Partnership For Patient Safety
Ventilator Associated Pneumonias

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Medical Director and Chief, Infection Prevention BIMC
Professor of Clinical Medicine AECOM
The Problem with Ventilator Associated Pneumonias (VAPs)

• (VAP) is an important complication of mechanical ventilation
• Prior NHSN definitions
  • Designed to be used for surveillance of all healthcare-associated PNEU
  • Including, but not limited to VAP
• However, other bad things can also occur to patients on ventilators
The Problem with Ventilator Associated Pneumonias (VAPs)

- Chest Film
- Signs and Symptoms
- Microbiology
- Complex
- Subjective
- Lack of sensitivity
- Lack of specificity
- Variability
  - Documentation
  - Best Practices
The Problem with Ventilator Associated Pneumonias (VAPs)

• Not ideal in an era of public reporting of healthcare-associated infection (HAI) rates, comparisons among facilities, pay-for-performance programs
The Problem of Reporting Ventilator Associated Pneumonias (VAPs)

Exhausting

Defensive

Adversarial
The Problem with Ventilator Associated Pneumonias (VAPs)

Need definitions that are reliable, objective and valid
• VAP Surveillance Definition Working Group
  • September 2011
    • Algorithm for detection of ventilator associated events (VAEs)
      • Objective criteria
      • Clinical data
      • Improve sensitivity and specificity
      • Potentially amenable to electronic data capture
New VAE Definition Algorithm

- Designed to detect
  - Ventilator-associated conditions and complications
    - including (but not necessarily limited to) VAP
  - Requires a minimum period of time on the ventilator
  - Focuses on readily-available, objective clinical data

AND

- Does not include chest radiograph findings
New VAE Definition Algorithm

- **Respiratory status component**
  - Patient on mechanical ventilation > 2 days
  - Baseline period of stability or improvement, followed by sustained period of worsening oxygenation
  - Ventilator-Associated Condition (VAC)

- **Infection / inflammation component**
  - General evidence of infection/inflammation
  - Infection-Related Ventilator-Associated Complication (IVAC)

- **Additional evidence**
  - Positive results of microbiological testing
  - Possible or Probable VAP

No CXR needed!
New VAE Definition Algorithm

- January 2013
- Rate per 1,000 ventilator days
- Stratification
  - ICU type
  - Unit type
  - Bed size
  - Academic affiliation
- ≥18 years of age
- Inpatients
  - acute care hospitals
  - long term acute care hospitals
  - inpatient rehabilitation facilities
- Excluded
  - high frequency ventilation
  - extracorporeal life support
New VAE Definition Algorithm

- **Included**
  - Patients who are receiving a conventional mode of mechanical ventilation while in the prone position
  - Patients who are receiving a conventional mode of mechanical ventilation while receiving nitric oxide therapy or epoprostenol therapy

- Patients on Airway Pressure Release Ventilation (APRV) or related modes are INCLUDED

**BUT**

- VAC determined by changes in FiO₂ only, since changes in PEEP as indicated in this surveillance algorithm may not be applicable to APRV
**New VAE Definition Algorithm**

<table>
<thead>
<tr>
<th>Event Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Location of Mechanical Ventilation Initiation:________________________</em></td>
</tr>
</tbody>
</table>

**Specific Event:**  
- [ ] VAC  
- [ ] IVAC  
- [ ] Possible VAP  
- [ ] Probable VAP

**Specify Criteria Used:**

**STEP 1: VAC (≥1 REQUIRED)**
- [ ] Daily min FiO₂ increase ≥ 0.20 (20 points) for ≥ 2 days\(^\d\)  
  - OR  
  - [ ] Daily min PEEP increase ≥ 3 cm H₂O for ≥ 2 days\(^\d\)
  - \(^\d\)after 2+ days of stable or decreasing daily minimum values.

**STEP 2: IVAC**
- [ ] Temperature > 38°C or < 36°C  
- [ ] White blood cell count ≥ 12,000 or ≤ 4,000 cells/mm\(^3\)
  - AND
- [ ] A new antimicrobial agent(s) is started, and is continued for ≥ 4 days

**STEP 3: Possible VAP (≥1 REQUIRED)**
- [ ] Purulent respiratory secretions\(^\d\) (defined as secretions from the lungs, bronchi, or trachea that contain >25 neutrophils and <10 squamous epithelial cells per low power field [lph, x100], or equivalent semi-quantitative results)
  - OR
- [ ] One of the following (qualitative, semi-quantitative or quantitative):\(^\d\)
  - [ ] Positive culture of sputum
  - [ ] Positive culture of endotracheal aspirate
  - [ ] Positive culture of bronchoalveolar lavage
  - [ ] Positive culture of lung tissue
  - [ ] Positive culture of protected specimen brushing

