
Katherine Allen-Bridson, Centers for Disease Control and Prevention
Cindy Gross, Emergint Technologies, Inc.
Joan N. Hebden, Wolters Kluwer Health-Sentri7
Gloria C. Morrell, Centers for Disease Control and Prevention
Marc-Oliver Wright, North Shore University Health System
Teresa Horan, Emory University

**Journal Title:** American Journal of Infection Control

**Volume:** Volume 41, Number 11

**Publisher:** Elsevier: 12 months | 2013-11-01, Pages 1085-1086

**Type of Work:** Article | Post-print: After Peer Review

**Publisher DOI:** 10.1016/j.ajic.2013.05.010

**Permanent URL:** https://pid.emory.edu/ark:/25593/v6zvm

Final published version: http://dx.doi.org/10.1016/j.ajic.2013.05.010

**Copyright information:**

Copyright © 2013 by the Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved

This is an Open Access work distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Accessed June 7, 2024 12:13 PM EDT

Katherine Allen-Bridson, RN, BSN, MScPH, CIC\(^a\,^*,\) Cindy Gross, MT, SM (ASCP), CIC\(^b\), Joan N. Hebden, RN, MS, CIC\(^c\), Gloria C. Morrell, RN, MS, MSN, CIC\(^a\), Marc-Oliver Wright, MT(ASCP), MS, CIC\(^d\), and Teresa Horan, MPH\(^e\)

\(^a\)National Healthcare Safety Network, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, GA

\(^b\)Emergint Technologies, Inc, a subsidiary of CACI, Inc, Atlanta, GA

\(^c\)Wolters Kluwer Health-Sentri7, Bellevue, WA

\(^d\)Department of Infection Control, North Shore University Health System, Evanston, IL

\(^e\)Rollins School of Public Health of Emory University, Atlanta, GA

Abstract

This is the second case study published in a series in AJIC since the Centers for Disease Control and Prevention/National Healthcare Safety Network (NHSN) surveillance definition update of 2013. These cases reflect some of the complex patient scenarios Infection Preventionists (IP) have encountered in their daily surveillance of health care-associated infections (HAI) using NHSN definitions. This is the first case utilizing the new NHSN Ventilator- associated Events (VAE) module and criteria.

This is the second case study published in a series in AJIC since the Centers for Disease Control and Prevention/National Healthcare Safety Network (NHSN) surveillance definition update of 2013. These cases reflect some of the complex patient scenarios IPs have encountered in their daily surveillance of health care-associated infections (HAI) using NHSN definitions. Objectives have been previously published.\(^1\)

The link to an online survey is provided below, where you may answer the questions posed and receive immediate feedback in the form of answers and explanations. All individual participant answers will remain confidential, although it is the authors’ hope to share a summary of the findings at a later date. Cases, answers, and explanations have been reviewed and approved by NHSN staff.

\(^1\)Address correspondence to Katherine Allen-Bridson, RN, BSN, MScPH, CIC, Centers for Disease Control and Prevention, Atlanta, GA., fsa6@cdc.gov (K. Allen-Bridson).

Conflicts of interest: None to report.
We hope that you will take advantage of this offering, and we look forward to your active participation: http://www.surveymonkey.com/s/NHSNVAE2013.

Helpful hint: Organizing the clinical data into a table (Table 1), will help you make your Ventilator-Associated Event (VAE) determinations. The calendar dates, mechanical ventilation day, daily minimum positive end expiratory pressure (PEEP) data and daily minimum fraction of inspired oxygen (FiO₂) data have been pre-filled in the table for your use. Complete the table as you work through the entire exercise and identify the VAE Window Period.

Note: In this example, we have chosen to present FiO₂ values as their corresponding oxygen concentration values (percentages). For example, a FiO₂ of 1.0 is represented by 100%, a FiO₂ of 0.45 by 45%, etc.

1/15/13: Patient admitted to hospital with drug-induced pneumonitis.


1/24–1/29/13: Minimum daily PEEP improves from 10 cm H₂O on the first day of mechanical ventilation to a range from 5 to 7.5 cm H₂O. Minimum daily FiO₂ improves from 1.0 (oxygen concentration 100%) to 0.45 (oxygen concentration 45%).

