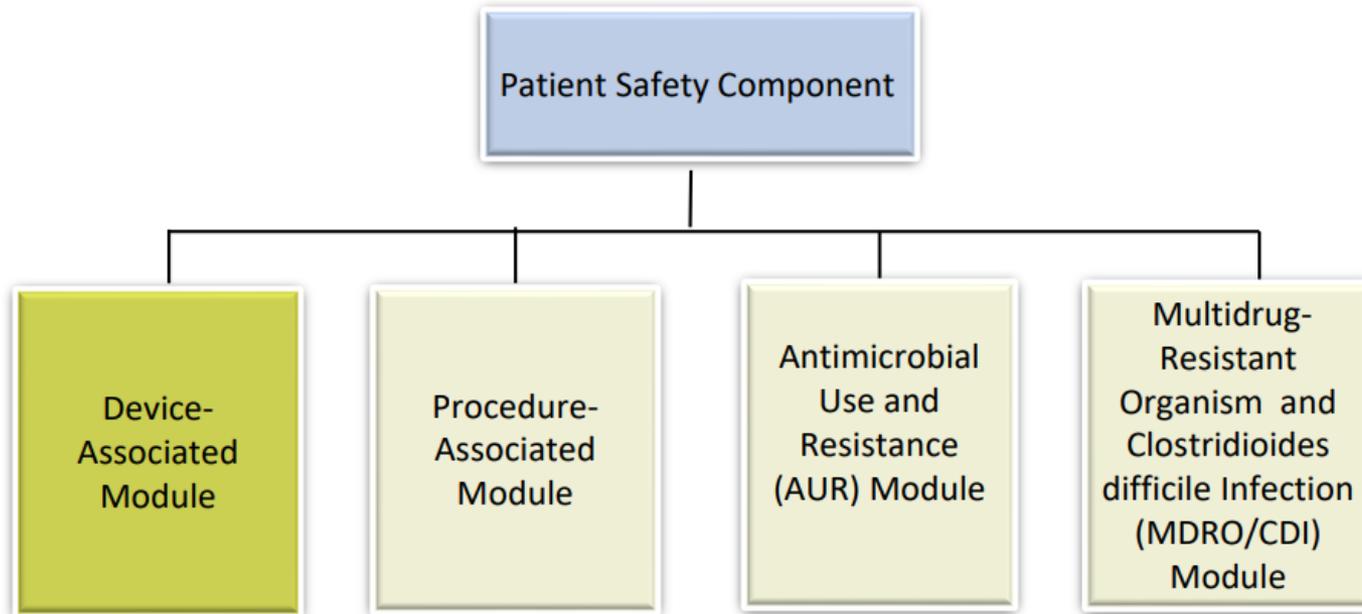


NHSN Background

NHSN Background



Patient Safety Component Background



VAE Section History

- **Prior to 2013, surveillance for ventilator-associated events was limited to VAP.**
- **One drawback is that radiographic findings of pneumonia were required in VAP event recording.**
 - **Evidence suggests that this is not an accurate way to identify VAP due to the subjectivity in technique, interpretation, and reporting.**
 - **Especially in inter-facility comparisons and public reporting situations.**
- **Another issue, was the lack of a sensitive or specific definition for VAP, with broad criteria and definitions that were unreliable.**
- **These limitations also stunt prevention efforts, as valid and reliable data is critical for prevention strategy assessment.**

VAE Section History

- **The VAE surveillance algorithm was implemented in 2013 to identify a broad range of conditions that occur in ventilated adults.**
 - **These criteria were made specifically to be objective and possibly automated to ensure both easy implementation and utilization of electronic health records to identify events.**
- **The PedVAE section has a similar history, with a group formed also in 2013 to define its criteria.**
 - **Unfortunately, there was insufficient data at the time, so the group was postponed until 2015.**
- **At that time, a study on pediatric events demonstrated that changes in the Fraction of Inspired Oxygen (FiO₂) and Mean Airway Pressure (MAP) were associated with events that prolonged patient stay and increased mortality.**
- **In 2019, PedVAE was introduced as a section following VAE in the Patient Safety Component.**



TDH/CMS Reporting Requirements

Reporting Requirements for VAE

Required Reporting:

Facility Type	Location(s)
Long-term acute care facilities (LTACs)	Adult Inpatient Locations only

Eligible for Surveillance (VAE):

