VALLABHBHAI PATEL CHEST INSTITUTE

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CIRULAR

The Antibiotic Policy of the Institute has been finalized by the Sub-Committee of Hospital Infection Control Committee in its meeting held on 16.07.2026 & the same has been approved by the Competent Authority for compliance by all concerned.

This issues with the approval of the Competent Authority.

Encls: *As above*

Assistant Registrar
(Admn-III)

To,

- All HoDs
- Incharge-ICU
- Incharge-Ward
- Incharge-Emergency
- Nodal Officer, NABH

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- PS to the Director - for information to the Director
- PA to the Deputy Registrar - for information to the Deputy Registrar
- Dr. Sonam Spalgais, Associate Professor & Nodal Officer & Member Secretary of HICC
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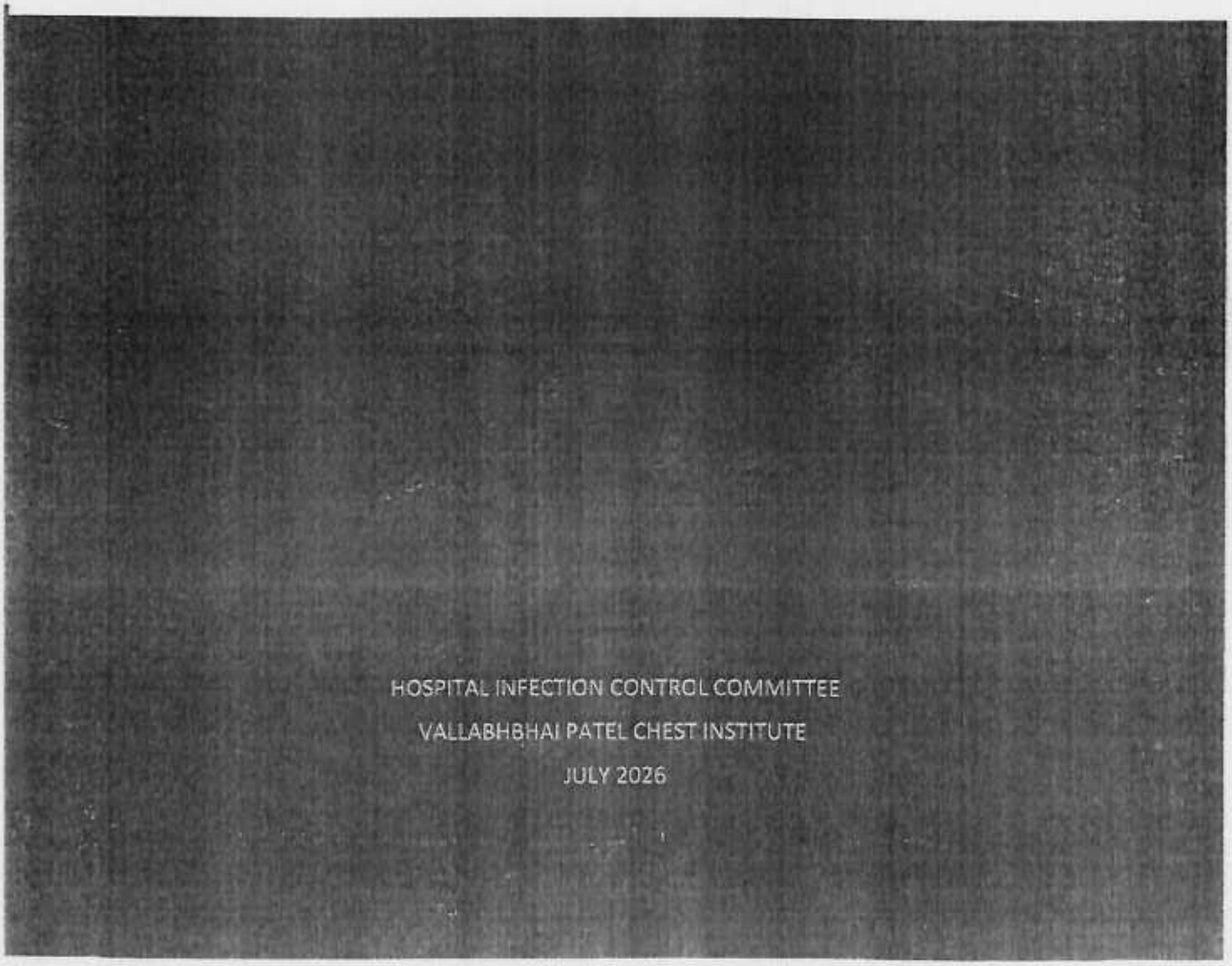
ANTIBIOTIC POLICY VALLABHBHAI PATEL CHEST INSTITUTE