**STEP 3: Probable VAP (≥1 REQUIRED)**
- [ ] Purulent respiratory secretions\(^\d\)
  - AND one of the following (meeting quantitative or semi-quantitative threshold as outlined in protocol):\(^\d\)
    - [ ] Positive culture of endotracheal aspirate
    - [ ] Positive culture of bronchoalveolar lavage
    - [ ] Positive culture of lung tissue
    - [ ] Positive culture of protected specimen brushing
  - OR
- [ ] One of the following results (without requirement for purulent respiratory secretions), as outlined in protocol:\(^\d\)
  - [ ] Positive pleural fluid culture
  - [ ] Positive lung histopathology
  - [ ] Positive diagnostic test for Legionella spp.
  - [ ] Positive diagnostic test for viral pathogens

\(^\d\)collected after 2 days of mechanical ventilation and within +/− 2 days of onset of increase in FiO₂ or PEEP.
New VAE Definition Algorithm - VAC

Patient on mechanical ventilation > 2 days

Baseline period of stability or improvement, followed by sustained period of worsening oxygenation

Ventilator-Associated Condition (VAC)

General evidence of infection/inflammation

Infection-Related Ventilator-Associated Complication (IVAC)

Positive results of microbiological testing

Possible or Probable VAP

• Respiratory status component

• Infection / inflammation component

• Additional evidence
New VAE Definition Algorithm - VAC

Patient has a baseline period of stability or improvement on the ventilator, defined by ≥ 2 calendar days of stable or decreasing daily minimum FiO₂ or PEEP values. The baseline period is defined as the two calendar days immediately preceding the first day of increased daily minimum PEEP or FiO₂.

AND

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 ≥ 0.20 (20 points) over the daily minimum FiO₂ in the baseline period, sustained for ≥ 2 calendar days.

2) Increase in daily minimum PEEP values of ≥ 3 cmH₂O over the daily minimum PEEP in the baseline period, sustained for ≥ 2 calendar days.
New VAE Definition Algorithm - IVAC

- Respiratory status component
  - Patient on mechanical ventilation > 2 days
  - Baseline period of stability or improvement, followed by sustained period of worsening oxygenation

- Infection / inflammation component
  - General evidence of infection/inflammation
  - Infection-Related Ventilator-Associated Complication (IVAC)

- Additional evidence
  - Positive results of microbiological testing
  - Possible or Probable VAP

Temperature or WBC and New antimicrobial agent
Patient meets criteria for VAC

AND

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 $> 38 \, ^\circ C$ or $< 36 \, ^\circ C$, OR white blood cell count $\geq 12,000$ cells/mm$^3$ or $\leq 4,000$ cells/mm$^3$.

AND

2) A new antimicrobial agent(s)* is started, and is continued for $\geq 4$ calendar days.

*See Appendix for eligible agents.
New VAE Definition Algorithm - VAP

- **Respiratory status component**
  - Patient on mechanical ventilation > 2 days
  - Baseline period of stability or improvement, followed by sustained period of worsening oxygenation
  - Ventilator-Associated Condition (VAC)

- **Infection / inflammation component**
  - General evidence of infection/inflammation
  - Infection-Related Ventilator-Associated Condition (IVAC)

- **Additional evidence**
  - Positive results of microbiological testing
  - Possible or Probable VAP

- Purulent secretions and/or other positive laboratory evidence
Patient meets criteria for VAC and IVAC

AND

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:

1) Purulent respiratory secretions (from one or more specimen collections)
   - Defined as secretions from the lungs, bronchi, or trachea that contain \( \geq 25 \) neutrophils and \( \leq 10 \) squamous epithelial cells per low power field (lpf, x100).
   - If the laboratory reports semi-quantitative results, those results must be equivalent to the above quantitative thresholds.

