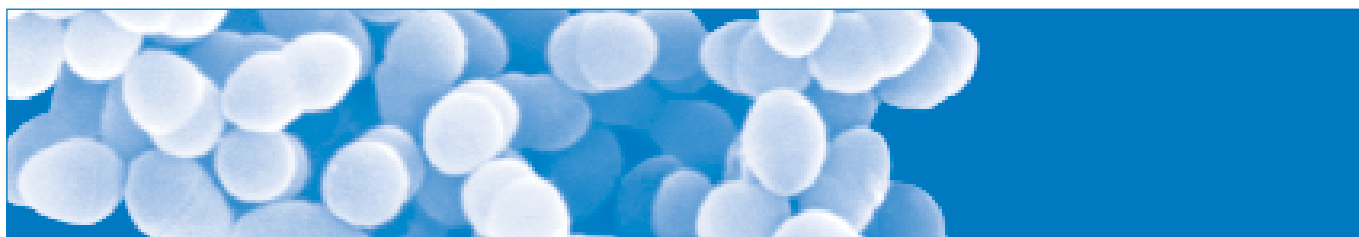


Saving Lives: reducing infection, delivering clean and safe care

High Impact Intervention No 5

Care bundle for ventilated patients (or tracheostomy where appropriate)



Aim

To prevent the development of ventilator-associated pneumonia (VAP)

Context

The Health Act 2006 Code of Practice¹ states that NHS organisations must audit key policies and procedures for infection prevention. This high impact intervention helps trusts achieve this aim by providing a focus on elements of the care process and a method for measuring the implementation of policies and procedures.

Respiratory infections are the fourth-largest contributor to hospital-acquired infection in the UK, and 19% of these are ventilation-related.²

VAP is a significant cause of morbidity and mortality in critically ill and postoperative patients receiving mechanical ventilation. In the European Prevalence of Infection in Intensive Care study,³ VAP was the most frequent infection, accounting for 45% of all infections in intensive care units (ICUs) in Europe. The incidence of VAP can vary from 9% to 68% in mechanically ventilated patients.⁴ VAP is associated with increased duration of ventilation, ICU stay, hospital stay, and cost. An American study estimated the additional cost of VAP to be in the region of \$11,897 per patient.⁵

Evidence-based guidelines for the prevention of VAP have been developed in North America by the Centers for Disease Control,⁶ the American Thoracic Society⁷ and the Canadian Critical Care Society.⁸ The Department of Health document *Winning ways* indicates that proper management of the ventilator tubing has a role in preventing VAP.⁹

A ventilator 'care bundle' of four elements: head of bed elevation, sedation holding, deep vein thrombosis prophylaxis and gastric ulcer prophylaxis – has been defined¹⁰ and used in clinical practice in England.¹¹ Many publications refer to these elements, among others, and the continuing challenge is how to put these evidence based therapies into practice consistently.¹² A 'how-to' guide for intensive care multidisciplinary teams¹³ describes steps for improving the quality of clinical care, and this high impact intervention also gives practical assistance to clinical teams, enabling them to implement good practice infection prevention and control.

Why use the care bundle?

This care bundle is based on EPIC guidelines, expert advice and other national infection prevention and control guidance. It should support implementation of local and national policy. The purpose is to act as a way of improving and measuring the implementation of key elements of care.

The risk of infection reduces when all elements within the clinical process are performed every time and for every patient. The risk of infection increases when one or more elements of a procedure are excluded or not performed.

Elements of the care process

There are two sets of actions outlined below as good practice; these are concerned with:

- a** regular observations
- b** ongoing care.

Regular observations

Elevation of the head of the bed to 30°–45°

- Reduce risk of VAP.⁸

Sedation holding

- Reduce duration of mechanical ventilation and risk of VAP.¹⁴

Deep vein thrombosis prophylaxis

- Prevent complications of critical care.¹⁵

Gastric ulcer prophylaxis

- Prevent complications of critical care.¹⁶

Appropriate humidification of inspired gas

- Prevent inspissation of secretions.⁶

Tubing management

- Replace when visibly soiled or mechanically malfunctioning.⁶
- Routinely replace according to manufacturer's guidance.
- Prevent condensate from entering patient's airway.⁷

Ongoing care

Suctioning of respiratory secretions

- Wear examination gloves and decontaminate hands before and after the suction procedure.⁶

Oral hygiene

- Routine oral hygiene as per local policy.

Note: This review tool is appropriate for patients with a tracheostomy. However, depending on a patient's location, such as a ward, the drug-related elements may not apply. This is a decision for local clinicians.

Using the bundle to ensure all elements of care are performed

Checking compliance with the elements in the care process will show the elements which were or were not performed. The tools on the CD will help you to:

- 1 identify when all elements have been performed
- 2 see where individual elements of care have not been performed
- 3 enable you to focus your improvement effort on those elements which are not being consistently performed

Using the compliance tool

- 1 Each time a care element is performed, insert a tick in the relevant column. If the action is not performed leave it blank.
- 2 Do this for each action, ensuring you tick it only when an element of care is performed correctly.
- 3 Calculate the totals and compliance levels by totalling the columns and using the tools provided (on the CD or at www.clean-safe-care.nhs.uk).
- 4 Your goal is to perform every element of care every time it is needed. The "All elements performed" column should be ticked when every care element is given correctly. This should total to 100% compliance when all care elements have been given correctly on every occasion.
- 5 Where elements have not been performed overall compliance will be less than 100%. This provides immediate feedback for users of the tool on those elements missed, and actions can then be taken to improve on compliance levels.
- 6 The percentage compliance figures for individual care elements show you where you need to focus effort to improve overall compliance.
- 7 The number of times when all elements are performed should be the same as the number of observations you perform. For example if you monitor the care process 10 times, then there should be 10 occasions when all elements were performed.

When the calculation is completed, the calculator tools on the CD (or at www.clean-safe-care.nhs.uk) will automatically show compliance graphs and run-charts for each element of care and for overall compliance with each high impact intervention. This will show you visually where to focus your improvement efforts to achieve full compliance.

Example

Care elements Observation	Care element 1	Care element 2	Care element 3	Care element 4	All elements performed
1	✓		✓	✓	
2	✓	✓		✓	
3	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	
5	✓	✓	✓	✓	✓
Total number of times an individual element was performed	5	4	4	4	2
% when element of care was given	100%	80%	80%	80%	40%

This example shows that while most care elements were performed on only two occasions were ALL elements performed correctly. Overall compliance with all elements was only 40% and as a result the risk of infection was significantly increased.

Best practice guides

The American Healthcare Infection Control Practices Advisory Committee guidelines⁶

The Canadian Critical Care Trials Group guideline⁸

The American Institute for Healthcare Improvement has used the ventilator bundle extensively. Further details are available at www.ihl.org/IHI/Topics/CriticalCare/IntensiveCare/

Recommended resources

Many guidelines and papers are available in the National Resource for Infection Control at www.nric.org.uk

The NHS infection control e-learning package is available at www.infectioncontrol.nhs.uk

The American Thoracic Society guidelines⁷

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