College of Registered Nurses of Saskatchewan

Pharyngitis: Adult & Pediatric

Ears, Eyes, Nose, Throat and Mouth

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

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Background

Pharyngitis and tonsillitis refer to inflammation of the mucous membranes of the pharynx and pharyngeal tonsils resulting from infectious and noninfectious causes (Brashers & Huether, 2019; Reinoso, Dunphy, & Porter, 2019). Pharyngitis and tonsillitis may occur independently; however, they often co-occur, sharing a common etiology, clinical course, and treatment regimen (Reinoso et al., 2019). Pharyngitis can be due to infectious and non-infectious etiologies, whereas almost all cases of tonsillitis are due to infectious etiology (Reinoso et al., 2019).

Infectious pharyngitis can be due to viral, bacterial, or fungal etiologies (Reinoso et al., 2019). Viral pathogens are the most common cause of infectious pharyngitis (Anti-infective Review Panel, 2019; Reinoso et al., 2019). Bacterial pathogens are responsible for approximately 20% of all cases of pharyngitis and typically cause an exudative pharyngitis (Reinoso et al., 2019). Causative pathogens may include Group A beta-hemolytic *S. pyogenes, Streptococcus* groups B, C, D, and G, N. *gonorrhoeae, H. influenza, S. pneumoniae, T. pallidum, Fusobacterium necrophorum; S. aureus, C. diptheriae,* and *Corynebacterium hemolyticum* (Reinoso et al., 2019). Fungal pharyngitis is typically caused by *Candida* infections; however, this is rare except in immunocompromised clients, long-term inhaled or systemic corticosteroid therapy, or excessive antibiotic use (Reinoso et al., 2019).

Non-infectious pharyngitis can be due to a wide range of etiologies including trauma, allergies (e.g., allergens such as dust and pollen), collagen vascular diseases (e.g., Kawasaki's disease), chemical or drug-induced damage (e.g., tobacco and cannabis smoking), severe dehydration, gastroesophageal reflux disease, low-humidity environment, or mouth breathing (Reinoso et al., 2019).

Infectious tonsillitis, which involves the posterior pharyngeal tonsils and the more anterior adenoid glands, can be due to similar bacterial and viral pathogens that cause infectious pharyngitis (see above) (Reinoso et al., 2019). Acute tonsillitis is most often caused by Group A *Streptococcus* (GAS) infection (Reinoso et al., 2019).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- clients with signs of post-streptococcal glomerulonephritis (e.g., hematuria, proteinuria, and oliguria);
- new onset hypertension;
- toxic-appearing infant or child, may be pale or cyanotic and is often lethargic or inconsolably irritable. In addition, tachypnea and tachycardia with poor capillary refill may be present;
- any signs of airway obstruction such as dyspnea, dysphagia or stridor;
- muffled or "hot potato" voice;
- drooling;
- peritonsillar abscess or peritonsillar cellulitis;
- neck swelling;
- trismus (difficulty opening jaw/mouth);
- neck pain;
- high fever, rigour, and night sweats;
- periorbital or facial edema;
- dehydration;
- Scarlet fever type rash (sandpaper feel, pastia lines in axillae);
- new onset murmur or pre-existing valvular heart disease; and/or
- adolescents and young adults (ages 15 to 24 years) presenting with symptoms of bacterial pharyngitis and unilateral neck swelling (should be assessed for F. necrophorum) (Anti-infective Review Panel, 2019; Interprofessional Advisory Group [IPAG], personal communication August 28, 2019; Reinoso et al., 2019).

Predisposing and Risk Factors

Predisposing and risk factors for pharyngitis include:

- increased prevalence of infectious cases in fall and winter months,
- increased prevalence of non-infectious cases related to allergies in the summer months,
- children ages five to 10 years (increased incidence of infectious pharyngitis and tonsillitis in this age group),
- upper respiratory tract infection,
- crowded living quarters (including daycare and school attendance),
- immunocompromised clients,
- work-related stress,
- tobacco and cannabis smoking,
- chemical exposure,
- excess consumption of alcohol,
- oral sex,
- diabetes mellitus or use of steroids (oral or inhaled), and/or
- unimmunized individuals (specifically C. diphtheria) (Reinoso et al., 2019).

Health History and Physical Exam

Subjective Findings

The circumstances of the presenting complaint should be determined. These include:

- mild to severe throat pain or pruritus in the throat;
- sensation of a swollen throat, with a "lump" that persists despite swallowing;
- dysphagia; or
- hoarseness (Reinoso et al., 2019).

