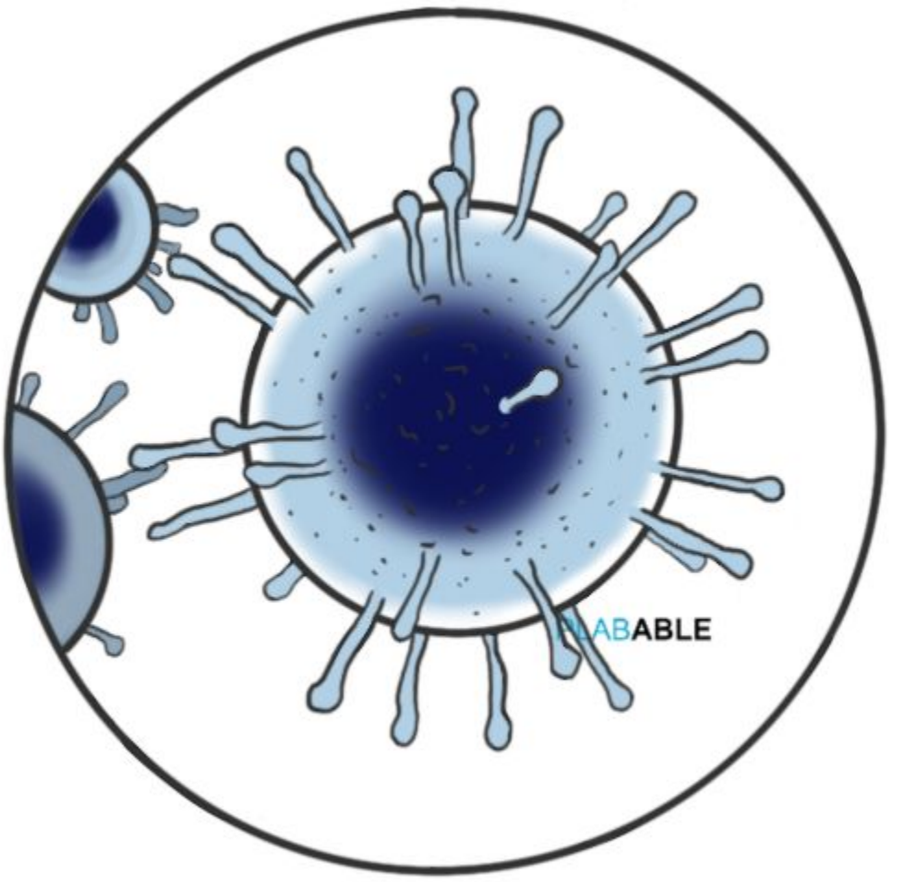
PLABABLE

GEMS

VERSION 6.4

INFECTIOUS DISEASES



Respiratory Infections

Community acquired pneumonia (mild)	Amoxicillin
Community acquired pneumonia (moderate)	Amoxicillin + Clarithromycin
Community acquired pneumonia (severe)	Co-amoxiclav + Clarithromycin Co-amoxiclav (amoxicillin + clavulanic acid)
Pneumocystis Jirovecii* pneumonia *(prev as "P. Carinii')	Co-Trimoxazole (trimethoprim + sulfamethoxazole)
Tuberculosis (TB)	**First 2 months: RIPE** • **R**ifampicin • **I**soniazid • **P**yrazinamide • **E**thambutol **Next 4 months: RI** Rifampicin and isoniazid
Aspiration pneumonia (community acquired)	Amoxicillin + Metronidazole

Pneumonia

Brain trainer:

A 54 year old man presents to the Emergency Department with a two day history of productive cough. His temperature in hospital is 39°C. A chest x-ray was ordered revealing right lower zone consolidation. He is allergic to penicillin. What is the SINGLE most appropriate treatment for this patient?

➔ **Clarithromycin or doxycycline**

In cases of penicillin allergy clarithromycin and doxycycline can be used as a substitute.

Avoid clarithromycin if the patient is also taking a statin due to increased risk of rhabdomyolysis.

Central Nervous System Infections

Out of hospital meningitis	Benzylpenicillin
In-hospital meningitis	Cefotaxime IV or Ceftriaxone IV
Listeria meningitis	Amoxicillin + Gentamicin
Cryptococcal meningitis	Amphotericin B
Meningitis prophylaxis (for contacts)	1st line: Ciprofloxacin 2nd line: Rifampicin

Meningitis

Brain trainer:

A woman over the age of 60 has meningitis in the Emergency Department. What should be administered empirically?

➔ **IV ceftriaxone and IV amoxicillin**

Recommendations for adding amoxicillin

- 50 years (BNF)
- 60 years (Oxford Handbook of Clinical Medicine)

In the exam, you will not be asked if amoxicillin should be added for a patient aged 50 to 60 since guidances differ.

