

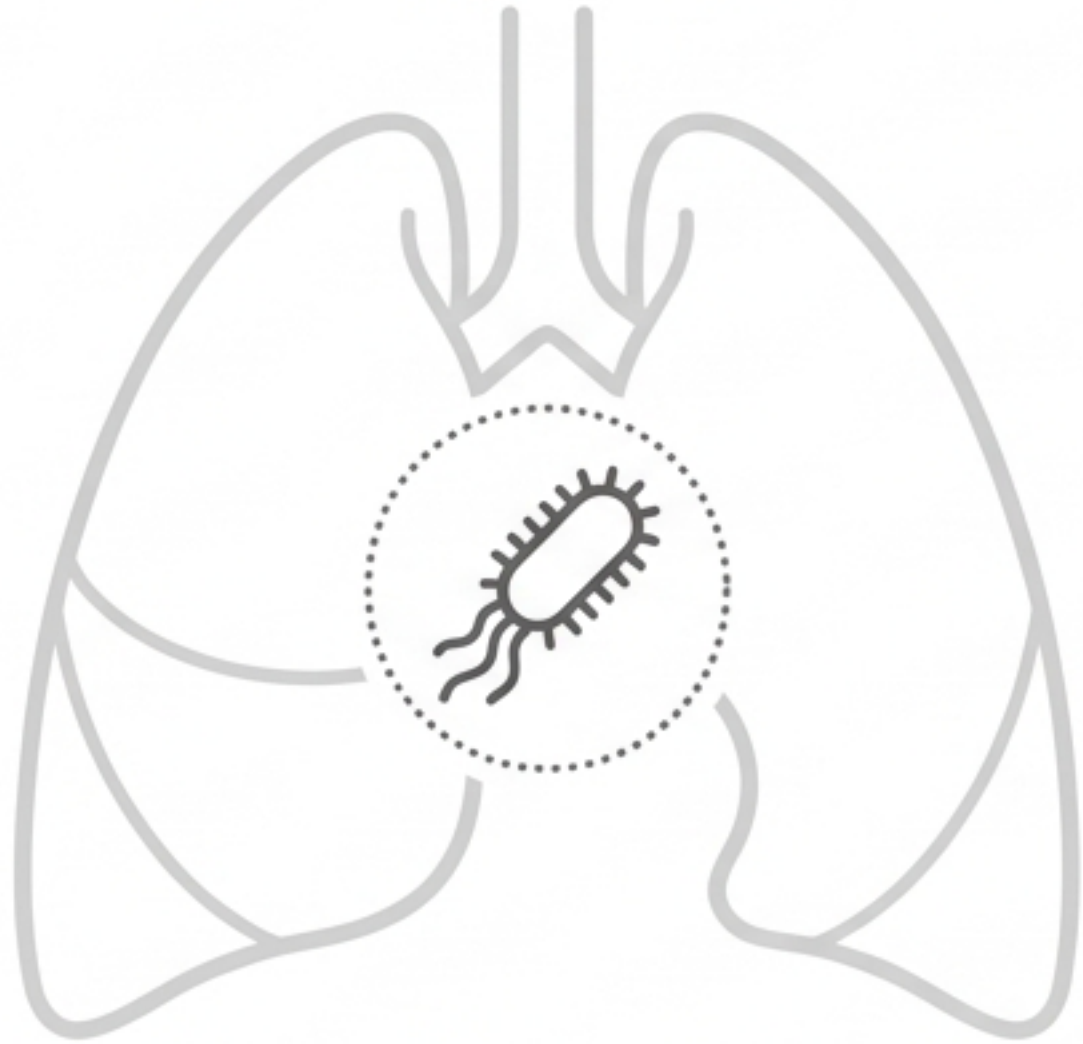
Diagnosis & Management of Community-Acquired Pneumonia

Visualizing the **2025 American Thoracic Society (ATS)** Official Clinical Practice Guideline Updates