Facility Type	Location(s)
Acute Care Hospitals (ACHs)	Adult inpatient locations
LTACs	Adult inpatient locations
Inpatient Rehabilitation Facilities (IRFs)	Adult inpatient locations

Eligible for Surveillance (PedVAE):

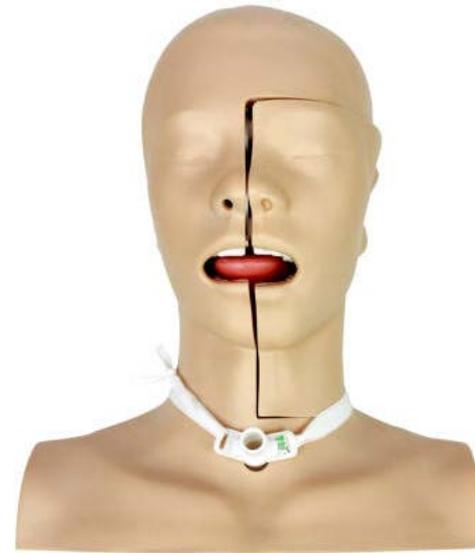
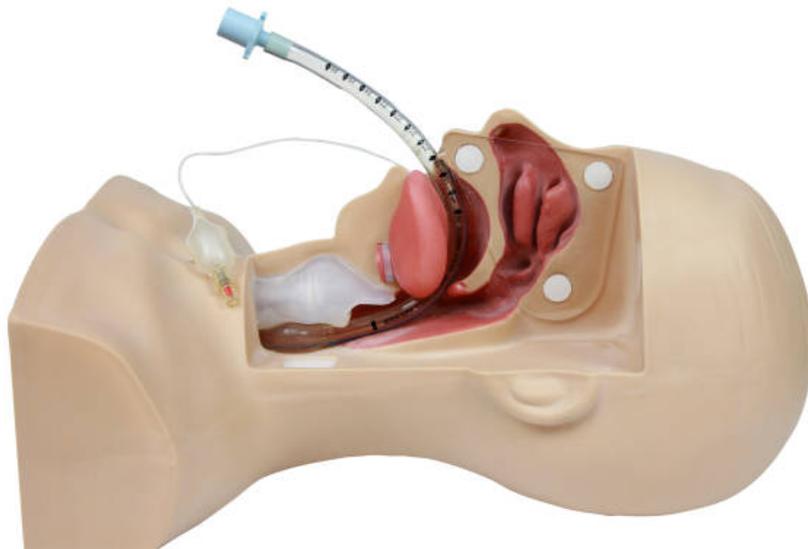
Facility Type	Location(s)
ACHs	Pediatric inpatient locations Neonatal inpatient locations
LTACs	Pediatric inpatient locations Neonatal inpatient locations
IRFs	Pediatric inpatient locations Neonatal inpatient locations



Definitions for Surveillance

Basic Definitions

- **Ventilator: A 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).**



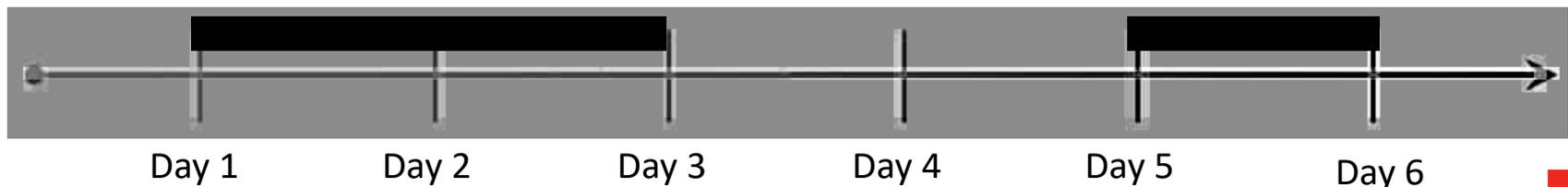
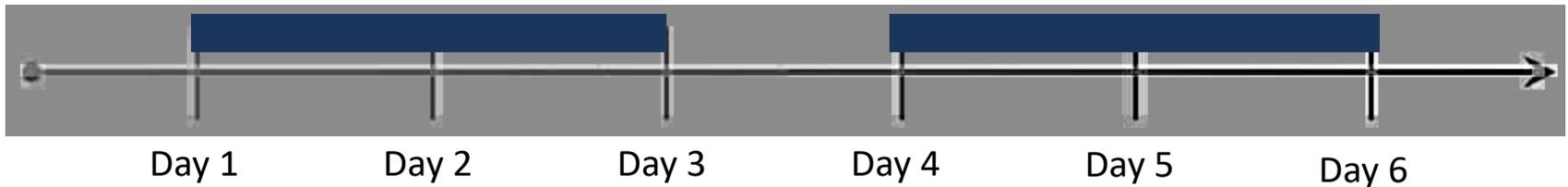
Not a ventilator



Basic Definitions

- **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.

