وقل رب زدني علما

النادي الطبي

RESPIRATORY SYSTEM

HAYAT BATCH

SUBJECT : Pharmacology

LEC NO. : 5

DONE BY : Jana Alqhaiwi

تفاريغ المادة

RS-Pharmacology notes

YouTube Videos

اضغط على الكلام المكتوب باللون الأزرق لتنتقل مباشرة الى المحاضرة

ملاحظة: يوجد تقاطع كبير بين ادوية الربو و ادوية COPD

و اغلب المصادر بتشرح الربو اول لهيك رح احط فيديوهات من شرح الربو تستفيدو منها دراستكم لل COPD

الموضوع	الفيديوهات المطلوبة 1	الفيديوهات المطلوبة 2	الفيديوهات المطلوبة 3
Treatment of COPD lec 1	احضر هذا الفيديو كامل رح يشرح موضوع الربو و الCOPD الفيديو رهيبيي.	للي بحب شرح فودة احضروا هذا الفيديو من الدقيقة 36 الى الساعة و 13 دقيقة اما اذا بتحضره كامل بتكون خلصت الربو يعني درست محاضرتين	

شرح عبدالمتعال فودة

FOUDA

Lecture 5: Treatment of bacterial respiratory infections 1

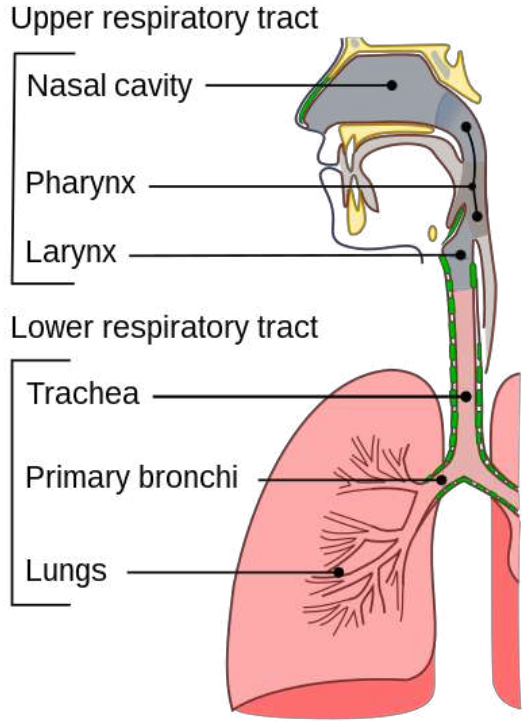
Respiratory system
Second year
Medical school
Hashemite University
2nd semester 23/24
Sofian Al Shboul, MD, PhD.

Respiratory tract

- ✓the **upper** airways : above the sternal angle (outside of the thorax), above the vocal folds, or above the cricoid cartilage

Anything below sternal angle is lower airways

- ✓and **lower** airways: trachea, bronchi (primary, secondary and tertiary), bronchioles (including terminal and respiratory), and lungs (including alveoli)



- ✓The larynx is sometimes included in both the upper and lower airways

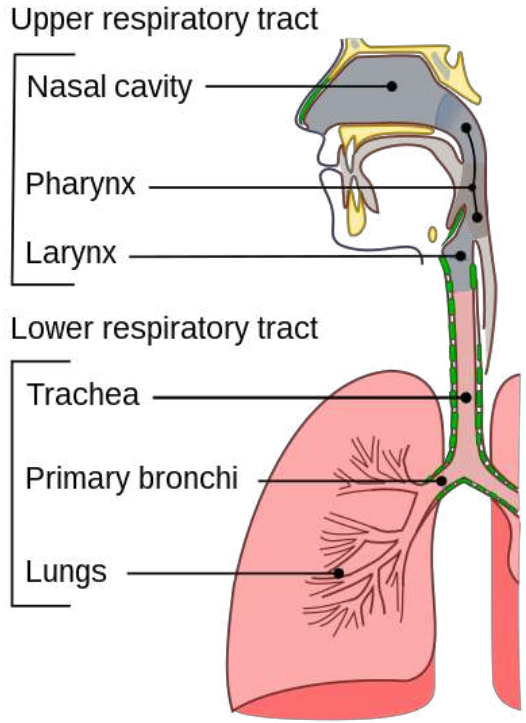
Respiratory tract infections

- Divided to:

I. Upper Respiratory tract Infection (URTI) (common cold, pharyngitis, epiglottitis, & otitis media etc.)

رح نحكي عنهم بهاي المحاضرة

II. Lower Respiratory tract Infection (LRTI) (bronchitis, bronchiolitis & pneumonia)



It is vey critical to define infections if it is upper or lower because treatment is different

Upper respiratory tract infection (URTI)

- Self-limited irritation and swelling of the upper airways with associated cough and no signs of pneumonia