The Evolving Ecosystem of the Lung

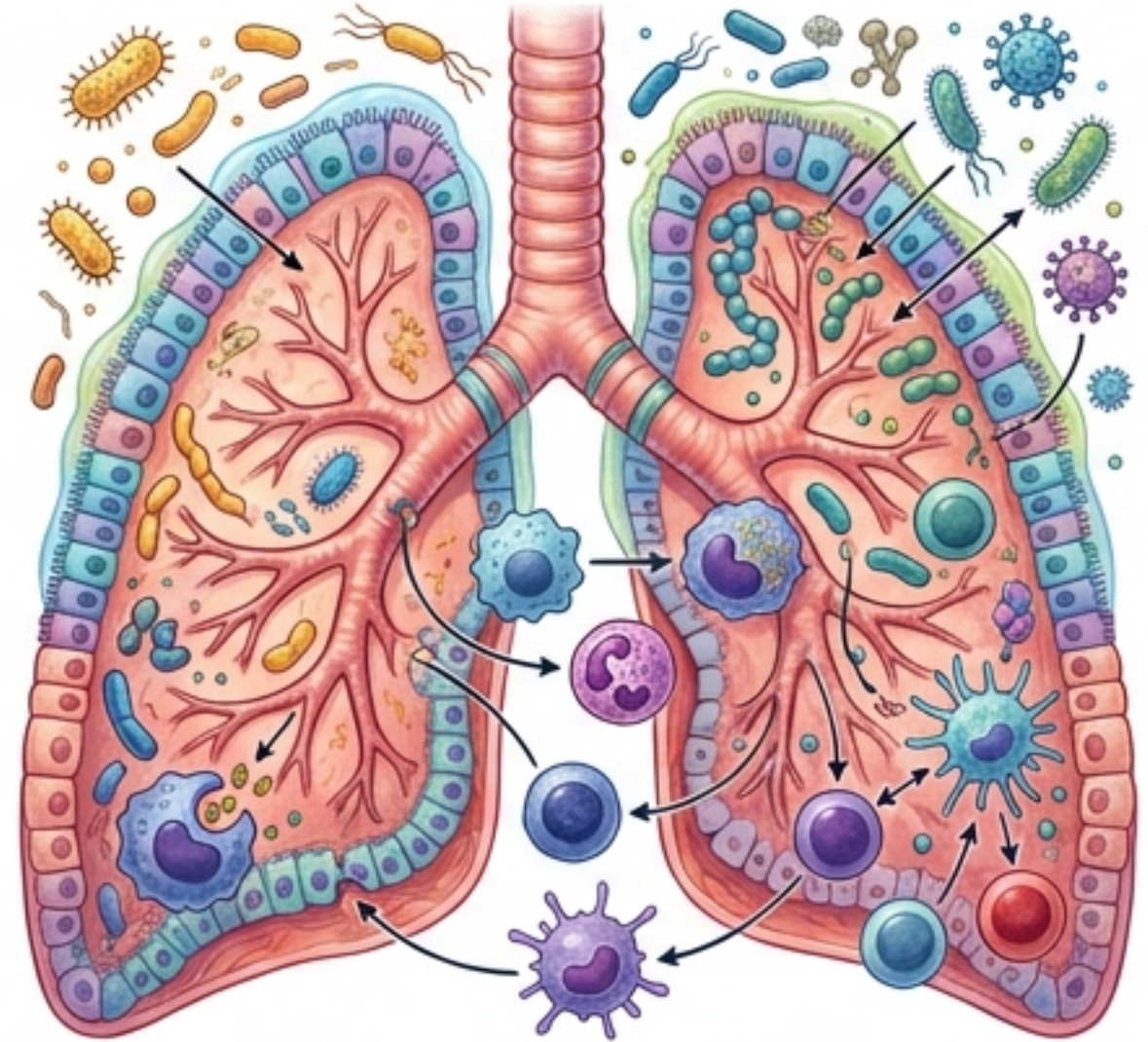
Historical Model: The Sterile Compartment



Historically viewed as a sterile space invaded by a single foreign organism.

Strategy: Total pathogen eradication.