Episodes of Mechanical Ventilation:



Basic Definitions

- **Fraction of Inspired Oxygen (FiO₂):** The fraction of oxygen in inspired gas.
 - For example, the FiO₂ of ambient air is 0.21; the oxygen concentration of ambient air is 21%.
- **In patients on mechanical ventilation, the FiO₂ is one of the key parameters that can be adjusted depending on the patient's oxygenation needs.**
 - It is typically in the range of 0.30 (oxygen concentration of 30%) to 1.0 (oxygen concentration of 100%).

Basic Definitions

- Daily Minimum FiO₂:** The lowest value of FiO₂ during a calendar day that is set on the ventilator and maintained for > 1 hour. . In circumstances where there is no value that is documented to have been maintained for > 1 hour (for example, the lowest value of FiO₂ is set late in the calendar day, mechanical ventilation is discontinued early in the calendar day, FiO₂ settings are changed very frequently throughout the calendar day) the daily minimum FiO₂ should default to the lowest FiO₂ setting during the calendar day (regardless of how long that setting was maintained).

EXAMPLE: The patient is intubated at 6 pm. FiO₂ 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 ₂	1.0	0.8	0.5	0.5	0.8	0.8

In this example, the daily minimum FiO₂ for the purposes of VAE surveillance is 0.5. FiO₂ settings are being monitored and recorded every hour. There are two consecutive hours where the FiO₂ setting is noted to be 0.5 (8 pm and 9 pm), and therefore required minimum duration of > 1 hour is met.

VAE Definitions

- **Positive End-Expiratory Pressure (PEEP):** A technique used in respiratory therapy in which airway pressure greater than atmospheric pressure is achieved at the end of exhalation by the introduction of a mechanical impedance to exhalation.
- In patients on mechanical ventilation, PEEP 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 to 15 cmH₂O.

VAE Definitions

- Daily Minimum PEEP:** The lowest value of PEEP during a calendar day that is set on the ventilator and maintained for > 1 hour. In circumstances where there is no value that is documented to have been maintained for > 1 hour (for example, the lowest value of PEEP is set late in the calendar day, mechanical ventilation is discontinued early in the calendar day, PEEP settings are changed very frequently throughout the calendar day) the daily minimum PEEP should default to the lowest PEEP setting during the calendar day (regardless of how long that setting was maintained).

EXAMPLE: The patient is intubated at 6 pm. PEEP 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
PEEP (cmH ₂ O)	10	8	5	5	8	8

In this example, the daily minimum PEEP for the purposes of VAE surveillance is 5 cmH₂O. PEEP settings are being monitored and recorded every hour. There are two consecutive hours where the PEEP setting is noted to be 5 cmH₂O (8 pm and 9 pm), and therefore required minimum duration of > 1 hour is met.

Basic Definitions

- **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:**
 - positive end-expiratory pressure (PEEP)
 - peak inspiratory pressure (PIP)
 - inspiratory time
 - frequency

PedVAE Definitions

- **Daily Minimum MAP:** The lowest value of MAP during a calendar day.

Basic Definitions

- **Date of Event:** The date of onset of worsening oxygenation. This is defined as the first calendar day in which the daily minimum PEEP or FiO₂ increases above the thresholds outlined in the VAE 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).
 - **NOTE:** The “date of event” is NOT the date on which all VAE criteria have been met. It is the first day (of a ≥ 2 -day period) on which either of the worsening oxygenation thresholds (for PEEP or FiO₂) is met.

EXAMPLE: A patient is intubated in the Emergency Room for severe community-acquired pneumonia and admitted to the MICU (day 1). The patient stabilizes and improves on days 2-5, with a daily minimum FiO₂ of 0.35 (35%) on days 4 and 5. On day 6, the patient experiences respiratory deterioration, and requires a minimum FiO₂ of 0.60 (60%) on days 6 and 7, meeting the criteria for a VAC. The date of the VAC event is day 6.