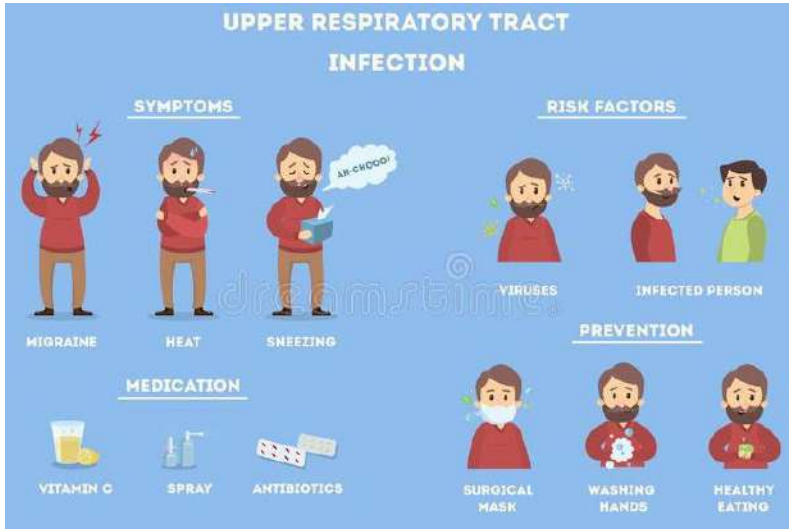
When there is pneumonia, you have upper and lower respiratory tract infection so treatment changes

- Common cold: rhinovirus, influenza virus.

Might bacterial or viral infection

- Bacteria: sudden onset pharyngitis presentations(strep throat): Group A streptococcus (Streptococcus pyogenes)

- Due to better efficacy, safety, cost-effectiveness and experience, penicillins are preferred for treatment of URTIs

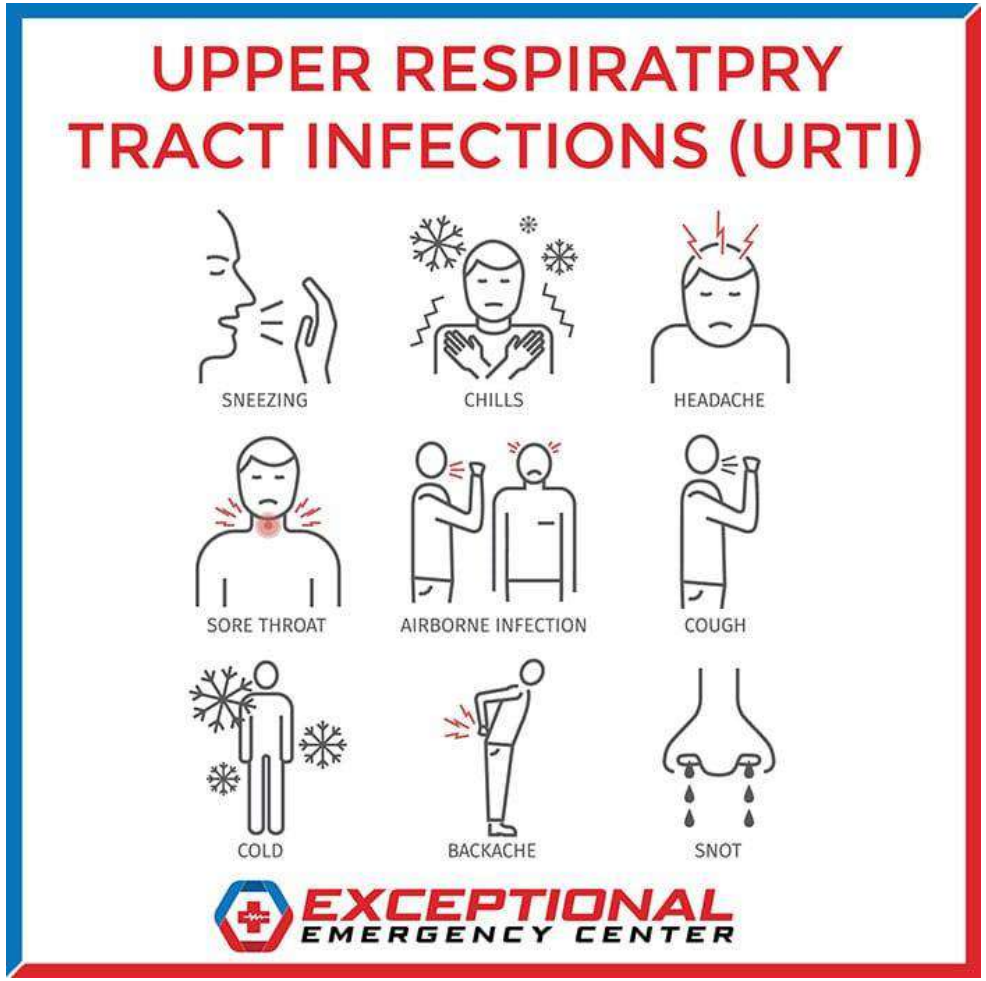


Viral infection is usually self-limited , however it doesn't always decay
You must give antibiotics in bacterial infections

ما رح يسألنا عن symptoms بس حكى بيجيبهم بسؤال cases فلازم نعرفهم

Upper respiratory tract infection (URTI)

- Cough
- Sore throat
- Runny nose
- Nasal congestion
- Headache
- Low-grade fever (not high)
- Facial pressure
- Sneezing



➢ The onset of symptoms usually begins one to three days after exposure and lasts 7–10 days, and can persist up to 3 weeks.