HOSPITAL INFECTION CONTROL COMMITTEE

VALLABHBHAI PATEL CHEST INSTITUTE

JULY 2026

ANTIBIOTIC POLICY

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1.0 Introduction & Stewardship Principles

1.1 The Threat of Antimicrobial Resistance (AMR)

Antimicrobial resistance is a global health crisis overshadowing historical gains in infectious disease management. Projections indicate that by the year 2050, Asia will experience 4.7 million deaths annually directly attributable to AMR. Resistance metrics within India have reached critical thresholds:

- ***Escherichia coli*:** 12% to 59% are Extended-Spectrum Beta-Lactamase (ESBL) producers; up to 30% are Carbapenemase producers (CP).
- ***Klebsiella pneumoniae*:** Exhibits up to 50% resistance to carbapenems, alongside an alarming rise in polymyxin (colistin) resistance.
- ***Staphylococcus aureus*:** Methicillin-resistant strains (MRSA) account for up to 30% of national isolates.

Antibiotic overuse and misuse drive this resistance pressure. India is the world's largest consumer of antimicrobials. Aligning with the World Health Assembly's Global Action Plan and the Indian National Action Plan (NAP-AMR), VPCI enforces this policy under five core objectives:

1. Improve institutional awareness and understanding of AMR.
2. Strengthen local microbiological surveillance and diagnostics.
3. Reduce infection incidence through strict hospital infection control metrics.
4. Optimize the deployment of antimicrobial agents via systematic stewardship.
5. Ensure clinical leadership and sustainable protocols regarding medication usage.

1.2 The WHO AWaRe Framework

This policy adopts the WHO AWaRe classification to optimize prescribing and curb resistance:

- **Access:** First- and second-line empiric options with a narrow spectrum, high safety profile, and low resistance potential.
- **Watch:** Broader-spectrum agents reserved for more severe clinical presentations.
- **Reserve:** "Last-resort" antibiotics safeguarded exclusively for confirmed multidrug-resistant (MDR) pathogens. To align with global stewardship targets, VPCI mandates that at least 60% of all hospital antibiotic prescriptions must come from the Access group, ensuring that Watch and Reserve agents are strictly monitored.

1.3 Principles of Rational Antibiotic Use

Antibiotic abuse stems from common clinical fallacies, such as the assumption that broad-spectrum coverage is universally safer, the failure to differentiate bacterial infections from non-infectious syndromes, and the treatment of benign microbial colonization. Antimicrobial stewardship at VPCI focuses on coordinated interventions designed to optimize agent selection, dosage, route, and duration, thereby optimizing clinical outcomes while minimizing toxicity and selective resistance pressure.

