

نحوه اپروچ به کودک ۱۰ ساله با شکایت گلودرد در درمانگاه پزشکی خانواده

استاد راهنما: دکتر نسیم عبادتی، هیات علمی گروه پزشکی خانواده
ارائه دهندگان: گروه A پزشکی خانواده

Chief complaint

• پسر ۱۰ ساله با شکایت از درد گلو از 2 روز قبل به درمانگاه پزشکی خانواده مراجعه کرده است.

Present illness

- بیمار کودک ۱۰ ساله می باشد که با شکایت از تب، بی حالی و گلودرد از ۲ روز پیش به صورت پیشرونده به درمانگاه پزشکی خانواده مراجعه کرده است. یکی از دوستان کودک هم یک هفته پیش این علائم را داشته است.
- بیمار شکایتی از سرفه، آبریزش بینی و تنگی نفس ندارد.

Past Medical History:

- فرزند اول خانواده
- حاصل NVD ۳۷ هفته
- وزن هنگام تولد: ۲۶۰۰ گرم، دور سر هنگام تولد: 34 سانتی متر، قد هنگام تولد: 50 سانتی متر

Drug history: -

Past surgical history: Circumcision

Family history: -

Allergy history: -

Physical Examination

- Vital Signs: HR: 90, SpO2: 98%, RR: 20, T: 39

در بررسی بیمار کودک ۱۰ ساله با قد 139 cm و وزن ۳۲ کیلوگرم می‌باشد که روی صندلی نشسته هوشیار و اورینته است ولی ضعف و خستگی دارد.

در بررسی گلوی بیمار با آبسلانگ، حلق اریتماتو و ملتهب می‌باشد. همچنین لوزه‌ها متورم و اگزوداتیو هستند. ضایعات وزیکولر در دهان ندارد.

در معاینه بیمار لنفادنوپاتی ندارد.

سمع ریه clear است و رال، ویز و کاهش صدا ندارد.

در سمع قلب S1 و S2 نرمال و بدون سوفل سمع شدند.

معاینه شکم طبیعی است. ارگانومگالی ندارد.

Differential Diagnosis

- Streptococcal pharyngitis
- Infectious mononucleosis
- Viral pharyngitis, e.g., Adenovirus, Coxsackie A virus, Herpes Simplex Virus, Covid-19
- Diphtheria
- Candida infection
- Irritative pharyngitis
- Foreign body
- Systemic inflammatory conditions, e.g., Kawasaki disease, Stevens-Johnson, ...
- Chemical exposure

Sore throat etiology

Cause	Infants and young children	Older children and adolescents
Viral pharyngitis*	Respiratory viruses Herpangina (enterovirus)* SARS-CoV-2	Epstein-Barr virus (infectious mononucleosis)* Respiratory viruses* HIV Herpangina (enterovirus) HSV SARS-CoV-2
Bacterial pharyngitis	Group A <i>Streptococcus</i> <i>Fusobacterium necrophorum</i> and other anaerobic bacteria (± Lemierre's syndrome ¶) Other bacteria Δ	Group A <i>Streptococcus</i> * <i>Neisseria gonorrhoeae</i> <i>Fusobacterium necrophorum</i> and other anaerobic bacteria (± Lemierre's syndrome ¶) Other bacteria Δ
Other infections	Retropharyngeal abscess ¶ Lateral pharyngeal abscess ¶ Epiglottitis ¶	Peritonsillar abscess ¶ Retropharyngeal abscess ¶ Lateral pharyngeal abscess ¶ Epiglottitis ¶
Miscellaneous conditions	Steven-Johnson syndrome Kawasaki disease Behçet syndrome PFAPA syndrome	Psychogenic pharyngitis Referred pain Steven-Johnson syndrome Kawasaki disease Behçet syndrome PFAPA syndrome
Traumatic injury	Foreign body Chemical exposure	Irritation of the mucosa*

Causes

- Life-threatening conditions
- Common
- Less common

Life-threatening conditions

Epiglottitis:

This disease manifests with a **toxic appearance, high fever, stridor, and drooling**. Sore throat occurs in many cases, but is only rarely the primary complaint.

Retropharyngeal abscess:

Retropharyngeal abscesses can cause sore throat and usually occur in **children less than four years** of age. Other complaints include **neck pain and fever**. There may be **difficulty swallowing** and **respiratory distress**.

Lateral pharyngeal abscesses:

Like retropharyngeal infections but occur less often. **High fever** is common. Other signs include **trismus and swelling below the mandible**.

Peritonsillar abscess:

This disease is most common in older children and **adolescents**. The abscess produces a bulge in the posterior aspect of the soft palate, **deviates the uvula to the contralateral side** of the pharynx, and has a fluctuant quality on palpation

Infectious mononucleosis :

rarely cause airway obstruction **from severe tonsillar hypertrophy**

Diphtheria:

seldom and characterized by a **thick pharyngeal membrane and marked cervical adenopathy**

Lemierre syndrome :

caused by *Fusobacterium necrophorum* or mixed anaerobic flora and is associated with **jugular venous thrombophlebitis** and **septic emboli**. It should be considered in the **ill-appearing patient with neck pain, severe pharyngitis, and respiratory**

Common conditions

Viral pharyngitis: (most common cause)

- **Adenoviruses** : Pharyngoconjunctival **fever**, a benign follicular **conjunctivitis** often accompanied by a febrile pharyngitis and **cervical adenitis**
- **Coxsackie A viruses**: **Herpangina** or **hand, foot, and mouth disease**. common in infants and young children.
- **Herpes simplex virus** usually causes **stomatitis** . However, it may cause pharyngitis in the immunocompromised child
- **Coronavirus disease 2019** : **Fever and cough** are other common symptoms that often accompany a sore throat. Fatigue, nasal congestion, diarrhea, and vomiting have also been described but occur less frequently

Candidal infection:

Oropharyngeal candidal infections (thrush) can cause significant pain and, outside of early infancy, are a marker for immunosuppression

Streptococcal pharyngitis :

Streptococcus pyogenes is the most frequent bacterial cause of infectious pharyngitis. Clinical manifestations include **high fever, exudative tonsillopharyngitis, palatal petechiae, and swollen, tender anterior cervical lymph nodes.**

Infectious mononucleosis:

EBV causes infectious mononucleosis and affects adolescents most frequently. Rarely, infectious mononucleosis can cause life threatening airway obstruction from tonsillar hypertrophy. An additional consideration in adolescents with an infectious mononucleosis-like syndrome is human immunodeficiency virus (HIV).