Basic Definitions

- **VAE Window Period:** This is the period of days around the date of event (specifically the day of onset of worsening oxygenation) within which other VAE criteria must be met. It is usually a 5-day period and includes the 2 days before, the day of, and the 2 days after the VAE date of event (specifically the first day of worsening oxygenation, the day of VAE onset).
 - In cases where the VAE date of event corresponds to MV day 3 or day 4, the window period described above may only be a 3-day or a 4-day window, because it can NOT include any days before the 3rd day of MV.

Basic Definitions

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

Basic Definitions

- **New Antimicrobial Agent: Defined as any agent listed that is initiated on or after the third calendar day of mechanical ventilation AND in the VAE Window Period. The agent is considered new for the purposes of this definition if it was NOT given to the patient on either of the 2 days preceding the current start date.**
 - **The antimicrobial agent(s) must have been given by one of the routes of administration outlined, and therapy with one or more new antimicrobial agents must be continued for at least 4 calendar days.**

Basic Definitions

Appendix. List of Antimicrobial Agents Eligible for IVAC, PVAP

Antimicrobial Agent
AMIKACIN
AMPHOTERICIN B
AMPHOTERICIN B LIPOSOMAL
AMPICILLIN
AMPICILLIN/SULBACTAM
ANIDULAFUNGIN
AZITHROMYCIN
AZTREONAM
BALOXAVIR MARBOXIL
CASPOFUNGIN
CEFAZOLIN
CEFEPIME
CEFIDEROCOL
CEFOTAXIME
CEFOTETAN
CEFOXITIN
CEFTAROLINE
CEFTAZIDIME
CEFTAZIDIME/AVIBACTAM
CEFTOLOZANE/TAZOBACTAM
CEFTRIAZONE
CEFUROXIME
CIPROFLOXACIN
CLARITHROMYCIN
CLINDAMYCIN
COLISTIMETHATE
DALBAVANCIN
DELAFLORACIN
DOXYCYCLINE
ERAVACYCLINE
ERTAPENEM
FLUCONAZOLE
FOSFOMYCIN
GEMIFLOXACIN
GENTAMICIN
IMIPENEM/CILASTATIN

IMIPENEM/CILASTATIN/RELEBACTAM
ISAVUCONAZONIUM
ITRACONAZOLE
LEFAMULIN
LEVOFLOXACIN
LINEZOLID
MEROPENEM
MEROPENEM/VABORBACTAM
METRONIDAZOLE
MICAFUNGIN
MINOCYCLINE
MOXIFLOXACIN
NAFCILLIN
OMADACYCLINE
ORITAVANCIN
OSELTAMIVIR
OXACILLIN
PENICILLIN G
PERAMIVIR
PIPERACILLIN/TAZOBACTAM
PLAZOMICIN
POLYMYXIN B
POSACONAZOLE
QUINUPRISTIN/DALFOPRISTIN
REMDESIVIR
RIFAMPIN
SULFAMETHOXAZOLE/TRIMETHOPRIM
TEDIZOLID
TELAVANCIN
TETRACYCLINE
TIGECYCLINE
TOBRAMYCIN
VANCOMYCIN, intravenous only
VORICONAZOLE
ZANAMIVIR

Basic Definitions

Table 1: Definitions of routes of administration

Route of Administration ^a	Definition ^b
Intravenous	An intravascular route that begins with a vein.
Intramuscular	A route that begins within a muscle.
Digestive Tract	A route that begins anywhere in the digestive tract extending from the mouth through rectum.
Respiratory Tract	A route that begins within the respiratory tract, including the oropharynx and nasopharynx.

^aOther routes of administration are excluded (for example, antibiotic locks, intraperitoneal, intraventricular, irrigation, topical).

^bDefinitions per SNOMED Reference Terminology

Basic Definitions

- **Qualifying Antimicrobial Day (QAD):** A day on which the patient was administered an antimicrobial agent that was determined to be “new” within the VAE Window Period. Days on which a new antimicrobial agent is administered count as QADs. Days between administrations of a new antimicrobial agent also count as QADs if there is a gap of no more than 1 calendar day between administrations. By contrast, days between administrations of different antimicrobial agents do NOT count as QADs.

