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Document Type:	Standard Operating Procedure	
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Department/Section:	Infection Prevention and Control Unit	
Document Title:	VAE SURVEILLANCE	

PROCEDURE:

- IPCU nurse collates information about admitted patients on mechanical ventilation. Information to be gathered should include but not limited to: FiO2, PEEP, Temperature, WBC count, Antibiotics and Culture results of sputum or endotracheal secretions (if any).
- 2. Identify patients for VAE surveillance based on the algorithm provided by the CDC. Patients must be mechanically ventilated for at least 4 calendar days to fulfill VAE criteria. The earliest day of event for VAE is day 3 of mechanical ventilation.
- 3. Correctly classify the event based on the VAE Algorithm. There is a hierarchy of definitions within VAE: If a patient meets criterion for VAC and IVAC, report as IVAC. If a patient meets criterion for VAC, IVAC, and PVAP, report PVAP. Do not upgrade an event using findings that occur outside the VAE Window Period.
- 4. Collect the device utilization census from the surveillance units and acquire the total number of ventilator days.
- 5. Calculate for the VAE rate for the applicable month of surveillance using the formula:

VAE Rate = No. of VAEs / No. of Ventilator days * 1000

- 6. Document the findings in the Hospital Acquired Infection (HAI) Form provided by the Department of Health.
- 7. Submit annual report to the Department of Health for licensing requirements.

REFERENCES:

Raoof, S. (2014, January 1). *Ventilator-Associated Events: The New Definition | American Journal of Critical Care | American Association of Critical-Care Nurses*. AACN. Retrieved December 23, 2021, from

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Mora Carpio, A. L., & Mora, J. I. (n.d.). *Positive End-Expiratory Pressure*. NCBI. Retrieved December 15, 2021, from https://www.ncbi.nlm.nih.gov/books/NBK441904/



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APPROVAL:

	Name/Title	Signature	Date
Prepared by:	CHARMAIGNE ANNE B. CANIEL	steary	03/29/2022
	Infection Prevention and Control Unit Nurse	Arens	031- 110-00
	RIA NICOLE A. GALVEZ, RN, APCHA	In the Os	03/29/2022
Verified:	Infection Prevention and Control Unit Supervisor	(1)	07/21/2012
vermeu.	DOLORES ROMMELA T. RUIZ, MD, FPSMID	121	03.29-2022
	Infection Prevention and Control Unit Interim Chair	00/01/8	03.71
Reviewed:	DENNIS C. ESCALONA, MN, FPCHA, FPSQua	2	03-29-2022
	Quality Assurance Supervisor		-1-2072
	HENRY F. ALAVAREN, MD, FPSMID, FPSQua Total Quality Division Officer	Dry.	-1.1
Recommending	Total Quality Division Officer	XI Meen	07/19/202Y
Approval:	MA. ANTONIA S. GENSOLI, MD, FPPS, FPCHA	man	6-6.22
	Vice President, Chief Medical Officer	- Lung	6-6.
Approved:	GENESIS GOLDI D. GOLINGAN	400	1/2/
	President and CEO	1085	9/23/22



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ANNEX:

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* FiO2 or PEEP values. The baseline period is defined as the 2 calendar days immediately preceding the first day of increased daily minimum PEEP or FiO2.

Daily minimum defined by lowest value of FiO2 or PEEP during a calendar day that is maintained for > 1 hour.

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* FiO2 of \geq 0.20 (20 points) over the daily minimum FiO2 of the first day in the baseline period, sustained for \geq 2 calendar days.
- 2) Increase in daily minimum* PEEP values of ≥ 3 cmH2O over the daily minimum PEEP of the first day in the baseline period†, sustained for ≥ 2 calendar days.

*Daily minimum defined by lowest value of FiO2 or PEEP during a calendar day that is maintained for > 1 hour.

†Daily minimum PEEP values of 0-5 cmH2O are considered equivalent for the purposes of VAE surveillance.

Ventilator Associated Condition

On or after calendar day 3 of mechanical ventilation and within 2 calendar days before or after the onset of worsening oxygenation, the patient meets both of the following criteria:

- 1) Temperature > 38 °C or < 36°C, OR white blood cell count ≥ 12,000 cells/mm3 or ≤ 4,000 cells/mm3. AND
- 2) A new antimicrobial agent(s) (see Appendix for eligible antimicrobial agents) is started and is continued for ≥ 4 qualifying antimicrobial days (QAD).

