

Pharmacotherapy 2

Upper Respiratory Tract Infections

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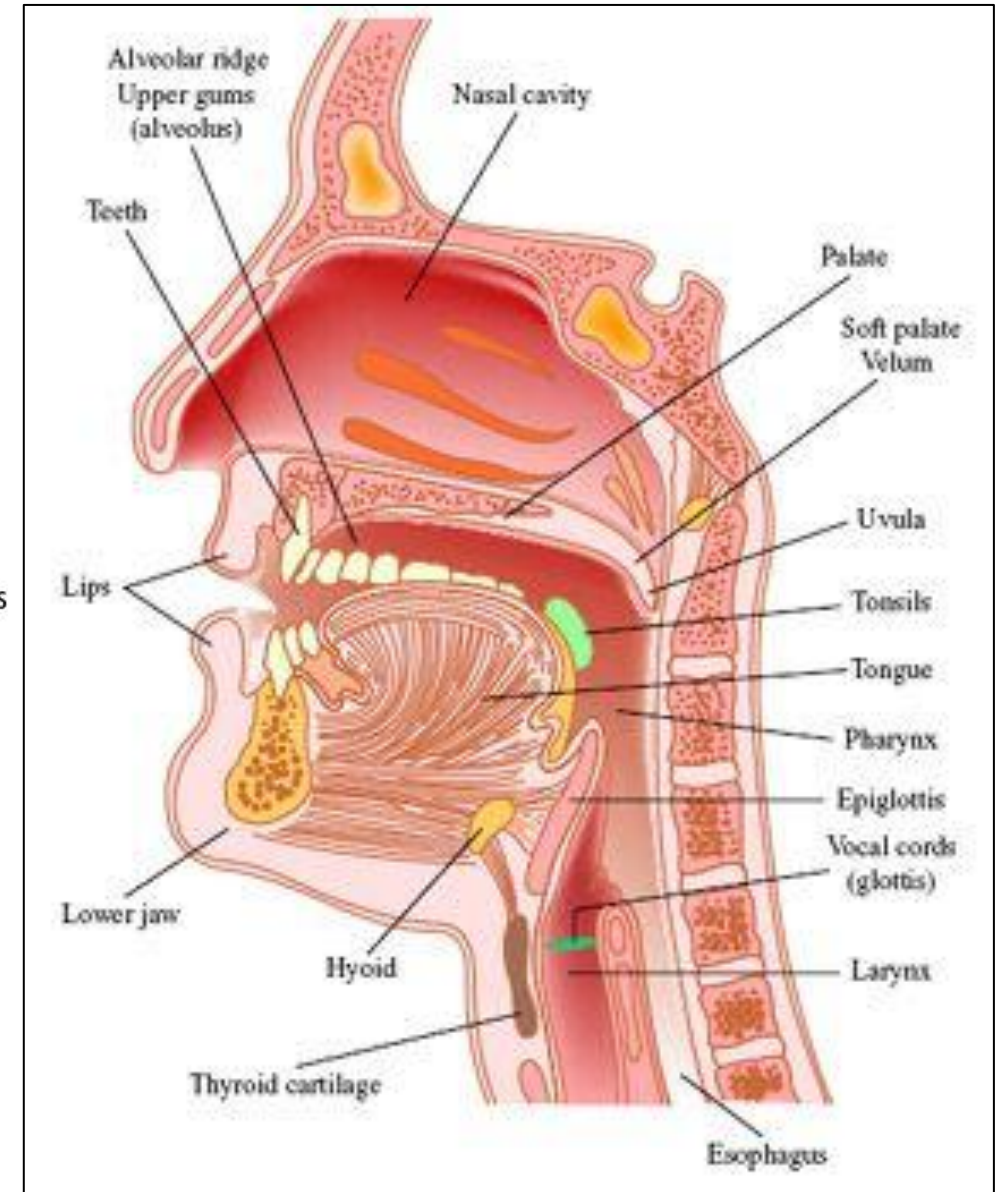
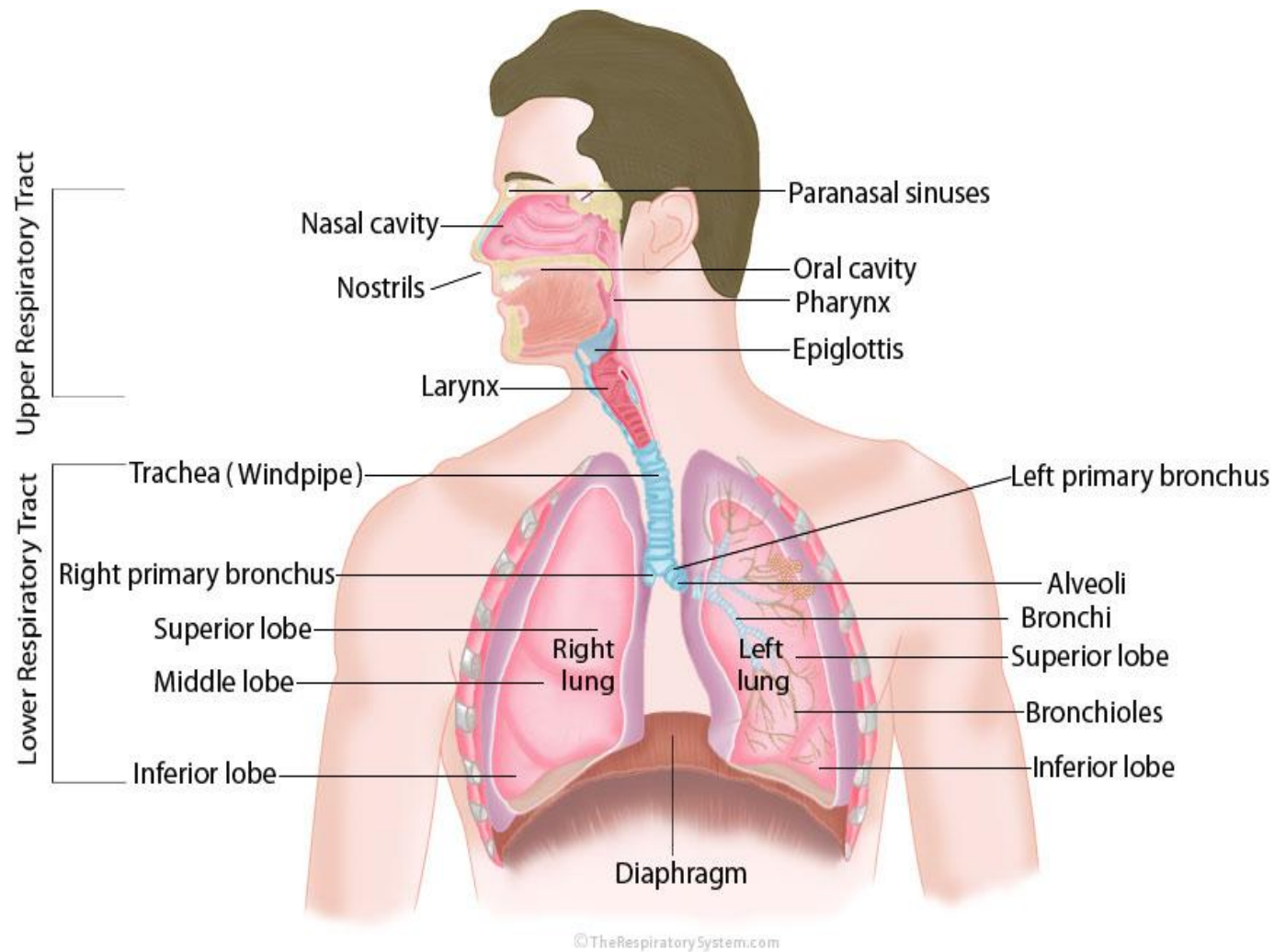
Topic Outline

- Pharyngitis (general principles, diagnosis, treatment)
- Rhinosinusitis (general principles, diagnosis, treatment)
- Otitis Media (general principles, diagnosis, treatment)
- Influenza Virus Infection (general principles, diagnosis, treatment, complications)

بِسْمِ اللَّهِ نَبْدَأُ 

اللهم لا سهل الا ما جعلته سهلا
وانت تجعل الحزن اذا شئت سهلا

Upper and Lower Respiratory Tract



Upper Respiratory Tract Infections (URIs)