1/30/13: The patient is febrile. Two sets of blood cultures are collected. One bottle from each is reported positive for Klebsiella pneumoniae. Patient started on ampicillin/sulbactam. Minimum PEEP: 5 cm H₂O; Minimum FiO₂: 45%.

1/31/13–2/3/13: Minimum daily PEEP: 5–7.5 cm H₂O. Minimum daily FiO₂: 45%–60%.

2/4/13: Minimum PEEP 7.5 cm H₂O; FiO₂ 60%. Patient becomes febrile: maximum temperature: 39°C. White blood cell count (WBC) 11,670 cells/mm³. Antibiotics are changed from ampicillin/sulbactam to meropenem and tobramycin.

2/5/13: Endotracheal aspirate collected for culture. Maximum temperature: 38.4°C. Patient remains on meropenem and tobramycin. Minimum PEEP remains at 7.5 cm H₂O; FiO₂ remains at 60%.

2/6–2/7/13: Patient remains on meropenem and tobramycin. Minimum daily PEEP remains 7.5 cm H₂O. Minimum daily FiO₂ increases to 65%. Afebrile. Endotracheal culture from 2/5 finalized on 2/7 as “Heavy Klebsiella pneumoniae.”

2/8/13: Minimum daily PEEP 5 cm H₂O. Minimum daily FiO₂ 50%, Meropenem and tobramycin continued.

We have prefilled the first 4 columns of the table below for your use.

Q1: Does this patient meet criteria for a Ventilator-associated Event (VAE), and if so, what type?
   1. No. This patient does not have a VAE.
2. Yes, this patient has a Ventilator-associated Complication (VAC).
3. Yes, this patient has an Infection-related Ventilator-associated Complication (IVAC).
4. Yes, this patient has a Possible Ventilator-associated Pneumonia (Possible VAP).

Let’s say the patient’s daily minimum FiO$_2$ on 2/4–2/5 (MV days 12 and 13) was 65% instead of 60%, but all other findings were the same.

Q2: Does this patient now meet criteria for a Ventilator-associated Event (VAE), and if so, what specific event should be reported?

1. No. This patient does not have a VAE.
2. Yes, report as a Ventilator-associated Condition (VAC).
4. Yes, report as a Possible Ventilator-associated Pneumonia (Possible VAP).

Acknowledgment

The authors gratefully acknowledge Dr Shelley Magill, with the CDC’s Division of Healthcare Quality Promotion, for her review and input on this case study.

The findings and conclusions in this case study are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Reference

Organizing clinical data

<table>
<thead>
<tr>
<th>Date</th>
<th>MV Day</th>
<th>Daily minimum PEEP (cmH₂O)</th>
<th>Daily minimum FiO₂ (oxygen concentration, %)</th>
<th>Temp&lt;sub&gt;min&lt;/sub&gt;</th>
<th>Temp&lt;sub&gt;max&lt;/sub&gt;</th>
<th>WBC&lt;sub&gt;min&lt;/sub&gt;</th>
<th>WBC&lt;sub&gt;max&lt;/sub&gt;</th>
<th>Abx</th>
<th>Specimen</th>
<th>Polys/Epis</th>
<th>Organism</th>
<th>VAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/24</td>
<td>1</td>
<td>10</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/25</td>
<td>2</td>
<td>7.5</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/26</td>
<td>3</td>
<td>5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/27</td>
<td>4</td>
<td>7.5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/28</td>
<td>5</td>
<td>5</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/29</td>
<td>6</td>
<td>5</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/30</td>
<td>7</td>
<td>5</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/31</td>
<td>8</td>
<td>5</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/1</td>
<td>9</td>
<td>7.5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/2</td>
<td>10</td>
<td>5</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/3</td>
<td>11</td>
<td>5</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/4</td>
<td>12</td>
<td>7.5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/5</td>
<td>13</td>
<td>7.5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/6</td>
<td>14</td>
<td>7.5</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/7</td>
<td>15</td>
<td>7.5</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/8</td>
<td>16</td>
<td>5</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>