Best Practices for Prevention of Ventilator Associated Pneumonia

Marti Shaver, RN, CIC
Derreck Wallace, RRT
Ruth Sidor, MSN APRN
Hillandale  North Decatur  Downtown Decatur
DeKalb Regional Health System

• Has more than 800 physicians skilled in 55 medical specialties
• 3 hospitals
• 42 physician practices
DeKalb Medical at North Decatur

• 32 bed Medical Surgical ICU
• Average of 4500 ventilator days per year
• AVLOS 5.4 days
“ZAP the VAP”

• Implemented the full Ventilator Bundle during 2013
  ➢ Head of the bed elevated 30° - 45°
  ➢ Oral care every 2 hours with every 12 hours teeth brushing and CHG oral care
  ➢ Daily Sedation Interruption
  ➢ Deep Venous Thrombosis prophylaxis
  ➢ Peptic Ulcer Disease prophylaxis
“ZAP the VAP”

- Introduced the new NHSN ventilator associated event (VAE) definitions to all ICU and Respiratory Care staff
- Utilized the CUSP model to engage staff and physicians
- Educated all ICU and Respiratory staff on the bundle
- Infection Prevention conducted daily rounds and concurrent surveillance
“ZAP the VAP”

Additional activity

• Networked with other facilities and incorporated community practices

• Took field trips to other facilities

• Participated in any educational session related to VAP prevention
  • Added a transport bundle

• 2014 Intensivists hired
• A reduction in Ventilator Associated Pneumonias occurred as a result of implementing and sustaining a bundled approach to care and standardization of the ventilator associated event definitions and criteria.

• The number of ventilator days for the post-implementation period (2013) remain essentially unchanged when compared to the pre-implementation period (2014-2016).
VAP Occurrences July 2013-June 2016
Practice Problem

• Patients intubated >24 hours are 6-21 times more likely to develop VAE than those intubated less than <24 hours

• VAE increases:
  o ventilator days by 4
  o critical care days by 4
  o hospital lengths of stay by 9 days

• Increase costs
Previous Practice

• Staff didn’t routinely integrate oral care for patients on mechanical ventilation
• Non sheathed yankuer and storage of yankuer if not in use
• Breaking the circuit connections for ATX
Previous Practice

- Routine saline lavage
- Placing items on top of the ventilator
- Non-exchange of gloves for ventilator manipulations
- Current practices had resulted in an increased incidence of VAE
Innovation/Intervention

- VAE Bundle Component
  - Head of bed elevation at least 30 degrees
  - Peptic ulcer disease prophylaxis
  - Deep vein thrombosis prophylaxis
  - Daily sedation vacation for readiness to wean assessment
  - Thorough daily oral care with subglottic suctioning
Innovation/Intervention

- Transport Bundle Component
  - Pre transport – suction artificial airway and posterior pharynx
  - Maintain closed suction connection to artificial airway
  - Empty foley bag prior to transport
  - Maintain HOB 30 degrees during transport unless contraindicated
  - Document length of time patient is flat ___ minutes
  - Post transport – suction artificial airway and posterior pharynx
Innovation/Intervention

- VAP Surveillance/Monitoring Sheet

<table>
<thead>
<tr>
<th>Place Patient Sticker</th>
<th>DeKalb Medical Ventilator-Associated Pneumonia Concurrent Surveillance/Monitoring</th>
<th>DeKalb Medical VAP Surveillance/Monitoring Sheet</th>
<th>Page # 1 2 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Name _________</td>
<td>MR# ________ Device: ETT Trach Unit ________ Rm ________</td>
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<tr>
<td>Date/Time</td>
<td>Vent Day</td>
<td>PEEP</td>
<td>FiO2</td>
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<tr>
<td>Date Intubated: ________</td>
<td>Date Extubated: ________</td>
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Microsource Legend:
- SPT - spu num 
- BW - bronch wash 
- BQQ - bronch quant 
- TRA - trach aspirate 
- BLD - blood 
- URI - urine