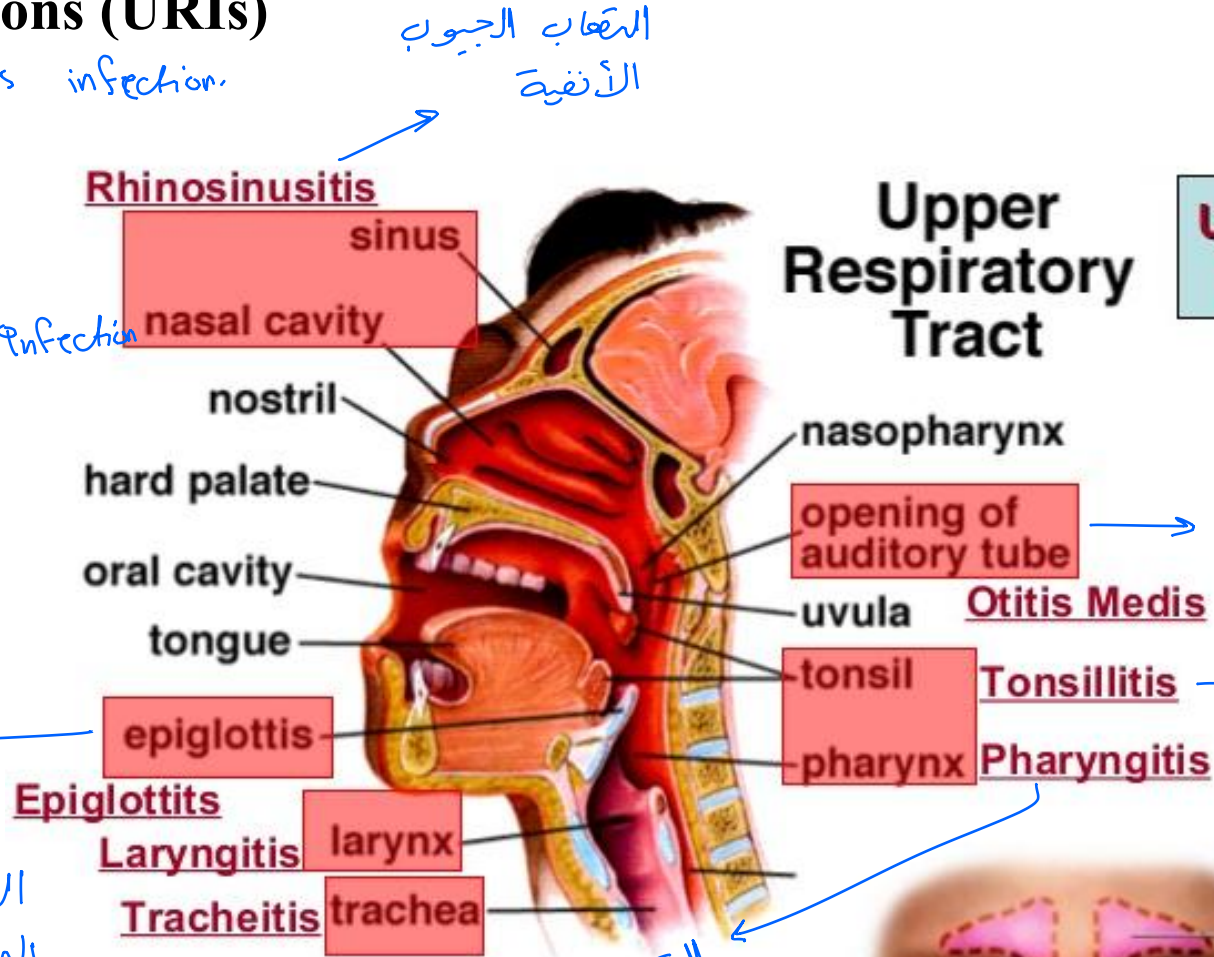
usually the etiology viruses infection.

✓ Pharyngitis, rhinosinusitis, and otitis media are the 3 most common URIs.

✓ Because URIs are so common, antibiotics used to treat them serve as catalysts for the emergence and spread of antibiotic resistance, thereby making wise antibiotic use critically important.

↓
ضروري اعرف المسبب للارتقا
virus و bacterial - لا
استخدام ال antibiotics في حالات ال
غير حقد

التهاب لسان المزمار

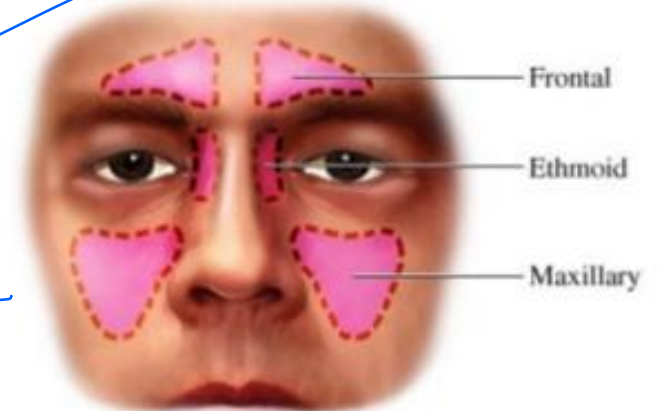


التهاب الجيوب الأنفية

حرقن التهاب فيها
يعمل التهاب
الاذن الوسطى

التهاب
اللوزتين

التهاب
الحلق



← في فرق بين ال pharyngitis وال Tonsillitis ولكن عادة بتكونوا معا جيب
Tonsils involved
للعجب يعني هعجب يكون في عندي pharyngitis بدون فاككون ال
بالغاية اللوزتين عبارة عن خط دفاع آخر
لصنع وجود microbes بالحلق راح ياتر عليه

Pharyngitis

→ Tonsillitis = براعقه عادة

Management ال Tonsillitis وال Pharyngitis تقريباً واحدة.

General Principles:

✓ An acute infection of oropharynx or nasopharynx.

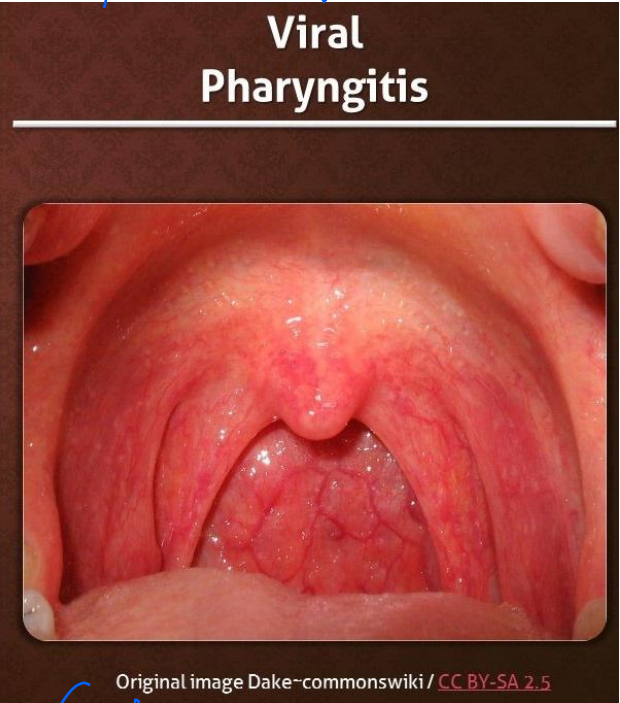
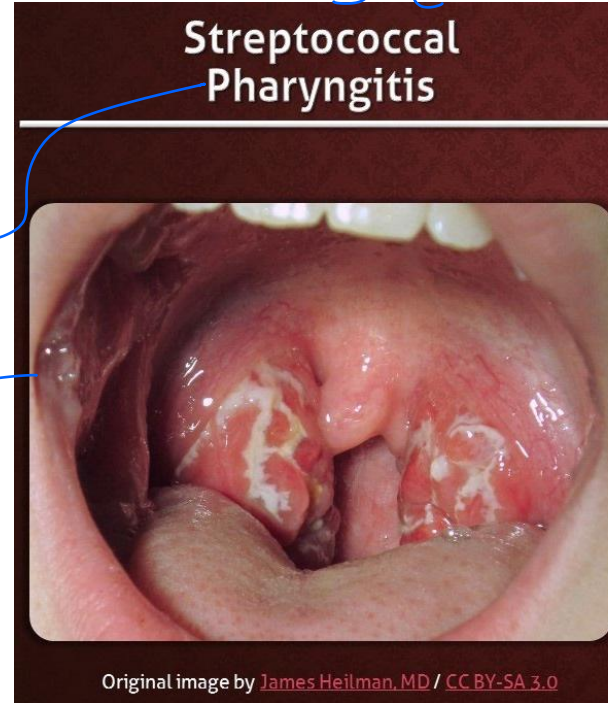
✓ * Viruses [rhinovirus (20%), coronavirus (5%), adenovirus (5%), HSV (4%), influenza virus (2%), parainfluenza virus (2%), Epstein-Barr virus (1%)] are the most common cause of pharyngitis.