EXAMPLE: A patient is intubated and mechanically ventilated on hospital day 1 in the MSICU. Ceftriaxone and azithromycin are started on day 1 and administered daily. After 3 days of improving respiratory status, the patient’s oxygenation deteriorates on days 4 and 5, with a daily minimum PEEP that is 4 cmH₂O higher than it was on days 2 and 3. Criteria for the VAC definition are met; the date of the event is hospital day 4. Ceftriaxone is discontinued and meropenem is begun on day 5. Azithromycin is continued. In this case, meropenem is a new antimicrobial agent: 1) it was begun on day 5 of mechanical ventilation, and 2) within the VAE Window Period (on the day after VAE onset), and 3) it was not given to the patient on either of the 2 days preceding the current start date. By contrast, ceftriaxone and azithromycin would not be considered new antimicrobial agents, since they were begun on day 1 of mechanical ventilation and continued daily into the VAE Window Period.



Denominator Data

Data Entry

- **Denominator Data Collected:**
 - Patient Days
 - Device Days
- **Optional Denominator Data:**
 - **Episodes of Mechanical Ventilation**
 - The EMV denominator is determined by counting all patients in the location who are on mechanical ventilation on the first day of the month regardless of eligibility for inclusion in VAE surveillance. Then, on each subsequent day of the month, count each additional patient that is started on mechanical ventilation.
 - This would include those that are admitted to the location already on mechanical ventilation, those that are newly ventilated, and any previously ventilated patients who have new episodes of mechanical ventilation occurring during the same month. The sum of the count for the first day and each subsequent day of the month is entered in NHSN.

Denominator Data

- **Denominator data collection options**

- **Daily**

- **Manual**

- **Electronic (Post-validation: 3 months of \pm 5% of manual counts)**

- **For VAE:**

- **NOTE: All ventilator days are counted, including ventilator days for patients on mechanical ventilation for < 3 days, and patients on high frequency ventilation and other therapies excluded from VAE surveillance. Patients with tracheostomies who are undergoing weaning from mechanical ventilation using tracheostomy collar trials are included in ventilator day counts if they spend some portion of the day on mechanical ventilation at a time that overlaps with the daily time during which ventilator day counts are performed.**
 - **NOTE: In addition to the total number of patients on ventilators on each day of surveillance, the number of patients on ventilators who are on the APRV mode of mechanical ventilation or related modes (which is a subset of all patients on ventilators) can optionally be indicated on the appropriate form (CDC 57.117 and 57.118).**

- **For PedVAE:**

- **NOTE: All ventilator days are counted, including ventilator days for patients on mechanical ventilation for < 3 days, and ventilator days for patients on extracorporeal life support or paracorporeal membrane oxygenation who are excluded from PedVAE surveillance. Patients with tracheostomies who are undergoing weaning from mechanical ventilation using tracheostomy collar trials are included in ventilator day counts if they spend some portion of the day on mechanical ventilation at a time that overlaps with the daily time during which ventilator day counts are performed.**



Numerator Data

VAE Surveillance:

VAC → IVAC → PVAP

Exclusions

- **Patients on high frequency ventilation, extracorporeal life support, or paracorporeal membrane oxygenation are EXCLUDED from VAE surveillance during periods of time when the support is in place the entire calendar day.**
- **If the date of event 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 VAE.**

Inclusions

- **Patients must be mechanically ventilated for at least 4 calendar days to fulfill VAE criteria (where the day of intubation and initiation of mechanical ventilation is day 1). The earliest date of event for VAE (the date of onset of worsening oxygenation) is day 3 of mechanical ventilation.**
- **Patients on Airway Pressure Release Ventilation (APRV) or related modes are INCLUDED, but when this mode is in use the VAE period of stability or improvement on the ventilator and the period of worsening oxygenation should be determined by changes in FiO₂ only, since changes in PEEP as indicated in this surveillance algorithm may not be applicable to APRV.**
- **Patients who are receiving a conventional mode of mechanical ventilation while in the prone position and patients who are receiving a conventional mode of mechanical ventilation while receiving nitric oxide therapy, helium-oxygen mixtures, or epoprostenol therapy are INCLUDED in VAE surveillance.**

HAI Definitions: (VAE) VAC

Practice Case 1

- Jane Doe is admitted on HD 1 for acute exacerbation of COPD and is intubated the same day. She continues to improve on the ventilator daily with PEEP values between 0 - 5 cm H₂O for HD 2 and 3 and FiO₂ values at .40 both days. On HD 4 her daily minimum PEEP increases from 5 cmH₂O to 9 cmH₂O while her daily FiO₂ remains at 0.40. The next day her daily minimum PEEP increases from 5 cmH₂O to 9 cmH₂O while her daily FiO₂ remains at 0.40. The next day her daily minimum PEEP remains at 9 cm H₂O.**