Unusual infections

N. gonorrhoeae may cause inflammation

Oropharyngeal tularemia is rare and should be entertained only in endemic areas among children who have an exudative pharyngitis that cannot be categorized by standard diagnostic testing and/or persists despite antibiotic therapy.

- **Noninfectious causes of pharyngitis**

- irritation or drying of the pharynx

(often from mouth-breathing overnight secondary to nasal obstruction from viral infection or allergic inflammation)

This condition occurs most commonly during the winter months, particularly after a night's sleep in a house with forced hot-air heating

- foreign body
(eg, fish bone)
- referred pain from extrapharyngeal sources
(eg, dental abscess, otitis media)
- chemical exposure
- Psychogenic pharyngitis
globus hystericus swallowing.

Unusual infections

- **Systemic inflammatory conditions :**
 - **Kawasaki** disease is characterized by high fever along with at least four of the five following findings: **conjunctivitis, mucositis, peripheral erythema and/or edema, truncal rash, cervical adenopathy.**
 - **Stevens-Johnson syndrome** is characterized **by vesicular and ulcerative lesions** of the mucosa, including the pharynx, genitalia, and conjunctivae. Additionally, children with this condition may have a diffuse rash, often consisting **of target lesions** or vesicles and bullae.
 - **Behçet's** syndrome is a more chronic systemic inflammatory disease that may involve the oral cavity. It is uncommon in children.
 - **Periodic fever** with aphthous stomatitis, pharyngitis and adenitis (**PFAPA** syndrome) is a cyclical inflammatory disease of unknown etiology..

History

- **fever**
- **fatigue (like mononucleosis)**
- **rapidity of the onset of symptoms**
- **respiratory distress:** obstruction, including epiglottitis, retropharyngeal or lateral pharyngeal abscess, peritonsillar abscess, massive tonsillar hypertrophy secondary to infectious mononucleosis, and rarely diphtheria.
- **immunocompromising conditions**(like Candida albicans)
- **immunizations**
- **travel**
- **sexual activity**
- **exposure to an individual with known COVID-19 infection**
- **Frequently recurring episodes :** secondary to respiratory viruses and/or GABHS infections but may indicate PFAPA

