I. Introduction/Background

Ventilator Associated Pneumonia (VAP) is an ongoing infection issue in the intensive care setting. VAP accounts for sixty percent of all deaths caused by a hospital related infection. Approximately eight percent to twenty-eight percent of all critical care patients develop VAP at a cost of $20,000 to $40,000 per case. This clinical practice guideline will provide the interventions needed to prevent ventilator associated pneumonias in the intensive care units at MIHS.

II. Definitions

**Bundle:** A bundle is a structured way of improving the processes of care and patient outcomes: a small, straightforward set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes.

**DVT:** Deep Vein Thrombosis

**HOB:** Head of bed

**MIHS:** Maricopa Integrated Health System

**PUD:** Peptic Ulcer Disease

**VAP:** Ventilator Associated Pneumonia described as the onset of pneumonia approximately 48 hours after intubation.

III. Persons effected

A. Registered Nurses and ancillary staff working in the Burn Center, the Medical Intensive Care Unit, the Cardiac Intensive Care, the Surgical Intensive Care unit, the Adult Progressive Care Unit, the Pediatric Intensive Care Unit, and the Neonatal Intensive Care Unit. Responsibility to implement bundle on any patient that is being mechanically ventilated at MIHS in the patient care areas.

B. Respiratory therapists – maintain ventilators, implement weaning profile, and advocate for the components of the VAP bundle
C. Management Teams – monitoring compliance by weekly infection control rounds, auditing compliance and improving/updating forms as needed.

D. Clinical Practice Educators – Continuing education of VAP and VAP bundles.

E. Physicians- Compliance with VAP bundles, documentation of VAP, participation of weekly infection control rounds (when available), initiate ventilator orders and weaning protocols.

F. Families – To be educated by nursing and to become advocates for the VAP bundles.

IV. Management/Guideline

Principles of care

A. Adults

- Head of bed elevated 30-45 degrees or reverse Trendelenburg
- Oral Care every 2 hours using hospital approved oral care kits
- Daily sedation vacation
- Peptic ulcer disease (PUD) prophylaxis
- Deep vein thrombosis (DVT) prophylaxis
- If Hi Lo Evac® endotracheal tube in place, maintain to suction per order
- Respiratory Therapist (RT) to check endotracheal cuff pressure q 6 hours

B. Pediatrics

- Elevate head of the bed
  - ☐ 15 – 30 degrees for neonates and
  - ☐ 30 – 45 degrees for infants or above
- Comprehensive mouth care q2h for more frequent for “high risk” patients
- Daily extubation readiness assessment
- Respiratory Therapist (RT) to check endotracheal cuff pressure q 6 hours
- Peptic ulcer disease (PUD) prophylaxis
- DVT prophylaxis for age appropriate patients

C. Neonates

- Education
- Strict adherence to hand hygiene
- Elevation of the head of bed
- Evaluation of weaning readiness
- Disinfection of surfaces and equipment
- Oral care
- Separate suction systems
- Clinically indicated suctioning
- Proper care / rotation of respiratory equipment

Indications

VAP bundles will be implemented on patients receiving mechanical ventilation in the patient care areas.

Contraindications

Contraindications may exist on components of the VAP bundle, this will be decided on diagnosis and/or physician order.

Risks

Non-compliance with the VAP bundle and the patient developing VAP

Assessment

Individual patient VAP bundle assessments will be completed by nursing staff during initial patient assessments and throughout shift. IC weekly rounds will provide group assessment of VAP bundle compliance and recent infection rates.

Investigations

If the patient is diagnosed with VAP, investigation for factors leading to VAP
V. Appendices
   A. Adult Audit Tool
   B. Pediatric Audit Tool
   C. Neonatal Audit Tool
   D. FAQS for VAP English Version
   E. FAQS for VAP Spanish Version

VI. Consumer Information
    FAQS (frequently asked questions) about “Ventilator-Associated Pneumonia” handouts for patient and
    Family education in both English and Spanish

VII. Audit Tools
    See Appendices

Reference documents (legislation, evidence, best practice, websites etc)