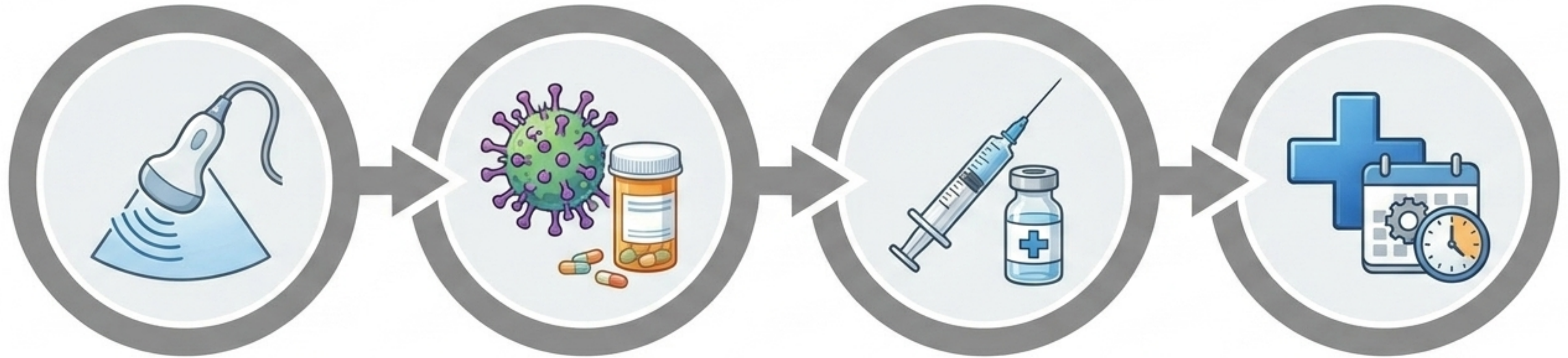
Modern Model: **The Dynamic Ecosystem**



A state emerging from **host susceptibility**, **dysbiosis** (microbial imbalance), and dysregulated inflammation.

Strategy: Reduce bacterial load with minimal microbiome disruption and targeted immunomodulation.

The 2025 Clinical Pathway: 4 Key Updates



Diagnosis

The emerging role of Lung Ultrasound (LUS) vs. Chest Radiography.

Treatment Initiation

Empiric antibiotics in the era of rapid respiratory viral testing.

Adjunctive Therapy

Systemic corticosteroids for hospitalized patients.

Resolution & De-escalation

Criteria and timelines for short-course antibiotic duration.

Step 1: Rethinking Initial Diagnosis

[Conditional Recommendation | Low-Quality Evidence]

For adults with suspected CAP, Lung Ultrasound (LUS) is an acceptable diagnostic alternative to chest radiography in medical centers where appropriate clinical expertise exists.

Voting Metric: 87% committee consensus.

Clinical Suspicion

Triage Decision

Choose LUS if:

- No radiography available
- High CT risk/cost
- Negative x-ray with high suspicion