In viral

If it happens once a year , it is fine
اكثر من مرة بالسنة اتحوّل ل chronic infection و صار بدو treatment غير antibiotics

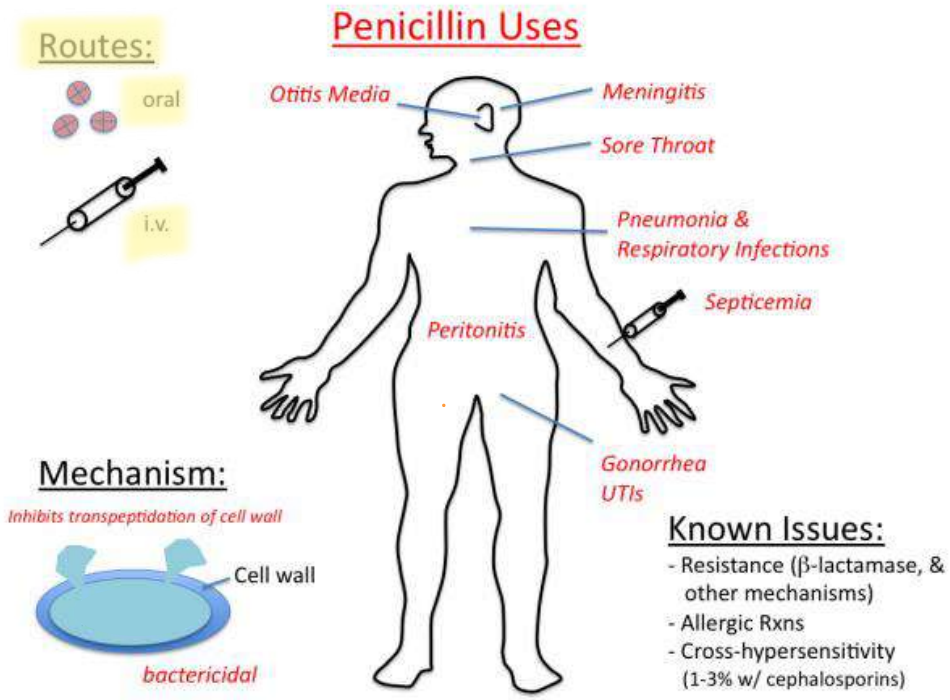
Penicillin

لازم نعرف كل drug و شو generation تاعه

- **Penicillin G**: Gram-positive and – negative cocci, gram-positive rods and anaerobes.
- **Broad-spectrum penicillins (gram-negative bacilli)**:
  - second generation: ampicillin, amoxicillin
  - third generation: carbenicillin
  - fourth generation: piperacillin

Piperacillin considered as 2nd generation pencillin that is active against gram negative cocci
This statement is wrong because it is very new(4th generation)

- All penicillins have relatively short half-lives and require frequent administration.