1.3 The Strategic Steps of Institutional Antibiotic Deployment

- **Step 1: Clinical Diagnosis:** Prioritize a syndrome-based clinical diagnosis over raw laboratory markers. Before prescribing, establish a high pre-test probability of infection and evaluate non-infectious mimics. Always draw appropriate cultures before the first dose.
- **Step 2: Reserve Empiric Therapy for Severely Ill Patients:** Limit immediate empiric coverage to critical presentations: febrile neutropenia, severe sepsis/septic shock, severe community-acquired pneumonia (CAP), ventilator-associated pneumonia (VAP), and necrotizing fasciitis.
- **Step 3: Analyze the Microenvironment:** Cross-reference the suspected clinical syndrome with VPCI's local institutional antibiogram to predict resistance patterns.
- **Step 4: Optimize Pharmacokinetics/Pharmacodynamics (PK-PD):** Tailor selections to achieve appropriate tissue penetration (e.g., blood-brain barrier, pulmonary epithelial lining) and adjust for baseline renal function.
- **Step 5: Mandatory De-escalation:** Review clinical progress and culture profiles at 48-72 hours. Narrow the spectrum, discontinue redundant double gram-negative or anaerobic coverage, stop polymyxins/glycopeptides if target pathogens are absent, and transition from IV to oral agents as soon as criteria are met.
- **Step 6: Stop Antibiotics for Documented Non-Infectious or Viral Syndromes:** Active de-escalation means immediately discontinuing therapies for viral pharyngitis, bronchitis, rhinosinusitis, non-infectious cardiopulmonary syndromes (e.g., heart

failure misdiagnosed as pneumonia), subcutaneous abscesses post-drainage, stasis dermatitis, and asymptomatic bacteriuria.

- **Step 7: Enforce Minimum Effective Durations:** Unless structural complications exist, stick to recommended timelines:
    - **CAP:** 5 days
    - **HAP:** 8 days
    - **Skin & Soft Tissue Infections:** 5 days
    - **Cystitis:** 3–5 days
    - **Pyelonephritis:** 5–14 days
    - **Uncomplicated *S. aureus* Bacteremia:** 2 weeks (complicated: 4–6 weeks)
    - **Surgical Prophylaxis:** 1 single pre-operative dose

2.0 Management of Multi-Drug-Resistant Bacterial Pathogens

2.1 Methicillin-Resistant *Staphylococcus aureus* (MRSA)

- **Resistance Profile:** Formerly resistant to all penicillins, Cephalosporins, and Macrolides. In vitro susceptibility to Fluoroquinolones, Aminoglycosides, or doxycycline does **not** justify monotherapy for serious deep-seated infections.
- **Laboratory Marker:** Cefoxitin resistance is the primary surrogate marker used in the VPCI laboratory.
- **First-Line Therapeutics:** Glycopeptides (**Vancomycin** or **Teicoplanin**) are the primary drugs of choice.
- **Alternative Agents: Linezolid** is reserved for skin, soft tissue, and structural pulmonary infections (excellent epithelial lining fluid penetration). **Daptomycin** is effective in bacteremia but must **never** be used to treat MRSA pneumonia due to its inactivation by pulmonary surfactants.
- **Carriage Elimination:** Topical application of Mupirocin intranasally twice daily for 5 days is indicated for verified nasal colonization control.
- **Restriction Note:** Avoid using Rifampicin outside of Mycobacterial regimens to limit rapid target-site mutations.

2.2 Vancomycin-Resistant Enterococcus (VRE)

Select therapies based on clinical severity and exact in vitro minimum inhibitory concentrations (MICs):

- **Linezolid:** Indicated and approved for severe VRE bloodstream infections.
- **Ampicillin:** High-dose regimens can be considered only if the strain demonstrates relative pan-susceptibility.
- **Daptomycin:** Useful off-label for deep tissue isolates but structurally unapproved for standard pulmonary parenchymal involvement.
- **Urinary Options:** Uncomplicated lower UTIs driven by VRE can be treated effectively using **Nitrofurantoin** or oral **Fosfomycin**.
- **Combination Therapy:** Use high-dose Aminoglycosides (Gentamicin/Streptomycin) strictly in synergy with cell-wall active agents for verified enterococcal endocarditis, provided high-level resistance is absent.

2.3 Extended-Spectrum β-Lactamase (ESBL) Producing Enterobacteriaceae

- **Laboratory Standard:** VPCI relies on resistance to Cefotaxime and Ceftazidime as screening markers. Confirmed ESBL producers are reported as clinically resistant to all Penicillins, cephalosporins (including Cefepime), and Aztreonam, regardless of nominal in vitro clear zones.
- **Target Regimens: Carbapenems** (Meropenem, Imipenem, Ertapenem) represent the absolute choice for severe systemic infections.
- **Carbapenem-Sparing Alternatives: Piperacillin-Tazobactam** or **Cefoperazone-Sulbactam** may be deployed for mild, localized infections if susceptibility is definitively verified via quantitative testing.

