### Pharyngitis (sore throat) Assessment Use Case

The purpose of this use case is to describe the process for assessment of patient presenting with sore throat, fever, chill as chief complaints leading to diagnosis of pharyngitis (and management of the condition) and excluding differential diagnosis such as infectious monucleosis

Use Case Sequence of Steps

1. A 20 yo male patient presents to General Practitioner/Primary Care Provider (GP/PCP) with complaints of sore throat which started 3 days ago; followed by fever, chills, cough, nausea and anorexia.
2. GP/PCP conducts clinical observations (including examination of the patient, ordering of diagnostic tests) and collects clinical data, which include the following:
	1. Relevant clinical history which includes but not limited to, recent exposure to others with pharyngitis, medications [**o**bjective] and any allergies/intolerances [**s**ubjective/**o**bjective]; previous episode(s) of similar/same complaints and frequency (recurrent aphthous ulcers).
	2. Recent travel history which include time, location, setting, arthropod exposure, pre-travel vaccination and prophylactic medications.
	3. Clinical examination findings (observations):
3. *Constitutional features*: fever, headache, rash, nausea, anorexia, muscle pain [**o**bjective], rhinorrhea, post-nasal drips, cough, fatigue, malaise [**s**ubjective] – date of onset and course
4. *Sore throat*: severity of pain [**s**ubjective]
5. *Throat*: erythema, any exudation; tonsillar enlargement; uvular oedema; palatal petechiae; stomatitis/ulcerations: e.g. round/ovoid ulcers with erythematous halo on mucosa of lips, cheek, tongue, throat (aphthous ulcers) [**o**bjective]
6. *Lymphadenopathy*: submandibular, anterior or posterior-cervical [**o**bjective]
7. *Eyes*: any conjunctivitis (viral)
8. *Liver and spleen*: any hepato-splenomegaly [**o**bjective],
9. *Smoking and Alcohol*: duration and amount [**o**bjective]
10. *Neurological syndromes*: e.g. optic neuritis, cranial nerve palsies, meningoencephalitis, etc (to rule out infectious mononucleosis)
	1. Diagnostic tests: [**o**bjective]
11. FBC/CBC
12. LFT/SGOT/SGPT (elevated in EBV – to rule out infectious mononucleosis)
13. Anti-EA IgG, IgM, EBV, viral capsid antigen (+ in EBV)
14. Throat swab to identify bacterial cause (to rule out group A beta-hemolytic streptococcus): rapid antigen detection test; culture
15. Diagnosis may be identified. If the clinical findings from the clinical data may support viral or bacterial pharyngitis, or infectious mononucleosis.

The clinical reasoning process leads to the establishment of provisional/working and differential diagnosis. This is followed by recommendations/interventions, a care plan, other procedures, and/or a referral where necessay.

**The Clinical Assessment Process:**

The clinical assessment process involved targeted collection of pertinent clinical data, the reasoning process to come to an understanding of the patient’s health issues/problems, and to arrive at a clinical judgment and decision which include:

* A problem/diagnostic statement
	+ Provisional/working diagnosis: clinical history and examination findings are suggestive of viral/bacterial pharyngitis
	+ Differential diagnosis: to exclude – infectious mononucleosis; aphthous ulcers
* A management/care **p**lan for the identified problem/diagnosis (and any relevant co-morbidity), which may include goals/milestones, interventions (medical, surgical, patient education), recommendations to patient, outcome assessment. (The management plan will be simple for case of simple viral or bacterial pharyngitis)

**Rheumatoid Arthritis Assessment** – Clinical Scenarios/Script

**First GP/PCP visit**

Presenting complaints:

A 20 yo Caucasian male patient presents to his General Practitioner/Primary Care Provider (GP/PCP) with complaints of severe sore throat which started 3 days ago; and followed by fever, chills, cough, nausea and anorexia.

Clinical history:

After listening to the patient’s presenting complaints, the GP/PCP then proceeds to take a full medical and travel history from the patient.

*Clinical history* to relevant to pharyngitis:

* Onset of complaints: sore throat started 3 days ago, which is followed by low grade fever, chills, nausea and anorexia on day 3 of onset of sore throat. Patient also complains of feeling of secretions coming out from back of throat.
* Exposure history:
	+ Patient denies any recent (up to 6 weeks ago) exposure to any other person who exhibited signs of respiratory infections.
	+ Patient also denies any known exposure to arthropods (e.g. dengue fever)
* Previous episodes: according to patient – last episode of sore throat >12 months ago
* Medication history: patient is not on any prescribed or OTC medication
* Smoking and drinking history: Patient is a non-smoker and only drinks socially

*Travel history*:

* Patient denies recent travel or resides in region/suburban that is known to be infested with disease carrying arthropods such as aedes aegypti (dengue fever)

The *medical history* and *travel history* details are also recorded in the patient’s medical record.