2) Positive culture (qualitative, semi-quantitative or quantitative) of sputum*, endotracheal aspirate*, bronchoalveolar lavage*, lung tissue, or protected specimen brushing*

*Excludes the following:
   - Normal respiratory/oral flora, mixed respiratory/oral flora or equivalent
   - *Candida* species or yeast not otherwise specified
   - Coagulase-negative *Staphylococcus* species
   - *Enterococcus* species
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:

1) Purulent respiratory secretions (from one or more specimen collections—and defined as for possible VAP)

AND one of the following (see Table 2):
- Positive culture of endotracheal aspirate*, ≥ 10^5 CFU/ml or equivalent semi-quantitative result
- Positive culture of bronchoalveolar lavage*, ≥ 10^4 CFU/ml or equivalent semi-quantitative result
- Positive culture of lung tissue, ≥ 10^6 CFU/g or equivalent semi-quantitative result
- Positive culture of protected specimen brush*, ≥ 10^3 CFU/ml or equivalent semi-quantitative result

*Same organism exclusions as noted for Possible VAP.

2) One of the following (without requirement for purulent respiratory secretions):
- Positive pleural fluid culture (where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube)
- Positive lung histopathology
- Positive diagnostic test for *Legionella* spp.
- Positive diagnostic test on respiratory secretions for influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus
New VAE Definition Algorithm

- VAEs defined by a 14 day period
- Event date = day 1
- A new VAE cannot be identified or reported until this 14 day period has elapsed
Identifying VAEs

Rounds
Respiratory Therapy
Pharmacy
Microbiology
Coding Department
IT Department
Process Improvement

Chart Review
Radiology Reports

Check List
### Ventilator-Associated Event Data Collection Tool

<table>
<thead>
<tr>
<th>Date</th>
<th>Vent Day</th>
<th>PEEP min</th>
<th>FiO₂ min</th>
<th>Temp</th>
<th>WBC</th>
<th>Pursuent resp. secretions</th>
<th>Positive sputum, BAL, PSB, ETA, lung tissue culture</th>
<th>Other Positive P/VAP Criteria</th>
<th>VAE (VAC, IVAC, Po/VAP)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Abbreviations: PEEP = Positive End-Expiratory Pressure; FiO₂ = fraction of inspired oxygen; Min = daily minimum; Max = daily maximum; OK = ≤ 6,000 WBC/mm₃; 12K = ≥ 12,000 WBC/mm₃; QAD = Qualifying Antimicrobial Day (see Antimicrobial Worksheet or protocol for details); resp = respiratory; BAL = bronchoalveolar lavage; PSB = protected specimen brush; ETA = endotracheal aspirate; qual = qualitative [non-quantitative]; quant = quantitative; P/VAP = Probable VAP; Path = pathology/histopathology; VAC = Ventilator-Associated Condition; IVAC = Infection-related Ventilator-Associated Complication; Po/VAP = Possible VAP.

1≥25 neutrophils per low power field (or heavy, 4+) and ≤10 squamous epithelial cells per low power field (or rare, occasional, few, 1, 2 or 4+)

2Endotracheal aspirate: quantitative threshold = ≥ 10⁶ CFU/ml (or moderate-heavy, 2+4 growth); Bronchoalveolar lavage: quantitative threshold = ≥ 10⁶ CFU/ml (or moderate-heavy, 2+4 growth); Lung tissue: quantitative threshold = ≥ 10⁶ CFU/g (or moderate-heavy, 2+4 growth); Protected specimen brush: quantitative threshold = ≥ 10⁶ CFU/ml (or moderate-heavy, 2+4 growth)

3Excludes the following, when cultured from sputum, ETA, BAL, PSB: Normal respiratory/oral flora, mixed respiratory/oral flora or equivalent, Controllable species or yeasts not otherwise specified, coagulase-negative Staphylococcus species, Enterococci species. Exclusions do not apply to cultures of lung tissue or pleural fluid.

4Positive pleural fluid culture where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube; see protocol for guidance on positive lung histopathology; positive diagnostic test for legionella spp. or for the following respiratory viruses: influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus.