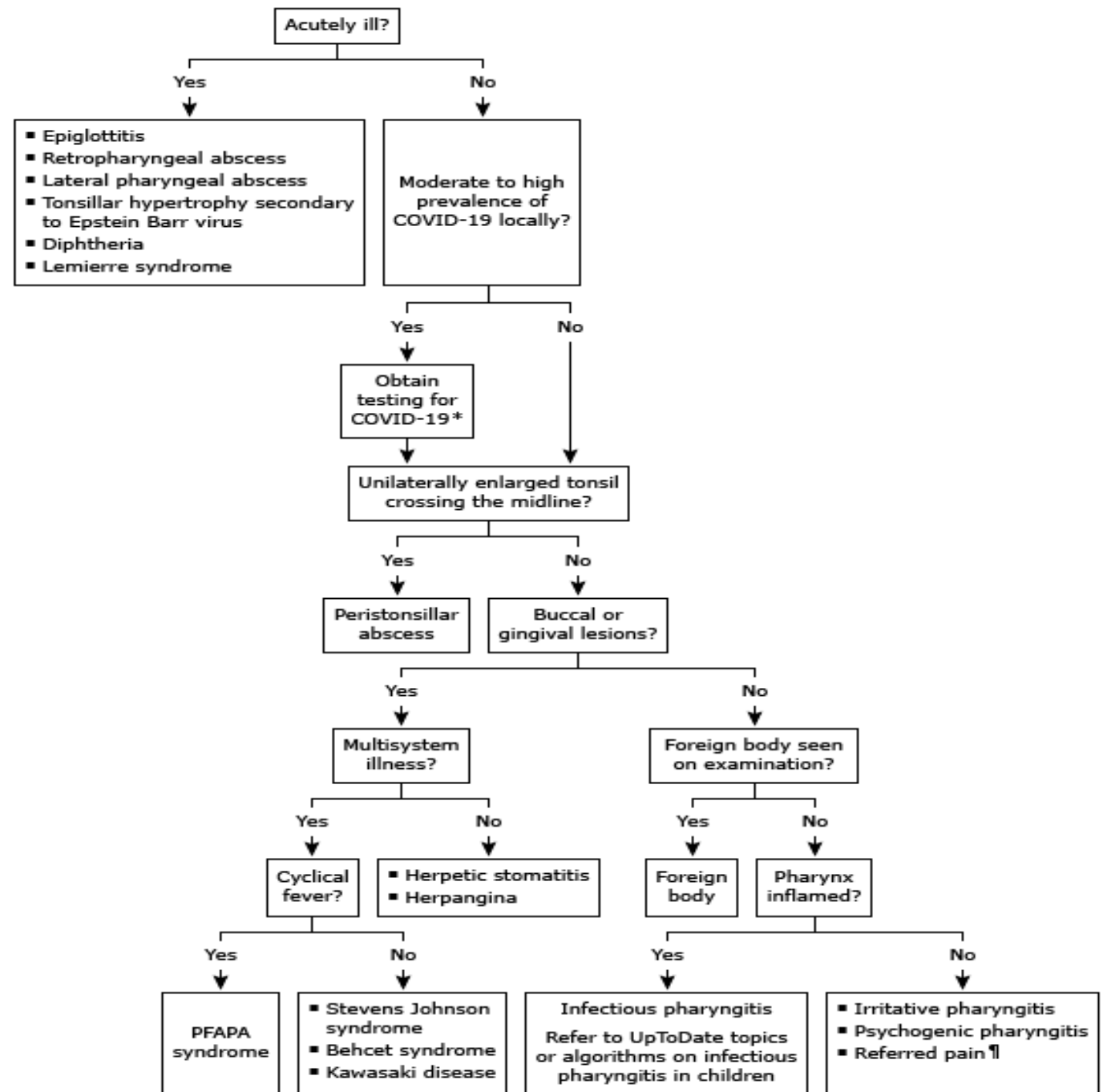
Physical examination

- **Erythema and exudate**, which may be secondary to **either viral or bacterial pathogens**, will be present in the majority of patients. Several specific findings are useful in pinpointing an etiologic agent.
- **Vesicles** on the buccal mucosa anterior to the tonsillar pillars points to a herpetic stomatitis or noninfectious syndromes, such as Behçet's or Stevens-Johnson syndrome (erythema multiforme).
- **Vesicle** in the posterior pharynx alone (herpangina) or in combination with involvement of the extremities (hand, foot, and mouth disease).
- **Generalized inflammation of the oral mucosa**, in a persistently febrile child, suggests Kawasaki disease.
- **A foreign body**
- **Significant asymmetry of the tonsils** indicates a peritonsillar cellulitis or, if extensive, an **abscess**. Clinically, the diagnosis of an abscess is reserved for the tonsil that protrudes beyond the midline, causing the uvula to deviate to the uninvolved side.

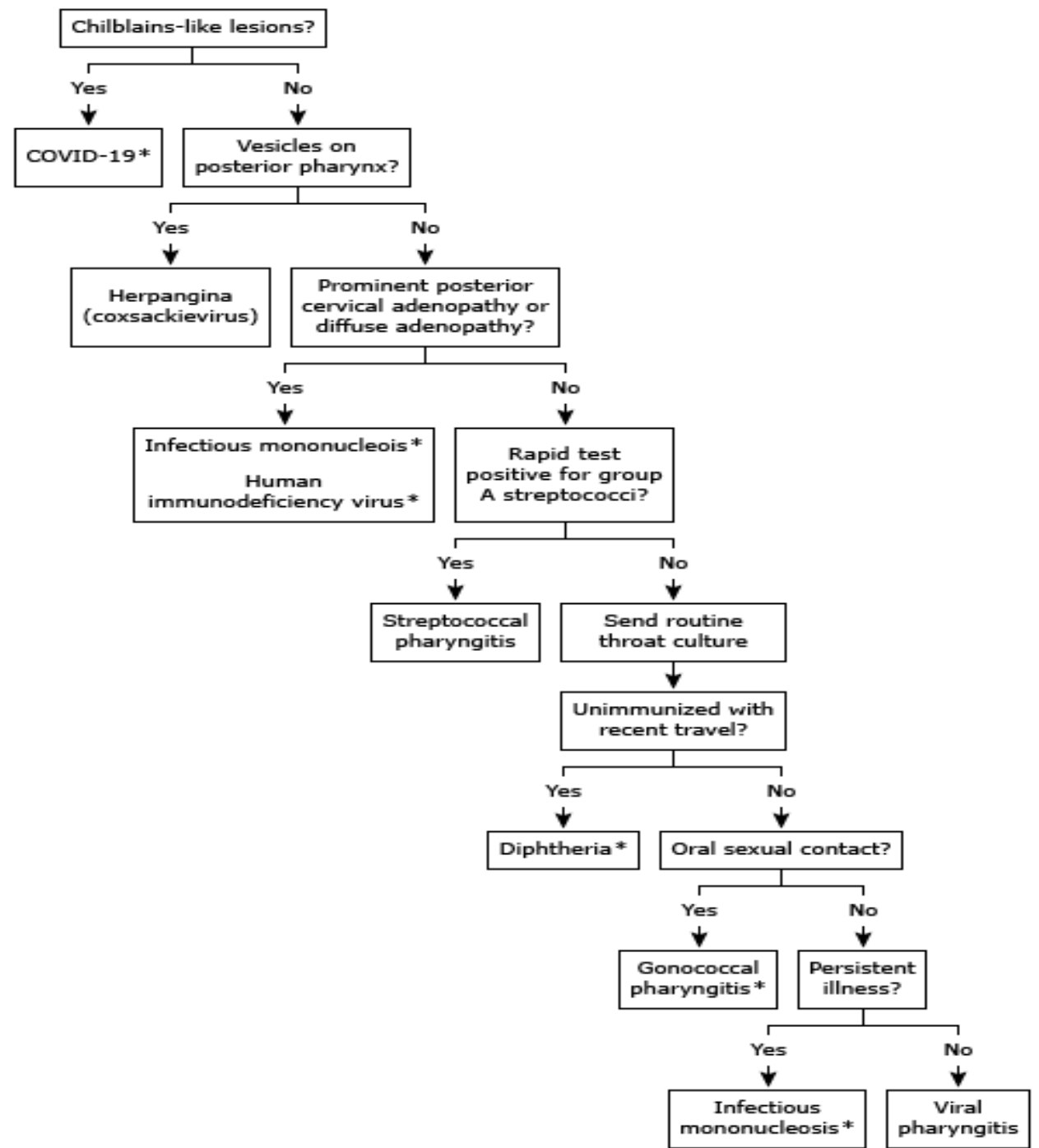
Physical examination

- **A diffuse erythematous rash** suggests scarlet fever due to group A streptococcus or, in an ill-appearing patient, the pediatric multisystem inflammatory disease reported with COVID-19
- **Chilblains** (pernio-like lesions) have been reported in children with **COVID-19**.
- **Typical appearance of streptococcal pharyngitis** includes fever, exudative pharyngitis, **palatal petechiae**, and swollen anterior cervical lymph nodes.
- **Diphtheria** causes a particularly thick exudate (**diphtheritic membrane**), often in association with tremendous enlargement of the cervical lymph nodes ("**bull neck**").
- **In infectious mononucleosis**, the examination may show large, mildly tender posterior cervical lymph nodes, diffuse **lymphadenopathy** outside the cervical region, and splenomegaly or, less commonly, hepatomegaly.
- **Stridor, drooling, or respiratory distress** : airway **obstruction** such as epiglottitis or retropharyngeal abscess.
- **An inflamed eardrum** : dental abscess.