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1	Intubated (VD 1)				
2					
3					
4	PEEP increased				
5	PEEP increased				
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

VAC – DOE: HD 4

HAI Definitions: (VAE) IVAC

Practice Case 2

- John Doe presents to the hospital for admission and is intubated on HD 1. He remains stable on the ventilator with PEEP of 2.0 cmH₂O and FiO₂ of 35%. On HD 4 he is noted to have a 38.5-degree fever and is started on meropenem IV. On HD 5 his FiO₂ is increased to 60% and is increased again to 70% on HD 6.**

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1	Intubated (VD 1)				
2					
3					
4	Fever				
5	Worse FiO ₂				
6	Worse FiO ₂				
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Practice Case 2

- John Doe presents to the hospital for admission and is intubated on HD 1. He remains stable on the ventilator with PEEP of 2.0 cmH₂O and FiO₂ of 35%. On HD 4 he is noted to have a 38.5-degree fever and is started on meropenem IV. On HD 5 his FiO₂ is increased to 60% and is increased again to 70% on HD 6.**

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1	Intubated (VD 1)				
2					
3			[Dark Blue Block]		
4	Fever				
5	Worse FiO ₂	[Red Block]		[Dark Blue Block]	
6	Worse FiO ₂				
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

IVAC – DOE: HD 5

HAI Definitions: (VAE) PVAP

Practice Case 3

- On HD 7 John has a chest x-ray which shows a pleural effusion and has a thoracentesis that day. Pleural fluid sent to culture was positive for *K. pneumoniae*.

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1	Intubated (VD 1)				
2					
3					
4	Fever				
5	Worse FiO ₂				
6	Worse FiO ₂				
7	Thoracentesis Culture: + <i>K. pneumo</i>				
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Practice Case 3

- On HD 7 John has a chest x-ray which shows a pleural effusion and has a thoracentesis that day. Pleural fluid sent to culture was positive for *K. pneumoniae*.

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1	Intubated (VD 1)				
2					
3			[Redacted]	[Redacted]	[Redacted]
4	Fever				
5	Worse FiO ₂	[Redacted]			
6	Worse FiO ₂				
7	Thoracentesis Culture: + <i>K. pneumo</i>				
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

PVAP – DOE: HD 5
Pathogen: *K. pneumoniae*

HAI Definitions: PedVAE

Practice Case 4

- **Timmy, a 3 y/o boy is admitted and on HD 2 is intubated. From HD 2 to HD 5 his MAP and FiO₂ values steadily improve to 8 cm H₂O and 30% respectively. On HD 6, his MAP increases from 8 cm to 14 cm and then on HD 7 to 15 cm.**

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1					
2	Intubated				
3					
4					
5					
6	Worse MAP				
7	Worse MAP				
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					

Practice Case 4

- Timmy, a 3 y/o boy is admitted and on HD 2 is intubated. From HD 2 to HD 5 his MAP and FiO₂ values steadily improve to 8 cm H₂O and 30% respectively. On HD 6, his MAP increases from 8 cm to 14 cm and then on HD 7 to 15 cm.**

Hospital Day	Sign/Sx	DOE	Window Period	Event Period	Qualifying Abx Day
1					
2	Intubated				
3					
4					
5					
6	Worse MAP				
7	Worse MAP				
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					

PedVAE – DOE: HD 6



Reporting VAE/PedVAE in NHSN

Reporting Events in NHSN

Reporting Events in NHSN



OMB No. 0920-0666
Form Approved
Exp. Date: 01/31/24
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Ventilator-Associated Event (VAE)

Ventilator-Associated Event (VAE)

