

Table 1. Primary and secondary findings are necessary to initiate antibiotics for bacterial pneumonia (PNA) or COPD exacerbation.

Primary		Secondary		Primary and secondary both present	Either Primary or Secondary absent
Afebrile	Other comorbidities	New productive cough	+ Either of the following A. Respiratory rate > 25/min B. Delirium	Start antibiotics	Start active monitoring
	COPD pre-existing	Increased sputum purulence	+ Either of the following A. Increased dyspnea B. Increased sputum volume		
Fever	>100°F or > 2.0°F above baseline or 2 X >99°F	>1 of the following symptoms (include at least 1 Respiratory Specific)		(Tables 2 & 3)	(do not start antibiotics)
		Respiratory Specific– at least one	Respiratory Non-Specific		
		-New or increase cough -New or increase sputum	-Delirium -Total WBC > 14,000* - Hypoxia (O2 sats < 90%)* -Pleuritic chest pain -Respiratory rate > 25 breaths/min -Consolidation (on exam)		(Table 2)
	High (>102F)	Respiratory Rate >25 and/or New Productive Cough		Consider ED	

* Secondary findings *italicized* may be documented/obtained by ordering these tests during active monitoring if resident initially does not meet criteria to start antibiotics

** Consider ordering chest X-ray and CBC with differential for febrile residents with cough and any of these criteria (HR >100, worsening mental status, or rigors) Antibiotics should not be used for up to 24 h after large-volume aspiration in those without COPD but with temp ≤38.9°C (102 °F) and non-productive cough

TABLE 2. CLINICAL RESPONSE DETAILS

Start Antibiotics: Primary & secondary findings both present	Start Active Monitoring: Either Primary or Secondary findings are absent
<ul style="list-style-type: none"> • Test COVID PCR (+ isolation) if still active • IF SEASONAL, √ RSV/INFLUENZA TESTING • Choose antibiotic (Table 3) • Diagnostics only if <ul style="list-style-type: none"> ○ If community/hospital legionella problem – test urine Legionella ○ If not improving consider CXR, pulse oximetry, CBC 	<ul style="list-style-type: none"> • Do not start antibiotics • Consider COVID PCR test if still active monitoring • If seasonal, consider √ RSV/influenza testing • If concerned or not improved √ CBC +/- CXR • Re-evaluate signs and symptoms every 24 hours. <ul style="list-style-type: none"> ○ If not improved, consider <ul style="list-style-type: none"> ▪ upper respiratory infection (URI) (if productive cough is not noted) ▪ non-infectious causes of pulmonary infiltrate, other infection source.

* In patients where suspicion of Legionella is low, and the burden/risks of sputum or urine acquisition is high, testing not justified. Urinary catheterization, induced sputum production, or nasotracheal suctioning are only necessary in patients or residents when suspicion of Legionella is high and require proper consent.

2019 American Thoracic Society/IDSA guidelines: (1) suggest Legionella antigen testing in cases where a known outbreak is occurring or severe disease in hospitalized patients; (2) adults with CAP when influenza viruses are circulating in the community test for influenza with a rapid molecular assay.

Table 3. Recommended agents and durations for Nursing Home Residents with Criteria to Start Antibiotics for Suspected Pneumonia				
Mild-Moderate				
	Scenario	Antibiotic to Start	Dosing and Duration (5 days)*	Considerations
1 st line	Moderate illness, able to take oral medication**	Cefpodoxime	200 mg PO BID X 5 days	Safe in mild PCN allergy Q 24 hrs if CrCL <30; or post HD X 3 Alternative cefuroxime 500 mg PO BID
		Amoxicillin/ clavulanate	500 mg/125 mg TID X 5 days	Equivalent to 875/125 mg BID
2 nd line	Severe contraindications to 1 st line	Levofloxacin	750 mg PO Q 24 X 5 days OR if CrCL<20 or ESRD, 750 x 1 dose, then 500 mg Q 48 hours X 2 doses	Pose a higher risk for <i>C. difficile</i> infection Caution with anti-arrhythmic medications and prolonged QTc. Mild PCN allergy not an indication for quinolones
Special circumstances				
2 nd line	Unable to take oral meds	Ceftriaxone IM/IV	1000 mg IM Q 24 hours X 5	Reserve IM for severe illness but reluctant to evaluate in ED/Hospital
	Deterioration on oral agents, severe illness	Ceftriaxone IM/IV AND		
			Doxycycline OR Azithromycin	100 mg BID X 5 days 500 mg X 3 days
	Risk for Pseudomonas***	Levofloxacin monotherapy	As above	
	Risk MRSA***	Doxy + 1 st line	100 mg BID X 5 days + 1 st line	Add doxy to first line agents.
	Risk of or suspect aspiration	Use either 1 st line	Duration should be maintained at 5 days	Add anaerobic coverage only if abscess or empyema suspected: then amox/clavulanate, or ceftriaxone/metronidazole

* Duration is 5 days. Only extend to 7 if signs/symptoms not improved at day 5 (i.e., still fever, use of supplemental O₂, unstable vital signs).

We recommend B-lactam monotherapy. 2019 ATS/IDSA guidelines recommend combination therapy (b-lactam/macrolide) for outpatients with co-morbidities, but for nursing home residents without typical community-exposure to atypical organisms, min role for combination therapy, but not contraindicated. **Co-morbidities include chronic heart, lung, liver, renal disease; diabetes, alcoholism, malignancy, asplenia.

*** for MRSA = history of clinical culture with MRSA (sputum, wound, nasal) in past year; for Pseudomonas = history of + PSA in Sputum in past year or bronchiectasis/FEV1<35%. If NOT transferring to ED to get new sputum culture, use levofloxacin (pseudomonas) or doxy + 1st line agent (for MRSA). **IF able** to order sputum microbiology, stop additional coverage if no Pseudomonas or MRSA recovered.