The GP/PCP progresses to conduct a thorough physical examination:

Physical Examination:

*Anthropometric data*

* Height: 180 cm
* Weight: 65 kg
* BMI: 20 (healthy: 18.5-25)

*Symptoms*

* Pain: Sudden onset sore throat with odynophagia.
* Headache
* Chills
* General malaise
* Nausea and anorexia (no vomiting; no abdominal pain)

*Signs*

* Cough: non-productive cough
* Fever: low grade fever – 38.3C (tympanic)
* Erythema and swelling: tonsillopharynx; no uvula deviation
* Exudate: patchy and discrete tonsillar exudate



* Anterior cervical lymphadenopathy: swollen and tender

Skin

* Rash: none

Tongue

* Strawberry tongue: tongue; no ulcer

Vital signs

* Temperature: 38.3C (tympanic)
* Heart rate: 87
* BP 115/75
* Respiratory rate: 16/min

The GP/PCP **records** the physical examination findings in patient’s medical record.

**Clinical Assessment**:

*Clinical Reasoning*:

The GP/PCP evaluates and applies clinical reasoning on patient data including presenting complaints, clinical history, travel history and physical examination results.

The GP/PCP then applies the clinical reasoning process is summarized as:

* Constitutional symptoms: sore throat with odynophagia, low grade fever, general malaise, chills and nausea, anorexia; plus: tonsillopharynx and uvula erythema and swelling – suggest bacterial/viral pharyngitis
* Fever, tonsillar exudate, anterior cervical lymphyadenopath, dry cough – satisfying three of the 4 diagnostic criteria for group A streptococcal pharyngitis (sensitivity: in adults, the positive predictive value of these criteria is around 40% if 3 criteria are met and about 50% if 4 criteria are met)
* Skin rash and tongue: absence of skin rash (small, flat fine pink rashes/red blotches) and no strawberry tongue – scarlet fever not likely
* Stomatitis/Oral ulcers: absence of round/ovoid ulcers with erythematous halo on mucosa of lips, cheek, tongue, throat – aphthous ulcers not likely
* Hepato-splenomegaly and neurological syndromes: absence of these signs and symptoms – infectious mononucleosis unlikely
* Medications: patient not on any prescribed or OTC medication – rules out adverse drug reactions

*Clinical Impression*:

Result of analysis and clinical reasoning lead the GP/PCP to arrive at the following (clinical impression):

*Provision/working diagnosis*:

* Acute bacterial or viral pharyngitis

*Differential diagnosis*:

* Aphthous ulcers, scarlet fever, infectious mononucleosis: unlikely

*Prognosis*:

* Uncomplicated acute pharyngitis resolves with no sequale
* Group A beta-hemolytic streptococcal pharyngitis
	+ is usually a self-limited disease, and most signs and symptoms resolve spontaneously in 3-4 days
	+ Rheumatic heart disease: effectively prevented by antibiotic therapy
	+ Complication: may result in poststreptococcal glomerulonephritis

Management Plan:

Based on this initial clinical assessment result and after discussion with the patient, the GP/PCP also decides on the following management plan:

*Diagnostic tests*

* Laboratory Tests ordered:

FBE/CBC and ESR

(Lymphocytosis in first week of infectious mononucleosis)

(ESR elevated in infectious mononucleosis)

Throat swab for:

* Group A beta-hemolytic streptococcal rapid antigen detection test (RADT)
* Throat culture in RADT negative results in children (North American guideline – to avoid not treating RADT false negative cases: [Bisno 2002](http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010502/full#CD010502-bbs2-0003); [Gerber 2009](http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010502/full#CD010502-bbs2-0016); European guideline recommends relying on negative RADT results without culture [Pelucchi 2012](http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010502/full#CD010502-bbs2-0029))
	+ Adults do not need follow-up culture after a negative antigen test because of the low incidence of GAS in this population[[1]](#footnote-1)

*Treatments*

* Paracetamol for pain and fever (example dosage: 1000mg q4-6h; max 4g/24hours)
* Supportive care:
	+ OTC medications for temporary relief of throat pain and dry cough, examples:
		- Warm saline gargle (1/4 to 1/2 teaspoon of salt per cup (8 ounces) of warm water);
		- Chloraseptic (benzocaine 0.71% w/v; 1mg/spray) throat spray (example dosage: 1 spray q2-4h; spit out after 15 sec; max 8 times/24 hours), or
		- Flurbiprofen 8.75 mg throat lozenges (example dosage: 1 lozenge q3-6h; max 5/24hr)
		- Bisolvon (dextromethorphan hydrobromide 10mg/5ml) dry cough liquid (example dosage – adult: 5-15 ml every 4-6 hours (max 60ml/24hours))
	+ Sucking ice cube; cold jelly or ice cream
	+ Encourage fluid intake
	+ Rest
* Antibiotics:
	+ Antibiotics withheld till RADT results available (Guidelines from the Infectious Diseases Society of America (IDSA) and American Heart Association state that microbiologic confirmation (via a rapid antigen test or culture) is required for the diagnosis of GAS 1; [[2]](#footnote-2).)