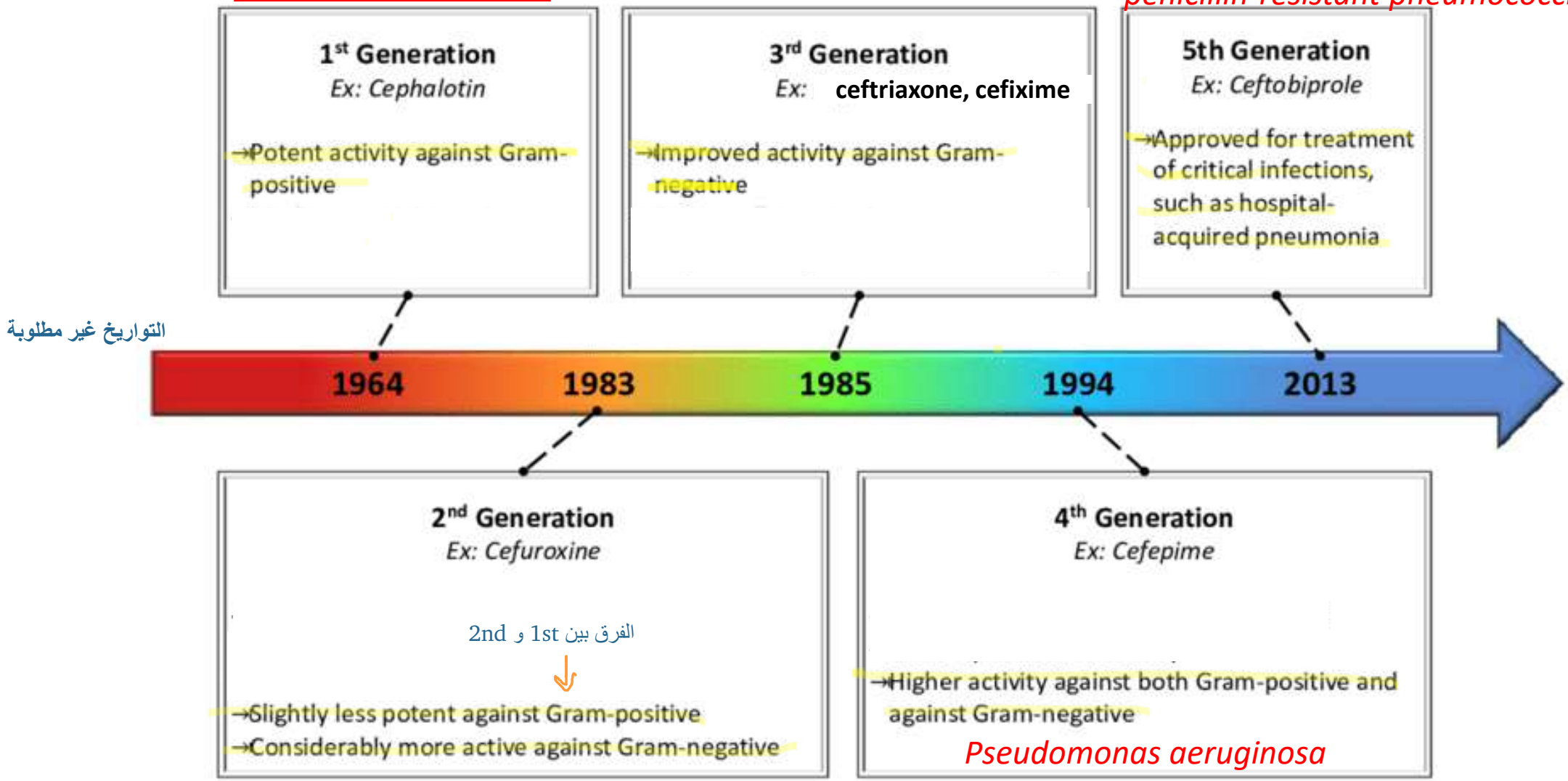
Cephalosporins

مهم نعرف drugs بكل + generation its activity و البكتيريا الفعّالة ضدها

Escherichia coli & Klebsiella pneumoniae

Neisseria

methicillin-resistant staphylococci & penicillin-resistant pneumococci.



Haemophilus influenzae

Pseudomonas aeruginosa

Macrolide

- Gram-positive bacteria and limited Gram-negative bacteria
- Antimicrobial spectrum is slightly wider than that of penicillin>> common substitute for patients with a penicillin allergy.
- Unlike penicillin, they are **effective against** Legionella pneumophila, mycoplasma, mycobacteria, and chlamydia.
- **Azithromycin, Clarithromycin and Erythromycin**

3 examples

حتى بال penicillin بنحوّل من 1st ل 2nd line اذا صار في allergy

Respiratory tract infection

بهمّه الدكتور كل disease و شو treatment بشكل اساسي

1. Rhinitis (common cold)
2. Pharyngitis
3. Sinusitis
4. Otitis Externa
5. Acute Otitis Media (Ear Infection)
6. Diphtheria
7. Epiglottitis
8. Laryngitis and croup
9. bronchitis and bronchiolitis
10. Pneumonia

Upper respiratory tract infection (URTI):

You should know these informations by default

Rhinitis

It is viral infection so there is no need for antibiotics

Because antibiotics are used to reduce symptoms

- Known as common cold
- Cough, headache, fever (not often or mild), sore throat and runny nose (rhinorrhea)
- Symptoms begin 2-3 days after infection
- Mainly viruses (Rhinoviruses)

Pharmacological management:

1. Dextromethorphan
2. Anti-histamines
3. Pain-killers
4. Decongestants

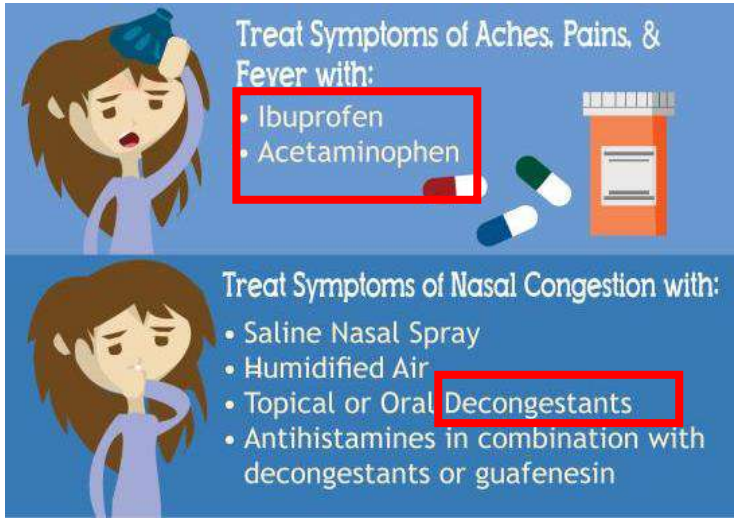


Table is review for the slide (بعطي المعلومات الاساسية)

Disease	Symptoms	Pathogens (common)	Pharmacotherapy
Rhinitis	Cough, headache, fever*, sore throat and rhinorrhea	Viruses	Supportive: Dextromethorphan, Anti-histamines, Pain-killers, Decongestants.

Upper respiratory tract infection (URTI):

Pharyngitis

Pharynigtis usually is bacterial infection and it will require some of antibiotics intervention

لانه اذا فكرته bacterial و هو viral و ما بصير sinusitis و otitis media شخصته صح انت هون دخلت بدوامة تانية و

So you need to deal with it

Bacterial or viral infection

- Inflammation of the throat (pharynx)
- Symptoms usually last 3–5 days
- Complications: sinusitis and acute otitis media

Swollen tonsils + high temperature

- ***Streptococcus pyogenes*:**

يتم التحويل بينهم حسب اذا صار allergy و لا لا

Not 2nd option

Penicillin or Amoxicillin (Oral)>>Cephalosporin (Cephalexin)>>Macrolide (Azithromycin)

- **Viral:** self-limiting

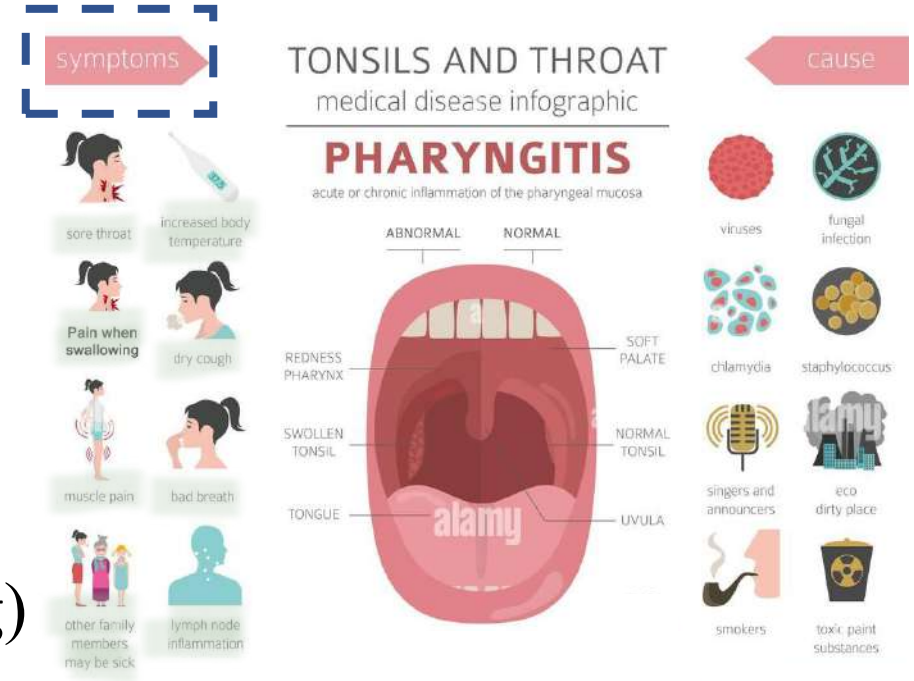
Sometimes we give for viral infections antibiotics in case of complications or predisposing factors

Because there is inflammation, pain

Conservative + oral CS (1-2 for pain on swallowing) + lidocaine wash + NSAIDs

- ***Candida albicans*:** clotrimazole

Fungi



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Upper respiratory tract infection (URTI): **Sinusitis**

❖Predisposing factors:
URTI, nasal septum deviation, tooth extractions, smoking, cystic fibrosis and immunodeficiency.