Approach to pediatrics sore throats



Suspected infectious pharyngitis



	Clinical syndrome	Clinical clues
Bacteria (requires antimicrobial therapy)		
<i>Streptococcus</i> , group A (most common cause requiring antimicrobial therapy)	Tonsillopharyngitis and scarlet fever	Acute onset, fever, headache, abdominal pain, tonsillopharyngeal erythema and exudate, tender anterior cervical lymph nodes
<i>Streptococcus</i> , groups C and G	Tonsillopharyngitis and scarlatiniform rash	
<i>Neisseria gonorrhoeae</i>	Pharyngitis	Oral-genital contact in sexually active adolescents
<i>Fusobacterium necrophorum</i>	Jugular vein suppurative thrombophlebitis (Lemierre syndrome)	Primarily affects adolescents and young adults, high fever (>39°C [102.2°F]), rigors respiratory symptoms, unilateral neck swelling or pain
<i>Arcanobacterium haemolyticum</i>	Pharyngitis and scarlatiniform rash	More common in adolescents, rash occurs in approximately one-half
<i>Corynebacterium diphtheriae</i>	Diphtheria	Tightly adherent membrane in nose and throat, history of travel (particularly to former Soviet Union, Africa, or Asia), lack of immunizations
Tularemia	Ulcerative-exudative pharyngitis	Ingestion of poorly cooked wild animal meat or contaminated water

Viruses that infect the pharynx directly

Epstein-Barr virus (EBV)	Infectious mononucleosis	Fever, severe pharyngitis, frequent exudates, anterior and posterior cervical lymphadenopathy, prominent constitutional symptoms
Cytomegalovirus (CMV)	Infectious mononucleosis	Fever, mild or no pharyngitis, anterior and posterior cervical lymphadenopathy, prominent constitutional symptoms
Human immunodeficiency virus (HIV)	Primary HIV infection	Mononucleosis-like syndrome with fever, weight loss, diffuse adenopathy, rash, splenomegaly, lymphopenia
Herpes simplex virus types 1 and 2	Pharyngitis	Exudative or nonexudative tonsillopharyngitis in sexually active adolescents, ulcerative lip lesion in 10 to 40 percent of cases
Influenza A and B viruses	Influenza	Fever, cough, pharyngitis, headache, myalgia, seasonal epidemics
Enteroviruses (Coxsackie A)	Herpangina and hand-foot-and-mouth disease	Vesicles in posterior pharynx may be accompanied by lesions on hands and feet
Adenovirus	Pharyngoconjunctival fever and acute respiratory disease	Conjunctivitis, tonsillopharyngeal erythema and exudates
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)*	Pharyngitis COVID-19 MIS-C	Clinical features are variable; may include fever, persistent cough, shortness of breath, gastrointestinal symptoms, cutaneous findings, epidemiologic link to individuals with SARS-CoV-2 infection

Ancillary studies

- **antigen detection** or culture: streptococcal disease:
- **heterophile** test and white blood cell count with differential: for infectious mononucleosis
- SARS-CoV-2 infection should undergo testing.
- chest radiograph or computed tomography of the chest
- **elevated procalcitonin** or **C-reactive protein** can be supportive of the diagnosis of COVID-19 but are present in the minority of children.
- A **soft-tissue radiographic examination** of the **lateral neck** may be useful in the child who **is ill appearing**, has significant difficulty swallowing, or who will **not move his neck**. An abnormal **epiglottitis and a retropharyngeal abscess** can be identified on this view
- If radiographs are normal and a lateral pharyngeal abscess is suspected on the basis of torticollis or asymmetrically enlarged anterior cervical lymph nodes, then a **CT** scan is indicated.

Group A streptococcal
tonsillopharyngitis in children
(clinical features and diagnosis)

Microbiology

GAS is a facultative, **gram-positive coccus** that grows in chains. The only known **reservoirs are the skin and mucous membranes of the human host**. The pathogenic mechanisms underlying these infections are poorly understood.

Epidemiology

GAS is **the most common cause of bacterial pharyngitis** in children and adolescents. It accounts for 15 to 30 percent of all cases of pharyngitis in children between the ages of 5 and 15 years.

In temperate climates, the incidence of GAS pharyngitis **peaks during the winter and early spring**. During these seasons, as many as 35 to 40 percent of cases of pharyngitis in children and adolescents are caused by GAS.

GAS pharyngitis is most common in school-age children but may occur in younger children, especially if they have contact with school-age children. In a meta-analysis, the pooled prevalence of GAS among children (<18 years) **who presented to an outpatient clinic or emergency department with sore throat** was 37 percent. The prevalence among children <5 years was 24 percent.

CLINICAL FEATURES

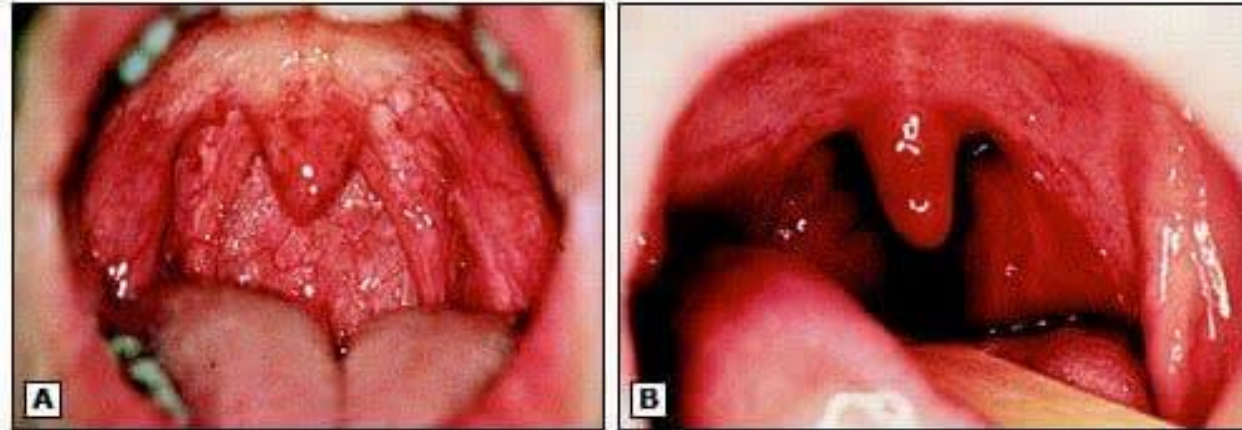
Children ≥ 3 years

- In children ≥ 3 years, GAS pharyngitis typically has an **abrupt onset**
- **Fever, headache, abdominal pain, nausea, and vomiting** may accompany the sore throat, which can lead to poor oral intake.
- Additional features may include: **exudative tonsillopharyngitis¹, enlarged erythematous tonsils, enlarged tender anterior cervical lymph nodes, palatal petechiae, inflamed uvula² and scarlatiniform rash^{3A,B}.**
- Viral features (eg, rhinorrhea, conjunctivitis, cough, hoarseness, anterior stomatitis, discrete ulcerative lesions or vesicles, diarrhea) **are usually absent.**
- Symptoms usually resolve spontaneously in **three to five days.**