✓ GABHS (group A β -hemolytic Streptococcus) pharyngitis: primary bacterial cause, 5–15% of cases in adults, 15–30% in children

✓ Children 5 to 15 years of age are most susceptible (At increased risk: parents of school-age children and those who work with children)

1. tonsils enlarged
2. puss on the tonsils
3. redness
4. mucousy (secretions)

1. Redness in oral pharynx.
2. dylation (inflammation)
3. Conjestion



gas pharyngitis
GI symptoms:
1. Nausea 2. vomiting
3. abdominal pain

need antibiotic therapy.

GI symptoms: diarrhea

sore throat

cough → الحاجة سعال
viral infection.

1. يكون المريض عند سعال
2. ألم في الحلق والحنجرة

أطفال المدارس
rare in children younger than 3 years old.
direct contact with nasal and oral cavity droplets
gas pharyngitis ← العدوى عن طريق ال

Diagnosis:

✓ Clinical Presentation:

- ① • Fever, cervical lymphadenopathy, tonsillar exudates & throat pain → most common clinical manifestations
② ③ ④
لـ تضخم الـ lymph node
الموجودة في الرقبة
الحمى ←
- Distinguishing bacterial from viral pharyngitis on clinical grounds alone is difficult → microbiologic testing is recommended for symptomatic patients unless they have symptoms suggestive of viral etiology or are younger than 3 years of age.
① ②
gas
bacterial infection.
لازم يكون عنده اعراض الـ
microbiological test not recommended.

* viral Infection of pharyngs → self limited

* GABHS Infection of pharyngs → need antibiotic
↓
specific type of bacteria.

* another Bacterial Infection → self limited.

CLINICAL PRESENTATION: Group A B-hemolytic Streptococcal Pharyngitis

General

- A sore throat of sudden onset that is mostly self-limited.
- Fever and constitutional symptoms resolving in about 3 to 5 days.
- Clinical signs and symptoms are similar for viral causes and nonstreptococcal bacterial causes.

Signs and Symptoms of GAS Pharyngitis

- 1 • Sore throat, usually with sudden onset
- 2 • Pain on swallowing
- 3 • Fever
- 4 • Headache, nausea, vomiting, and abdominal pain (especially in children)
- 5 • Erythema/inflammation of the tonsils and pharynx
- 6 • Patchy exudates
- 7 • Enlarged, tender anterior cervical lymph nodes
- 8 • Red swollen uvula
- 9 • Petechiae or purple spots on the soft palate
- 10 • Scarlatiniform rash (papular, blanching, and erythematous rash often affecting neck then spreads along the trunk and limbs).

Signs Suggestive of Viral Origin for Pharyngitis

- 1 • Conjunctivitis → eye involvement.
- 2 • Coryza → (أعراض أنفية) سيلان ر عفس
- 3 • Cough → حيث موبوءة بال Bacterial infection.
- 4 • Anterior stomatitis → الحموي الغم
- 5 • Viral exanthem → rash. wide spread.

rash يختلف عن ال
الوجود في ال
Bacterial infection.

Laboratory Tests

- 1 • Throat swab and culture
- 2 • Rapid antigen-detection test (RADT)

له صوب مغمية زبي حبة الدمى تبلس عن الرقة

له اللسان نفس لون الفولة، عليه زي تودات بيضاد.

يتميز ال chest , trunk , extremities

طمسها فئذ مصاحبة لإرتفاع درجة الحرارة.

→ strawberry
tongue

✓ Diagnostic Testing → Swab → Rapid antigen detection test or culture.

• Reserved for:

diagnostic test الشكاف يلي بعلاج ال

عشيرة في ال
gas pharyngitis

1. ➤ symptomatic patients with exposure to a case of strep. pharyngitis
2. ➤ those with signs of significant infection (fever, tonsillar exudates, & cervical adenopathy)
3. ➤ whose symptoms persist despite symptomatic therapy
4. ➤ patients with a history of rheumatic fever.

← تكون ال signs هاي تكون درجات .
3
اذا كانت ال symptoms sever

← كانت الأعراض خيروالفة هل هي (viral or bacterial) وصبرت عليه فترة دقا
حسن

• Rapid antigen detection testing (RADT) is useful for diagnosing GABHS (> 90% sensitivity and specificity). A negative test does not reliably exclude GAS, making throat culture necessary if clinical suspicion is high.

1. Rapid
2. not expensive

3. easy to do.

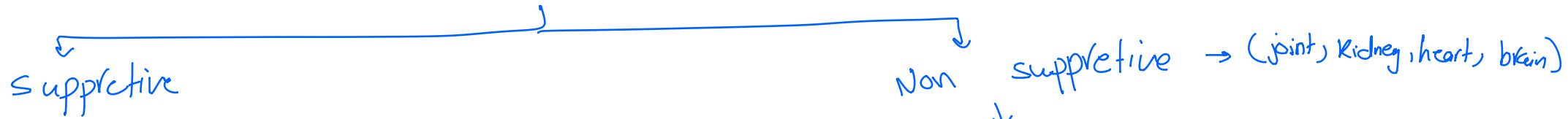
Rapid test → negative → culture
بستني ال culture
في بعض الحالات عشان اتأكد (adolescence + children أقل من 20 سنة)

• Delaying therapy while awaiting culture results does not affect the risk of complications (but symptomatic benefit is postponed, contagion remains), and patients must be educated as to the value of waiting, given the low false-negative rate of RADT.

← عيب
الريفين.

← بس ممكن تبغير سرعة إصابة الريفين في الأعراف اذا كان الريفين باله بلس يوحين بجاني فذهاي الأعراض
فما عندي مشكلة لأنه بستني نتيجة ال culture بس اذا كان الريفين باله عشر أيام بجاني فذهاي الأعراض هاي
فدايركت لازم البستني في empiric therap

Complications of gas pharyngitis



spread the infection to another area and cause another infection such as: otitis media, Rhinosinosis

Non suppurative → (joint, kidney, heart, brain)

↓
Autoimmune response

1. Acute rheumatic fever → ^{يكون يتحول} rheumatic heart disease.

2. problem in the joints. ^{rash} 3. problem in the kidney

1. complications هاي تبس اذا ال gas pharyngitis فالتاقت او فالتاقت شكر جميع.

فالتاقت شكل صحيح يعني ممكن كانت المشكلة : 1. نوع ال antibiotic
2. الجرعة خطأ. 3. عدم التزام المريض 4. مدة العلاج غير كافية

antigen ← في عندي على ال gas pharyngitis ← antigen هاي ال antigen لتسبب
antigen موجودة في الجسم (joint, brain, heart) لما تسير عندي استجابة مناعية الجسم
تكون antibodies ضد هاي ال antigen تبس فتن بس يحتاج ال antigen موجودة على ال

gas pharyngitis تبس يحتاج ال self antigen ← تبس عندي Acute rheumatic fever
يكون انا فالتاقت راح تبس عندي rheumatic heart disease ← درحات في المفاصل وفي حالات ممكن يدخل المرفق بحالة قلب مفتوح.

Treatment: prevention → primary → non-suppressive complication
 → secondary → non-suppressive complication
 من خلال التشخيص الصحيح والعلاج الصحيح يمنع أنه يصير عرضي المرفق
 معون يكون المضاعفات non-suppressive complication صارت الأساس وبعد ما أعالجها بي
 لمنع أنها ترجع تتكرر مرة ثانية .