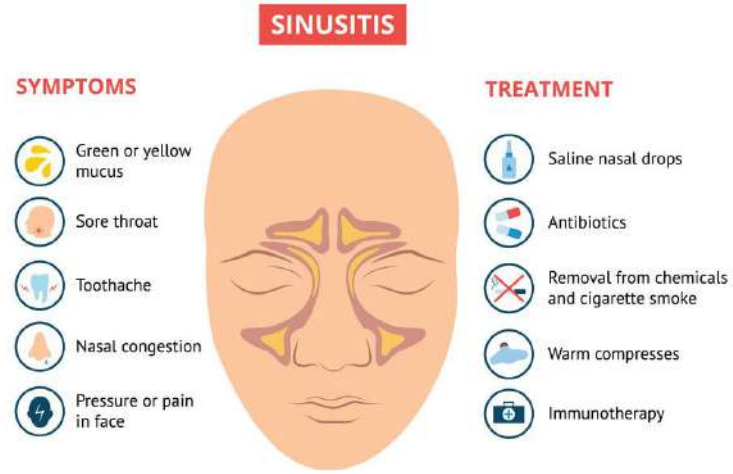
❖Nasal congestion (headache or toothache), facial swelling, tenderness, discharge (green or yellow color= bacterial infection or clear= allergy)

viral / allergic غير ذلك
No antibiotics

❖Antibiotics not recommended in those with mild/moderate + for first 7-10 days

course و لازم تكمل

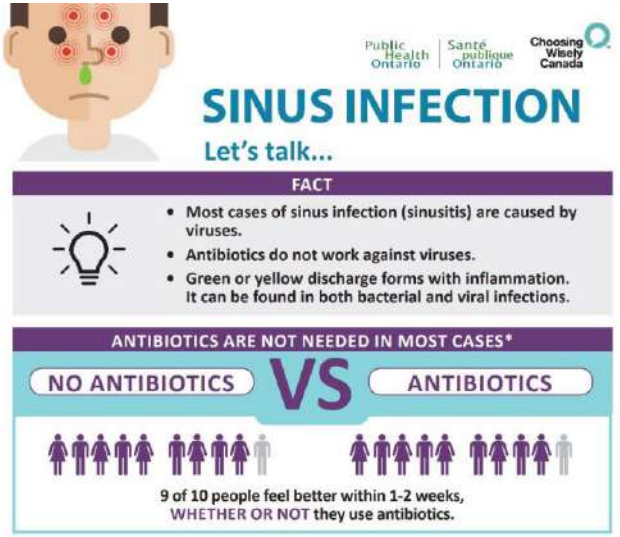
❖Viral
❖Bacteria: Streptococcus pneumoniae, Haemophilus influenzae and Streptococcus pyogenes (uncommon)



Upper respiratory tract infection (URTI): **Sinusitis**

- Decongestants
- Amoxicillin/clavulanic acid >>doxycycline or cephalosporins^{3rd} (cefixime) >> fluoroquinolone (levofloxacin or moxifloxacin)
- Macrolides (clarithromycin or azithromycin) are **not** recommended for empiric therapy

يفضّل ما تبلش فيهم عندك خيارات تانية



- Chronic: Intranasal saline, Intranasal corticosteroids, Oral corticosteroids and antibiotics (limited evidence, after culture)

ما بتضلك تاخد antibiotics عشان ما يصير resistance و يعمل inhibition لل normal flora و اهم سبب هو علاج لانه problem
sinusitis هو symptom(لانه هي المشكلة اللي بتعمل chronic continuous resistance sinusitis)

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Upper respiratory tract infection (URTI): **Acute Otitis Media (Ear Infection)**

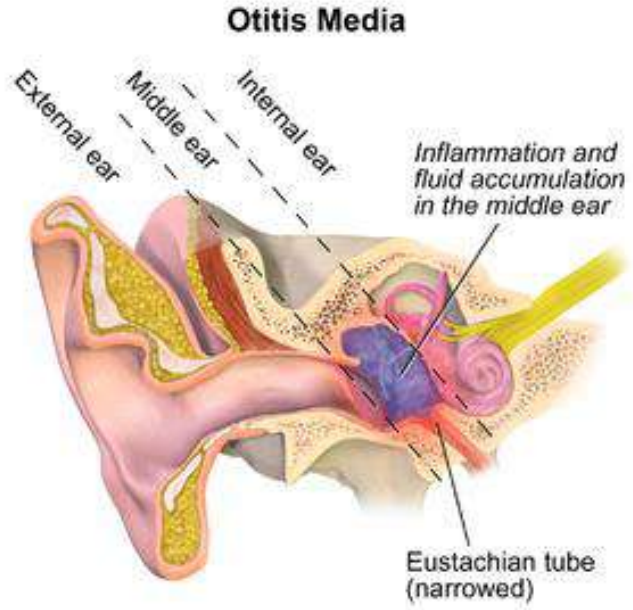
Inflammation in middle ear-> fluid retention -> bacterial grow

- Inflammation of the Eustachian tubes and buildup of fluid in the middle ear >> possible bacterial growth in the fluids
- Ear pain (otalgia), fever, sensation of fullness, irritable, tug on the involved ear, difficulty sleeping (children)
- Untreated or severe infections >> eardrum rupture or mastoiditis and CNS involvement. It will spread (it will not stick to ear by itself)