CLINICAL FEATURES



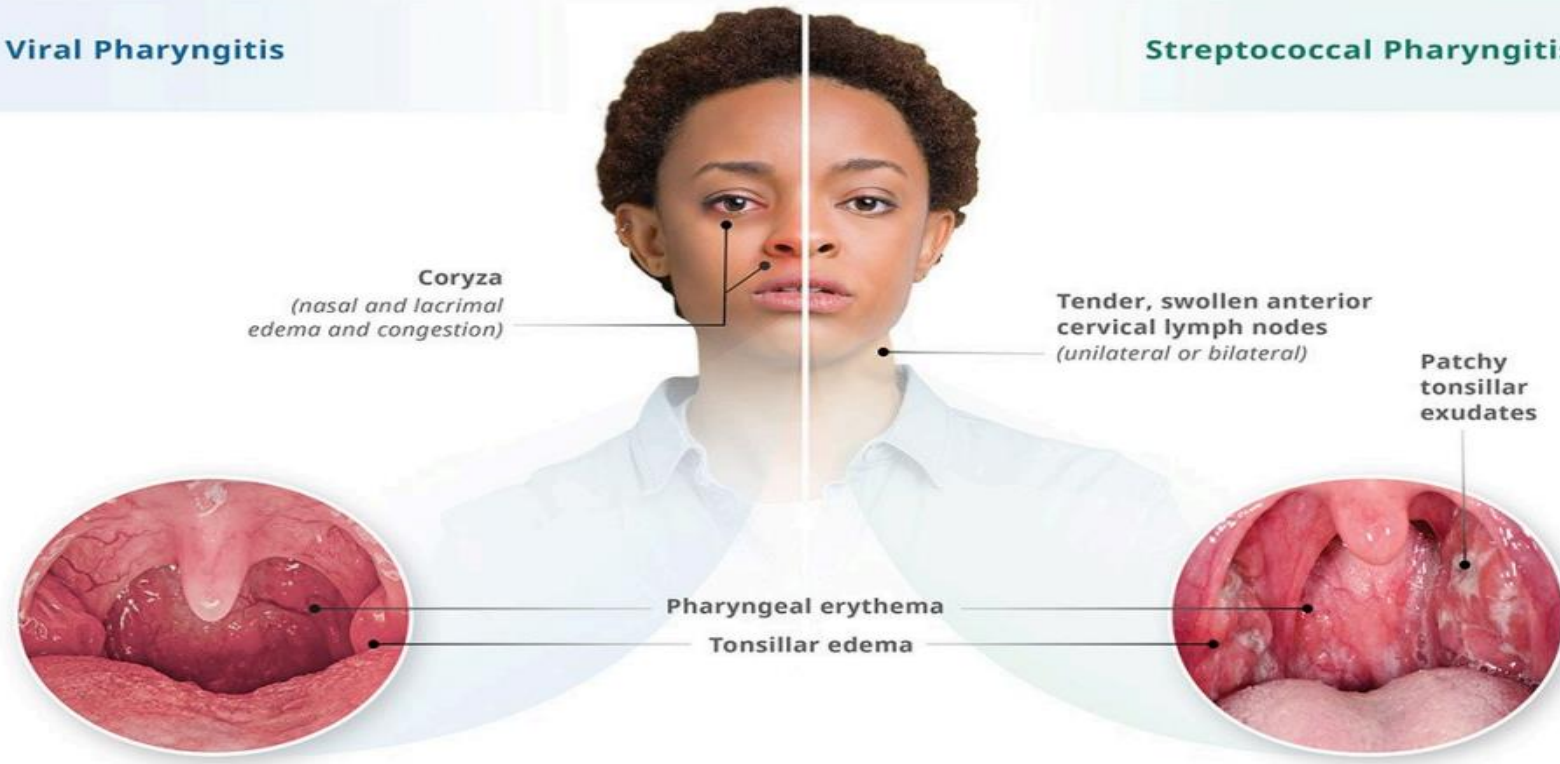
1. This patient with streptococcal pharyngitis has prominent bilateral tonsillar exudate without peritonsillar swelling



2. Inflammation of the uvula in association with tonsillar and posterior pharyngeal involvement.(A) Redness and vascularity of the tonsillar pillars and uvula are mild to moderate. The uvula is moderately swollen.(B) Redness is diffuse and intense.

Viral Pharyngitis

Streptococcal Pharyngitis



Features Suggestive of Viral Pharyngitis

- Subacute onset of sore throat
- Associated upper respiratory infection symptoms (cough, congestion, conjunctivitis, hoarse voice)
- Pharyngeal erythema and tonsillar edema
- Low-grade or absent fever

Features Suggestive of Streptococcal Pharyngitis

- Acute onset of sore throat
- Absence of other upper respiratory infection symptoms
- Pharyngeal erythema and tonsillar edema
- Fever
- Tonsillar exudates

CLINICAL FEATURES

Children <3 years

- Children <3 years of age generally **do not have the findings that are typical of older children.**
- Instead of a well-defined episode of pharyngitis, they may have protracted symptoms of **nasal congestion and discharge, low-grade fever (eg, <38.3°C), and tender anterior cervical adenopathy.** This GAS symptom complex is called "**streptococcosis.**"
- Infants <1 year of age may present with nonspecific symptoms, including **fussiness, decreased appetite, and low-grade fever.** They often have older siblings or day care contacts with GAS infection.