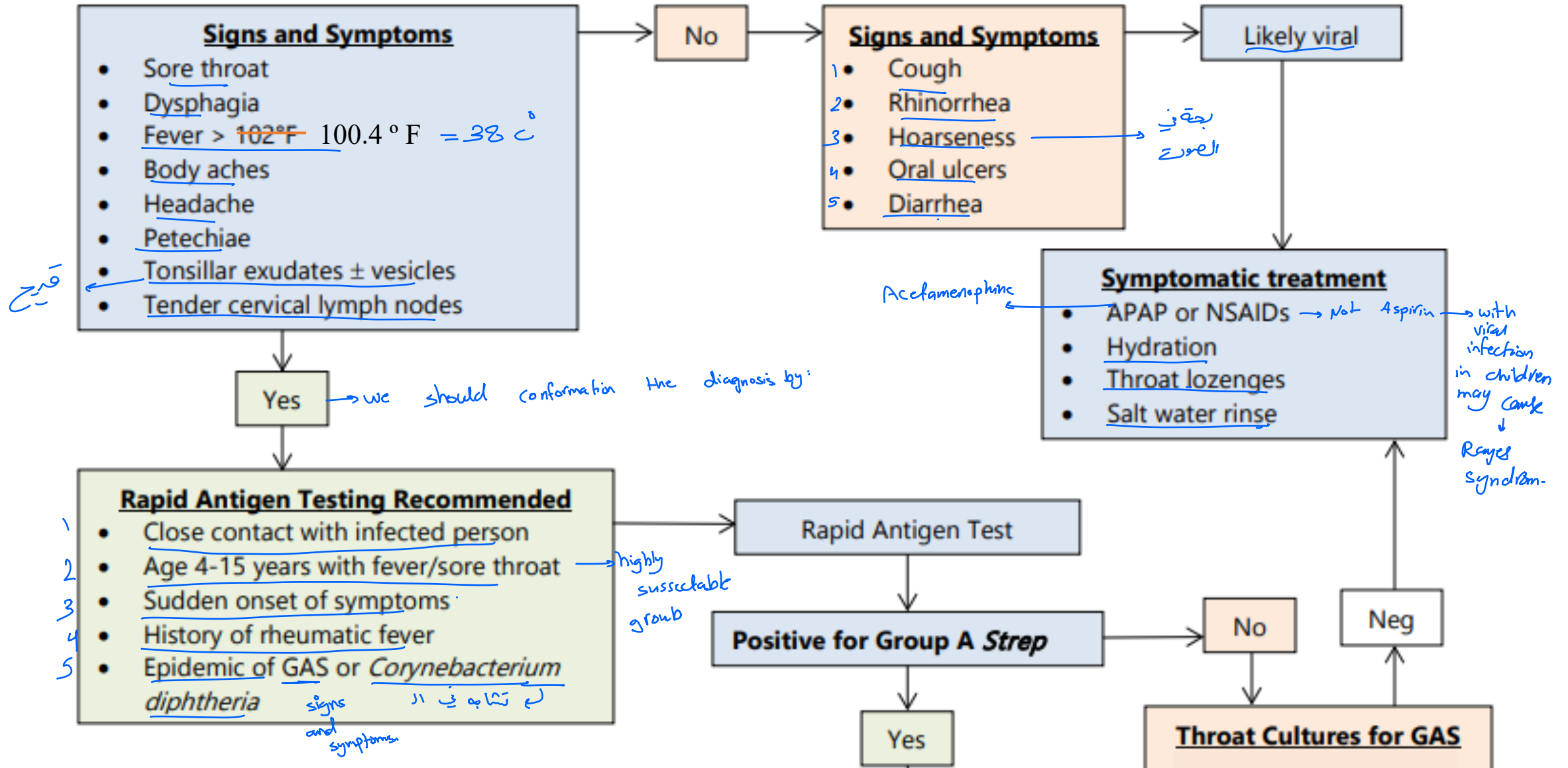
- ✓ Most cases of pharyngitis are self-limited and do not require antimicrobial therapy.
- ✓ Empirical therapy is not recommended; however, if used while results are pending, it is important to discontinue empirical antibiotics once laboratory results come back as negative.
- ✓ Treatment for GABHS is indicated with a positive culture or RADT, or if the diagnosis is strongly suspected, pending culture results.
 test ← لها نتيجة لا ← test فالتعريف بين الأعراض تحسروا
 ① → drug of choice ②
- ✓ Treatment options include penicillin V 500 mg PO every 12h for 10 days, clindamycin 300 mg PO every 8h for 10 days, azithromycin 500 mg PO on day 1 followed by 250 mg every day on days 2–5, or benzathine penicillin G 1.2 million units IM as a one-time dose.
 ③ → Drug of choice ④
- ✓ Effective antibiotic therapy reduces the infectious period to about 24 hours.

- ✓ The duration of therapy for GABHS pharyngitis is 10 days, except for benzathine penicillin and azithromycin, to maximize bacterial eradication.
↳ 5 days. single dose
- ✓ Supportive care should be offered to all patients with acute pharyngitis (antipyretic medications, analgesics, and nonprescription lozenges and sprays containing menthol and topical anesthetics for temporary relief of pain). 3 1 5
- ✓ GABHS carriers (33% of household contacts of acute case) do not need antimicrobial therapy due to low risk of spreading GABHS pharyngitis or developing complications.

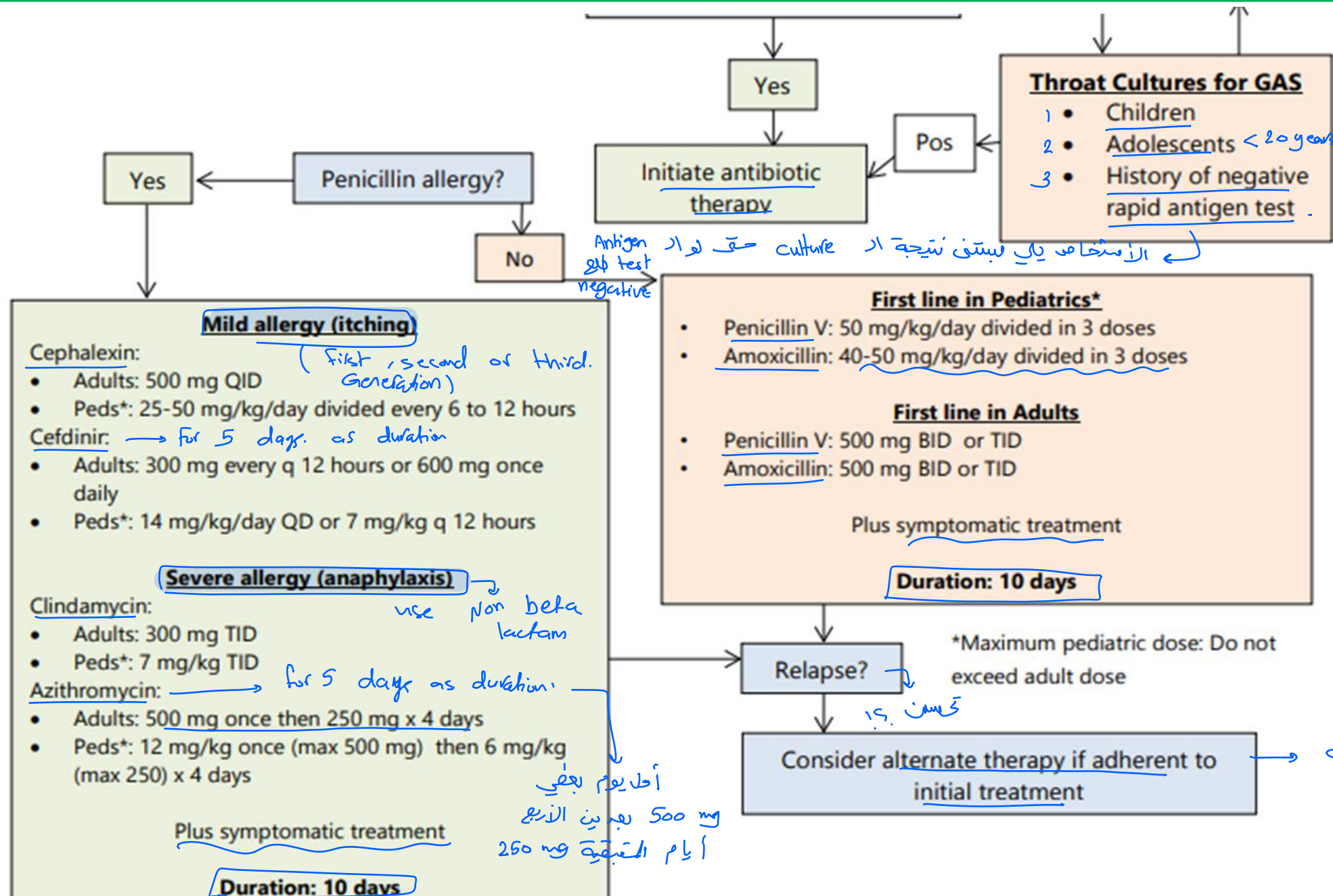
There is no signs of symptoms + no complications + عيس
معدية