So deal with it is very critical

- Streptococcus pneumoniae, haemophilus influenzae and Staphylococcus aureus
- Amoxicillin-clavulanate>>cephalosporin (Cefuroxime)>> doxycycline or macrolide (Azithromycin)

Not any macrolide



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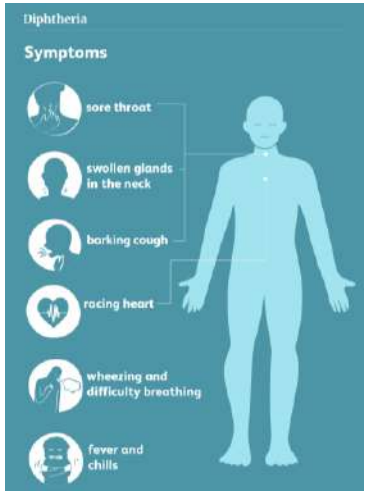
Upper respiratory tract infection (URTI):

المشكلة في البكتيريا و toxin تاعها

Diphtheria



- Most infections are asymptomatic or have a mild clinical course.
- Sore throat, lack of appetite, low-grade fever and grey or white patch develops in the throat
- Corynebacterium diphtheriae
- Complications: myocarditis, inflammation of nerves, and kidney problems.
- Diphtheria antitoxin (horses) + erythromycin >> penicillin

To deal with toxin

To deal with pathogen

If you leave it , it will cause a very serious problem

Erythromycin prefered than pencillin
في حالة البكتيريا فقط

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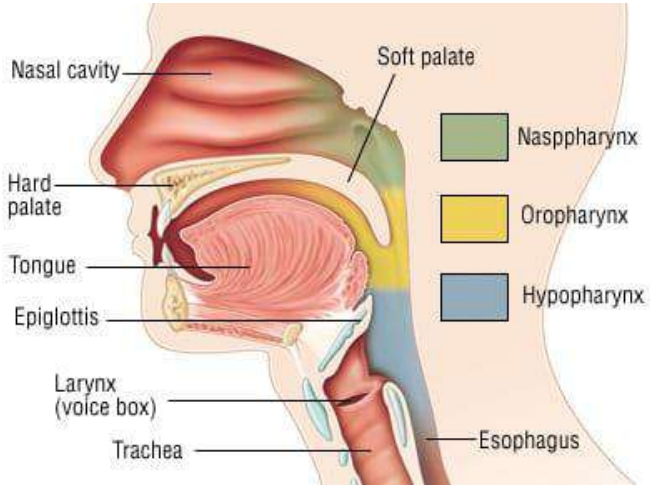
Upper respiratory tract infection:
Acute epiglottitis

Emergency problem (acute inflammation) بشكل سريع يتطور

- An acute inflammation in the supraglottic region of the oropharynx including epiglottis

- Rapid onset: trouble swallowing>>drooling, fever, aphonia and an increased breathing rate و pulse بكون عالي

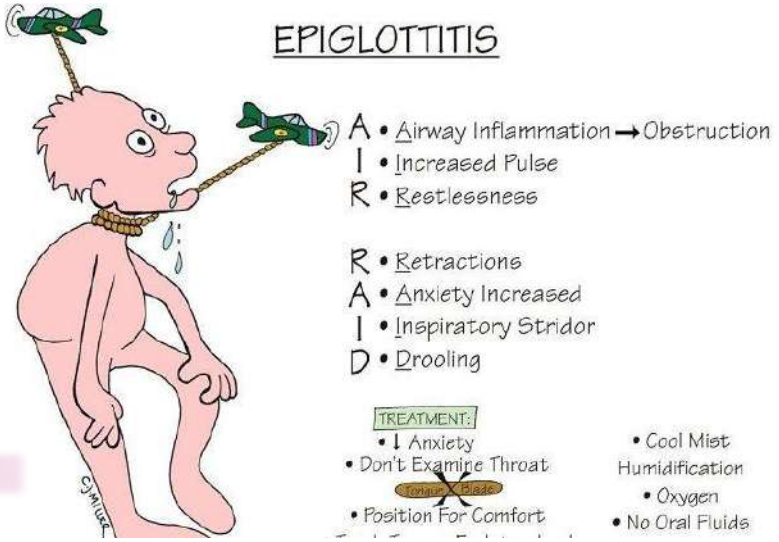
- Primarily caused by bacteria, haemophilus influenzae and Streptococcus pneumoniae.



Upper respiratory tract infection: **Acute epiglottitis**

- direct inspection using a laryngoscope.