Infection-related Ventilator-Associated Complication (IVAC)

(continued on the next page)



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On or after calendar day 3 of mechanical ventilation and within 2 calendar days before or after the onset of worsening oxygenation, **ONE** of the following criteria is met (taking into account organism exclusions specified in the protocol):

Criterion 1: Positive culture of one of the following specimens, meeting quantitative or semi-quantitative thresholds† as outlined in protocol, without requirement for purulent respiratory secretions:

- -Endotracheal aspirate, ≥ 105 CFU/ml or corresponding semi-quantitative result
- -Bronchoalveolar lavage, ≥ 104 CFU/ml or corresponding semi-quantitative result
- -Lung tissue, ≥ 104 CFU/g or corresponding semi-quantitative result
- -Protected specimen brush, ≥ 103 CFU/ml or corresponding semi-quantitative result

Criterion 2: Purulent respiratory secretions (defined as secretions from the lungs, bronchi, or trachea that contain ≥ 25 neutrophils and ≤ 10 squamous epithelial cells per low power field [lpf, x100])† PLUS organism identified from one of the following specimens (to include qualitative culture, or quantitative/semi-quantitative culture without sufficient growth to meet Criterion #1):

- -Sputum
- -Endotracheal aspirate
- -Bronchoalveolar lavage
- -Lung tissue
- -Protected specimen brush

Criterion 3: One of the following positive tests:

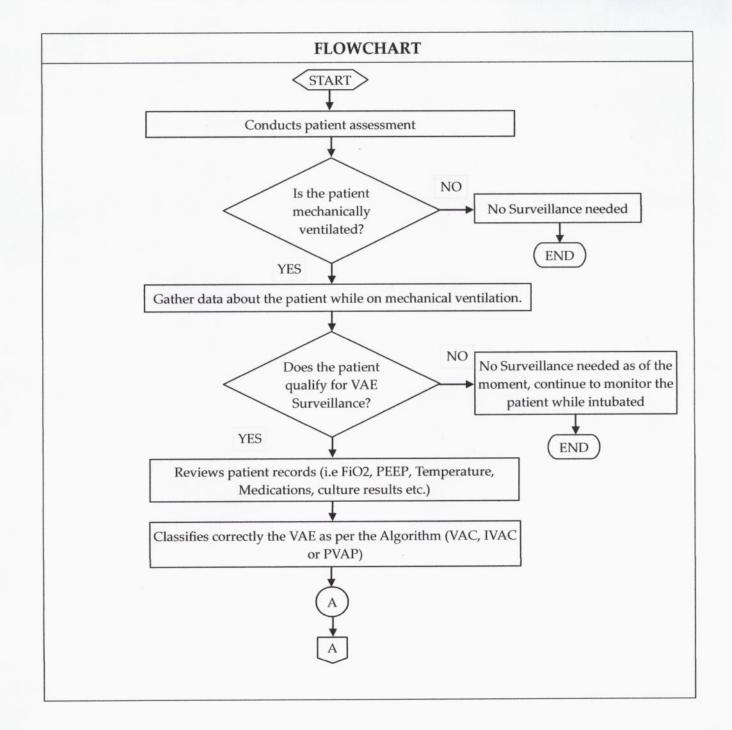
- -Organism identified from pleural fluid (where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube)
- -Lung histopathology, defined as: 1) abscess formation or foci of consolidation with intense neutrophil accumulation in bronchioles and alveoli; 2) evidence of lung parenchyma invasion by fungi (hyphae, pseudohyphae, or yeast forms); 3) evidence of infection with the viral pathogens listed below based on results of immunohistochemical assays, cytology, or microscopy performed on lung tissue
- -Diagnostic test for Legionella species
- -Diagnostic test on respiratory secretions for influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus

† If the laboratory reports semi-quantitative results, those results must correspond to the quantitative thresholds. Refer to Table 2 and 3

Possible Ventilator-Associated Pneumonia

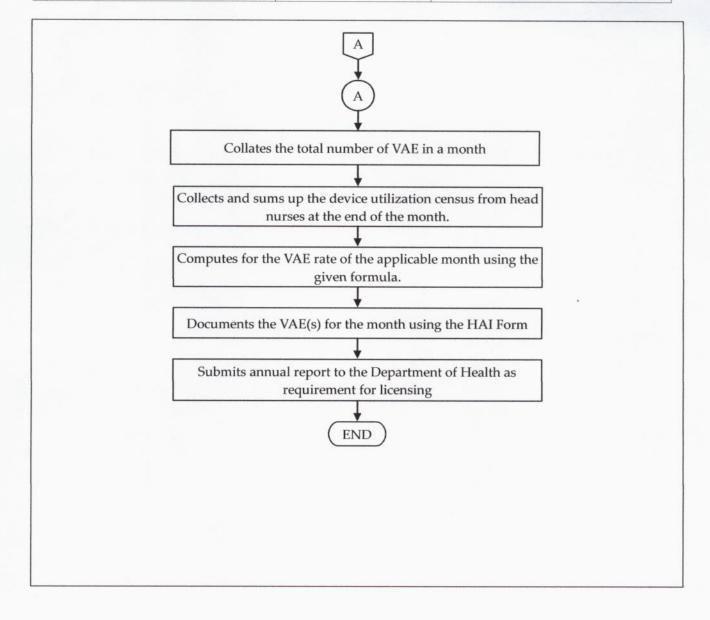


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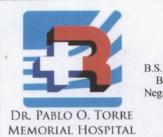
APPROVAL:

	Name/Title	Signature	Date
Prepared by:	CHARMAIGNE ANNE B. CANIEL	731	03/29/2022
	Infection Prevention and Control Unit Nurse	Satisfy	טעטע ון עןכט
	RIA NICOLE A. GALVEZ, RN, APCHA	En thals	haladaana
Verified:	Infection Prevention and Control Unit Supervisor	0/0	03/29/2022
vermeu.	DOLORES ROMMELA T. RUIZ, MD, FPSMID	0,9	03/29/202
	Infection Prevention and Control Unit Interim Chair	0229	אטוןיטף
Reviewed:	DENNIS C. ESCALONA, MN, FPCHA, FPSQua	2	03/29/2022
	Quality Assurance Supervisor		ساماری
	HENRY F. ALAVAREN, MD, FPSMID, FPSQua		alaha.
Recommending	Total Quality Division Officer	A Muce	0/19/2020
Approval:	MA. ANTONIA S. GENSOLI, MD, FPPS, FPCHA	4.0.	
3.5	Vice President, Chief Medical Officer	luong	6.6-27
Approved:	GENESIS GOLDI D. GOLINGAN	And	1/20/-
**	President and CEO	908	6/23/25



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	KEY TASKS	PERSON RESPONSIBLE
1.	Collates information about admitted patients on mechanical ventilation. Information to be gathered should include but not limited to: FiO2, PEEP, Temperature, WBC count, Antibiotics and Culture results of sputum or endotracheal secretions (if any)	IPCU Nurse
2.	Identifies patients for VAE surveillance based on the algorithm provided by the CDC	IPCU Nurse
3.	Classifies correctly the event based on the VAE Algorithm	IPCU Nurse
4.	Collects the device utilization census from the surveillance units and acquire the total number of ventilator days	IPCU Nurse
5.	Calculates for the VAE rate for the applicable month of surveillance	IPCU Nurse
6.	Documents the findings in the Hospital Acquired Infection (HAI) Form provided by the Department of Health	IPCU Nurse
7.	Submits annual report to the Department of Health for licensing requirements	IPCU Nurse



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APPROVAL:

	Name/Title	Signature	Date
Prepared by:	CHARMAIGNE ANNE B. CANIEL	17.1	03/29/2022
	Infection Prevention and Control Unit Nurse	Jaliney	70016560
Verified:	RIA NICOLE A. GALVEZ, RN, APCHA	Rathals	03/29/2022
	Infection Prevention and Control Unit Supervisor		
	DOLORES ROMMELA T. RUIZ, MD, FPSMID	950	03.29-2022
	Infection Prevention and Control Unit Interim Chair	Q 47	0,00000
Reviewed:	DENNIS C. ESCALONA, MN, FPCHA, FPSQua	2	23-29-2022
	Quality Assurance Supervisor	,	~ KI- KUSZ
Recommending Approval:	HENRY F. ALAVAREN, MD, FPSMID, FPSQua	1	
	Total Quality Division Officer	A Meer	J/19/2021
	MA. ANTONIA S. GENSOLI, MD, FPPS, FPCHA	marx	1100
	Vice President, Chief Medical Officer	many	0-6-11
Approved:	GENESIS GOLDI D. GOLINGAN		dada
	President and CEO	100	925/22



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PURPOSE:

- 1. To monitor the prevalence and for the detection of Ventilator Associated Events (VAE) occurring in the hospital.
- 2. To comply with the Department of Health as a requirement for licensing.

SCOPE:

Applies to all Infection Prevention and Control Unit (IPCU) staff of Dr. Pablo O. Torre Memorial Hospital

PERSON RESPONSIBLE:

Infection Prevention and Control Unit Nurse

GENERAL GUIDELINES:

- DPOTMH shall comply with the Department of Health (DOH) requirement in monitoring for the occurrence of Ventilator Associated Events in the hospital for the purpose of hospital licensing.
- 2. Ventilator Associated Event (VAE) Surveillance Algorithm published by the Center for Disease Control (CDC) shall be utilized in assessing and categorizing ventilator associated events being investigated in the hospital.
- The VAE rate formula shall be used for the purpose of data analysis in this institution. It is calculated by dividing the number of VAEs by the number of ventilator days and multiplying the result by 1000 (ventilator days).
- Nurse stations under surveillance shall submit their device utilization census every end of the month to the Infection Prevention and Control Unit to be utilized in computing for the VAE rate.