



Ventilator Associated Pneumonia Pathway

(for Adult Patients on Mechanical Ventilation >3 days)

Clinical Diagnosis	CPIS points	0	1	2
	Tracheal secretions		rare	abundant
Infiltrate on chest X-ray		none	diffuse	localized
Temperature (°C) (°F)		36.5-38.4 97-100.9	38.5-38.9 101-102	< 36 or > 39 <97 or > 102
WBC count (1000/mm ³)		4-11	< 4 or > 11	< 4 or > 11 + > 500 bands
PaO ₂ /FiO ₂		With clinical ARDS or with P/F >240		Without clinical ARDS and with P/F < 240

**Note: If Clinical Pulmonary Infection Score (CPIS) is < 6, consider alternative diagnoses
CPIS has not been validated in immunosuppressed patients**

Microbiology	<p>Obtain Protected Alveolar Lavage (PAL) or Bronchial Alveolar Lavage (BAL) prior to starting antibiotics (suctioned sputum is suboptimal but acceptable in select patients)</p> <ul style="list-style-type: none"> Order Gram stain and culture, Chest X-ray (if not previously obtained) Begin empiric antibiotics after cultures sent
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Empiric Antibiotics	<p>Piperacillin/Tazobactam (4.5 gm IV q6h)* PLUS Tobramycin⁺ (7mg/kg dosing weight IV q24h) *</p> <p><u>For patients at risk for Gram positive infections or if Gram positive cocci present on Gram stain,</u> Begin Vancomycin 15mg/kg IV q12h*</p> <p><u>For Penicillin Allergy:</u> Cefepime (2gm IV q8h*) or Aztreonam^a (2gm IV q8h*)</p> <p>It is <i>NOT</i> recommended that levofloxacin be used for routine empiric treatment And should be limited to <u>patients who cannot receive aminoglycosides</u> Levofloxacin (750mg IV/po daily*)</p>
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- * Dosing recommendations for empiric antibiotics for patients w/o renal insufficiency. Please consult pharmacy to dose if patient's Clcr < 60 ml/min.
- + For tobramycin, order 4 & 12 hour random levels after 1st dose.
- a Aztreonam provides only Gram (-) aerobic coverage, additional agents may be necessary to extend coverage for GPC and anaerobes

Pathogen-directed therapy	<p style="text-align: center;"><u>For positive culture results:</u> Streamline therapy as appropriate</p> <p style="text-align: center;"><u>If cultures negative* on Antibiotic Day #4:</u></p> <ul style="list-style-type: none"> • Re-evaluate diagnosis & antimicrobial coverage • Consider discontinuation antibiotics for CPIS score <6 <ul style="list-style-type: none"> *A diagnostic threshold of 10⁴ will be used for quantitative cultures of PAL samples
Duration of therapy	<p style="text-align: center;"><u>Evaluate Criteria for short-course therapy on Day #8:</u> Discontinue antibiotics if the following criteria are met:</p> <ul style="list-style-type: none"> • Resolving clinical symptoms (i.e. CPIS score < 6) <ul style="list-style-type: none"> • Infections <i>NOT</i> involving <i>Pseudomonas</i>, <i>Acinetobacter</i>, or <i>Stenotrophomonas spp</i> <p style="text-align: center;"><u>If therapy is being continued past Day #8:</u> Consider streamlining to single agent</p>

References:

Ventilator Associated Pneumonia Guidelines

American Thoracic Society/Infectious Disease Society of America, *Am J Respir Crit Care Med* 2005; 171: 388-416.

Duration of Pneumonia Therapy: 8 vs 15 days

Chastre J, et al. *JAMA* 2003; 290: 2588-2598.

Modified Clinical Pulmonary Infection Score (CPIS)

Fartoukh M, et al. *Am J Respir Crit Care Med* 2003; 168: 173-9.

5/2005, P. Shane Winstead, Pharm.D