CLINICAL FEATURES

Complications

Nonsuppurative complications of GAS pharyngitis include:

- Acute rheumatic fever
- Poststreptococcal glomerulonephritis
- Pediatric autoimmune neuropsychiatric disorders associated with streptococcus (PANDAS)

Suppurative complications of GAS pharyngitis include:

- Necrotizing fasciitis
- Bacteremia
- Peritonsillar cellulitis or abscess
- Otitis media
- Sinusitis

DIAGNOSIS

Diagnostic criteria

The diagnosis of GAS pharyngitis is supported by a **positive microbiologic test** (throat culture, rapid antigen detection test [RADT], or molecular point-of-care test [POC] for GAS) in a **patient with symptoms of GAS pharyngitis** and **absence of signs and symptoms of viral infections** (eg, rhinorrhea, conjunctivitis, cough, hoarseness, anterior stomatitis, discrete ulcerative lesions or vesicles, diarrhea).

The presence of isolated viral features (eg, cough, rhinorrhea) **does not preclude** a diagnosis of GAS pharyngitis.

Neither throat culture, RADT, nor molecular POC test for GAS can differentiate patients with **acute GAS pharyngitis** from **GAS carriage with intercurrent viral illness**. (between 5 and 21 percent of children between 3 and 15 years of age are pharyngeal carriers of GAS)

DIAGNOSIS

Approach to testing

Whom to test (microbiologic testing for GAS):

- In children ≥ 3 years of age and adolescents with **evidence of acute tonsillopharyngitis** (erythema, edema, and/or exudates) **or scarlatiniform rash** (picture 3A-B) on physical examination.
- In children < 3 years of age with **prolonged nasal discharge, tender anterior cervical adenopathy, and low-grade fever.**
- In children with the **suspected** diagnosis of **acute rheumatic fever (ARF)** or **acute poststreptococcal glomerulonephritis.**
- In children with a **previous diagnosis of ARF** when there is a **household contact with GAS.**

To prevent identification of GAS carriers with viral respiratory infection, we **avoid microbiologic testing for GAS in children and adolescents with multiple manifestations strongly suggestive of viral illness.**

DIAGNOSIS

- Choice of test
 - For children and adolescents in whom microbiologic testing for GAS is necessary, we suggest performance of a **RADT**. **Standard throat culture** and **molecular assays** are acceptable alternatives.
 - **If initial testing with RADT is negative in a child or adolescent**, we recommend follow-up testing with **standard throat culture** because RADT may miss as many as 30 percent of cases of GAS pharyngitis. (Confirmation of negative RADT with throat culture **is not necessary in adults**. The risk of an initial episode of ARF in an adult with GAS pharyngitis is extremely low, even if an episode of streptococcal pharyngitis is untreated).
 - **If initial testing with a molecular assay is negative**, follow-up testing with a **standard throat culture is not necessary**, given the high sensitivity of molecular assays.

Serologic testing for GAS has been used historically to confirm previous infection in patients who are being evaluated for ARF or poststreptococcal glomerulonephritis. However, serologic testing is not helpful at the time of clinical presentation with pharyngitis.

Treatment

- The goals of antibiotic therapy for GAS pharyngitis include symptom relief, preventing complications, and preventing transmission to others. (See 'Goals of treatment' above.)
- Whom to treat:

We recommend antibiotic treatment for any patient with symptomatic pharyngitis or tonsillopharyngitis who has a positive rapid antigen test or culture for GAS. We generally do not treat patients who do not have microbiologic confirmation of infection or who are chronic carriers

