Health PEI

ANTIMICROBIAL STEWARDSHIP SUBCOMMITTEE

Acute Exacerbation of Chronic Obstructive Pulmonary Disease: Antimicrobial Management

Definitions

- **Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AECOPD):** An acute worsening of respiratory symptoms that is sustained (48 hours or more) and results in additional therapy.
- May be triggered by infections, airway irritants, non-adherence to COPD treatments, pulmonary embolism, pulmonary edema, pneumothorax, etc.

Most Common Organisms

- **Respiratory viral infections:** Most commonly human rhinovirus ("common cold"), Influenza, COVID-19
- **Respiratory bacterial infections:** *Haemophilus influenzae, Moraxella catarrhalis, Streptococcus pneumoniae*

Diagnostic Considerations

- Although viral and bacterial infections may cause AECOPD, it is important to rule out non-infectious precipitants including pulmonary embolism, pneumothorax, heart failure or pleural effusion.
- Viral causes
  - Influenza testing during periods of increased influenza activity
  - COVID-19
- If radiographic and clinical evidence of pneumonia, choose antibiotic based on Health PEI Pneumonia Guidelines

Empiric Antibiotic Therapy

- Use antibiotics ONLY in patients with at least TWO of the following cardinal signs:
  - **increased sputum purulence**
  - **Increased sputum volume**
  - **Worsening dyspnea**
- If a patient has received an antibiotic in the last three months, it is recommended to switch to an alternative class.
- Macrolides are not recommended as first line empiric therapy due to poor Haemophilus coverage and high rates of *Streptococcus pneumoniae* resistance.
- Fluoroquinolones should be reserved for severe cases or failure with first line options due to concerns regarding resistance and *C. difficile*.
- Treatment failure is defined as clinical deterioration after 72 hours or no improvement after completion of first line treatment.

Empiric Antimicrobial Therapy for AECOPD

Risk Factors	Preferred Empiric Regimen	Alternate Empiric Regimen
Acute Bronchitis ○ Patients presenting with only 1 of the 3 cardinal signs	No antimicrobial therapy recommended	
Less than 4 exacerbations in the past year and at least 2 of the following cardinal signs: 1. Increased sputum purulence 2. Increased sputum volume 3. Worsening dyspnea	amoxicillin 1000 mg PO TID* **OR** doxycycline 100 mg PO BID	cefuroxime 500 mg PO BID* **OR** sulfamethoxazole-trimethoprim 1 DS tablet (160/800 mg) PO BID* **OR** **when above options cannot be used:** azithromycin 500 mg PO daily[§] x 3 days **OR** clarithromycin 500 mg po BID*
4 or more exacerbations in the past year and at least 2 of the following cardinal signs: 1. Increased sputum purulence 2. Increased sputum volume 3. Worsening dyspnea **OR** Treatment failure[α] **OR** Antibiotics in the past 3 months	amoxicillin/clavulanate 875/125mg PO BID* **OR** cefuroxime 500 mg po BID*	levofloxacin 750 mg PO/IV daily* **OR** ceftriaxone 1g IV q24h
Other Considerations:		
If radiographic and clinical evidence of **pneumonia**, choose antibiotic based on Health PEI Pneumonia Guidelines		

*Requires dose adjustment in renal dysfunction

§Special authorization required from PEI Pharmacare

αTreatment failure is defined as clinical deterioration after 72 hours or no improvement after completion of first line treatment

Duration

- Usual duration of therapy: **5 days** (some exceptions may apply)

IV-to-PO Conversion

- Evaluate for IV-to-PO conversion within 48 hours of initiating treatment.
- Consider oral antibiotics when patient is clinically improving (i.e. tolerating oral intake, hemodynamically stable, afebrile for at least 24 hours) – see Health PEI IV-to-PO Guideline for more details.

Prevention

- Review patient vaccine record in provincial all immunizations registry (AIR) to ensure they are up to date with all eligible vaccinations.

These guidelines are an adaptation of Nova Scotia Health Authority's "Acute Exacerbation of Chronic Obstructive Pulmonary Disease" 2023 guideline.

References

1. Province of British Columbia. (2025). *Chronic Obstructive Pulmonary Disease (COPD): Diagnosis and Management*. Retrieved from https://www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/bc-guidelines/copd
2. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2023. [Internet]. Available from: Available from: http://goldcopd.org/.
3. RA McIvor, ER McIvor. Chronic Obstructive Pulmonary disease (COPD). E-CPS. 2025. Available from: https://cps.pharmacists.ca/search
4. Nova Scotia Health Authority. "Acute Exacerbation of Chronic Obstructive Pulmonary Disease." *NS Health Library*. 2025. Available at: https://library.nshealth.ca/ld.php?content_id=36906350