In addition to the above complaints, symptoms that may be clues to a bacterial etiology include:

- fever and chills,
- report of a fast heartbeat,
- report of "pus" in the back of the throat,
- reports large round cervical lymph nodes,
- absence of cough,
- absence of rhinorrhea,
- rapid onset of symptoms,
- malaise, and/or
- generalized aches and pains (Reinoso et al., 2019).

Additional symptoms that may be clues to a viral etiology include:

- laryngitis,
- cough,
- rhinorrhea,
- absence of fever or low-grade fever,
- rapid onset of symptoms,
- malaise,
- generalized aches and pains, and
- headache (Reinoso et al., 2019).

Additional symptoms that may be clues to a non-infectious etiology include:

- slow onset of symptoms;
- persistent post nasal drip;
- paroxysmal sneezing;
- itchy, watery eyes;

- rhinorrhea;
- absence of systemic symptoms; and
- mild sore throat that is worse when lying supine (Reinoso et al., 2019).

Objective Findings

The signs and symptoms of pharyngitis may vary based on the etiology.

Physical findings associated with a bacterial etiology may include:

- fever higher than 38.3°C oral;
- tachycardia;
- inflamed throat, typically erythematous;
- edematous pharyngeal mucosa and tonsils;
- maculopapular rash on extremities of young adults (specifically *C. hemolyticum* or *T. pallidum*);
- enlarged tonsils;
- exudate on the tonsils (white to yellow in colour);
- sandpaper-like, scarlatini form rash (*Streptococcal* infections);
- unilateral neck swelling (*F. necrophorum*); and/or
- tender anterior cervical lymphadenopathy (Anti-infective Review Panel, 2019; Reinoso et al., 2019).

Physical findings associated with a viral etiology may include:

- afebrile or low-grade fever;
- inflamed throat, typically erythematous;
- conjunctivitis;
- petechiae to palate and exanthem (Epstein-Barr virus [EBV]);
- vesicular lesions to oral cavity (herpes simplex virus [HSV]);
- purulent exudate on tonsils may be noted (EBV);
- edematous pharyngeal mucosa and tonsils;
- tender tonsillar or posterior cervical lymphadenopathy; and/or
- hepatosplenomegaly (EBV) (Reinoso et al., 2019).

Physical findings associated with fungal (e.g., *Candida*) etiology may include thin, white, nonvesicular, diffuse or patchy exudative ulcers to oropharyngeal mucosa (Reinoso et al., 2019).

Physical findings associated with a non-infectious etiology may include:

- afebrile,
- edematous pharyngeal mucosa and tonsils, and/or
- minimal erythema to the pharynx (Reinoso et al., 2019).

Differential Diagnosis

The following should be considered as part of the differential diagnosis:

- epiglottitis,
- infectious mononucleosis,
- sexually transmitted infection (for chronic pharyngitis, investigate sexual practices),
- peritonsillar or tonsillar abscess,
- postnasal drip secondary to rhinitis or sinusitis,
- pharyngeal or tonsillar malignancy, and
- Vincent's angina (necrotic tonsillar ulcers) (Reinoso et al., 2019).

Making the Diagnosis

The diagnosis is made when the history and physical examination support the diagnosis of pharyngitis and/or tonsillitis (Anti-infective Review Panel, 2019; Reinoso et al., 2019); however, it is often impossible to distinguish clinically between bacterial and viral pharyngitis (Reinoso et al., 2019). Refer to the clinical tool "*The Modified Centor (Sore Throat) Score*" to help decide the likelihood a client has a GAS infection and requires antibiotics.

Investigations and Diagnostic Tests

Most cases of pharyngitis and tonsillitis are self-limited and investigations or diagnostic tests are unnecessary if the client's history and physical examination support the diagnosis of pharyngitis and/or tonsillitis (Anti-infective Review Panel, 2019; Reinoso et al., 2019). However, bacterial and viral cultures of the throat may be appropriate for more complicated cases or when the likelihood of GAS is high.

The Modified Centor (Sore Throat) Score

In adults and pediatrics, 80-90% of sore throats are caused by viral infections (Anti-infective Review Panel, 2019; Reinoso et al., 2019). To assess the probability of diagnosing GAS pharyngitis in a client presenting with a sore throat, several tools have been developed. In a primary care setting, the *Modified Centor (Sore Throat) Score* provides an evidence-based clinical decision rule for all age groups (Anti-infective Review Panel, 2019, p. 8).