PATIENT ID ___________
### Data Collection

<table>
<thead>
<tr>
<th>VentDay</th>
<th>PEEPmin</th>
<th>FiO₂min</th>
<th>Tmin</th>
<th>Tmax</th>
<th>WBCmin</th>
<th>WBCmax</th>
<th>Antimicrobials</th>
<th>Spec</th>
<th>Polys</th>
<th>Epis</th>
<th>Organism</th>
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<tr>
<td>1</td>
<td>10</td>
<td>60</td>
<td>37.9</td>
<td>38.1</td>
<td>12.1</td>
<td>14.2</td>
<td>None</td>
<td>--</td>
<td>--</td>
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</tr>
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<td>5</td>
<td>40</td>
<td>37.1</td>
<td>37.5</td>
<td>11.8</td>
<td>11.8</td>
<td>None</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>40</td>
<td>36.9</td>
<td>37.6</td>
<td>12.1</td>
<td>12.1</td>
<td>None</td>
<td>ETA</td>
<td>≥25/lpf</td>
<td>&lt;1/lpf</td>
<td><em>S. aureus</em></td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>60</td>
<td>38.1</td>
<td>39.2</td>
<td>14.5</td>
<td>16.8</td>
<td>PIPTAZ, VANC</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
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<td>8</td>
<td>50</td>
<td>38.4</td>
<td>38.9</td>
<td>12.6</td>
<td>15.9</td>
<td>PIPTAZ, VANC</td>
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<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
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<td>7</td>
<td>40</td>
<td>36.5</td>
<td>37.8</td>
<td>11.1</td>
<td>13.6</td>
<td>PIPTAZ, VANC</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>40</td>
<td>36.2</td>
<td>37.0</td>
<td>11.5</td>
<td>13.0</td>
<td>PIPTAZ, VANC</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>40</td>
<td>36.7</td>
<td>37.3</td>
<td>8.3</td>
<td>8.3</td>
<td>PIPTAZ, VANC, ETA</td>
<td>&lt;1/lpf</td>
<td>0.0-25/lpf</td>
<td>Oral flora</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

- **PEEPmin**: minimum positive end-expiratory pressure.  
- **FiO₂min**: minimum fraction of inspired oxygen.  
- **Tmin**, **Tmax**: minimum temperature, maximum temperature.  
- **ETA**: endotracheal aspirate.  
- **PIPTAZ**: piperacillin/tazobactam.  
- **VANC**: vancomycin.  
- **Spec**: specimen type.  
- **Polys**: polymorphonuclear leukocytes.  
- **Epis**: epithelial cells.  
- **lpf**: low power field.
What is Purulent Sputum?

<table>
<thead>
<tr>
<th>Bacteria/100X Field or WBC/10X Field</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Bacteria: “No Organisms Observed”</td>
</tr>
<tr>
<td></td>
<td>WBC: “No WBC Observed.”</td>
</tr>
<tr>
<td>1-5</td>
<td>Rare (1+)</td>
</tr>
<tr>
<td>6-10</td>
<td>Few (2+)</td>
</tr>
<tr>
<td>11-24</td>
<td>Moderate (3+)</td>
</tr>
<tr>
<td>≥ 25</td>
<td>Many (4+)</td>
</tr>
</tbody>
</table>

A Ventilator-Associated Condition (VAC) was found on day 1/2/2013. Click on the Go to IVAC button to move to the next part of the protocol or click on the "Explain" button to see how this determination was made.

<table>
<thead>
<tr>
<th>MV Day</th>
<th>Date</th>
<th>Min. PEEP (cmH₂O)</th>
<th>Min. FiO₂ (% 21-100)</th>
<th>VAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12/30/2012</td>
<td>5</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>12/31/2012</td>
<td>5</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1/1/2013</td>
<td>5</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1/2/2013</td>
<td>8</td>
<td>75</td>
<td>VAC</td>
</tr>
<tr>
<td>5</td>
<td>1/3/2013</td>
<td>8</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1/4/2013</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1/5/2013</td>
<td>7</td>
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<td>8</td>
<td>1/6/2013</td>
<td>5</td>
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<td></td>
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<tr>
<td>9</td>
<td>1/7/2013</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1/8/2013</td>
<td></td>
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</tr>
</tbody>
</table>
The temperature and/or WBC criteria have been met during the VAE Window Period, and there are 5 Qualifying Antimicrobial Days (QADs) in a row. This meets the definition of an IVAC. Click on "Go to VAP" button to determine if this case conforms to a Possible or Probable Ventilator-Associated Pneumonia (VAP) definition.

<table>
<thead>
<tr>
<th>MV Day</th>
<th>Date</th>
<th>Hide...</th>
<th>Hide...</th>
<th>VAE</th>
<th>36°C≥T&lt;38°C</th>
<th>4,000 cells/mm³ ≥ WBC ≥ 12,000 cells/mm³</th>
<th>QAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12/30/2012</td>
<td>5</td>
<td>50</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>12/31/2012</td>
<td>5</td>
<td>50</td>
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</tr>
<tr>
<td>3</td>
<td>1/1/2013</td>
<td>5</td>
<td>40</td>
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</tr>
<tr>
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<td>1/2/2013</td>
<td>8</td>
<td>75</td>
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<tr>
<td>5</td>
<td>1/3/2013</td>
<td>8</td>
<td>40</td>
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<td>6</td>
<td>1/4/2013</td>
<td>8</td>
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<tr>
<td>7</td>
<td>1/5/2013</td>
<td>7</td>
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<tr>
<td>8</td>
<td>1/6/2013</td>
<td>5</td>
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<tr>
<td>9</td>
<td>1/7/2013</td>
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<td>10</td>
<td>1/8/2013</td>
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</tbody>
</table>

