Q4 2025 MD Snapshot-Prescribing Companion: **Two unique antibiotic case study scenarios**

Prescribing Resource

Physician Prescribing Practices (PPP) Program
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Case study 1: Acute pharyngitis in an adult patient from an Indigenous community

Patient background

A 32-year-old woman from a northern Indigenous community presents to a rural primary care clinic with a 2-day history of sore throat, painful swallowing, fever, and malaise. She denies cough, rhinorrhea, or conjunctivitis. Her past medical history is unremarkable, and she takes no regular medications. She reports that several family members in her community have recently experienced similar symptoms.

Clinical assessment

Vital signs:

- Temperature: 38.4°C
- HR: 96 bpm
- BP: 118/74 mmHg
- RR: 16/min
- SpO_2: 98% on room air

Physical exam:

- Oropharynx: erythematous with tonsillar exudates
- Tender anterior cervical lymphadenopathy
- No evidence of peritonsillar abscess, otitis media, or sinusitis
- Lungs clear; abdomen benign

Using the modified Centor criteria, the patient's score is 4, indicating a high likelihood of Group A Streptococcal (GAS) pharyngitis.

Diagnostic considerations

Although the clinical picture suggests GAS pharyngitis, other viral and bacterial pathogens may cause similar presentations. To distinguish between GAS infection and other etiologies, clinicians may use rapid antigen detection testing (RADT) or throat culture. In this case, the clinic performs RADT, which returns positive for GAS.

Risk context: Indigenous Populations and rheumatic fever

While the incidence of acute rheumatic fever (ARF) has declined significantly in most parts of Canada, it continues to occur disproportionately among certain populations, particularly Indigenous Peoples and those living in remote communities.[1] Contributing factors may include barriers to healthcare access, household crowding, and differential exposure to endemic strains.

Patients from these higher-risk settings may therefore warrant extended antibiotic therapy to ensure complete eradication of GAS and to reduce the risk of ARF.

Management and treatment plan

For most adults with confirmed GAS pharyngitis, Penicillin V 600 mg PO QID for 5 days is typically recommended.[1]

However, in this patient who is from a population with persistently higher rates of rheumatic fever clinicians may consider a 10-day duration of therapy to optimize GAS eradication and mitigate ARF risk.

Chosen regimen: Penicillin V 600 mg PO QID for 10 days.[1]

Additional considerations:

- Patient has normal renal function and average body weight, and therefore standard dosing is appropriate.
- Follow-up is advised if symptoms worsen or fail to improve within 48–72 hours.
- Patient education includes the importance of adherence to the full antibiotic course, transmission precautions, and signs of complications (e.g., suppurative infections, ARF symptoms).

Discussion

This case illustrates the importance of applying clinical judgement in conjunction with guideline-supported therapy. Although short-course penicillin therapy is generally effective for uncomplicated GAS pharyngitis, population-specific risk factors such as the higher incidence of ARF in many Indigenous communities may justify extended treatment duration.

When prescribing, clinicians should:

- Adhere to regional antibiograms and local susceptibility patterns, recognizing that GAS remains universally susceptible to penicillin, but co-infections or alternative pathogens may vary.
- Consider pharmacokinetic variations in special populations (e.g., obesity, renal impairment) that may require individualized dosing adjustments.
- Use diagnostic testing (RADT or culture) where needed to confirm GAS infection and avoid unnecessary antibiotic use.

Key teaching points

- GAS pharyngitis remains a clinically significant illness in adults and is more concerning in populations at higher risk for rheumatic fever, including many Indigenous communities.
- A 10-day course of Penicillin V may be more appropriate for high-risk patients despite shorter recommended regimens for low-risk individuals.
- Culture or rapid antigen testing should be used to differentiate GAS pharyngitis from viral or other causes.
- Clinical judgement is essential; guidelines provide a framework but should be individualized based on patient context and local epidemiology.

Case study 2: Severe community-acquired pneumonia in an adult patient

Patient background

A 67-year-old man presents to the emergency department with a 3-day history of fever, chills, productive cough, dyspnea, and pleuritic chest pain. His symptoms have progressively worsened. His medical history includes COPD, hypertension, and type 2 diabetes mellitus. He lives in an urban center experiencing seasonal increases in influenza and RSV transmission.

He reports a documented anaphylactic allergy to cephalosporins. Upon arrival, he appears acutely unwell and in respiratory distress.

Clinical presentation

Vital signs:

- Temperature: 39.1°C
- HR: 118 bpm
- BP: 92/58 mmHg
- RR: 32/min
- SpO_2: 86% on room air → 93% on 4 L/min nasal cannula

Physical exam findings:

- Increased work of breathing, accessory muscle use
- Right lower-lobe crackles
- Delayed capillary refill
- Intermittent confusion

Severity assessment:

The patient meets criteria for severe CAP, requiring ICU admission based on clinical instability and high CURB-65 score.

Diagnostic workup

Microbiological testing

Testing is guided by the patient's severity, underlying comorbidities, and local respiratory virus activity.

Respiratory viral NAAT

- Nasopharyngeal swab sent for NAAT respiratory virus panel (influenza, RSV, SARS-CoV-2).
- Appropriate due to severe illness and community transmission.

Blood cultures

- Two sets drawn prior to initiating antibiotics.

Lower respiratory tract specimen

- Sputum (or endotracheal aspirate if intubated) obtained for Gram stain and culture.

Urine antigen testing

- Legionella pneumophila serogroup 1 urine antigen ordered given severity and epidemiologic considerations.