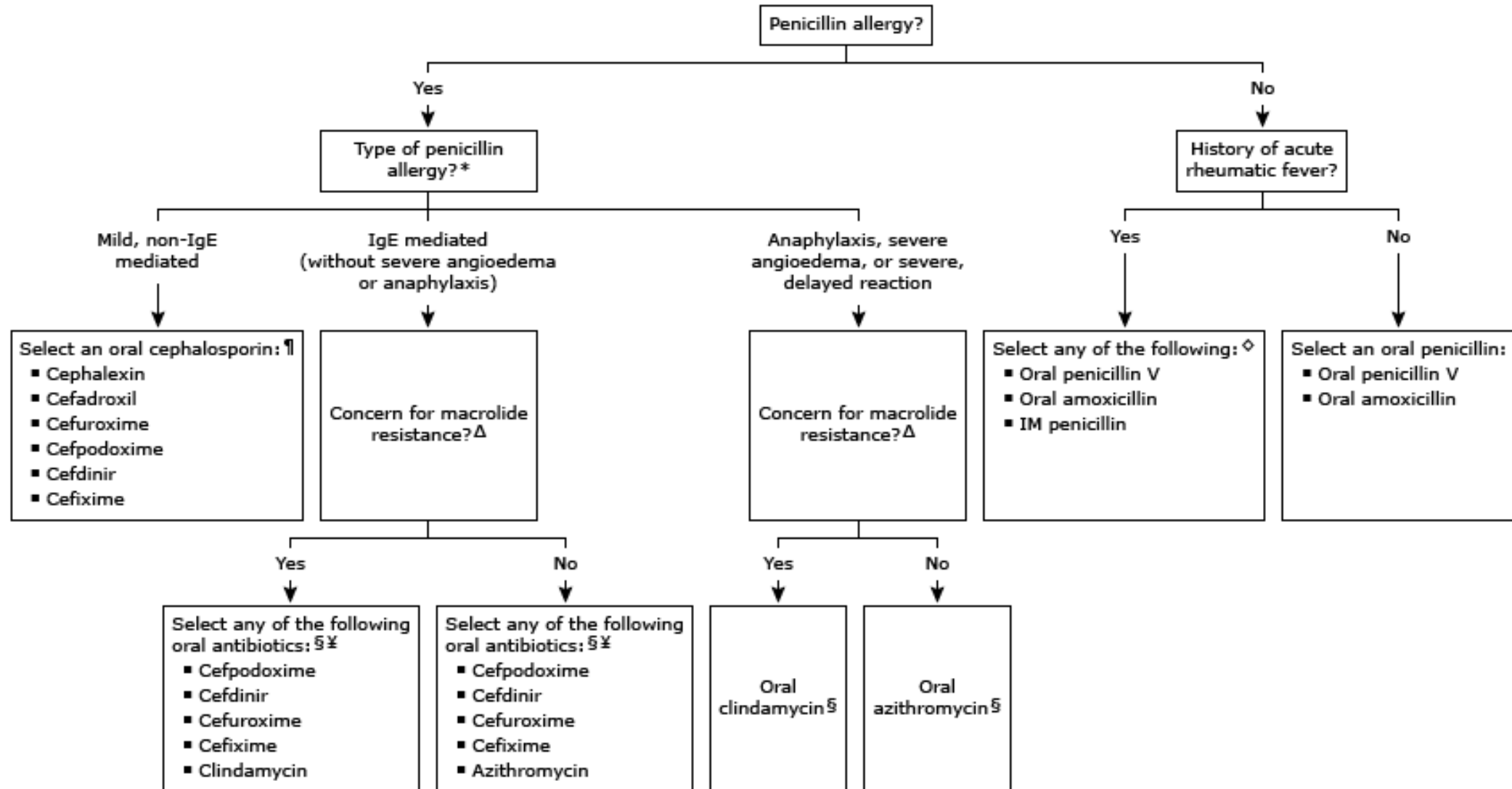
Treatment

- Preferred treatment for **children** – For most children, we use either **oral penicillin V** or **amoxicillin**. **Amoxicillin** is often preferred for young children because the taste of the amoxicillin suspension is more palatable than that of penicillin
- Preferred treatment for **adults** – For most adults, we treat with oral **penicillin V 500 mg two to three times daily for a total of 10 days**. Penicillin is the treatment of choice for GAS pharyngitis due to its efficacy, safety, narrow spectrum, and low cost

Treatment

- **Alternatives** for patients who cannot tolerate penicillin – Cephalosporins, **clindamycin, and macrolides** are alternatives for patients who are allergic to penicillin or who cannot otherwise tolerate penicillin.
- Treatment for patients with a **history of acute rheumatic fever** – For patients with a history of acute rheumatic fever or for those who may not adhere to oral therapy, we select among **oral penicillin, oral amoxicillin, or a single dose of intramuscular penicillin** based on drug availability, cost, and patient values and preferences.

Treatment



Treatment of pharyngitis due to group A *Streptococcus* in children and adolescents

Antibiotic class	Drug	Dosing in children and adolescents*	Advantages	Disadvantages
Penicillins (preferred)	Penicillin V	<ul style="list-style-type: none"> ▪ If ≤ 27 kg: 250 mg 2 to 3 times daily for 10 days ▪ If > 27 kg: 500 mg 2 to 3 times daily for 10 days 	<ul style="list-style-type: none"> ▪ Narrow spectrum ▪ No documented resistance ▪ Low cost 	<ul style="list-style-type: none"> ▪ Thrice-daily dosing; however, twice-daily regimen appears to be as effective as thrice daily⁽¹⁾
	Amoxicillin*	<ul style="list-style-type: none"> ▪ 50 mg/kg per day orally (maximum 1000 mg per day) for 10 days ▪ May be administered once daily or in 2 equally divided doses 	<ul style="list-style-type: none"> ▪ Taste of suspension more palatable than penicillin, often preferred for children 	
	Penicillin G benzathine (Bicillin L-A)	<ul style="list-style-type: none"> ▪ If ≤ 27 kg: Penicillin G benzathine (Bicillin L-A) 600,000 units IM as a single dose[¶] ▪ If > 27 kg: Penicillin G benzathine (Bicillin L-A) 1.2 million 	<ul style="list-style-type: none"> ▪ Can be given as a single dose ▪ Ensured adherence ▪ Only drug studied for prevention of acute rheumatic fever 	<ul style="list-style-type: none"> ▪ Variable availability ▪ High cost ▪ Injection site pain
		units IM as a single dose		

Cephalosporins (potential alternatives for mild reactions to penicillin ^Δ)	Cephalexin* (first generation)	<ul style="list-style-type: none"> 40 mg/kg/day divided twice daily for 10 days (maximum 500 mg/dose) 	<ul style="list-style-type: none"> High efficacy rate Narrower spectrum than later-generation cephalosporins 	<ul style="list-style-type: none"> Broader spectrum than penicillin Greater potential to induce antibiotic resistance
	Cefuroxime* (second generation)	<ul style="list-style-type: none"> 10 mg/kg/dose orally twice daily for 10 days (maximum 250 mg/dose) 	<ul style="list-style-type: none"> High efficacy rate Narrower spectrum than later-generation cephalosporins 	<ul style="list-style-type: none"> Broader spectrum than penicillin and first-generation cephalosporins Greater potential to induce antibiotic resistance
	Cefpodoxime* (third generation)	<ul style="list-style-type: none"> 5 mg/kg/dose orally every 12 hours (maximum 100 mg/dose) for 5 to 10 days 	<ul style="list-style-type: none"> High efficacy rate FDA approved for 5-day course 	<ul style="list-style-type: none"> Broader spectrum than penicillin and earlier-generation cephalosporins Greater potential to induce antibiotic resistance
	Cefdinir* (third generation)	<ul style="list-style-type: none"> 7 mg/kg/dose orally every 12 hours for 5 to 10 days or 14 mg/kg/dose every 24 	<ul style="list-style-type: none"> High efficacy rate FDA approved for 5-day course when 	<ul style="list-style-type: none"> Broader spectrum than penicillin and earlier-generation cephalosporins
		<ul style="list-style-type: none"> hours for 10 days (maximum 600 mg/day) 	<ul style="list-style-type: none"> dosed twice daily 	<ul style="list-style-type: none"> Greater potential to induce antibiotic resistance