Weighing the LUS Diagnostic Alternative



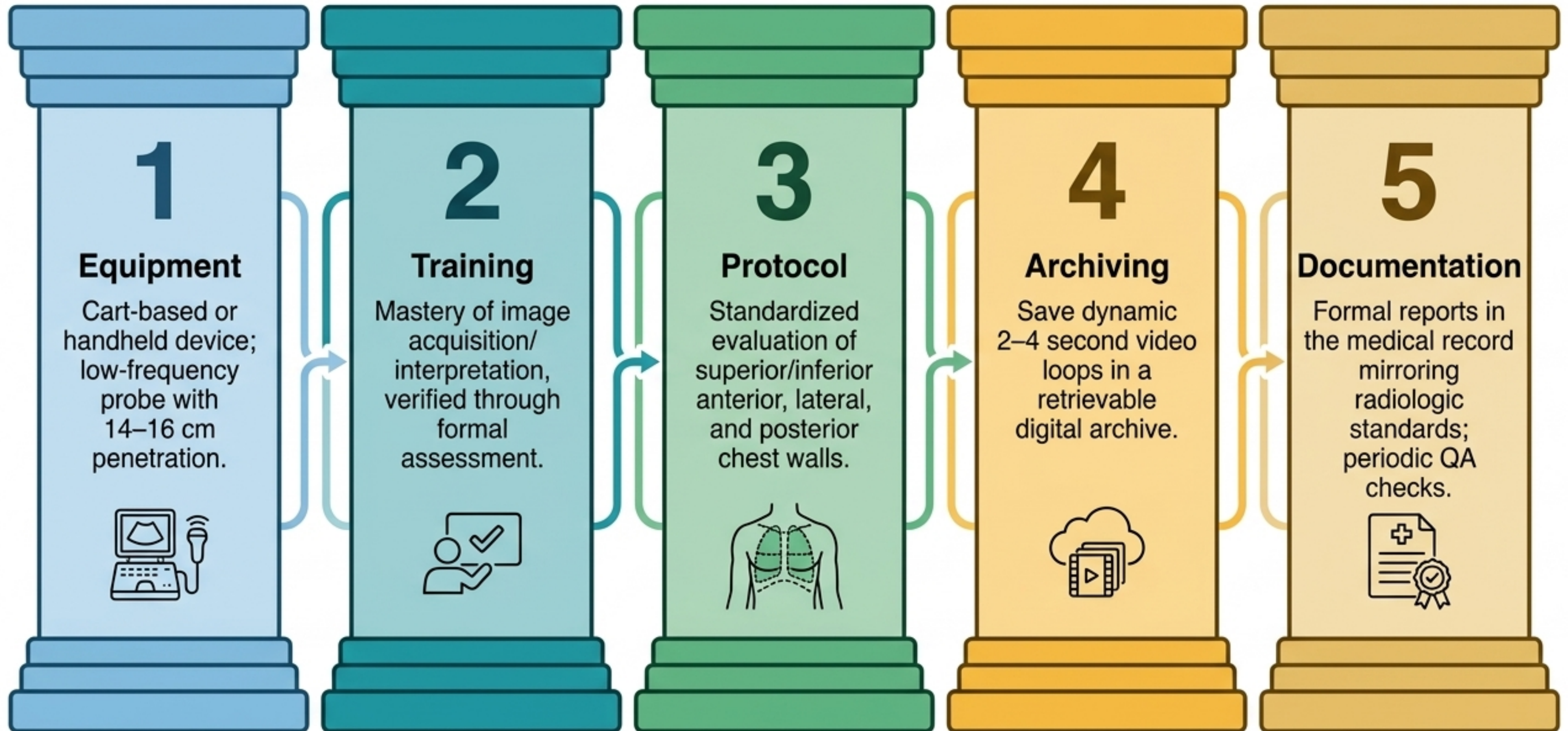
Factors Favoring LUS

- Lack of chest radiography availability.
- Patient convenience and need to avoid radiation exposure.
- High patient risk or cost associated with CT scans.
- All criteria for clinical expertise are met.

Factors Limiting LUS

- Need to evaluate alternative diagnoses (e.g., pulmonary embolism, malignancy).
- Physical barriers to high-quality LUS (obesity, surgical drains, chest wall scars, patient inability to hold position).
- Lack of institutional protocol or expertise.

The 5 Pillars of Lung Ultrasound Expertise



Step 2: The Viral-Bacterial Coinfection Dilemma

Rapid viral PCR tests easily identify respiratory viruses, but current microbiology cannot reliably exclude a concurrent bacterial infection in the lung.

Risk of missed bacterial coinfection

(Adverse outcomes, septic shock, death)



Risk of unnecessary antibiotics

(*Clostridioides difficile*, resistance, microbiome disruption, side effects)



Key Insight: Clinical presentation, biomarkers (like procalcitonin), and radiology cannot reliably distinguish viral from bacterial-viral coinfections.

Empiric Antibiotics for Viral-Positive CAP

[All Recommendations: Conditional | Very Low-Quality Evidence]

Outpatients



Suggest NOT prescribing.
(93% consensus). Low risk of harm if bacterial infection is missed.

Inpatients



Suggest prescribing.
(80% consensus). Higher baseline severity warrants coverage.



Suggest prescribing.
(73% consensus). Increased risk of poor outcomes if antibiotics are withheld.



Suggest prescribing.
(100% consensus). High risk of death; missing a bacterial coinfection is catastrophic.

Tipping the Scale: Outpatient Comorbidities

>50% Agreement to Prescribe

Chronic pulmonary disease
(excl. asthma) [82%]

End-stage liver
disease [71%]

End-stage renal
disease [65%]

Cardiovascular disease

Alcoholism

Neoplastic disease

<50% Agreement to Prescribe

Neurological
disease

Chronic liver
disease

Malnutrition

Current
smoker

Diabetes

Obesity

Immunocompromised hosts (e.g., active chemotherapy, solid organ transplant, advanced HIV) are strictly excluded from these CAP guidelines.

Step 3: Adjunctive Systemic Corticosteroids

[Strong Recommendation | Low Evidence]

Nonsevere Inpatients
(100% consensus)



Recommend NOT Administering.

Rationale: Undesirable effects (robust evidence for hyperglycemia) outweigh non-significant impacts on mortality or length of stay.

[Conditional Recommendation | Low Evidence]

Severe Inpatients
(94% consensus)



Suggest Administering.

Rationale: Desirable effects on critical outcomes (reduced mortality and length of stay) outweigh the risks of side effects.

Nuancing the Corticosteroid Decision in Severe CAP



Influenza Pneumonia

This recommendation strictly excludes patients with severe CAP caused by influenza due to observational data suggesting potential harm.



Factors Favoring Steroids:

- Short interval between symptom onset and presentation.
- Elevated inflammatory markers (CRP, IL-6).
- Respiratory failure (PaO₂/FIO₂ ratio < 300) or septic shock.
- Ability to administer early (<24 hours).



