

How to prevent ventilator-associated pneumonia (VAP)

Some patients with COVID-19 being treated in hospitals and intensive care units (ICU) need mechanical ventilation for breathing.

Patients who are being mechanically ventilated are at risk of developing a secondary or healthcare-associated pneumonia infection, known as ventilator-associated pneumonia (VAP). VAP occurs when bacteria enter through the ventilation tube into the patient's lungs causing an infection that was not there before. This infection is linked to increased mortality and longer ICU and hospital stay.

The VAP bundle

ICU staff can reduce or prevent VAP by using the **evidence-based practice VAP bundle** (see box below), a group of interventions that, when implemented together, result in better outcomes for the patient. This means following standard and transmission-based precautions, including current recommendations for contact and droplet precautions and airborne precautions when performing aerosol-generating procedures for suspected, probable or confirmed COVID-19 patients.^{1,2}

The VAP bundle interventions aim to avoid the risk of aspiration in the lungs, colonisation of respiratory tract with pathogenic microorganisms and contamination of respiratory equipment.

Always implement the following interventions **when a patient is being mechanically ventilated**:^{3,4}

- Elevate head of bed (30°–45°)
- Daily sedative interruption and assessment of readiness to extubate
- Subglottic secretion drainage
- Avoid ventilator circuit changes unless visibly soiled or malfunctioning
- Daily oral care with chlorhexidine

Other strategies to prevent VAP

- Strict hand hygiene for airway management
- Control and maintenance of cuff pressure
- Practices that promote patient mobility and autonomy
- Venous thromboembolism (VTE) prophylaxis

¹ World Health Organization. 13 March 2020. *Clinical management of severe acute respiratory infection when COVID-19 is suspected*. URL: [www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](http://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected) (accessed 15 April 2020).

² Ministry of Health. 8 April 2020. Updated advice for health professionals: novel coronavirus (COVID-19). URL: www.health.govt.nz/system/files/documents/pages/updated-advice-for-health-professionals-covid-19-8apr20.pdf (accessed 14 April 2020).

³ Klompas M, Branson R, Eichenwald EC, et al. 2014. Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals: 2014 Update. *Infection Control and Hospital Epidemiology* 35(8): 915–36.

⁴ Hellyer TP, Ewan V, Wilson P, et al. 2016. The Intensive Care Society recommended bundle of interventions for the prevention of ventilator-associated pneumonia. *Journal of the Intensive Care Society* 17(3): 238–43.