<p>Macrolides (alternatives for patients with anaphylaxis or other IgE-mediated reactions or severe delayed reactions to penicillin^A)</p>	Azithromycin	<ul style="list-style-type: none"> 12 mg/kg/day (maximum 500 mg/dose) for 5 days 	<ul style="list-style-type: none"> Can be given as a 5-day course due to extended half-life 	<ul style="list-style-type: none"> Growing rates of resistance Associated with QTc prolongation and, rarely, life-threatening cardiovascular events including TdP; assess risk (eg, history of long QT interval, interacting medications, electrolyte abnormalities)
	Clarithromycin*	<ul style="list-style-type: none"> 7.5 mg/kg/dose (maximum 250 mg per dose) orally twice daily for 10 days 		<ul style="list-style-type: none"> Growing rates of resistance Greater gastrointestinal side effects than azithromycin Causes CYP3A4 drug interactions QTc interval prolongation: Refer to azithromycin
<p>Lincosamides (alternative</p>	Clindamycin	<ul style="list-style-type: none"> 7 mg/kg/dose (maximum 		<ul style="list-style-type: none"> Growing rates of resistance
<p>when macrolide resistance is a concern and penicillins and cephalosporins cannot be used)</p>		<ul style="list-style-type: none"> 300 mg per dose) orally 3 times daily for 10 days 		<ul style="list-style-type: none"> High side effect profile (ie, gastrointestinal)

Symptom resolution and test of cure

- Symptom resolution and return to work – Fever and sore throat typically resolve within **one to three** days. Most patients can return to work, school, or daycare **after 12 to 24 hours** of antibiotic therapy, provided they are afebrile and otherwise well.
- A **test of cure** is usually **not needed** for patients who are **asymptomatic** at the end of a course of antibiotic therapy, except for those with a history of acute rheumatic fever or in other special circumstances or patients who have **persistent or recurrent symptoms** after completing a course of antibiotic therapy, we **repeat** microbiologic testing when symptoms are compatible with GAS infection. Because chronic GAS carriage can occur after antibiotic therapy, we generally avoid testing in patients who have symptoms that are more compatible with viral pharyngitis or other etiology.

persistent or recurrent symptoms

- For patients with microbiologically proven recurrent or persistent GAS pharyngitis, **we repeat a 10-day course of antibiotic therapy** and generally select an antibiotic that has greater beta-lactamase stability than the one used initially.
- As examples, if penicillin was used for initial treatment, we use either amoxicillin-clavulanate or a first-generation cephalosporin; if a first-generation cephalosporin was used, we select a later-generation cephalosporin.
- **relapse rates may be lower with cephalosporin use**, as well as scientific observations that antibiotics with **greater beta-lactamase activity** may be more effective in eradicating GAS from the oropharynx.
- For patients with frequent, severe episodes of GAS pharyngitis that recur despite appropriate antibiotic treatment, we consider tonsillectomy.
- When recurrent infections are thought to be due to ongoing GAS circulation among household members, we consider testing all household members and treating those who test positive.

Prophylaxis

- Antibiotic prophylaxis is used for patients with a history of acute rheumatic fever because these patients are at high risk for recurrence and for the development of chronic valvular heart disease. Antibiotic prophylaxis is not recommended for chronic carriers, except in special circumstances

Choice of antibiotic agent for treatment and prophylaxis of acute rheumatic fever

Scenario	Antibiotic choice(s)
Preferred treatment in endemic areas where IM penicillin is available at low cost	<ul style="list-style-type: none"> IM penicillin G benzathine given every 28 days
Alternative treatment in nonendemic areas where IM penicillin is unavailable or prohibitively expensive	<ul style="list-style-type: none"> Oral penicillin V
Confirmed penicillin allergy*	<ul style="list-style-type: none"> Preferred – Oral azithromycin Alternative – Oral sulfadiazine
Severe symptomatic RHD [¶]	<ul style="list-style-type: none"> Preferred – Oral penicillin V Alternatives – Oral azithromycin or oral sulfadiazine
Bleeding problems following IM injection that cannot be addressed	<ul style="list-style-type: none"> Preferred – Oral penicillin V Alternatives – Oral azithromycin or oral sulfadiazine
Other barriers to using the preferred treatment that cannot be resolved ^Δ	<ul style="list-style-type: none"> Oral penicillin V
Patients at low risk of recurrence [◇]	<ul style="list-style-type: none"> Oral penicillin V
Breakthrough infection while on prophylaxis	<ul style="list-style-type: none"> For treatment of acute infection – Oral clindamycin[§] For ongoing prophylaxis – IM penicillin G benzathine given every 21 days

Secondary prophylaxis for rheumatic fever - Duration of therapy

Category	Duration after last attack
Rheumatic fever with carditis and residual heart disease (persistent valvular disease*)	10 years or until 40 years of age (whichever is longer) Sometimes lifelong prophylaxis (refer to UpToDate topics on treatment and prevention of acute rheumatic fever and management and prevention of rheumatic heart disease)
Rheumatic fever with carditis but no residual heart disease (no valvular disease*)	10 years or until 21 years of age (whichever is longer)
Rheumatic fever without carditis	5 years or until 21 years of age (whichever is longer)

سطوح پیشگیری

Primordial Prevention

Primary Prevention

Secondary Prevention

Tertiary Prevention

Quaternary Prevention

Primordial Prevention

- Hygiene
- Social distancing

Primary Prevention

- Good hand hygiene and avoiding close contact with individuals who are sick.
- Postexposure prophylaxis: testing and treatment of asymptomatic persons who have been exposed to a patient with group A Streptococcus (GAS) pharyngitis which are not routinely recommended expect for patients with a history of complicated GAS pharyngitis
- Prevention of foodborne illness by asymptomatic food service workers with nasopharyngeal carrier, through cooking complete reheating, and use of gloves while handling food.
- Ensuring proper vaccination against diseases that can lead to Strep throat.

Secondary Prevention

- **Early detection and treatment** of strep pharyngitis to **prevent complications and transmission** to others. Rapid strep tests and throat cultures are commonly used to diagnose strep throat, and prompt initiation of antibiotic treatment can help the spread of infection.

Tertiary Prevention

- **Managing and treating complications** that may arise from untreated or inadequately treated strep pharyngitis. Complications such as rheumatic fever and PSGN can be prevented through appropriate antibiotic therapy

Quaternary Prevention

- **Avoid unnecessary medical interventions** and the overuse of antibiotics to prevent antibiotic resistance and protect overall public health.

با تشکر از توجه شما