2.4 Carbapenem-Resistant Enterobacteriaceae (CRE)

CRE isolates are generally pan-resistant to standard beta-lactamase inhibitor combinations and Aminoglycosides. Empiric or targeted salvage regimens are based on combination therapies tracking:

- **Polymyxins (Colistin):** Loading dose of 9 million units (MU) IV stat, followed by a maintenance dose of 3 MU every 8 hours (or 4.5 MU every 12 hours) to maintain target steady-state plasma concentration.
- **Tigecycline:** Indicated for complicated intra-abdominal and soft tissue involvements. Avoid use for primary bacteremia due to rapid tissue distribution and low serum levels.

2.5 Recommended Measures to Control the Spread of MDROs

To mitigate the transmission of multi-drug-resistant strains within VPCI, the following infection control directives must be strictly enforced:

- **Laboratory Alerts:** Implement rapid laboratory identification and immediate reporting of MDRO profiles to clinical teams.
- **Enhanced ICU Surveillance:** Intensify routine infection screening, environmental tracking, and active surveillance within all intensive care units.
- **Barrier Precautions:** Enforce mandatory contact isolation protocols, including the dedicated use of gowns and gloves for managing colonized or infected patients.
- **Hand Hygiene:** Mandate strict adherence to WHO handwashing guidelines before and after all patient contact.
- **Cephalosporin Restriction:** Enforce strict administrative controls and stewardship reviews on the routine or empiric use of 3rd generation cephalosporins.

3.0 Management of Upper Respiratory Tract Infections & Acute Bronchitis

3.1 Acute Pharyngitis and Rhinosinusitis

- **Etiology:** The vast majority of upper respiratory tract infections (URTIs) are viral (Rhinovirus, Influenza, RSV, Coronavirus). Antibiotics are explicitly contraindicated.
- **Bacterial Pharyngitis:** Suspect Group A Beta-Hemolytic Streptococci (GABHS) predominantly in patients presenting with high fever >38°C, tonsillopharyngeal exudates, and tender anterior cervical lymphadenopathy in the **absence** of a prominent cough (**Centor Score 0-2**- GABHS pharyngitis unlikely, **Score 3-4**-Strongly suggestive of a bacterial infection).
- **Treatment Matrix:** Verified GABHS should be treated with **Amoxicillin** or **Penicillin V** for a full 10-day course to prevent secondary non-suppurative complications (rheumatic fever).

3.2 Acute Sinusitis Diagnostic Criteria

Antibiotic management for acute sinusitis is restricted to patients displaying:

1. Symptoms have been persisting for the past 10 days without signs of clinical improvement.
2. "Double sickening"- sudden clinical deterioration, new-onset fever, or increased purulent rhinorrhea following an initially improving typical viral URI.
3. Severe acute onset of high fever accompanied by focal facial pain for a minimum of 3 consecutive days.

- **Regimen:** Oral **Amoxicillin** or **Amoxicillin-Clavulanic Acid** for 5–7 days in adults.

3.3 Acute Bronchitis

Acute bronchitis is a self-limiting viral inflammation of the large airways. **Antibiotics must be withheld.**

- Purulent or colored (yellow/green) sputum is a marker of inflammatory cell migration and **does not** signify primary bacterial infection.
- Manage symptoms supportively via hydration and selective antitussives. Cough duration routinely stretches across 2 to 3 weeks naturally.

4.0 Community-Acquired Pneumonia (CAP)

4.1 Diagnosis & Core Evaluation

CAP presents as an acute lower respiratory parenchymal infection accompanied by new or worsening infiltrates on chest radiography, alongside fever, cough, purulent sputum production, or tachypnea. In elderly individuals, systemic febrile responses may be absent; altered mental status or acute confusion are common presenting features.