اللهم افتح لي فتحة يذهلني اتساعه

Acute Pharyngitis for Adult and Pediatric Patients Algorithm



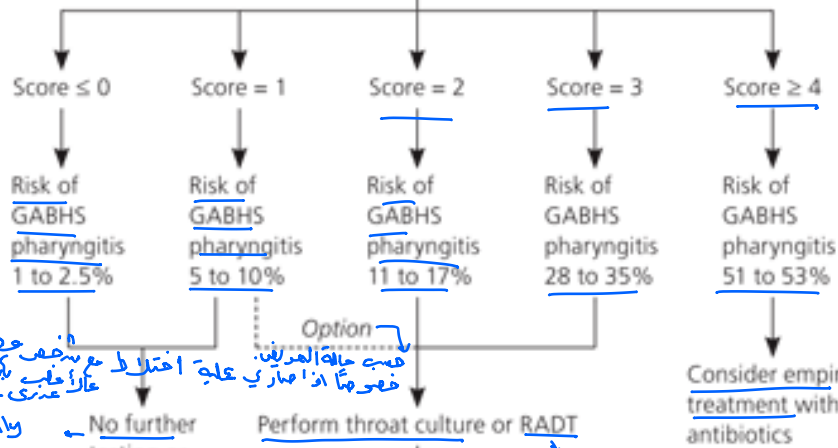
(2018) Outpatient Acute Pharyngitis for Adults and Pediatric Patients Algorithm. Retrieved from 2020 Virginia Department of Health website.
<https://www.vdh.virginia.gov/haia/vhag/>



Patient with sore throat
Apply streptococcal score

Criteria	Points
Absence of cough	1
Swollen and tender anterior cervical nodes	1
Temperature > 100.4°F (38°C)	1
Tonsillar exudates or swelling	1
Age	
3 to 14 years	1
15 to 44 years	0
45 years and older	-1
Cumulative score:	

maximum
score = 5
minimum
score = -1



Option: Perform throat culture or RADT

Negative

Positive

Perform a throat culture in children (<20 yrs)

No antibiotics indicated

Treat with antibiotics



M Must be older than 3 years



C Cough Absent (+1)



E Exudative or Swollen Tonsils (+1)



N Nodes -- adenopathy in anterior cervical chain (+1)



T Temperature -- >38°C (+1)



O Often Young, <15 years old (+1)



R Rarely Old > 45 years old (-1)

Likelihood of Positive Strep Throat Cultures based on M-CENTOR Score



Source: 1) McNamee WJ, White D, Tarranbaum D, Lee DE. A clinical score to reduce unnecessary antibiotic use in patients with sore throat. CMAJ. 1998;158(1):76-83. PubMed PMID: 9475915; PubMed Central PMCID: PMC1228750.

Next Steps

M-CENTOR <1

- Low likelihood of Strep pharyngitis
- No rapid strep test, culture or antibiotic required

M-CENTOR 2-3

- Moderate likelihood of Strep pharyngitis
- Recommend rapid strep test +/- culture
- Antibiotic therapy based on test/culture results

M-CENTOR >4

- High likelihood of Strep pharyngitis
- Recommend rapid strep test +/- culture
- Consider empiric antibiotic therapy*

Modified Centor score and management options using clinical decision rule

Based on clinical presentation test without microbiological test.

Used to calculate the risk of streptococcal pharyngitis and to decide whether RADT and antimicrobial therapy should be initiated in patients presenting with sore throat. Clinicians should consider performing RADT for those with scores of 2 if they are pediatric patients, if they are at risk of complications (immunocompromised or frail), or if they appear clinically unwell. Other factors should be considered (e.g., a score of 1, but recent family contact with documented streptococcal infection).

Yuchen (Richard) Tang, MD candidate 20218, McMaster University

Choby B. Diagnosis and Treatment of Streptococcal Pharyngitis – American Family Physician. American Academy of Family Physicians. 2009 <http://www.aafp.org/afp/2009/0301/p383.html>.

Clinical Practice Guideline for the Diagnosis and Management of Group A Streptococcal Pharyngitis: 2012 Update by the Infectious Diseases Society of America. <http://cid.oxfordjournals.org/content/early/2012/09/06/cid.cis629.full.pdf+html>

عنه يتحدد في اختيار الجرعة + مدة باليوم (frequency)

Treatment of pharyngitis due to group A *Streptococcus* in adults

depending on severity of infection + sight of infection + duration of infection

Antibiotic class	Drug	Dosing in adults*	Advantages	Disadvantages
Penicillins (preferred) ↓ drug of choice.	Penicillin V aspen.	500 mg orally two to three times daily for 10 days	- Narrow spectrum - No documented resistance - Low cost	Three-times-daily dosing; however, twice-daily regimen appears to be as effective as thrice daily^[1]
	Amoxicillin*	500 mg orally twice daily for 10 days 1000 mg (immediate release) once daily for 10 days	Also available as once-daily extended-release tablet[†]	
	Penicillin G benzathine* (Bicillin L-A)	1.2 million units IM as a single dose → given as a single dose → no problem in adherence. advantage.	- Can be given as a single dose - Ensured adherence - Only drug studied for prevention of acute rheumatic fever	- Variable availability - High cost - Injection site pain
Cephalosporins (potential alternatives for mild reactions to penicillin ^Δ)	Cephalexin* (first generation) مطلوب عن	500 mg orally twice daily for 10 days	- High efficacy rate - Narrower spectrum than later-generation cephalosporins. ← ليس الـ penicillin more effective	- Broader spectrum than penicillin - Greater potential to induce antibiotic resistance.
	Cefadroxil* (first generation)	1 g orally daily for 10 days	- Once daily - High efficacy rate - Narrower spectrum than later-generation cephalosporins	- Broader spectrum than penicillin - Greater potential to induce antibiotic resistance
	Cefuroxime* (second generation)	250 mg orally twice daily for 10 days	- High efficacy rate - Narrower spectrum than later-generation cephalosporins	- Broader spectrum than penicillin and first-generation cephalosporins - Greater potential to induce antibiotic resistance
	Cefpodoxime* (third generation)	100 mg orally twice daily for 5 to 10 days	- High efficacy rate - FDA approved for 5-day course	- Broader spectrum than penicillin and earlier-generation cephalosporins - Greater potential to induce antibiotic resistance
	Cefdinir* (third generation)	300 mg orally twice daily for 5 to 10 days or 600 mg orally once daily for 10 days	- Once-daily option - High efficacy rate - FDA approved for 5-day course	- Broader spectrum than penicillin and earlier-generation cephalosporins - Greater potential to induce antibiotic resistance
	Cefixime (third generation)	400 mg orally once daily for 10 days	- Once daily - High efficacy rate	- Broader spectrum than penicillin - Greater potential to induce antibiotic resistance

يأتي عنه في حقه مطلوب
regimen الـ

↓
الجرعة.

يأتي عنه مع بعض الآخر
مطلوبين حفظ.

advantages + disadvantages

مبدأ
microorganism.

لا يـ درجة هـ
حـاثر مـ
بـعـب

مناعة للرئتين
مناعة
قد رته انه
microorganism
يعود
Infection
عالية
or both of them.

الأطفال أقل جراحة تكون 12 بعد ذلك الأثر المثلث تكون 6



Macrolides
(alternatives for patients with anaphylaxis or other IgE-mediated reactions or severe delayed reactions to penicillin^Δ)

Azithromycin

▪ 12 mg/kg/day (maximum 500 mg/dose) 5 days → as loading dose.

▪ Once daily

▪ Growing rates of resistance
▪ Rarely associated with prolonged QT interval and TdP → serious ventricular

Clarithromycin*

↓
more drug
during interaction
than Azithromycin.

▪ 250 mg orally twice daily for 10 days

▪ Growing rates of resistance
▪ Greater gastrointestinal side effects than azithromycin
▪ Causes CYP3A4 drug interactions
▪ Rarely associated with prolonged QT interval and TdP



Lincosamides
(alternative when macrolide resistance is a concern and penicillins and cephalosporins cannot be used)

Clindamycin

▪ 300 mg orally three times daily for 10 days

▪ Growing rates of resistance
▪ High side-effect profile (ie, gastrointestinal)

Stevens-Johnson syndrome.

عق قد يستعمل.

2

arrhythmia. → at risk:

1. heart problem.
2. ventricular arrhythmia.
3. on Amelivance drug.
4. Drugs that inhibit liver enzymes that increase level of Azithromycin.
5. patient on another drug that cause prolonged of QT interval.

