Reducing Respiratory Nosocomial Infection Markers (NIMs) to prevent Infection Ventilator-Associated Complications (IVACs)
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Significance

- The criteria for ventilator-associated pneumonia (VAP) was changed to infection-related ventilator-associated complication (IVAC).
  - Each Nosocomial Infection Markers (NIMs) is an opportunity for IVAC to occur.
- IVAC is the 2\textsuperscript{nd} most common hospital-acquired infection (HAI).\textsuperscript{1}
- IVAC has 46\% mortality.\textsuperscript{2}
- IVAC increases length of stay by 4 to 19 days, which is non-reimbursable.\textsuperscript{3}
Cost Significance

- The average non-reimbursed cost of IVAC is $40,000.²
- The Indiana University Health Cardiac Medical Critical Care (CMCC) unit cost per day is $3,618.
Background Planning

- Administered Missed Nursing Care Survey Instrument
- Performed random bedside audits on vented patients for oral care compliance
- Educated on the project, procedure, and expectations of oral care
- Ordered supplies, and demonstrated proper use of oral care kits
- Unveiled logo for project at Pasta Party celebration for all staff
Proper Use of Oral Care Kits for Vented Patients

Set expectations around evidence-based oral care policy:

- Chlorhexidine toothbrush every 12 hours
- Deep subglottal suctioning every 12 hours
- Swab mouth every 4 hours
- Suction patient before position change (i.e., lowering head of bed)
Proper Use of Oral Care Kits for Vented Patients

Set expectations around evidence-based oral care policy:

- Designated suction line for oral care
- Date and time all oral care kits
- Hang kits on designated hook in room
- Document
- Reinforce bundles
- Proactive oral care for “at risk” patients
Keeping Up the Momentum

- January 2013
  - Journal clubs report progress with NIMS data
  - Awarded staff with cups and badge holders
- February 2013: Mouth Care Mania Game with prizes
- April 2013: Reviewed process with staff
- May 2013: Written test to assess knowledge
- August 2013: Unit competency demonstration of oral care
- September 2013: Staff prizes for audits/tests
Validation of Competency

Kirkpatrick’s Level 2 Competency evaluation tool for all RNs to validate oral care competency.
Validation of Competency

Check Off Skills

- Hand hygiene and application of gloves
- Toothbrush with chlorhexidine using dedicated suction lines
- Verbalization
  - Frequency of oral care during shift
  - “At risk” patients
  - Method setup, date, and time of kits
- Deep glottal suctioning method and rationale for use
- Appropriate documentation
Challenges in Defining “At Risk”

Use Ventilator Oral Care Kits:

- Patients on BIPBP or high-flow oxygen masks
- High Risk of intubation or reintubation
- Dependent on ADLs (i.e., patient confused, weak, paralyzed, can’t pick up toothbrush)
- NPO, OG, NG, TPN (unable to take oral nutrition/hydration)
- Include any patient nurse feels is at risk
**Problem Statement and Goal:** To decrease Respiratory NIMS by 15% in 12 months to prevent incidence of VAP and maintain VAP free days.

### Logic Model

#### Outputs

<table>
<thead>
<tr>
<th>Activities</th>
<th>Participant/Target Systems</th>
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#### Outcomes

<table>
<thead>
<tr>
<th>90 day Short-Term</th>
<th>Measures</th>
<th>6 months Intermediate</th>
<th>Measures</th>
<th>Long-Term</th>
<th>Measures</th>
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<tbody>
<tr>
<td>Pre project missed nursing care audits completed by 11-15-12 (baseline)</td>
<td>35% participation by RN staff. At least 30 RN's</td>
<td>Missed nursing care audits completed by 3-31-13</td>
<td>40% participation By staff at least 35 RN's</td>
<td>Reduced missed nursing care with audits completed by 9-30-13</td>
<td>30% reduction in missed nursing care</td>
</tr>
<tr>
<td>Pre project education 90% completed by 11-15-12</td>
<td>Roster of all RN's and validate completion</td>
<td>Reinforced teaching 1:1 with each RN to assess barriers &amp; needs for education.</td>
<td>Roster of all RN's 1:1 evidenced based review of information and assessment of barriers 5-1-13</td>
<td>Written exam By 6-1-13 by all RN's</td>
<td>Must pass with score of 90%</td>
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<tr>
<td>RN demonstrates compliance of oral care per policy 25% of audits</td>
<td>Cerner audits Random room audits of supplies used.</td>
<td>RN demonstrates increased compliance of oral care with cerner and room audits to 50%</td>
<td>Room audits per CSI team, e-Partners audits, cerner audits. 4-30-13</td>
<td>RN demonstrates increased compliance with oral care and documentation 90%</td>
<td>Must pass competency with 100% compliance</td>
</tr>
<tr>
<td>Written exam by 6-1-13 by all RN’s</td>
<td>Unit competency by all RN’s 9-30-13</td>
<td>Room and chart audits are validate RN compliance.</td>
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#### Assumptions:

1. Audits of current practice will assist CSI team to identify knowledge deficits, barriers and obstacles to delivery of oral care
2. Demonstration of oral care supplies and nursing evidenced based education will increase compliance and improve standards of care.
3. Increased knowledge will increase compliance with oral care and hand hygiene which will decrease NIMS and prevent VAP.

#### External Factors:

1. New 2013 guidelines for VAP may increase rates called on unit.
Total Critical Care Respiratory NIMs

![Graph of Total Respiratory NIMs by Location](CareFusion_Indiana_University_Health_Metho)
CMCC Respiratory NIMs

[Diagram showing bar chart for respiratory NIMs from January 2012 to September 2013 for CHPM-A4E1/A4E2-Cardiac Critical Care with additional note: "For patients in multiple locations on the estimated acquired date, the NIM is counted once for each of the locations."]
Oral Care Compliance Audits

Compliance

- Compliance
- Linear (Compliance)

Better
Oral Care Compliance Audits

Number of VAP/VAE

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<tr>
<th></th>
<th>ACC</th>
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<th>MSCC</th>
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<td>6</td>
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</table>
Sustainability = Financial Impact

CMCC has sustained zero IVACs from 2010-2013

- CMCC length of stay per day costs $3,618.
- Average extended length of stay for IVAC is 4-19 days.³
- Avoiding one IVAC saves between $14,472 and $68,742.
Financial Impact

Ventilator Associated Pneumonia (VAP)

- Average cost of VAP: $9,076. 5
- 12 patients suffered VAPs/VAEs in 5 other ICUs
  - Average: 2.4 VAP per unit
- By maintaining zero IVACs in the CMCC, the estimated annual fiscal impact is $21,782 (based on cost of a VAP).
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- Kristen Kelley, MSN, RN, Infection Control
- Michelle Wallace, MSN, RN, CHFN
References


Additional Resources