4.2 Severity Stratification via the CURB-65 Metric

Assign 1 point for each presentation:

- **C**onfusion (new onset orientation deficit)
- **U**rea (Blood Urea Nitrogen (BUN) > 19 mg/dL equivalent to a Serum Urea > 7 mmol/L)
- **R**espiratory Rate >30/min
- **B**lood Pressure (Systolic Blood pressure <90 mm of Hg or Diastolic Blood Pressure ≤60 mmHg.
- **65** -Age: ≥ 65 years of age.

A total score of 0–1 suggests outpatient management, a score of 2 indicates inpatient ward admission, and a score of ≥3 warrants consideration for intensive care unit (ICU) admission.

Management Allocation Matrix

CURB-65 Score	Risk Stratification	Care Setting Allocation	Empiric Regimen Options
0 – 1	Low Risk	Outpatient Management	**Oral Amoxicillin** (1 g q8h) OR **Oral Doxycycline** (100 mg q12h)
2	Moderate Risk	Inpatient Ward	**Oral/IV Amoxicillin-Clavulanate** + **Clarithromycin** (500 mg q12h)
≥3	High Risk	Inpatient / ICU	**IV Cefotaxime** (2 g q8h) OR **IV Ceftriaxone** (2 g q24h) **PLUS IV Clarithromycin** (500 mg q12h)

Note: *Clarithromycin provides targeted atypical coverage against Mycoplasma pneumoniae and Legionella. Switch to oral formulations as soon as gastrointestinal transit is reliable.*

5.0 Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AECOPD)

5.1 Indications for Antibiotic Therapy

Antibiotics provide zero benefit in non-purulent exacerbations and must be withheld unless specific criteria are met. Empiric antibiotic therapy is indicated only for:

- **The Three Cardinal Symptoms:** Increased dyspnea, increased sputum volume, and increased sputum purulence.
- **Sputum Purulence + 1:** Increased sputum purulence combined with *either* increased dyspnea *or* increased sputum volume.
- **Mechanical Ventilation:** Any patient requiring non-invasive (NIV) or invasive mechanical ventilation.

5.2 Pathogen Stratification

- **Uncomplicated AECOPD:** Driven by *Streptococcus pneumoniae*, *Haemophilus influenzae*, or *Moraxella catarrhalis*.
- **Complicated AECOPD (Risk of *Pseudomonas aeruginosa* or MDR strains):** Risk factors include ≥ 3 courses of antibiotics/steroids in the past year, baseline $FEV_1 <$ 50%, or previous isolation/colonization of *P. aeruginosa*.

5.3 Diagnostics

- **Sputum Culture:** Indicated *only* in severe or complicated cases to monitor for MDR/pseudomonal shifts. A positive culture without purulence indicates colonization, not infection.
- **Radiology & Labs:** Obtain a chest radiograph to rule out mimics (pneumonia, pneumothorax, heart failure). Check complete blood count, CRP, and ABG in hospitalized patients.

5.4 Target Empiric Treatment Protocols

- **Mild to Moderate Exacerbation (Outpatient):** No risk factors for *Pseudomonas* or complex comorbidities.

  Oral **Amoxicillin** (500 mg q8h) or Oral **Doxycycline** (100 mg q12h) or **Oral Cefalexin** (500 mg q8h) for 5 days

- **Severe Exacerbation (Inpatient Ward):** Hospitalized with comorbidities, but no *Pseudomonas* risk factors.

Oral or IV **Amoxicillin-Clavulanic Acid** (500 mg + 125 mg q8h) OR **IV Cefotaxime** (2 g q8h) for 5 days.

- **High Risk for Resistant Pathogens** *(Inpatient / ICU):* Meets ≥1 risk factor for *Pseudomonas aeruginosa.*

  IV Piperacillin-Tazobactam (4.5 g q6h) ORalternatively **IV Cefepime** (2 g q8h) OR **IV Levofloxacin** (750 mg q24h)

Stewardship Directive: Check historical cultures. If the patient has a known prior colonization or frequent admissions with ***Pseudomonas aeruginosa***, empiric regimens must be adjusted to include an anti-pseudomonal agent (e.g., Piperacillin-Tazobactam or Cefepime).