Page 1 of 4 *required for saving **required for completion

Facility ID:	Event #:	
*Patient ID:	Social Security #:	
Secondary ID:	Medicare #:	
Patient Name, Last:	First:	Middle:
*Gender: F M Other	*Date of Birth:	
Ethnicity (Specify):	Race (Specify):	
*Event Type: VAE	*Date of Event:	
Post-procedure VAE: Yes No	Date of Procedure:	
NHSN Procedure Code:	ICD-10-PCS or CPT Procedure Code:	
*MDRO Infection Surveillance:		
<input type="checkbox"/> Yes, this infection's pathogen & location are in-plan for Infection Surveillance in the MDRO/CDI Module <input type="checkbox"/> No, this infection's pathogen & location are not in-plan for Infection Surveillance in the MDRO/CDI Module		
*Date Admitted to Facility:	*Location:	
* Location of Mechanical Ventilation Initiation: _____ *Date Initiated: ___/___/___ APRV: Yes No		
Event Details		
*Specific Event: <input type="checkbox"/> VAC <input type="checkbox"/> IVAC <input type="checkbox"/> PVAP		
*Specify Criteria Used:		
<u>STEP 1: VAC (≥1 REQUIRED)</u>		
<input type="checkbox"/> Daily min FiO ₂ increase ≥ 0.20 (20 points) for ≥ 2 days [†] OR <input type="checkbox"/> Daily min PEEP increase ≥ 3 cm H ₂ O for ≥ 2 days [†] [†] after 2+ days of stable or decreasing daily minimum values.		
<u>STEP 2: IVAC</u>		
<input type="checkbox"/> Temperature > 38°C or < 36° OR <input type="checkbox"/> White blood cell count ≥ 12,000 or ≤ 4,000 cells/mm ³ AND <input type="checkbox"/> A new antimicrobial agent(s) is started, and is continued for ≥ 4 days		
<u>STEP 3: PVAP</u>		
<input type="checkbox"/> Criterion #1: Positive culture of one of the following specimens, meeting quantitative or semi-quantitative thresholds as outlined in protocol, [‡] <u>without</u> requirement for purulent respiratory secretions: <input type="checkbox"/> Endotracheal aspirate <input type="checkbox"/> Lung tissue <input type="checkbox"/> Bronchoalveolar lavage <input type="checkbox"/> Protected specimen brush OR <input type="checkbox"/> Criterion #2: Purulent respiratory secretions [‡] (defined in the protocol) <u>plus</u> organism(s) identified from one of the following specimens: [‡] <input type="checkbox"/> Sputum <input type="checkbox"/> Lung tissue <input type="checkbox"/> Endotracheal aspirate <input type="checkbox"/> Protected specimen brush <input type="checkbox"/> Bronchoalveolar lavage OR <input type="checkbox"/> Criterion #3: One of the following positive tests (as outlined in the protocol): [‡] <input type="checkbox"/> Organism(s) identified from pleural fluid <input type="checkbox"/> Diagnostic test for <i>Legionella</i> species <input type="checkbox"/> Lung histopathology <input type="checkbox"/> Diagnostic test for selected viral pathogens		
[‡] collected after 2 days of mechanical ventilation and within +/- 2 days of onset of increase in FiO ₂ or PEEP.		
*Secondary Bloodstream Infection: Yes No		COVID-19: Yes No If Yes: <input type="checkbox"/> Confirmed <input type="checkbox"/> Suspected
**Died: Yes No	VAE Contributed to Death: Yes No	
Discharge Date:	*Pathogens Identified: Yes No ^{**If Yes, specify on pages 2-3}	

Pathogen #	Gram-positive Organisms														
Staphylococcus coagulase-negative <small>(specify species if available):</small>	CEFOX/OX SRN	VANC SRN													
	_____Enterococcus faecium _____Enterococcus faecalis _____Enterococcus spp. (Only those not identified to the species level)														
Staphylococcus aureus	DAPTO SS-DD NSR	GENTHLI SRN	LNZ SRN	VANC SRN											
	CIPRO/LEVO/MOXI SRN	CEFOX/METH/OX SRN	CEFTAR SS-DDI SRN	CLIND SRN	DAPTO SRN	DOXY/MINO SRN	GENT SRN	LNZ SRN	RIF SRN	TETRA SRN	TMZ SRN	VANC SRN			
Pathogen #	Gram-negative Organisms														
Acinetobacter (specify species)	AMK SRN	AMPSUL SRN	CEFTAZ/CEFOTI/CEFTRX SRN	CEFEP SRN	CIPRO/LEVO SRN	COL/PB SRN	DORI/MERO SRN	DOXY/MINO SRN	GENT SRN	IMI SRN	PIPTAZ SRN	TMZ SRN	TOBRA SRN		