Factors Limiting Steroids:

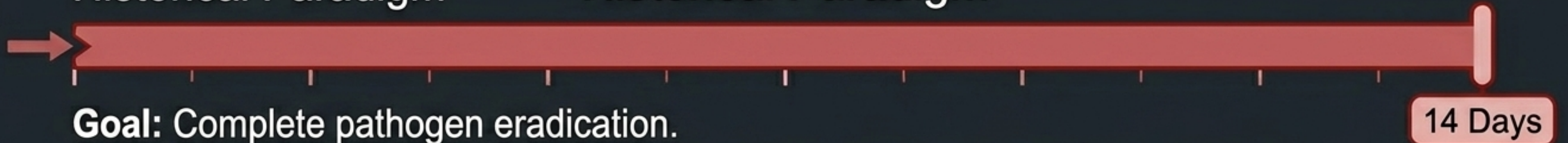
- Uncontrolled diabetes.
- Recent GI bleeding.
- Longer time since onset of severe CAP (>72 hours).
- Normal inflammatory markers.

Step 4: Resolution & De-escalation

The Shift Toward Shorter Antibiotic Courses

Historical Paradigm

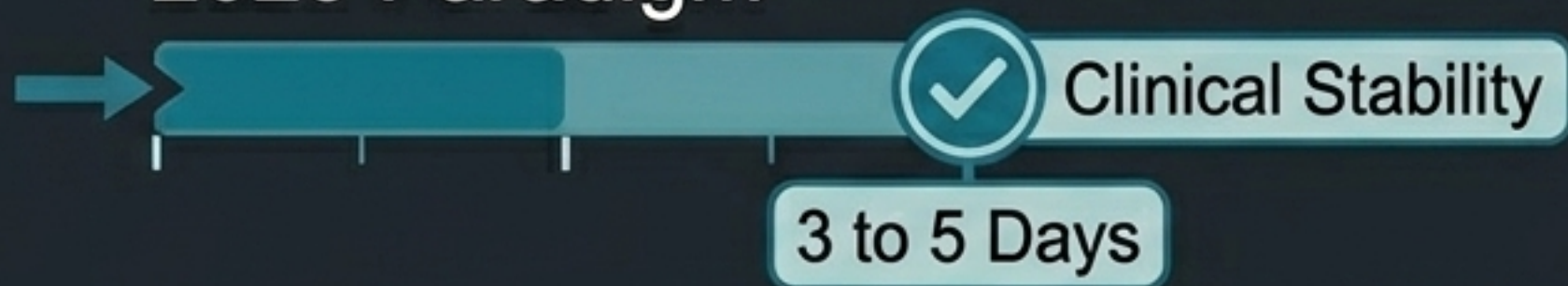
Historical Paradigm



Goal: Complete pathogen eradication.

Result: High rates of adverse events, *C. difficile*, and antimicrobial resistance.

2025 Paradigm



Goal: Reduce bacterial load to allow host immune clearance while preserving the microbiome.

Result: Shorter durations show noninferior clinical cure rates.

Antibiotic Duration by Clinical Setting

Outpatients

[Conditional | Low Evidence]



< 5 Days

(Minimum 3 days effective duration).

Nonsevere Inpatients

[Conditional | Low Evidence]



< 5 Days

(Minimum 3 days effective duration).

Severe Inpatients

[Strong | Low Evidence]



≥ 5 Days

Insufficient therapy here carries a high risk of adverse outcomes or death.



Note: Pharmacokinetics matter. 1 day of high-dose extended-release azithromycin is effectively a 4-day duration.

The Prerequisite: Defining “Clinical Stability”

**Short courses require daily assessment.
Stop the clock when the dashboard turns green.**

Temperature
< 37.8°C

Heart rate < 100
beats per minute

Respiratory rate
< 24 breaths per
minute

Systolic blood
pressure > 90
mm Hg

SpO₂ > 90% (or
PaO₂ > 60 mm Hg on
room air, or return to
baseline oxygen
requirement)

Normal mental
status

When to Override the Short-Course Strategy

Factors that demand longer therapy

Specific Organisms

S. aureus (including MRSA), *Pseudomonas aeruginosa*, or suspected intracellular microorganisms (e.g., *Legionella*).

Structural Lung Disease

Bronchiectasis, postobstructive pneumonia, chronic respiratory insufficiency.