This figure shows how it is serious



- Do not use tongue depressor or attempt throat swab

- requires immediate airway management (tracheal intubation).

we need to open the air flow لانه tracheal intubation ممكن نضطر لل

كتير مهم انك ما تحط انه تحاول تستخدم tongue depressor او swap attempt patient under anxiety or stress
because it has risk to kill the patient
severe obstruction of airway because of inflammation اصلا عنده

Patients need airway management before treatment

- Cephalosporin^{3rd} (ceftriaxone) + vancomycin

لانه بنعطى بالمستشفى فحتى ما يصير معه resistance بنعطي معه vancomycin

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epiglottitis	Trouble swallowing, drooling, fever, aphonia and an increased breathing rate	Streptococcus pneumoniae and haemophilus influenzae	requires immediate airway management (tracheal intubation). Cephalosporin3rd (ceftriaxone) + vancomycin

Upper respiratory tract infection:
Croup and laryngitis

صوت النباح

- "barking/brassy" cough, inspiratory stridor, hoarseness, difficult breathing, fever and runny nose
- Starts or get worse at night and normally lasts one to two days. بتزيد في الليل و تقل في النهار
- Mainly viral (parainfluenza and influenza)
- Corticosteroids and nebulized epinephrin مش بخاخ بكون مخلوط مع ماء عشان يفتح القصبات
- Used in very specific cases: Cephalosporin^{3rd} (ceftriaxone) + vancomycin متل epiglottitis

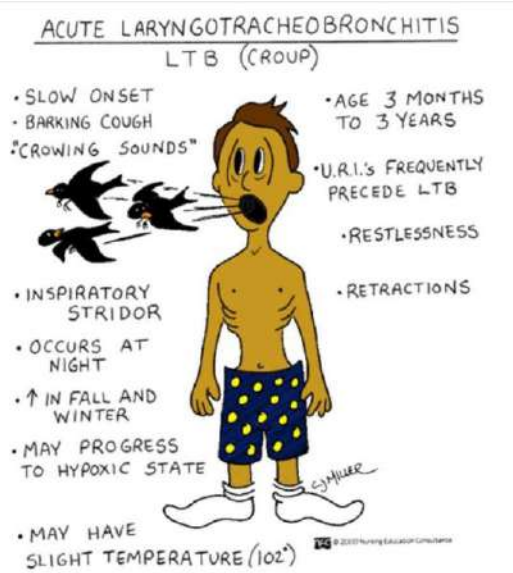

Table is good for review but CAN'T replace the slides

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Croup and laryngitis	"barking/brassy" cough, inspiratory stridor, hoarseness, difficult breathing, fever and runny nose Starts or get worse at night	Mainly viral (parainfluenza and influenza) Rarely bacterial	Corticosteroids and nebulized epinephrin Used in very specific cases: Cephalosporin3rd (ceftriaxone) + vancomycin

Quiz

1. Which of the following antibiotics is considered a second-generation broad-spectrum penicillin?
   a) Penicillin G
   b) Ampicillin
   c) Piperacillin
   d) Ceftriaxone

2. Which antibiotic is commonly used as a substitute for patients with a penicillin allergy?
   a) Penicillin G
   b) Ampicillin
   c) Piperacillin
   d) Azithromycin

3. Which respiratory tract infection is known as the common cold?
   a) Rhinitis
   b) Pharyngitis
   c) Sinusitis
   d) Diphtheria

4. What is the main pharmacological management for rhinitis (common cold)?
   a) Antibiotics
   b) Antivirals
   c) Supportive care
   d) Antifungals

5. Which pathogen commonly causes acute epiglottitis?
   a) Streptococcus pneumoniae
   b) Haemophilus influenzae
   c) Staphylococcus aureus
   d) Corynebacterium diphtheriae

6. What is the primary treatment for acute epiglottitis?
   a) Macrolides
   b) Cephalosporin
   c) Vancomycin
   d) Antitoxin

Answers

1.B
2.D
3.A
4.C
5.B
6.B

Another quiz

1. Which pathogen is most commonly associated with acute otitis media?
   a) Streptococcus pyogenes
   b) Haemophilus influenzae
   c) Staphylococcus aureus
   d) Pseudomonas aeruginosa
   e) Corynebacterium diphtheriae

2. A patient presents with a sore throat, difficulty swallowing, and swollen tonsils. The throat culture reveals Streptococcus pyogenes. What is the first-line pharmacotherapy for this condition?
   a) Amoxicillin/clavulanic acid
   b) Ciprofloxacin-hydrocortisone
   c) Erythromycin
   d) Ceftriaxone
   e) Dextromethorphan

3. Which medication is indicated for the treatment of acute otitis media in children?
   a) Doxycycline
   b) Ciprofloxacin
   c) Acetic acid-hydrocortisone
   d) Amoxicillin-clavulanate
   e) Clarithromycin

4. A patient presents with a "barking" cough, inspiratory stridor, and fever that worsens at night. Which condition is most likely causing these symptoms?
   a) Rhinitis
   b) Diphtheria
   c) Epiglottitis
   d) Bronchitis
   e) Croup

Answers

1.B
2.A
3.D
4.E