IM: intramuscularly; FDA: US Food and Drug Administration; TdP: torsades de pointes.

* Dose alteration may be needed for renal insufficiency.

¶ Once-daily immediate-release amoxicillin appears to be non-inferior to penicillin V or amoxicillin administered in multiple daily doses, primarily based on studies in children and adolescents. An extended-release preparation of amoxicillin is also available. The dose in adults is 775 mg orally once daily for 10 days.

Δ Approach to patients with penicillin allergy varies among experts and allergy severity; refer to the UpToDate text for additional detail.

◇ A 3-day course is approved and widely prescribed in Europe and other regions.

Reference:

1. Lan AJ, Colford JM, Colford JM Jr. The impact of dosing frequency on the efficacy of 10-day penicillin or amoxicillin therapy for streptococcal tonsillopharyngitis: A meta-analysis. *Pediatrics* 2000; 105:E19.

Data from:

1. Shulman ST, Bisno AL, Clegg HW, 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* 2012; 55:e86.
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* 2009; 119:1541.

ياي مطلوب زي ياي فوق
 الراسم بالمرحله النيرة بيفظال
 regimen.

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	- 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	- Narrow spectrum - No documented resistance - Low cost	Thrice-daily dosing; however, twice-daily regimen appears to be as effective as thrice daily^[1]
	Amoxicillin*	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	- Taste of suspension more palatable than penicillin, often preferred for children - Available as once-daily extended-release tablet[†]	
	Penicillin G benzathine (Bicillin L-A)	- If ≤ 27 kg: Penicillin G benzathine (Bicillin L-A) 600,000 units IM as a single dose^Δ - If > 27 kg: Penicillin G benzathine (Bicillin L-A) 1.2 million units IM as a single dose	- Can be given as a single dose - Ensured adherence - Only drug studied for prevention of acute rheumatic fever	- Variable availability - High cost - Injection site pain
Cephalosporins (potential alternatives for mild reactions to penicillin [◊])	Cephalexin* (first generation)	40 mg/kg/day divided twice daily for 10 days (maximum 500 mg/dose)	- High efficacy rate - Narrower spectrum than later-generation cephalosporins	- Broader spectrum than penicillin - Greater potential to induce antibiotic resistance
	Cefuroxime* (second generation)	10 mg/kg/dose orally twice daily for 10 days (maximum 250 mg/dose)	- High efficacy rate - Narrower spectrum than later-generation cephalosporins	- Broader spectrum than penicillin and first-generation cephalosporins - Greater potential to induce antibiotic resistance
	Cefpodoxime* (third generation)	5 mg/kg/dose orally every 12 hours (maximum 100 mg/dose) for 5 to 10 days	- High efficacy rate - FDA approved for 5-day course	- Broader spectrum than penicillin and earlier-generation cephalosporins - Greater potential to induce antibiotic resistance
	Cefdinir* (third generation)	7 mg/kg/dose orally every 12 hours for 5 to 10 days or 14 mg/kg/dose every 24 hours for 10 days (maximum 600 mg/day)	- High efficacy rate - FDA approved for 5-day course when dosed twice daily	- Broader spectrum than penicillin and earlier-generation cephalosporins - Greater potential to induce antibiotic resistance



Macrolides (alternatives for patients with anaphylaxis or other IgE-mediated reactions or severe delayed reactions to penicillin [◇])	Azithromycin	12 mg/kg/day (maximum 500 mg/dose) for 5 days	Can be given as a 5-day course due to extended half-life	- Growing rates of resistance - Rarely associated with prolonged QT interval and Tdp
	Clarithromycin*	7.5 mg/kg/dose (maximum 250 mg per dose) orally twice daily for 10 days		- Growing rates of resistance - Greater gastrointestinal side effects than azithromycin - Causes CYP3A4 drug interactions - Rarely associated with prolonged QT interval and TdP
Lincosamides (alternative when macrolide resistance is a concern and penicillins and cephalosporins cannot be used)	Clindamycin	7 mg/kg/dose (maximum 300 mg per dose) orally 3 times daily for 10 days		- Growing rates of resistance - High side effect profile (ie, gastrointestinal)



IM: intramuscularly; FDA: US Food and Drug Administration; TdP: torsades de pointes.

* Dose alteration may be needed for renal insufficiency.

¶ Once-daily extended-release amoxicillin is recommended by the 2009 American Heart Association guidelines but is not available in all regions. It is noninferior to immediate release amoxicillin administered in multiple daily doses. The dose in adolescents 12 years and older is 775 mg orally once daily for 10 days.

Δ In children weighing ≤27 kg, the combination IM formulation of 900,000 units benzathine penicillin G with 300,000 units procaine penicillin G (Bicillin C-R 900/300) is a less painful alternative. Efficacy in larger children and adults has not been established.

◇ Approach to patients with penicillin allergy varies among experts and allergy severity; refer to UpToDate text for additional details.

Reference:

1. Lan AJ, Colford JM, Colford JM Jr; The impact of dosing frequency on the efficacy of 10-day penicillin or amoxicillin therapy for streptococcal tonsillopharyngitis: A meta-analysis. *Pediatrics*; 2000 Feb; 105:E19.

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1. Shulman ST, Bisno AL, Clegg HW, 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* 2012; 55:e86.
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* 2009; 119:1541.
3. American Academy of Pediatrics. Group A Streptococcal Infections. In: *Red Book: 2021-2024 Report of the Committee on Infectious Diseases*, 32nd ed, Kimberlin DW, Barnett ED, Lynfield R, Sawyer MH (Eds), American Academy of Pediatrics 2015. p.694.

TABLE 126-5

Antibiotics and Doses for Eradication of Group A β -Hemolytic Streptococcal Pharyngitis in Chronic Carriers

Antibiotic	Brand Name	Dose
Clindamycin	Cleocin®	20-30 mg/kg/day orally in three divided doses (maximum 300 mg/dose)
Amoxicillin-clavulanate	Augmentin®	40 mg/kg/day orally in three divided doses (maximum 2,000 mg/day of amoxicillin)
Penicillin V and rifampin	Pen-V®, Rifadin®	Penicillin V: 50 mg/kg/day orally in four doses for 10 days (maximum 2,000 mg/day); and rifampin: 20 mg/kg/day orally in one dose for the last 4 days of treatment (maximum 600 mg/day)
Penicillin G benzathine and rifampin	Bicillin L-A®, Rifadin®	Penicillin G benzathine: <27 kg—0.6 million units, 27 kg or greater—1.2 million units intramuscularly; and rifampin: 20 mg/kg/day orally in two doses during last 4 days of treatment with penicillin (maximum 600 mg/day)

Data from Reference 19.

do not produce beta lactamase, → There are another bacteria that produce " " so the drug not effective so it cause recurrent infection.