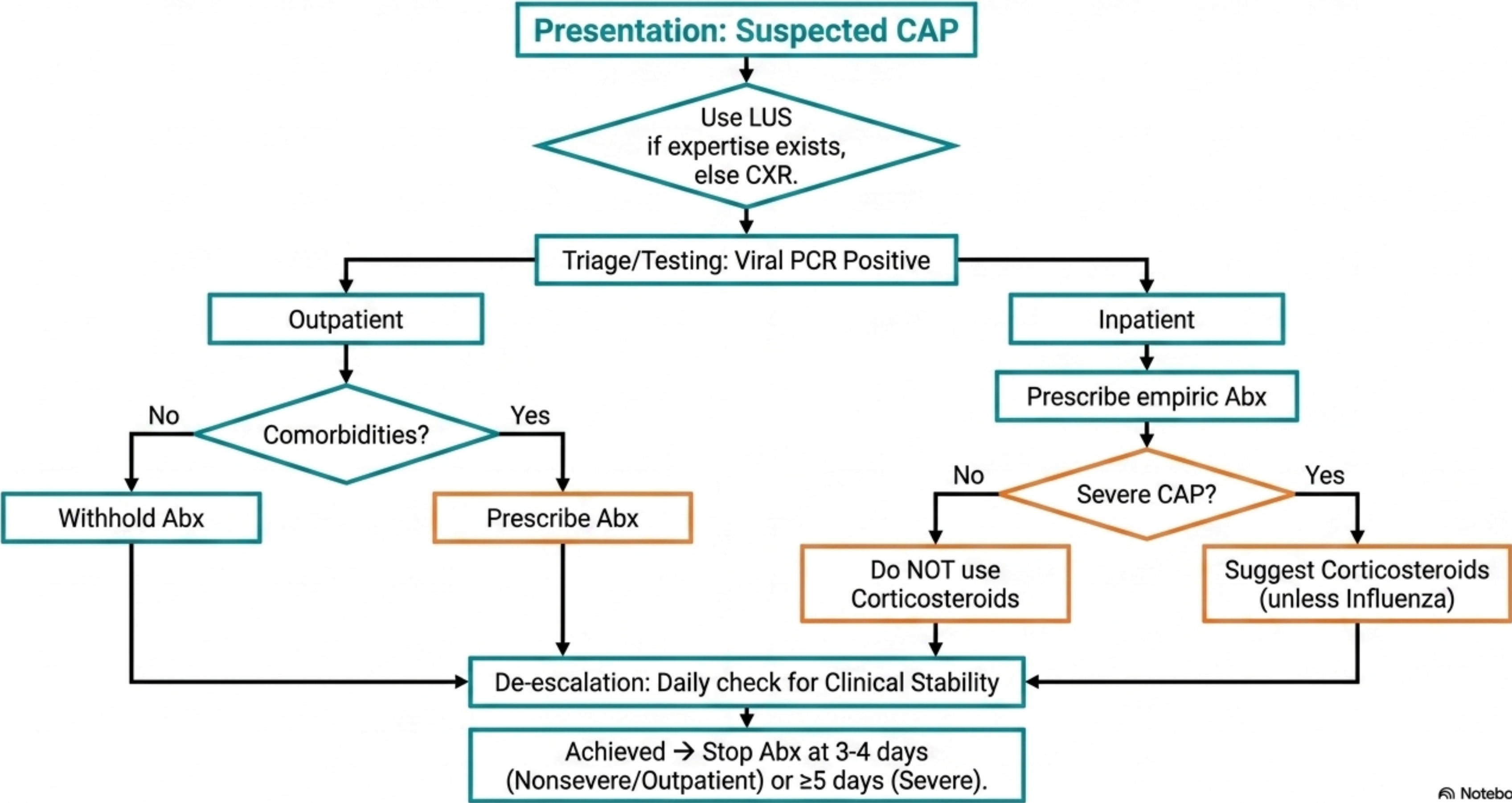
Radiographic & Clinical Complications

Necrotizing process, lung abscess, empyema, parapneumonic effusion, or bacteremia.

Systemic Factors

Pregnancy, recent hospitalization, or residence in a long-term care facility.

SYNTHESIS: The 2025 CAP Management Algorithm



The Era of Individualized Pneumonia Care



Not a Mandate

No guideline can account for all unique clinical circumstances. These recommendations provide a basis for rational decision-making, not rote application.

Embrace Uncertainty

The evidence base for CAP is dynamic and often low-quality. Careful clinical judgment remains paramount.

Shared Decision Making

Conditional recommendations mean a sizable minority of patients may prefer an alternative. Communication and contingency planning are part of the prescription.