Goal
PREVENT VENTILATOR ASSOCIATED PNEUMONIA (VAP) BY IMPLEMENTING THE COMPONENTS OF CARE CALLED THE “VAP BUNDLE”

Summary of Revisions from Previous Versions of the Getting Started Kit
1. The case for preventing ventilator associated pneumonia was updated.
2. The definition of VAP was clarified.
3. Adult VAP Bundle: has been revised to reflect new evidence and has gone from 4 to 5 elements.
4. Additional revisions to reflect new evidence were made for hand hygiene, venous thromboembolism (VTE) prophylaxis and the promotion of patient mobility and autonomy.

The Pediatric section was not revised as there was no notable evidence to modify current VAP prevention practices.

Background
• Ventilator-associated pneumonia (VAP) is the leading cause of death among hospital-acquired infections. Hospital mortality of ventilated patients who developed VAP is 46% compared to 32% for ventilated patients who do not develop VAP. ¹
• VAP prolongs time spent on the ventilator, length of ICU stay and length of hospital stay after discharge from the ICU. ²,³
• VAP adds an estimated US $40,000 to a typical hospital admission. ⁴
• In Canada it is estimated that the prevention of one case of VAP could result in a cost saving of approximately $14,000 per patient.⁵ It is estimated that the number of adult cases of VAP in Canada are around 4,000 per year, resulting in approximately 230 deaths consuming 17,000 excess ICU days or 2% of all ICU days in Canada, at an estimated cost to the Canadian health care system of CAN $46 million per year.

Intervention
Five key components for the VAP Bundle
1. Elevation of the head of the bed to 45° when possible, otherwise attempt to maintain the head of the bed greater than 30° should be considered
2. Daily evaluation of readiness for extubation
3. The utilization of endotracheal tubes with subglottic secretion drainage
4. Oral care and decontamination with Chlorhexidine
5. Initiation of safe enteral nutrition within 24-48h of ICU admission

Additional Evidence Based Components of Care
• Hand Hygiene
• Practices That Promote Patient Mobility and Autonomy
• Venous Thromboembolism (VTE) Prophylaxis

Compliance with the VAP bundle has been most successful when all elements are executed together as an “all or none” strategy.⁶
**Intervention Measures**

1. **VAP rate in ICU per 1000 ventilator days**  
   **Goal:** Decrease the VAP rate by 50% in one year

2. **VAP bundle compliance rate**  
   **Goal:** 95% of all patients on the mechanical ventilation in the intensive care unit(s) receive all five elements of the VAP bundle

**Other Resource**


**Success Stories**

The Calgary Health Region, with the support of the Canadian ICU Collaborative, has charged a multidisciplinary critical care team with the responsibility of reducing the incidence of VAP. Several interventions, including a VAP bundle, were utilized and applied across an entire health region. VAP rates have steadily declined over the last 15 months and have been largely under the goal of 9.8 cases/1000 ventilator days. The team’s success in lowering VAP has not only provided the momentum for sustained improvement and spread to other areas, but has also resulted in overall improvements in health outcomes and resource utilization within the critical care units.

Kelowna General Hospital (KGH), participating in the Canadian ICU Collaborative, has implemented a variety of evidence-based prevention strategies to reduce ventilator associated pneumonia (VAP) rates. Over an 18-month period, KGH has achieved more than 80% overall compliance with each VAP prevention strategy and has reduced VAP rates by 25%. This has improved patient care, increased access to ICU critical care beds, and resulted in significant cost savings to the organization.

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6. Canadian Collaborative to Improve Patient Care and Safety in the ICU; January 2010.