Other potential testing

Depending on epidemiology and risk factors:

- Pneumococcal urine antigen
- Mycoplasma PCR
- Fungal or mycobacterial testing if clinically indicated

Management and treatment plan

Choice of antimicrobial therapy

Ordinarily, first-line therapy for severe CAP includes a β-lactam + macrolide combination, however, this patient has a documented anaphylactic cephalosporin allergy, which contraindicates cefotaxime and ceftriaxone.

Selected therapy: Levofloxacin 500 mg PO every 24 hours for 5 days.[2]

- PO route chosen due to patient's ability to take oral medications and potential for early transition to home management when clinically stable.
- Fluoroquinolones provide monotherapy coverage for typical and atypical CAP pathogens.

Evidence considerations

- There is low-certainty evidence that fluoroquinolones may increase the proportion of patients achieving clinical cure compared with β-lactam + macrolide therapy.
- However, levofloxacin and moxifloxacin remain second-choice options due to concerns about:
  - Adverse events (tendon rupture, dysglycemia, QT prolongation)
  - Antibiotic resistance
- In this case, use is appropriate due to severe illness and lack of safe β-lactam alternatives.

Duration of antibiotic therapy: Evidence summary

- Moderate-certainty evidence suggests 3-, 5-, 7-, and 10-day antibiotic regimens may provide comparable clinical cure.[2]
- However, mortality and adverse event data remain uncertain.[2]
- Importantly, critically ill patients were excluded, limiting applicability to ICU-level CAP. [2]

Clinical application

The duration of therapy should be tailored based on daily assessment of clinical response, with the following considerations:

- **3 days** → May be considered only if rapid clinical resolution occurs.
- **5 days** → Typical duration for stable, improving patients not requiring prolonged ICU support.
- **7 days or more** → Appropriate for patients requiring ICU admission or experiencing slow clinical improvement.
- Failure to achieve clinical stability by day 7 should prompt evaluation for:
  - Necrotizing pneumonia
  - Lung abscess
  - Pleural space infection

- Alternative diagnoses

Given this patient's severe presentation, comorbidities, and ICU-level severity, he will likely require at least 5 days, with a potential extension to 7 days based on response.

Clinical course

Within 48 hours of initiating levofloxacin, the patient shows improvement in oxygenation and mental status. Blood cultures remain negative. Legionella antigen is pending. Based on daily clinical assessment, therapy is continued with plans to complete a 5–7-day course depending on continued clinical trajectory.

Key teaching points

- Anaphylactic β-lactam allergy significantly limits treatment options in severe CAP; fluoroquinolone monotherapy is appropriate when alternatives cannot be used.
- Fluoroquinolones are second-line due to safety concerns and antimicrobial stewardship considerations.
- Duration of therapy should be individualized and guided by daily reassessment rather than fixed intervals.
- Severe CAP always warrants comprehensive microbiological testing.
- Consider differential diagnoses and complications if the patient does not meet clinical stability by day 7.

Conclusion

These two cases highlight important scenarios in which antibiotic therapy extending beyond seven days or the use of a fluoroquinolone is clinically justified. Both examples reinforce that prescribing decisions often require individualized assessment, taking into account patient-specific factors such as comorbidities, allergy profiles, severity of illness, epidemiologic risks, and clinical response over time. While standardized recommendations provide valuable guidance, professional judgment remains essential in determining the most appropriate therapeutic approach for each patient.

In addition, it is important to describe why these are the metrics being highlighted. Antimicrobial resistance (AMR) is a real and growing threat, and inappropriate antibiotic prescribing can cause significant patient harm. At the same time, there are situations such as the cases described where extended antibiotic durations or broader-spectrum agents like fluoroquinolones are clinically necessary. To support thoughtful prescribing, these metrics are included in the MD Snapshot reports to prompt reflection and to ensure that antibiotic use is appropriate, defensible, and aligned with best practice.

The MD Snapshot provide physicians with their prescribing data and allow comparison with peers in similar practice groups. However, these data do not tell the whole story. Prescribing metrics cannot fully capture clinical context or the complexity of patient presentations. Each physician's practice is unique, and variation in prescribing may reflect differences in patient populations, acuity, comorbidities, or community needs. For this reason, it is crucial that physicians interpret their data thoughtfully, reflect on their own clinical environment, and apply their professional judgment when evaluating their prescribing patterns.

Ultimately, high-quality patient care relies on the combination of evidence-based guidelines, local epidemiology, and clinical expertise, applied in a way that supports safe and appropriate prescribing.

Required disclaimer

The information included in this guideline does not replace clinical judgement.

Please adhere to regional antibiograms and local susceptibility rates when prescribing. Doses are based on normal renal function and average body weight.

Pharmacokinetic differences in special populations (e.g., obesity, renal dysfunction) may require individualized assessment and tailored dosing.

Questions? For inquiries or feedback, please contact us by email at **AIR.Inquiries@cpsa.ab.ca**.

References

1. Firstline Clinical. (2025). *Canadian Antibiotic Treatment Guidance*. Spectrum Mobile Health Inc. Retrieved January 6, 2026, from Group A Streptococcal Pharyngitis | Canadian Antibiotic Treatment Guidance | Firstline
2. Firstline Clinical. (2025). *Canadian Antibiotic Treatment Guidance*. Spectrum Mobile Health Inc. Retrieved January 6, 2026, from Severe / Empiric Treatment | Canadian Antibiotic Treatment Guidance | Firstline