This form is not a part of the permanent medical record.
Innovation/Intervention

• Development of protocols
  – Spontaneous Breathing Trial
  – Sedation Vacation
Implementation

• Educate the staff (ZAP the VAP) on the significance of VAE & oral care
• Improve performance & documentation of oral care and VAE bundle by adding to ventilator flowsheet
• Tracking of transports
Implementation

- Separate suction canisters
- 24 hour oral care kits with sheathed yankuer and CHG
- Equipment changes for ventilator patients
- Avoid placing items on top of ventilator
- Use clean gloves for all ventilator manipulations
- Minimize circuit disconnections
Implementation

• Watching VAE trends in the ICU
• Approval and activation of weaning protocol
• Increase the level of communication between RN and RT
Future Implications

• Patients requiring intubation > 7 days would benefit from an early tracheostomy. Evidence shows VAE incidence is 42.3% on late tracheostomies versus 27.2% on early tracheostomies (p<0.05) (Tablan, et. al., 2004)

• Reviewing Weaning protocol
Sustaining

• Teamwork
• Daily rounding
• Policies and protocols
• Best Practice Continuation
• Auditing
Sustaining - Policies

• Policies
  – Sedation Vacation (SATS)
  – SBT (Spontaneous breathing trial)
  – Delirium management
Sustaining - Policies

- Vanderbilt's Wake Up Breath protocol
- Some differences but Modeled after Vanderbilt’s protocol
A. Worksheet Algorithm

Patient qualifies for Sedation Awakening Trial (SAT)

Tolerating Well

Is Patient Candidate for SBT?

Yes

Initiate SBT with Respiratory Therapist and RN involvement

Pass

Extrude

No

Not Tolerating Sedation Awakening Trial

Resume sedation at ½ previous rate and titrate to achieve either prescribed RASS or RASS -1 to -2

Assess need for further sedation based on RASS score and pain scale. Continue patient care without sedation if patient is not exhibiting any of the failure criteria. If exhibiting failure criteria then resume sedation at ½ previous rate and achieve either prescribed RASS or RASS -1 to -2

Fail SBT

Resume sedation at ½ previous rate and achieve either prescribed RASS or RASS -1 to -2
Sustaining - Opportunities

- **ABCDEF Bundle**

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**Confusion Assessment Method in the ICU**

1. RASS is above - 4 (-3 through +4): Proceed to next step
2. If RASS is -4 or -5: Stop, reassess patient at later time
3. Delirium Assessment (CAM-ICU): 1 AND 2 AND (Either 3 OR 4)
   - 1. Acute Onset or Fluctuating Course
      - An acute change from mental status baseline?
      - Or Patient's mental status fluctuating during the past 24hrs
      - **No** or **Stop** if no delirium
   - 2. Inattention
      - Please read the following ten letters: SAYEHAART
      - Error: When patient fails to squeeze on the letter "A"
      - Error: When the patient squeezes on any letter other than "A"
      - **≤ 3 Errors** or **Stop** if no delirium
   - 3. Altered Level of Consciousness (actual RASS)
      - If RASS is zero, proceed to next step
      - If RASS is other than zero
      - **Stop** if patient is delirious
   - 4. Disorganized Thinking
      - **≥ 2 Errors**
      - Patient is delirious
      - **≤ 2 Errors** or **Stop** if no delirium

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Sustaining - Practice

• Mouth care
• HOB elevation
• Prophylaxis
Sustaining - Auditing
# Sustaining - Auditing

<table>
<thead>
<tr>
<th>Name</th>
<th>Room #</th>
<th>HOB &gt;30 Degrees</th>
<th>Mouth swabs present and labeled</th>
<th>Documented Q 2 hours mouth care</th>
<th>DVT Prophalaxis</th>
<th>PUD prophalaxis</th>
<th>ETT labeled and dated</th>
<th>Comments</th>
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Sustaining - Encouragement

• Parties to celebrate
• Emails and boards to inform
• Recognition
Summary

• Problem identification
• Establish best practice
• Practice change
• Teamwork
• Maintenance of Change