Legend: VAE Window | VAE Date | Qualifying Antimicrobial Day (QAD) | Cumulative QAD |
# Ventilator-Associated Event Calculator

This conforms to the **Possible Ventilator-Associated Pneumonia** definition and should be reported as such. For a discussion of why, see/click on the **Explain** button.

<table>
<thead>
<tr>
<th>Row</th>
<th>Conditions occurring within your &quot;VAE Window&quot; from 1/1/2013 to 1/4/2013</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Purulent respiratory secretions (from one or more specimen collections) Defined as secretions from the lungs, bronchi, or trachea that contain ≥ 25 neutrophils and ≤ 10 squamous epithelial cells per low power field [lpf, x100]</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Positive culture (qualitative, semi-quantitative or quantitative) of sputum, endotracheal aspirate, bronchoalveolar lavage, lung tissue, or protected specimen brush</td>
<td>✔</td>
</tr>
<tr>
<td>3</td>
<td>Positive pleural fluid culture (where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Positive Lung histopathology</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Positive diagnostic test for Legionella spp.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Positive diagnostic test on respiratory secretions for influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus</td>
<td></td>
</tr>
</tbody>
</table>

[Click this button to calculate possible or probable VAP.]
Event Details

Specific Event: PIVAP - Possible Ventilator-Associated Pneumonia

Specify Criteria Used *

STEP 1: VAC (> 1 Required)
- Daily min FiO₂ increase ≥ 0.20 (20 points) for ≥ 2 days†
- Daily min PEEP increase ≥ 3 cm H₂O for ≥ 2 days†
† after 2+ days of stable or decreasing daily minimum values

STEP 2: IVAC
- Temperature > 38°C or < 36°C
- OR White blood cell count ≥ 12,000 or ≤ 4,000 cells/mm³

plus

- A new antimicrobial agent(s) is started, and is continued for ≥ 4 days

STEP 3: PIVAP
- Purulent respiratory secretions
- OR One of the following (qualitative, semi-quantitative, or quantitative): *
  - Positive culture of sputum
  - Positive culture of endotracheal aspirate
  - Positive culture of bronchoalveolar lavage
  - Positive culture of lung tissue
  - Positive culture of protected specimen brushing

* Collected after 3 days of mechanical ventilation and within +/- 2 days of onset of increase in FiO₂ or PEEP

Secondary Bloodstream N - No
Infection:
- Died**: N - No

Discharge Date: 02/01/2013
Pathogens Identified: Y - Yes
If Yes, specify below ->
## Following the Bundle

### ICU Unit
**Ventilator Bundle Compliance Monitor**
**Ventilator Associated Pneumonia (VAP)**

<table>
<thead>
<tr>
<th>Bed #</th>
<th>HOB elevated between 30-45 degrees</th>
<th>Daily Sedation Vacation</th>
<th>PUD Prophylaxis</th>
<th>DVT Prophylaxis</th>
<th>Oral Care</th>
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</thead>
<tbody>
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</table>

**Key:**
- ✓ = component met
- NO = component not met
- N/A = component contraindicated based on clinical status (supportive documentation required)
### MEDICAL INTENSIVE CARE UNIT INTERDISCIPLINARY DAILY PLAN/GOALS

**Page 1 of 2**

**Date:** 3/11/12

#### PLAN
- **Date:**
- **Time:**
- 24 hour APACHE done: □ Yes □ No. Reconciliation done: □ Yes □ No
- **Procedure/test (Based on Problem List):**
  - 1.
  - 2.
  - 3.
  - 4.
- **Plan to continue use of □ Central line □ Indwelling Urinary Catheter** (document reason on back of form)
- **Medication Changes:**
  - Glucose Control:

#### Pain/Sedation Management
- **Dexmedetomidine Protocol:**
- **Dexmedetomidine Change(s):**
- **Warning Protocol:**
  - Done: □
  - Not Done: □
  - Not candidate
- **Ventilator Bundle (VAB):**
  - Initiated: □
  - Maintained: □
  - NA: □
- **Sedation Vacation:**
- **Oral Care:**
- **DVT prophylaxis:**
- **GI prophylaxis:**
- **Sedation Vacation indicated:**
  - Yes: □
  - No: □
- **Consultations:**
- **Nutrition:**
  -□ NPO
  -□ Continue current diet
  -□ Initiated Enteral Feedings □ Enteral feeding to ____________ ml/h;
  -□ PO diet to ____________
- **Nursing Plans/Goals (Based on Problem List):**
  - □ Safety measures: follow Standard safety measures/Universal Precautions + Fall prevention + see Fall Prevention Protocol
  - □ Fall Prevention Protocol: Initiate □ Maintain
  - □ Restraint(s): □ Remove □ re-evaluate □ Write
  - □ apply during Sedation vacation □ remove patient sedated □ maintain at risk for lab device removal: Yes □
  - □ Maintain □ while in bed □ while in chair
  - **Activity:**
    - □ Bedrest position Q 3h
    - □ Progress T R/T OOB to chair
    - □ Call assist to chair
    - □ Stand & pivot □ walk to chair
    - □ Call walker, OOB to chair
  - **Nutrition:**
    - □ Feed □ assist with meals
    - □ Encourage □ offer small frequent meals
    - □ If unsuccessful □ involve family in feeding
  - **Skin Integrity:**
  - **Wound(s):**
  - **On Pressure Ulcer Prevention Protocol:**
  - **On Pressure Ulcer Treatment Protocol:**
  - □ Other:
- **Plans (Based on Problem List):**
  - □ Prevent CAUTI
  - □ DC today □ aseptic maintenance of catheter & bag
  - □ Prevent CLABs □ change central line dressing
  - □ Glucose Control: NA: □
  - □ FS q __ hr: □
  - □ Titrate insulin based on Glucose Protocol

#### Patient/Family Education
- □ Focus on:
  - □ Diagnosis
  - □ Infection prevention/precautions/hand hygiene
  - □ Fall prevention
  - □ Safety measures: skin wounds/PAC care smoking cessation
  - □ Pain mg/PCA
- **Other:**
- **Document on IFI/EOS OR: See Family Interactions/Teaching on CC Flowsheet**

#### Disposition
- □ Remain in CC unit □ Transfer to M-5 unit □ Transfer to 5-D unit □ Transfer to PD

#### Attending/Fellow
- **Signature:**
- **Date/Time:**

#### Nurse
- **Signature:**
- **Date/Time:**
<table>
<thead>
<tr>
<th><strong>Plan</strong></th>
<th><strong>Date:</strong></th>
<th><strong>Time:</strong></th>
<th><strong>24 hour APACHE done:</strong></th>
<th><strong>Yes</strong></th>
<th><strong>No</strong></th>
<th><strong>Med. Reconciliation done:</strong></th>
<th><strong>Yes</strong></th>
<th><strong>No</strong></th>
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<tbody>
<tr>
<td><strong>Procedure/test (Based on Problem List):</strong></td>
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<td>Indwelling Urinary Catheter (document reason on back of form):</td>
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<td><strong>Medication Changes:</strong></td>
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</table>
VAE Definitions

- Always follow the CDC NHSN surveillance criteria
- Biggest error..........not using the objective criteria but rather using subjective physician assessments
- Not all VAPs are diagnosed correctly by a physician
Reporting Data

• Don’t be bullied – you are the experts
• Concurrent review with your team
• Don’t surprise anyone at the end of the month
VAP to VAE

- New definitions
- Improved quality
- May not be comparable with past data
- Lessons of the past still applicable
## New VAE Algorithm

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<tr>
<th>Location</th>
<th>Summary Yr</th>
<th>months</th>
<th>vaecount</th>
<th>numventdays</th>
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4VAC
1 IVAC
1 Possible PNEU
## VAP Bundle Compliance

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<thead>
<tr>
<th>Unit</th>
<th>VAP SIR</th>
<th>VAP Rate</th>
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<td>2 East</td>
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<td>0</td>
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Timely presentation of outcome and process data
Root Cause Analyses
Failure Modes and Effects Analysis
Sustainability
Team Building and Empowerment

Red Rules

Beth Israel Medical Center has established a "Red Rules" program to enhance patient safety. Red Rules must be followed at all times. Following the rules ensures safe patient care.

There are no exceptions.

All staff are empowered to speak up and stop a procedure if a rule is not being followed.

You have the support of senior administration and all clinical department chairs.

Administration

Caught Being Great

Board of Trustees
This Continues To Be A Team Effort

Prevent an Infection.
Save a Life.
It Matters.