Step 1

Determine the client's total *Modified Centor (Sore Throat) Score* by assigning points using the following criteria.

Criteria	Score
History of fever or measured temperature > 38°C oral	1
Absence of cough	1

Tender and enlarged anterior cervical lymph nodes	1
Tonsillar exudate or swelling	1
Age 3 - 14 years	1
Age 15 - 44 years	0
Age ≥ 45 years	-1

Step 2

Choose the appropriate management according to the total score.

Total Score	Management
0 - 1	No culture/rapid antigen test needed. No antibiotic therapy needed.
2	**Adults:** Perform culture (or rapid antigen test if available). If rapid antigen test is negative, no treatment needed. If positive, treat with antibiotics. No need for throat culture. **Pediatrics:** Perform culture (or rapid antigen test if available). If rapid antigen test is negative, culture is still required. If positive, treat with antibiotics. No need for throat culture. **Both:** If no rapid antigen test is available, perform culture; no antibiotics unlessculture returns positive.
3	Perform rapid antigen test or culture. Treat positive GAS tests.
4 - 5	Culture and consider empiric antibiotic therapy on clinical grounds until culture results available. Discontinue antibiotic therapy if culture result isnegative.

Note: Adapted from Anti-infective Review Panel (2019), p. 8

According to the Anti-infective Review Panel (2019), the *Modified Centor (Sore Throat) Score* is invalid in the following situations:

- communities in which an outbreak or epidemic of GAS pharyngitis is occurring; and
- clients with a history of rheumatic fever, valvular heart disease, or who are immunosuppressed.

Management and Interventions

Goals of Treatment

The primary goals of treatment for pharyngitis and/or tonsillitis are to eradicate infection (where appropriate), prevent complications (e.g., pharyngitis caused by *F. necrophorum* require empiric antibiotic treatment to prevent Lemierre's syndrome, glomerulonephritis, etc.), prevent the spread of GAS to contacts, provide symptomatic care and pain relief, and avoid unnecessary use of antibiotics (Anti-infective Review Panel, 2019; Reinoso et al., 2019).

Non-Pharmacological Interventions

The RN(AAP) should recommend, as appropriate, the following non-pharmacological options:

- saline nasal spray,
- warm saltwater gargles,
- over the counter throat lozenges or sprays, and
- warm moist compress qid for 30 to 60 minutes at a time to tender cervical lymph nodes (Reinoso et al., 2019).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of pharyngitis are in accordance with the *RxFiles: Drug Comparison Charts* (RxFiles Academic Detailing Program, 2021), *CPS Drug Information* (Canadian Pharmacists Association, 2021), and the *Anti-infective Guidelines for Community-acquired Infections* (Anti-infective Review Panel, 2019).

Analgesics and Antipyretics

	Drug	Dose	Route	Frequency	Duration
Pediatric					
	Acetaminophen	10-15 mg/kg/dose (maximum daily dose of 75 mg/kg/day)	p.o.	q4-6h prn	5-7 days
AND / OR	Ibuprofen	5-10 mg/kg/dose (maximum daily dose of 40 mg/kg/day)	p.o.	q6-8h prn	5-7 days

	Drug	Dose	Route	Frequency	Duration
Adult					
	Acetaminophen	500-1000 mg (maximum daily dose of 4 g/day)	p.o.	q4-6h prn	5-7 days
AND/ OR	Ibuprofen	400 mg (maximum daily dose of 1600 mg/day)	p.o.	q6-8h prn	5-7 days

Oral Antibiotics

The following antibiotic recommendations are for the treatment of suspected (based on *Modified Centor (Sore Throat) Score)* or confirmed GAS pharyngitis in adults and pediatrics. Consult with a physician/NP if it is suspected that pharyngitis has been caused by *F. necrophorum* as appropriate empiric therapy will need to be initiated (Anti-infective Review Panel, 2019).