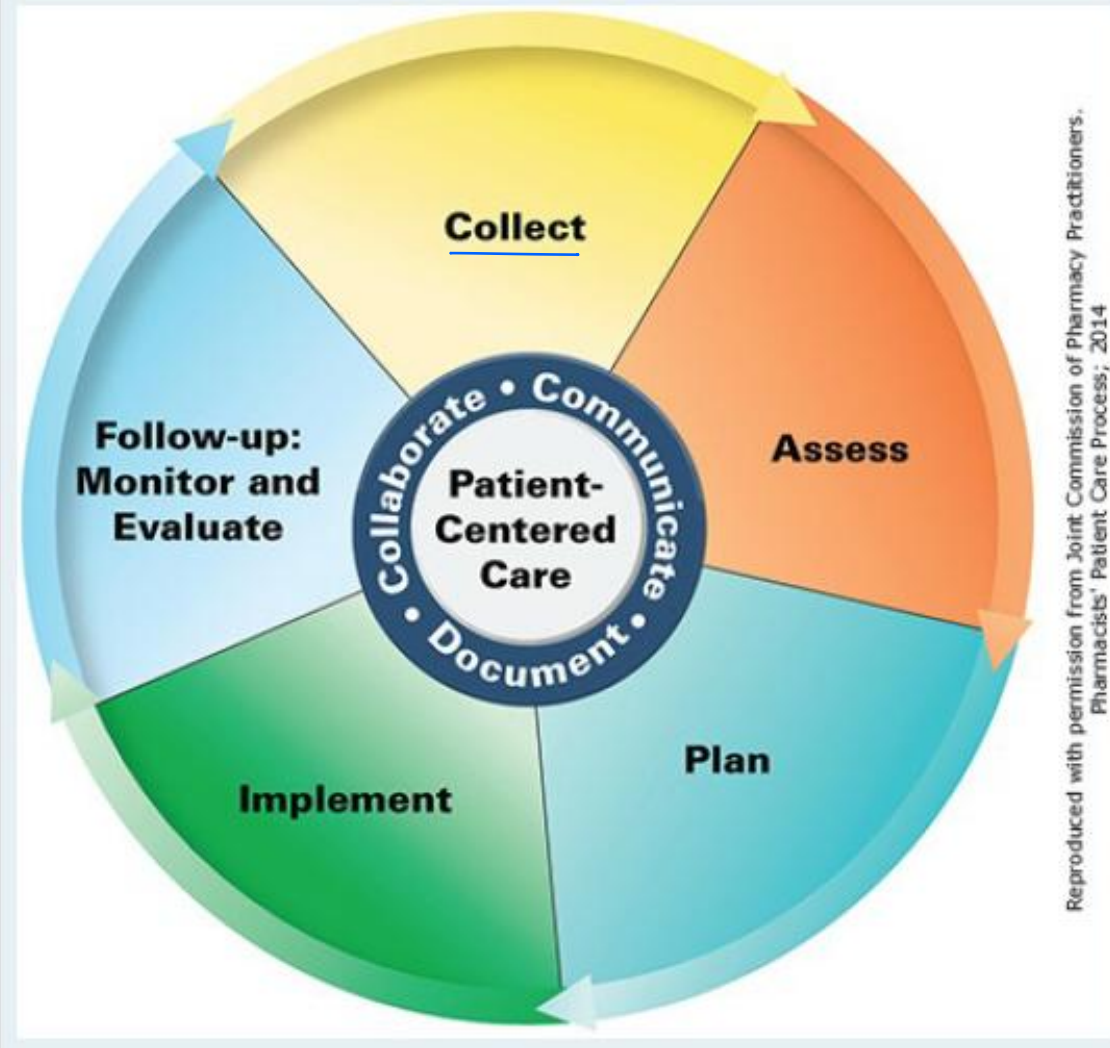
Recurrent pharyngitis infection.

- ✓ Several alternative antibiotics are preferred over penicillin or amoxicillin with GABHS carriers and recurrent pharyngitis. ①
- ✓ Amoxicillin-clavulanate, clindamycin, penicillin/rifampin combination, and benzathine penicillin G/rifampin combination may be considered for recurrent episodes of pharyngitis to maximize bacterial eradication in potential carriers and to counter copathogens that produce β -lactamases. ②

تكون المريض بالبداية معالج دواء يكون عنده أي أمراض والتأكد في كيفية استخدامه
 بعدا يصير أكثر وقصيف الحاجة عنده تزداد البكتيريا لتسبب ال infection عنده
 تلك فيه تنفس بال pharyngitis أرو أرفس مرات بال سنة. ← recurrent pharyngitis.

Patient Care Process

Patient Care Process for Acute Pharyngitis



تجميع معلومات عن حالة المريض

Collect →

- Patient characteristics (eg, age, weight)
- Patient history (eg, past infections including rheumatic fever and rheumatic heart disease, current and past antibiotic/antiviral use noting previous failures, medication allergies)
- Determine whether the patient is a school-age child, parent/caregiver of a school-age child, or works with school-age children
- Objective data:
 - Temperature
 - Signs and symptoms (see “Clinical Presentation”)
 - Other diagnostic tests, when indicated (eg, RADT, throat culture, microbiologic testing)

Assess → viral or bacterial infection.

- Infection status, including presence of signs and symptoms
- Determine which symptoms may need additional therapy (eg, ongoing throat pain)
- Use information collected, patient factors (eg, patient age, symptom severity), and joint decision-making with parents/caregivers to determine whether antibiotics are needed
- If antibiotics are appropriate, determine proper choice of antibiotic, dose, duration, and dosage form

Plan* → *اسب ال assessment*

- Select drug therapy regimen including specific antibiotic, dose, route, frequency, and duration; specify the continuation and discontinuation of existing therapies (see Tables 135-4 and 135-5)
- Monitor efficacy (eg, temperature, pain), safety (eg, medication-specific adverse effects), and time frame
- Educate patient and/or caregiver (eg, purpose of treatment, drug therapy) emphasizing adherence to treatment regimen
- Recommend self-monitoring of body temperature

تنفيذ ال plan. ← Implement*

- Provide patient education regarding the infection and all elements of treatment plan
- Use motivational interviewing and coaching strategies to maximize adherence
- Schedule follow-up, when indicated
- Recommend measures to reduce throat pain if present

Follow-up: Monitor and Evaluate → *مراقبة حالة المريض أثناء العلاج.*

- Presence of adverse effects, particularly allergic reactions
- Patient adherence to treatment plan using multiple sources of information
- Inquire if there have been infections among household contacts

*Collaborate with patient, caregiver(s), and other healthcare professionals.

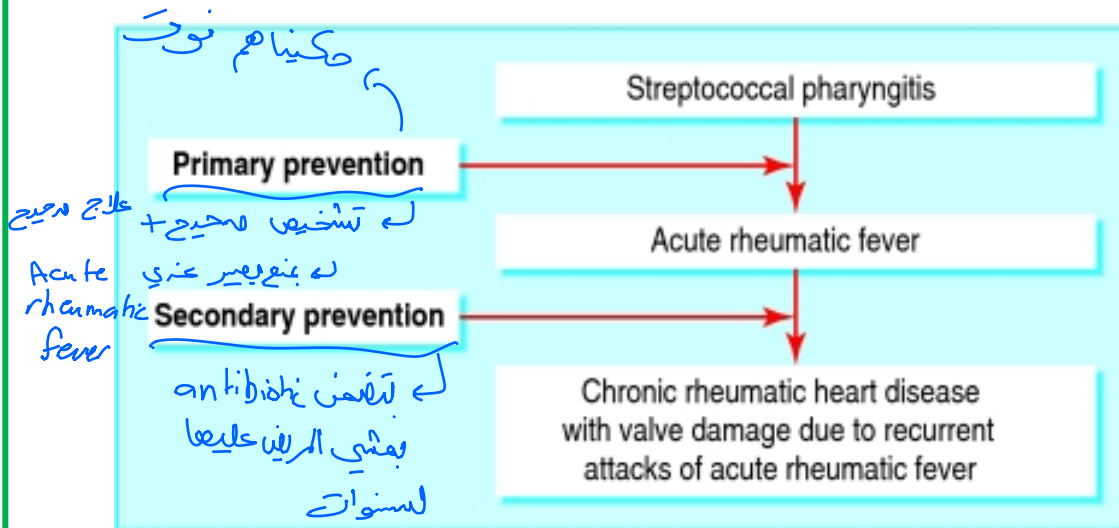
✓ Secondary prophylaxis of recurrence of rheumatic fever and/or rheumatic heart disease: patients should receive continuous antibiotic prophylaxis initiated as soon as the patient is diagnosed and the initial infection has been treated

②

1. IM benzathine penicillin G every 4 weeks
2. penicillin V or sulfadiazine
3. allergic to penicillin & sulfadiazine → a macrolide or azalide

✓ How rheumatic fever affects the heart:

<https://youtu.be/ZB97F-z36Mk>



① with Acute rheumatic fever

بالتالی لما لیجف الحمار

المناعی وینج antibodies

یروحوا یعاجوا ال

self antigen وریس عری

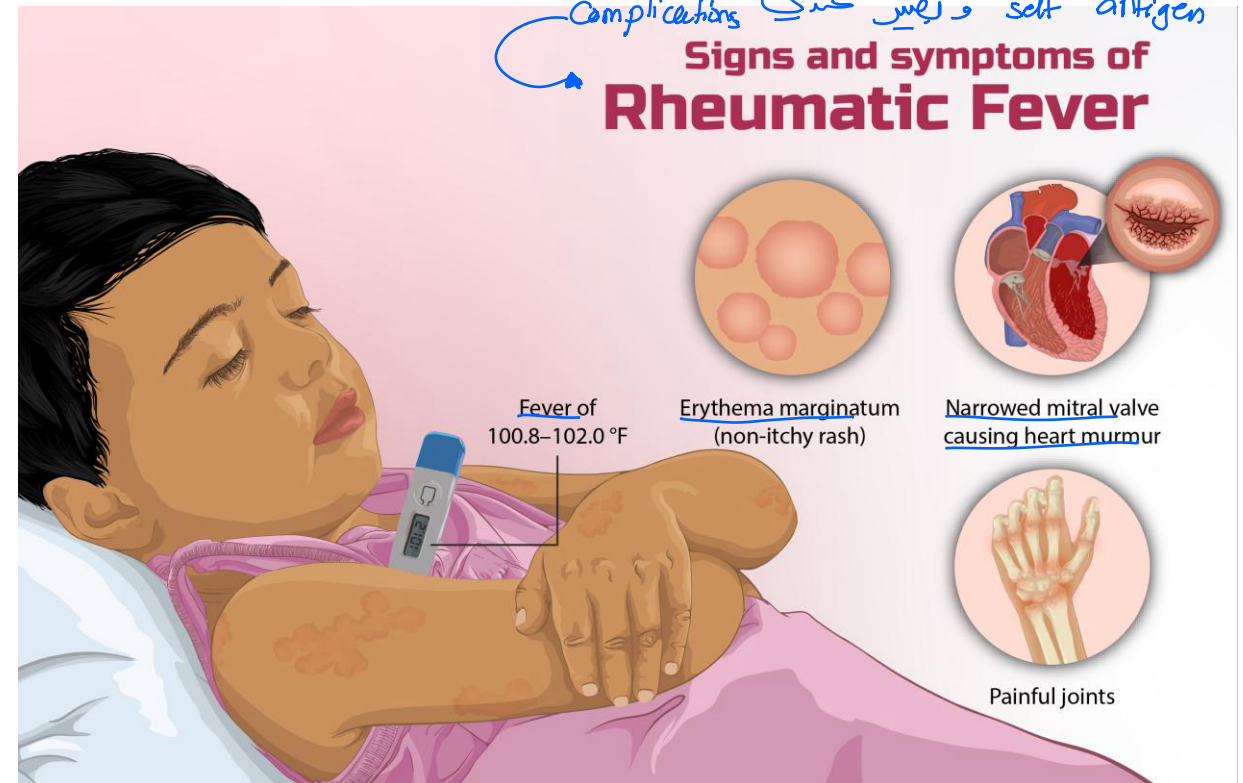
Complications

gas pharyngitis اذا ما قالیج وکینا

الها مشا بهة

heart, brain, joint

antigen هو بوجه فی



Secondary prophylaxis for rheumatic fever - Duration of therapy

Category	Duration after last attack
Rheumatic fever with <u>carditis and residual heart disease</u> (persistent valvular disease*)	<u>10 years or until 40 years of age</u> (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 <u>carditis but no residual heart disease</u> (no valvular disease*)	<u>10 years or until 21 years of age</u> (whichever is longer) → reversable heart disease.
Rheumatic fever <u>without carditis</u>	<u>5 years or until 21 years of age</u> (whichever is longer)

* Clinical or echocardiographic evidence.

Rheumatic heart disease may be reversible or irreversible →
symptoms: fatigue, shortness of breath, cough

يمكن الملاحظة تفور و الرين يحتاج للعلاج قلب مفتوح

Modified with permission from: 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. Circulation 2009; 119(11):1541-51. Copyright © 2009 Lippincott Williams & Wilkins.

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لا فاش كل الأبخاخات و يجب الجوا عن ال GAS pharyngitis

ليس عندهم Acute rheumatic fever ← م.ب: ١. ان immunity للمرض

٢. ان bacteria ال verulance قد يرتفع على السبب في المرض وقد يشي sever

مفاتيح

Type of drug reactions

Type of reaction	Common features
<u>Non-allergic reaction</u>	- Adverse effects (eg, diarrhea, vomiting, yeast vaginitis) - Family history of penicillin allergy but no personal history
<u>Mild non-IgE-mediated reaction</u>	- Maculopapular rash (with or without itching) - Medical record lists penicillin allergy but patient unaware of reaction.
<u>IgE-mediated reaction</u>	- Anaphylaxis → dizziness, Hypotension - Angioedema → يطفأ عنه الـرقبة على التنفس - Wheezing - Laryngeal edema - Hypotension - Hives/urticaria → حكة شديدة
<u>Serious delayed reactions</u> ↓ delay reaction.	- Toxic epidermal necrolysis (TEN) - Stevens-Johnson syndrome (SJS) - Drug reaction with eosinophilia and systemic symptoms/drug-induced hypersensitivity syndrome (DRESS/DiHS) - Other exfoliating dermatoses/erythroderma - Serum sickness-like reactions - Drug-induced cytopenias - Drug-induced renal, hepatic, or other specific organ damage

→ No penicillin no Cephalosporins.

→ use macrolides or clindamycin.

يعطيكم العافية جميعا ولا تنسوني من صالح دعائكم
 زميلتكم مرام الزيايدي 🤍🙏

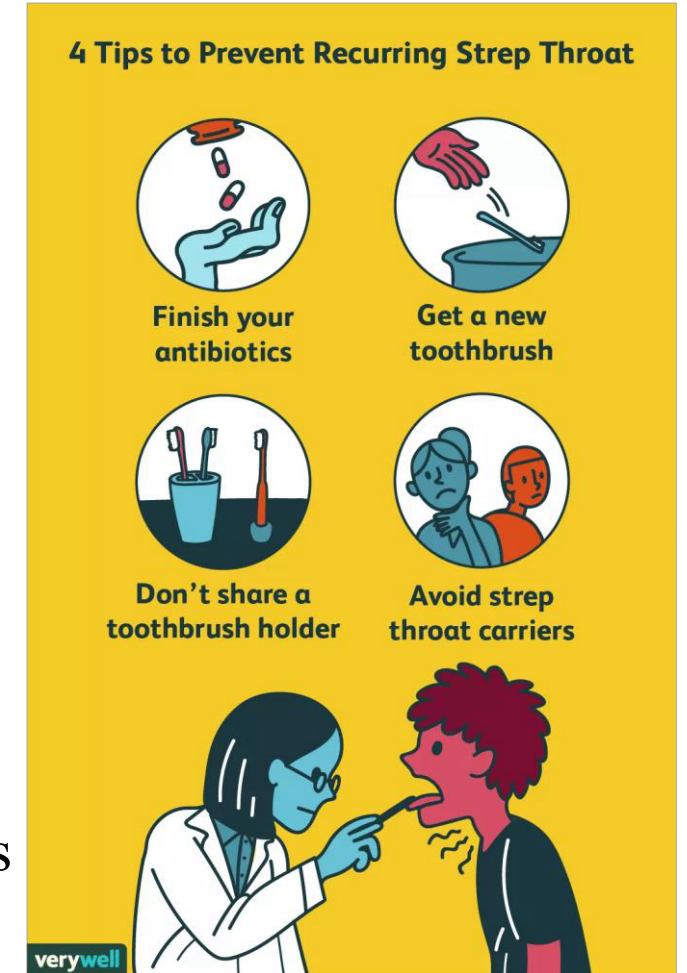
IgE: immunoglobulin E.

✓ Patient Education Tips

• Prevention:

- Wash your hands frequently, especially after blowing your nose or after caring for a child with a sore throat.
- If someone in your home has pharyngitis, keep his or her eating utensils and drinking glasses separate from those of other family members. Wash these objects thoroughly in hot, soapy water.
- If a toddler with pharyngitis has been chewing or sucking on toys, wash these objects thoroughly in water and disinfectant soap, then rinse well.
- Promptly dispose of any dirty tissues from runny noses and sneezes, and then wash your hands.
- Do not allow a child who has been diagnosed with strep throat to return to school or day care until he or she has been taking antibiotics for at least 24 hours and symptoms have improved.

قراءة ذاتية
self reading + self learning.



✓ Patient Education Tips

- Treatment:

- If you have simple viral pharyngitis, your symptoms should go away gradually over a period of about one week.
- Because antibiotics do not work against viruses, viral pharyngitis usually is treated by treating the symptoms to make you feel more comfortable until your body's immune system defeats the infection. These measures include:
 - Getting plenty of rest (either in or out of bed)
 - Taking ibuprofen, acetaminophen or aspirin (in adults only) to relieve throat pain
 - Drinking plenty of water to prevent dehydration
 - Gargling with warm salty water to ease throat pain
 - Drinking warm liquids (tea or broth) to soothe the throat
 - Using a cool mist vaporizer to relieve throat dryness
 - Using nonprescription throat lozenges or anesthetic throat sprays
- These measures will help to ease your discomfort with any type of throat infection.

- If you have strep throat, you also will take antibiotics to prevent complications.
- Your symptoms should subside within two to three days after you begin taking antibiotics.
- It's important to take all the medication, even after you start to feel better.