6.0 Urinary Tract Infections

6.1 Lower Urinary Tract Infection (Acute Uncomplicated Cystitis)

- **Clinical Presentation:** Dysuria, frequency, urgency, and suprapubic pain without systemic symptoms.
- **Preferred Management Matrix (Adults):**
  - **First Line: Nitrofurantoin** (100 mg PO q12h for immediate-release formulations) for 5 days. Nitrofurantoin remains highly active against local ESBL-producing Enterobacteriaceae.
  - **Alternative:** Oral **Fosfomycin** (3 g single stat dose).
  - **Second Line: Sulfamethoxazole-Trimethoprim** (800 mg/160 mg q12h) for 3 days. Avoid if regional resistance indices cross 20%.

6.2 Upper Urinary Tract Infection (Acute Uncomplicated Pyelonephritis)

- **Clinical Presentation:** Flank pain, costovertebral angle tenderness, high fever, nausea, vomiting, and systemic toxic features.
- **Outpatient Regimen (Mild presentations with preserved oral intake tolerance):** Oral **Ciprofloxacin** (500 mg q12h) for 7 days. *Prescribers must maintain vigilance regarding fluoroquinolone black-box warnings (tendinopathy, QTc prolongation, and central nervous system disturbances).*
- **Inpatient Severe Pyelonephritis Regimen:**
  - **IV Cefotaxime** (1–2 g q8h) OR **IV Ceftriaxone** (1–2 g q24h).
  - In critical septic presentations, supplement immediately with a carbapenem-sparing aminoglycoside: **IV Amikacin** (15 mg/kg once daily) or **IV Gentamicin** (5 mg/kg once daily). Total duration: 7–14 days depending on response and clearance.

7.0 Sepsis and Septic Shock in Adults

7.1 Diagnostic Protocol

Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection. It is identified clinically by an acute change in the Sequential Organ Failure Assessment (**SOFA**) score of points. Septic shock represents circulatory and metabolic collapse marked by persistent hypotension requiring vasopressors to maintain a Mean Arterial Pressure (MAP) and a serum lactate despite adequate volume resuscitation.

7.2 Syndromic Empiric Antibiotic Regimens for Sepsis

Draw two sets of blood cultures immediately and launch the targeted IV therapies within 1 hour of recognition:

- **Clinical Sepsis of Unknown Origin: IV Ceftriaxone** (2 g q24h) **OR IV Cefotaxime** (2 g q8h) **COMBINED WITH IV Amikacin** (15 mg/kg once daily). Baseline duration: 7 days.
- **Intra-Abdominal Focus Sepsis: IV Ceftriaxone** (2 g q24h) **PLUS IV Metronidazole** (500 mg q8h) **OR** monotherapy with **IV Piperacillin-Tazobactam** (4.5 g q6h). Reserve **IV Meropenem** (2 g q8h) for patients with a history or high risk of multidrug-resistant CRE/ESBL infections.
- **Bacterial Meningitis Sepsis: IV Cefotaxime** (2 g q6h)

  OR

  IV Ceftriaxone (2 g q12h) to achieve therapeutic cerebrospinal fluid profiles.
- **Enteric fever: Ceftriaxone** (IV): 2 g given once a day for 10 days
- **Lower respiratory tract infection: Cefotaxime** (IV): 2 g given every 8 hours **AND Clarithromycin** (IV): 500 mg given every 12 hours

  OR

  Ceftriaxone (IV): 2 g given once a day **AND Clarithromycin** (IV): 500 mg given every 12 hours
- **Urinary tract infection**: **Cefotaxime** (IV): 2 g given every 8 hours **AND Amikacin** (IV): 15 mg/kg given once a day

  OR

  Ceftriaxone l (IV): 2 g given once a day **AND Amikacin** (IV): 15 mg/kg given once a day

8.0 Hospital-Acquired Pneumonia (HAP) & Ventilator-Associated Pneumonia (VAP)

8.1 Diagnostics & Scope

- **HAP:** Pneumonia develops 48 hours or more after hospital admission, not incubating at the time of arrival.
- **VAP:** Pneumonia emerging 48 hours following endotracheal intubation.
- **Diagnostic Criteria:** New or changing pulmonary infiltrates on chest X-ray matched with purulent secretions, rising inflammatory counts, and worsening oxygenation parameters. Always collect deep sputum or endotracheal aspirates for quantitative culture before treatment alteration.

