Ventilator-Associated Pneumonia (VAP)

- It is a nosocomial pneumonia in a patient who has been mechanically ventilated (by endotracheal tube or tracheostomy) for at least 48 hours at the time of diagnosis.

- Ventilator-associated pneumonia (VAP) is the second most common hospital-acquired infection and the leading cause of death from nosocomial infections.

- Intubated patients have a 10-fold increase in the incidence of nosocomial pneumonia, and the critically ill patient who is mechanically ventilated is especially at risk for development of VAP.

- Factors that lead to nosocomial pneumonia are
  - Oropharyngeal colonization,
  - Gastric colonization,
  - Aspiration,
  - Compromised lung defenses,
  - Mechanical ventilation,
  - Re-intubation,
  - Self-extubation, presence of a
  - Nasogastric tube,
  - Supine position

- Maintenance of the natural gastric acid barrier in the stomach plays a major role in decreasing incidence and mortality from nosocomial pneumonia.

- The widespread use of antacids or histamine type 2 receptor (H2) blockers can predispose the patient to nosocomial infections because
  - They decrease gastric acidity (increase alkalinity).
  Used to guard against stress bleeding, these medications may increase colonization of the upper gastrointestinal tract by bacteria that thrive in a more alkaline environment.

- A patient should be suspected of having a diagnosis of VAP if the chest x-
ray shows new or progressive and persistent infiltrates. Other signs and symptoms can include a fever higher than 100.4°F (38°C), leukocytosis, new-onset purulent sputum or cough, and worsening gas exchange.

- There are numerous strategies for the prevention of VAP.

- Prevent colonization by pathogens of the oropharynx and gastrointestinal tract

- Meticulous handwashing & use of gloves when suctioning patients orally or through the endotracheal tube,
- Gloves should also be worn when suctioning through closed-suction devices.

- Critically ill patients have an increased risk for colonization by the microorganisms contributed by poor oral hygiene.

- Oral care for a mechanically ventilated patient involves brushing the patient’s teeth (approximately every 2 to 4 hours),
- Using antiseptic solutions and alcohol-free mouthwash to cleanse the mouth,
- Applying a water-based mouth moisturizer to maintain the integrity of the oral mucosa,
- Thoroughly suctioning oral secretions. Additional

- Elevate the head of the bed 30 to 45 degrees in patients receiving enteral feedings (unless contraindicated) to decrease the risk of aspiration.

- Place Long-term (i.e., longer than 3 days) endotracheal tubes and gastric tubes orally (unless contraindicated or not tolerated by the patient). This intervention reduces the risk of the patient contracting infectious maxillary sinusitis, which is associated with the development of VAP.

- The use of an endotracheal tube that provides a port for the continuous aspiration of subglottic secretions (CASS) appears to prevent the development of VAP in the first week of intubation, and may decrease the overall incidence of VAP. The use of the CASS endotracheal tube is typically reserved for those patients who can be identified as potentially requiring long-term ventilation.