	Drug	Dose	Route	Frequency	Duration
Pediatric (First line without penicillin allergy)					
	Penicillin V	≤ 27 kg: 40 mg/kg/day (maximum daily dose of 750 mg/day)	p.o.	divided b.i.d. or t.i.d.	10 days
	Penicillin V	> 27 kg: 600 mg (adult dosing)	p.o.	divided b.i.d.	10 days
OR	Amoxicillin	40 mg/kg/day (maximum daily dose of 1 g/day)	p.o.	divided b.i.d.	10 days
Pediatric (Second line without penicillin allergy)					
	Cephalexin	25 to 50 mg/kg/day in divided doses to a maximum daily dose of 1 g/day	p.o.	q.i.d.	10 days
OR	Cefuroxime	20 mg/kg/day in divided doses (maximum daily dose	p.o.	b.i.d.	10 days

		of 500 mg/day)			
	Drug	**Dose**	**Route**	**Frequency**	**Duration**
Pediatric (Third line without penicillin allergy; First line with penicillin allergy)					
	Azithromycin	20 mg/kg/day (maximum daily dose of 500 mg/day)	p.o.	once daily	3 days
OR	Clarithromycin	15 mg/kg/day in divided doses (maximum daily dose of 500 mg/day)	p.o.	b.i.d.	10 days
Adult (First line without penicillin allergy)					
	Penicillin V	600 mg	p.o.	b.i.d.	10 days
OR	Amoxicillin	500 mg	p.o.	b.i.d.	10 days
Adult (Second line without penicillin allergy)					
	Cephalexin	500 mg	p.o.	b.i.d.	10 days
OR	Cefadroxil	500 mg	p.o.	b.i.d.	10 days
OR	Cefuroxime	250 mg	p.o.	b.i.d.	10 days
OR	Cefprozil	250 mg	p.o.	b.i.d.	10 days
Adult (Third line without penicillin allergy; First line with penicillin allergy)					
	Azithromycin	500 mg po once daily	p.o.	once daily	3 days
OR	Clarithromycin	250 mg	p.o.	b.i.d.	10 days
OR	Erythromycin	250 mg	p.o.	q.i.d.	10 days

Client and Caregiver Education

The RN(AAP) provides client and caregiver education as follows:

- Advise that treatment for viral pharyngitis includes adequate rest, oral fluids, and analgesics.
- Discourage the use of antibiotics if viral pharyngitis is suspected.
- Reassure that a sore throat is generally self-limiting, with most clients recovering after three to seven days with or without antibiotic treatment.
- If fever is present, encourage adequate fluid intake to avoid dehydration.
- Explain that urgent medical attention should be sought if the client develops difficulty breathing, stridor, drooling, a muffled voice, severe pain, dysphagia, or if they are not able to swallow adequate fluids or become systemically unwell.
- Advise regular use of acetaminophen or ibuprofen to relieve pain and fever.
- If antibiotics are prescribed, counsel about the appropriate use of medications (dose, frequency, compliance, etc.).
- Provide advice regarding food and drink to avoid exacerbating pain (e.g., avoid hot drinks, acidic foods).
- Suggest ice or flavoured frozen desserts (such as popsicles) as it may provide additional symptomatic relief.
- Suggest the use of simple mouth washes (e.g., warm salty water) at frequent intervals until the discomfort and swelling subside (Reinoso et al., 2019).

Monitoring and Follow-Up

The RN(AAP) should instruct the client to return to the clinic for reassessment if symptoms do not improve in 48-72 hours. Immunocompromised clients should seek immediate medical advice if they become systemically unwell (Reinoso et al., 2019).

Complications

Group A Streptococcal infection and *F. necrophorum* are two bacterial etiologies that can cause significant complications (e.g., post-streptococcal glomerulonephritis) in the absence of appropriate antibiotic treatment (Anti-infective Review Panel, 2019). Group A beta-hemolytic *S. pyogenes* is the most important cause of pharyngitis as it can lead to acute rheumatic fever and subsequent post-streptococcal sequelae (e.g., heart valve damage and reactive arthritis (Anti-infective Review Panel, 2019; Reinoso et al., 2019).

Additional nonsuppurative and suppurative complications of untreated streptococcal pharyngitis and/or tonsillitis may include:

- Scarlet fever,
- toxic shock syndrome,
- acute glomerulonephritis,
- PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections),
- tonsillopharyngeal cellulitis or abscess,

- otitis media,
- sinusitis,
- necrotizing fasciitis,
- streptococcal bacteremia, or
- meningitis (Brashers & Huether, 2019; Pichichero, 2019).

Referral

Refer to a physician/NP if client presentation is consistent with those identified in the *Immediate Consultation Requirements* section and/or the client is taking a disease-modifying anti-rheumatic drug (DMARD) or carbimazole, or the client is immunocompromised (e.g., leukemia, aplastic anemia, asplenia, HIV/AIDS, or is receiving chemotherapy) (IPAG, personal communication August 28, 2019).

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