8.2 Empiric Treatment Protocols

Empiric coverage factors in local VPCI ICU antibiograms and individual patient risk factors for Multi-Drug-Resistant Organisms (prior antibiotic exposure within 90 days, prolonged stay, or prior isolation of MRSA/Pseudomonas).

Standard Risk (No specific MDR factors)

- **IV Cefotaxime** (2 g q8h) OR **IV Ceftriaxone** (2 g q24h) OR **IV Amoxicillin-Clavulanic Acid** (1.2 g q8h).

High Risk (MDR Pathogens, *Pseudomonas*, or MRSA Suspected)

- Deploy an anti-pseudomonal backbone: **IV Piperacillin-Tazobactam** (4.5 g q6h) OR **IV Cefepime** (2 g q8h) OR **IV Meropenem** (1–2 g q8h).
- If high-risk MRSA markers are present (e.g., prior isolation, line-associated infection, or severe necrotizing features): **ADD IV Vancomycin** (15–20 mg/kg q12h, targeting trough values of 15–20) OR **IV Linezolid** (600 mg q12h).
- **Standard Duration:** 7–8 days. De-escalate based on microbiology reports by day 3.

9.0 Summary Matrix for VPCI Clinicians*

Use the following quick-reference matrix for initial empiric selection in the outpatient clinic and inpatient wards at VPCI:

Clinical Setting / Patient Profile	Primary First-Line Empiric Choices	Secondary / Alternative Selections
Healthy Adults (Outpatient CAP)	Oral Amoxicillin OR Oral Doxycycline	Oral Azithromycin/ Clarithromycin
Adults with Comorbidities (Outpatient CAP) *(Chronic Heart, Lung, Renal, Liver Disease, or DM)*	Oral Amoxicillin-Clavulanate **PLUS** Oral Azithromycin (or Doxycycline)	Oral Cephalosporin (Cefuroxime / Cefpodoxime) **PLUS** Oral Macrolide
Inpatient CAP (No Risk Factors for MRSA/Pseudomonas)	IV/Oral Beta-lactam **PLUS** Azithromycin	Respiratory Fluoroquinolone Monotherapy
Inpatient CAP (With verified Risk Factors for *P. aeruginosa*)	**Dual Combination (Different Classes):** Piperacillin-Tazobactam / Cefepime / Ceftazidime / Meropenem **PLUS** Amikacin / Ciprofloxacin	Adjust dynamically according to the active institutional antibiogram profile
Inpatient CAP (With verified Risk Factors for MRSA)	**ADD** IV Linezolid OR IV Vancomycin	Discontinue at 48 hours if cultures display zero Gram-positive clusters

*** Note: The empirical treatment is decided according to the yearly antibiogram generated at Vallabhbhai Patel Chest Institute.**

Mandatory Policy Check: Re-evaluate every antimicrobial prescription sheet within 48 to 72 hours of initial order. Ensure all data fields are appropriately logged within the patient chart, detailing the clinical diagnosis, planned stop dates, and de-escalation pathways.

10. References

1. The WHO AWaRe (Access, Watch, Reserve) antibiotic book. Geneva: World Health Organisation; 2022. Licence: CC BY-NC-SA 3.0 IGO.

2. World Health Organisation. *The WHO AWaRe (Access, Watch, Reserve) antibiotic book: Infographics*. Geneva: World Health Organisation; 2024. License: CC BY-NC-SA 3.0 IGO.

3. Treatment Guidelines for Antimicrobial Use in Common Syndromes. 3rd edition. New Delhi: Indian Council of Medical Research, 2022. All rights reserved