The treatment plan details are documented in patient’s medical record

*Follow-up*

The GP/PCP recommends the patient to make a follow-up appointment with the clinical registration desk to return for reassessment when the test results become available

**Follow-up GP/PCP visit** (3 days later)

The patient makes appointments with the diagnostic services and has the tests specimens to be taken immediately after the first visit to GP/PCP clinic.

The results are sent to the patient’s GP/PCP after 48 hours

Patient returns to GP/PCP clinic in 2 days for follow up consultation

Review of diagnostic test results

The GP/PCP reviews the patient’s diagnostic tests (lab/blood and imaging) results (and note the abnormal findings) prior to seeing the patient at the follow-up appointment

*Laboratory test results*:

* Hb = 145 (reference range – men: 150 +/- 20g/L )
* RBC = 4.7 (reference range – men: 5.0 +/- 0.5x1012/L )
* ESR = 7.0 (reference range – men under 50yo: <12-15mm/hour)
* WBC = 10.5 (reference range: 7.0 +/-3.0x109/L)
* Neutrophil = 6.5 (reference range: 2.0-7.0x109/L)
* Lymphocyte = 1.07 (reference range: 1.0-3.5x109/L)
* Platelets = 300 (reference range 140-400 x109/L)
* Throat swab RADT = positive

Review of physical examination findings

The review of diagnostic findings is followed by a repeat of interview of the patient and physical examination.

The review is also used to determine changes to the patient’s clinical condition since the first consultation. The clinical findings (including review of the diagnostic test results) are **documented**.

*Symptoms*:

* Constitutional symptoms (malaise, headache, chills, non-productive cough) resolved (Fever and constitutional symptoms usually resolve within three to four days, even in the absence of antimicrobial therapy)
* Pain: sore throat and odynophagia improving

Signs:

* Tonsillopharygnx: erythema, oedematous, patchy purulent tonsillar exudate, no uvula deviation
* Cervical lymphadenopathy: persisting but less severe
* Temperature = 36.6C
* Heart rate: 78/min
* Respiratory rate: 16/min
* Tongue: normal
* Skin rash: negative
* Hepatosplenomegaly: negative

**Clinical Assessment**

*Clinical reasoning*:

The GP/PCP evaluates patient data including any new presenting complaints, new physical examination results and diagnostic test results.

The GP/PCP then applies the clinical reasoning on the data from clinical history, diagnostic tests and physical examination:

* The persistence of constitutional symptoms: fever, malaise and fatigue
* Physical examination and diagnostic test findings of acute pharyngitis:
	+ throat pain and odynophagia; cervical lymphadenopathy
	+ tonsillopharyngeal erythema, odema, purulent tonsillar exudate;
	+ leukocytosis: with predominate neutrophilia
* Diagnostic test data:
	+ RADT= +ve: confirms Group A haemolytic streptococcal pharyngitis
	+ Normal lymphocyte count and no reactive lymphocyte = excludes infectious mononucleosis

*Clinical Impression*:

The clinical evaluation and reasoning lead to the GP/PCP establishing:

*Final diagnosis*:

Group A haemolytic streptococcal pharyngitis

*Differential diagnosis*: Ruled out

* Infectious mononucleosis
* Scarlet fever
* Aphthous ulcers,

*Prognosis*: Group A haemolytic streptococcal pharyngitis

* is usually a self-limited disease, and most signs and symptoms resolve spontaneously in 3-4 days
* Rheumatic heart disease: effectively prevented by antibiotic therapy
* Complication: may result in poststreptococcal glomerulonephritis

The GP/PCP **documents** the clinical findings and final diagnosis in the patient’s medical record

Treatment Plan:

* Antibiotic
	+ Penicillin V 250 mg 4 times daily in adults for 10 days
* Continue supportive therapy:
* OTC Soothing lozenges PRN; fluid and rest
1. Shulman ST, Bisno AL, Clegg HW, Gerber MA, Kaplan EL, Lee G, et al. Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis: 2012 update by the Infectious Diseases Society of America. *Clin Infect Dis*. Nov 15 2012;55(10):1279-82 [↑](#footnote-ref-1)
2. Gerber MA, Baltimore RS, Eaton CB, et al. Prevention of rheumatic fever and diagnosis and treatment of acute Streptococcal pharyngitis: a scientific statement from the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee of the Council on Cardiovascular Disease in the Young, the Interdisciplinary Council on Functional Genomics and Translational Biology, and the Interdisciplinary Council on Quality of Care and Outcomes Research: endorsed by the American Academy of Pediatrics. *Circulation*. Mar 24 2009;119(11):1541-51 [↑](#footnote-ref-2)