Escherichia coli	AMK SRN	AMP SRN	AMPSUL/AMXCLV SRN	AZT SRN	CEFAZ SRN	CEFTAZ SRN	CEFOTI/CEFTRX SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN
	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CIPRO/LEVO/MOXI SRN	COL/PB [†] SRN	DORI/MIMERO SRN	DOXY/MINO/TETRA SRN	ERTA SRN	GENT SRN	IMIREL SRN	MERVAB SRN	PIPTAZ SRN	TIG SRN	TMZ SRN	TOBRA SRN
Enterobacter (specify species)	AMK SRN	AZT SRN	CEFTAZ SRN	CEFOTI/CEFTRX SRN	CEFEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CIPRO/LEVO/MOXI SRN	COL/PB [†] SRN	DORI/MIMERO SRN	DOXY/MINO/TETRA SRN	ERTA SRN	GENT SRN	IMIREL SRN	MERVAB SRN

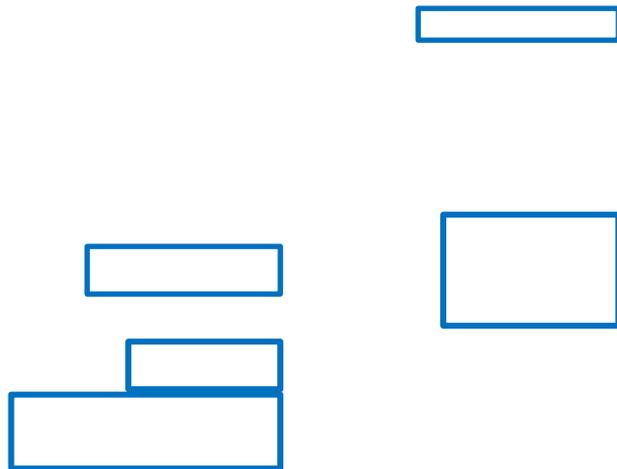
Klebsiella pneumoniae	AMK SRN	AMPSUL/AMXCLV SRN	AZT SRN	CEFAZ SRN	CEFTAZ SRN	CEFOTI/CEFTRX SRN	CEFEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN
	CEFTAVI SRN	CEFTOTAZ SRN	CIPRO/LEVO/MOXI SRN	COL/PB [†] SRN	DORI/MIMERO SRN	DOXY/MINO/TETRA SRN	ERTA SRN	GENT SRN	IMIREL SRN	MERVAB SRN	PIPTAZ SRN	TIG SRN	TMZ SRN	TOBRA SRN	
Klebsiella oxytoca	AMK SRN	AMPSUL/AMXCLV SRN	AZT SRN	CEFAZ SRN	CEFTAZ SRN	CEFOTI/CEFTRX SRN	CEFEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN

Klebsiella aerogenes	AMK SRN	AMPSUL/AMXCLV SRN	AZT SRN	CEFAZ SRN	CEFTAZ SRN	CEFOTI/CEFTRX SRN	CEFEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CEP SRN	CEFTAVI SRN	CEFTOTAZ SRN

Pseudomonas aeruginosa	AMK SRN	AZT SRN	CEFTAZ SRN	CEFEP SRN	CEFTAVI SRN	CEFTOTAZ SRN	CIPRO/LEVO SRN	COL/PB SRN	DORI/MIMERO SRN	GENT SRN	PIPTAZ SRN	TOBRA SRN			

Presence of colon(s) in the voluntarily provided information obtained at the healthcare system that should permit identification of any infection or condition is collected with a guarantee that it will not be used for the purpose stated. And will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 305 and 305(c) of the Public Health Service Act (42 USC 2624, 2625, and 2625(c)). Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC, Reports Clearance Office, 1600 Clifton Rd, NE, Atlanta, GA 30333, ATTN: PRA (800-368-0100). EDC 10/13/2020, NHSN, v.8.0

Reporting Summary Data in NHSN



Data Entry



Data Entry





VAE/PedVAE 2022 Updates

2022 Updates: VAE

- **VAE Rate added**
 - Rate of VAE per 1000 ventilator days
 - Rate of VAE per 100 episodes of mechanical ventilation
- **Pleural fluid specimen obtained during thoracentesis or within 24 hours of chest tube placement are eligible to fulfill criteria.**



Resources

NHSN Resources

- VAE: [VAE](#) | [PSC](#) | [NHSN](#) | [CDC](#)
- PedVAE: [PedVAE](#) | [PSC](#) | [NHSN](#) | [CDC](#)

- **Patient Safety Component Manual**
 - VAE: [Ventilator-associated Event \(VAE\)](#)
 - PedVAE: [Pediatric Ventilator-associated Event \(PedVAE\)](#)

Contact

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