*Evidence table
Clinical Practice Guideline
Approval Form

Part 1- Document Information

1.1 Proposed CPG Title: Clinical Guideline for the prevention of Hospital Acquired Ventilator Associated Pneumonia (VAP)

1.2 Category of Document: (i.e. please check)
- □ System Wide
- □ Departmental
- ☑ Division
- □ Multi-Department

1.3 Is the document new or under review? (please check one)
- ☑ New
- □ Review

1.4 Name/Department of Author: Phil Wedzik, Critical Care

Part 2 – Development & Approval Process

Step 1 – Identify topic: Prevention of VAP

Outline CPG topic: VAP bundles identified

Step 2 – Identify and involve stakeholders:

Outline stakeholders: MICU, CICU, SICU, NICU, PICU, APCU, Burn Center, and Respiratory Department

Outline stakeholder consultation process:
Multi-disciplinary task force for including nurses from each area, physicians, respiratory therapists, convened every two weeks for a total of 6 meetings. The task force included the following people: Beth Leggitt, Carol Carpenter, Christine Montgomery, Christopher Hines, Dr. David Rosenberg, Dr. David Wisinger, Diana Blady, Douglas Whitby, Dr. Mahesh Kotwal, Gloria Haught-Neese, Jana Bosse, Joel Detzel, Dr. Mehrdad Sirrian, Patricia Kardos, Dr. Patrick O’Neill, Patty Ramsey, Ramiro Garza, Rita Neibaur, Dr. Suresh Lal, Dr Syed Zaidi, Dr. Tammy Kopelman, Tita Delisi, Virginia Martinez, and Phil Wedzik.

Step 3 – Review current practices and evidence:

Summarize current practice and evidence available:
Current practice is implementing the bundles on all mechanically ventilated patients as identified in the guideline for prevention of VAP.

Step 4 – Develop draft and circulate for consultation:

Communicate with the Policy and Procedure Coordinator. Develop draft (access via CPG website in C360. Circulate completed draft to stakeholders- this may be repeated with the final draft. Approved by VAP task force and Nurse Practice Council/Policy & Procedure

Step 5 – Approval: (Obtain signatures of co-operating divisions and departments as appropriate)
I certify that I have read this proposed CPG and accept its implications for my department:

<table>
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<th>Name</th>
<th>Signature</th>
<th>Division/Department</th>
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<td>Robert Fromm</td>
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Chief Medical Officer
Step 6 - Signatures of Author and Associate Authors:

I undertake that I have consulted all Divisions likely to be effected by this proposed CPG and have obtained their signed agreement:

Principal Author: Phil Wedzik, RN

Associate Author:

Director sign-off:

Name of Director: Tina Malone

Step 7 – Implementation:

The Guideline owner will communicate the new/reviewed document to all staff through email distribution lists (and newsletters as appropriate). It is the responsibility of the author to ensure that the appropriate staff in their areas are aware of the document. If there are any other communication formats, please inform the Policy and Procedure Coordinator. Please outline your implementation plan.

All staff in the above areas have been educated via skills fair and CLC on the VAP bundles. When guidelines are available on Compliance 360 all managers and clinical practice educators will be notified. It will be their responsibility to notify their staff.
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<thead>
<tr>
<th>Author/s</th>
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<td>M.I Uhing</td>
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<td>Keyword: VAP NICU</td>
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<tr>
<td>E. Foglia</td>
<td>Ventilator-Associated Pneumonia in Neonatal and Pediatric Intensive Care Unit Patients</td>
<td>Clinical Microbiology Reviews, July 2007, p.409-425 vol. 20, No. 3</td>
<td>III</td>
<td>CINAHL</td>
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<td>M. Meier</td>
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<td>A. Elward</td>
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<tr>
<td>None</td>
<td>What is a Bundle?</td>
<td>Institute for Healthcare Improvement</td>
<td>VI</td>
<td><a href="http://www.ihi.org">www.ihi.org</a> key word: VAP</td>
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<td>J. Stockwell</td>
<td>Nosocomial infections in the pediatric intensive care unit: Affecting the impact on safety and outcome</td>
<td>Pediatric Critical Care Medicine 2207 Vol. 8, No. 2</td>
<td>III</td>
<td>VAP</td>
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<td>Document from DR. Lal</td>
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<td>S. Coffin</td>
<td>Strategies to Prevent Ventilator-Associate Pneumonia in Acute Care Hospitals</td>
<td>Supplemental Article: SHEA/IDSA Practice Recommendations Infection Control and Hospital Epidemiology October 2008, Vol. 29 Supplement 1</td>
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<td>R Brennon</td>
<td>Creating and Implementing a Bundle to Reduce VAP in the NICU</td>
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