Meningitis

Brain trainer:

A person with headache, neck stiffness, photophobia and high fever. What is the most likely organism?

If gram positive diplococci seen

➔ ***Streptococcus pneumoniae***

If gram negative diplococci seen

➔ ***Neisseria meningitidis***

If non-blanching rash seen

➔ ***Neisseria meningitidis***

Genitourinary Infections

Infection	Antibiotic
Lower uncomplicated UTI	Trimethoprim or Nitrofurantoin
Upper UTI (Pyelonephritis)	Cefalexin, co-amoxiclav, ciprofloxacin or trimethoprim
Candida albicans (Vulvovaginal Candidiasis)	Clotrimazole or Fluconazole
Trichomonas vaginalis	Metronidazole
Cervicitis (Chlamydia)	1st line: Doxycycline 2nd line/pregnant: Azithromycin
Cervicitis (Gonorrhoea)	Ceftriaxone IM or CIprofloxacin (if sensitivity is known)
Pelvic inflammatory diseases	1st line: Ceftriaxone + Metronidazole + Doxycycline
Syphilis	Penicillin G
Genital herpes (HSV)	Aciclovir

Weakened Immunity

Brain trainer:

A pregnant woman has thick white marks inside her mouth. She is a smoker. What is the most likely diagnosis?

➔ **Candidiasis**

A weakened immunity (due to pregnancy) and a more common diagnosis speaks for candidiasis.

If the stem contained “cannot be rubbed off”, choose leukoplakia.

Gastrointestinal Infection

Infection	Antibiotics
Salmonella	Ciprofloxacin OR Cefotaxime
Shigella / Campylobacter	Erythromycin OR Azithromycin OR Clarithromycin OR Ciprofloxacin
Clostridium difficile **(Pseudomembranous colitis)**	For mild: Oral Metronidazole For severe: Vancomycin
Helicobacter pylori	**OAC** or **OAM** Omeprazole Amoxicillin Clarithromycin or Metronidazole

Clostridium difficile

Brain trainer:

A person with watery diarrhoea after given antibiotics for 7 days post-operatively. Three other patients have developed similar symptoms in the ward.

➔ ***Clostridium difficile***

Look at the key differences:

Clostridium difficile → Severe diarrhoea + recent use of broad spectrum antibiotics + spreads easily in wards

Norovirus → Severe diarrhoea + spreads easily in wards

Clostridium difficile Vs Norovirus

Here are some pro tips to help you differentiate between the two when asked in the exam

Clostridium Difficile	Norovirus
Recent use of broad spectrum antibiotics	Outbreaks seen commonly in semi-closed areas like hospital wards

If both these features are in the stem, e.g. patient in a ward for a few days and given broad spectrum IV antibiotics → We would pick Clostridium Difficile

Do not differentiate the two based on bloody or non-bloody diarrhoea!

Ear, Nose & Throat infection

Acute bacterial otitis media	Amoxicillin
Upper respiratory tract infection: ● Pharyngitis ● Tonsillitis ● Laryngitis	Phenoxymethylpenicillin

Laryngitis

Brain trainer:

A boy has a 2 day history of hoarseness of voice, dry cough, fever and malaise. On examination his vocal cords are oedematous. What is the most appropriate investigation?

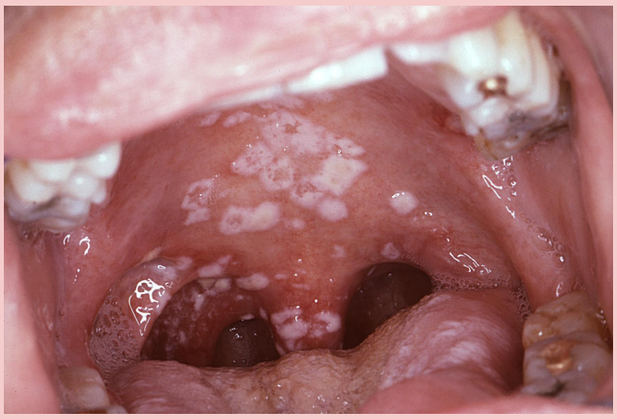
➔ **None required**

Skin, Joint and Other Infections

Cellulitis	Flucloxacillin
Mastitis	
Diabetic Foot infection	
Scabies	Permethrin 5% topical
Septic Arthritis	Flucloxacillin Vancomycin (MRSA)
Osteomyelitis	
Toxoplasmosis	Pyrimethamine + Sulfadiazine

Oral Thrush (Oral candidiasis)

Features:



- Thick white marks
- ± inflamed mouth / tongue
- Can be **rubbed** out
- ± Red inflamed painful sore mouth angles

Contributing factors

- History of immunosuppression -diabetes, recent use of antibiotics & regular steroids eg. asthmatic
- Smoking
- Elderly
- Pregnancy

Treatment

- Stop smoking
- Good inhaler technique and hygiene
  eg. use a spacer and rinse mouth after use
- 1st line: oral miconazole gel
- Oral fluconazole 50mg OD 7 days in severe cases

Leukoplakia

Features

- Raised edges
- Bright white patches
- Sharply well defined
- Cannot be rubbed out

Contributing factors

- History of smoking

Investigation

- Biopsy (they are premalignant for SCC)

Treatment

- Smoking cessation
- Observe or surgical excision depending on biopsy result

Streptococcus Pneumoniae

Facts:

- The **most common cause** of pneumonia
- A gram +ve diplococci

Features:

- Productive cough 😷
- Fever
- Chest tightness
- Unilateral basal crackles on auscultation
- Unilateral lobar consolidation on x-ray

It is associated with *Herpes Labialis*

Different Types Of Pneumonia

Pneumococcal **p** streptococcal **l** Also associated with HIV patient - CD4>200 !!	• Herpes Labialis • Typical features of community acquired pneumonia → Productive cough → Fever → Unilateral basal crackles → Unilateral basal consolidation • **Lobar consolidation**
Mycoplas**ma**	• Erythe**ma** multiforme • Atypical features: → Young adult → Dry cough → Bilateral consolidation • **Patchy consolidation of 1 lower lobe**
Pneumocystis jirovecii	• HIV with CD4 < 200 • ± desaturation on exercise • Dry cough • **Bilateral consolidation** • Exertional dyspnoea

Different Types Of Pneumonia

Staph. aureus	• Pneumonia developed after influenza (flu) • Common in IV drug abuser and elderly • **Bilateral cavitation**
Legionella	• Pneumonia developed after exposure to water, staying in hotel • Low sodium • Low lymphocytes • **Bibasal consolidation** • Macrolides/Tetracyclines are usual treatment of choice
Klebsiella	• Cavitating pneumonia • Particularly upper lobe

Type Of Pneumoniae

Brain trainer:

A HIV man presents with symptoms of pneumoniae. His CD4 count is measured at 350mm³. X-ray shows shows lobar consolidation. What is the most likely causative organism?

➔ **Streptococcus pneumoniae**

Type Of Pneumoniae

Brain trainer:

A 14 year old child presents with meningitis. CSF sample collected appears purulent. If neisseria meningitidis was not amongst the options which organism would you suspect?

➔ **Streptococcus pneumoniae**

Type Of Pneumoniae

Brain trainer:

An IV drug users presents with symptoms of pneumoniae. One week earlier he had flu like symptoms. X-ray shows bilateral cavitations. What is the most likely causative organism?

➔ **Staphylococcus aureus**

Tuberculosis

Facts:

- Caused by *mycobacterium tuberculosis* (Acid fast bacilli)
- Travelling Hx: **South Asia, Sub-saharan Africa, and India**

Diagnosis:

1. **Sputum staining** for acid-fast bacilli
2. **Bronchoalveolar lavage** if no sputum
3. **Gastric lavage** if above not available (sputum might be swallow by patient during sleep)

High risk factor groups:

- Homeless
- Drug abuser
- Smoker
- Low socioeconomic class

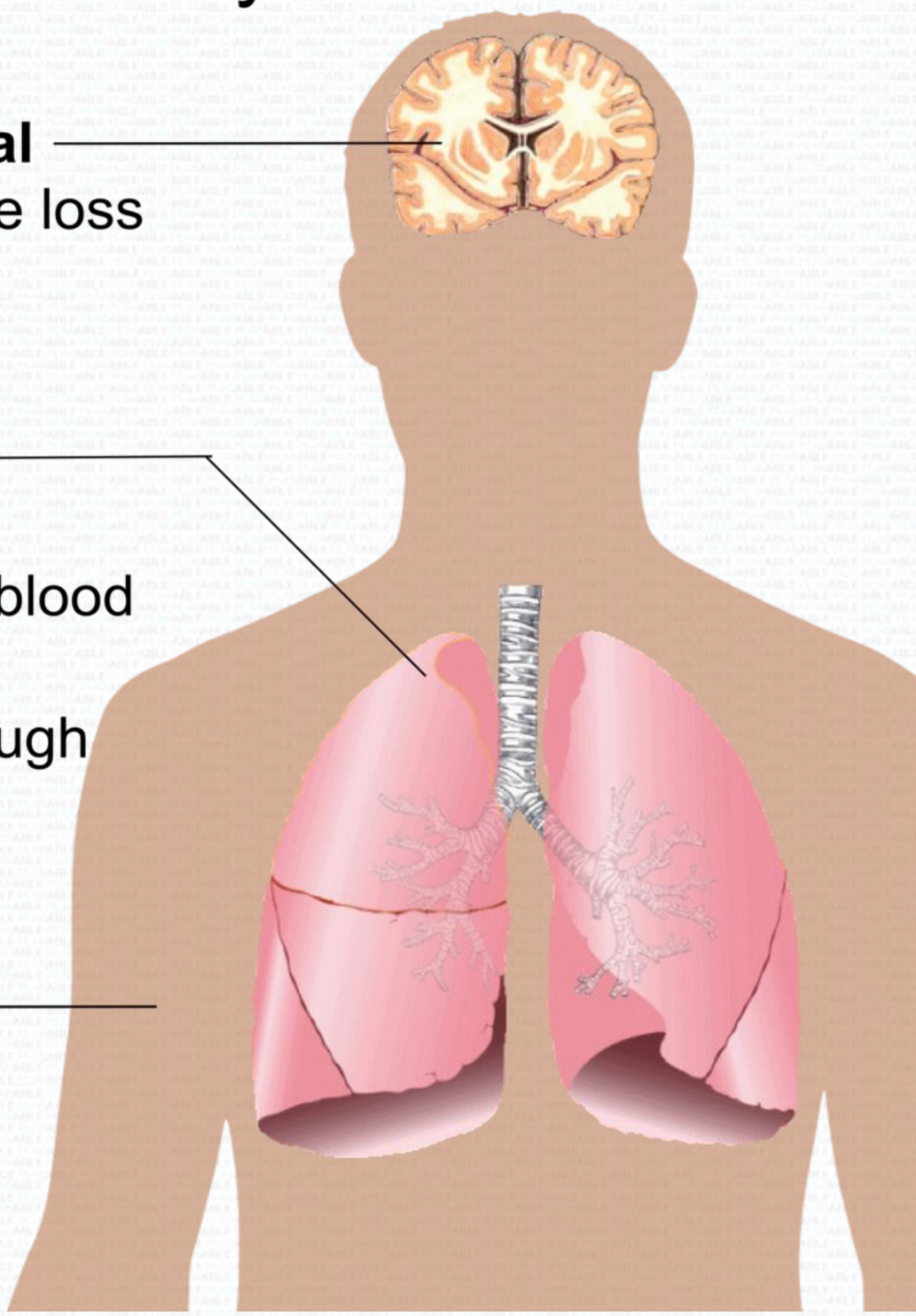
Tuberculosis

Features:

- **Chronic productive cough**
- **Hemoptysis**
- Weight loss (Cachexia)
- Fatigue
- Night sweats
- Small area of caseating granulomas
- Upper lobe consolidation, infiltration with cavitation on chest x-ray
- Cervical or supraclavicular lymph nodes may be initially **tender, firm and discrete** on **palpation** but later become suppurative

Tuberculosis

Main symptoms of Pulmonary tuberculosis



Central
- appetite loss
- fatigue

Lungs
- chest pain
- coughing up blood
- productive, prolonged cough

Skin
- night sweats,
- pallor

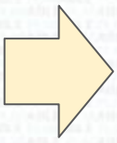
Tuberculosis

Screening for contacts:

- For **latent** TB **not acute** TB
- **Mantoux test** for contact who have not been vaccinated with BCG before
- **Interferon gamma test** for contacts who have been vaccinated with BCG before

Treatment

1st 2 months - **RIPE**
Rifampicin,
Isoniazid,
Pyrazinamide,
Ethambutol



Next 4 months - **RI**
Rifampicin, **I**soniazid

These are not contraindicated during pregnancy
but streptomycin is!!

Tuberculosis

Directly-Observed Therapy:
For patient who need support to manage TB in outpatient setting:

For underserved groups

- Homeless
- Imprisoned
- Drug or alcohol misuse
- Patient who have not been adherent to therapy
- Patient who are too ill to adhere to therapy

Toxoplasmosis can present with **splenomegaly** and **cervical lymphadenopathy**
Weight loss is usually NOT SEEN.

Tuberculous Lymphadenitis

Contributing factors:

Travelling history - particularly to/from India

Features:

- Fever
- Cough
- Cervical lymphadenopathy
- Caseating granuloma in LNs

Sarcoidosis and Crohn's disease have **NON-caseating granuloma**

Laryngeal TB

Contributing factors

- IV drug abuser
- Low socioeconomic

Features

- Fever
- Cough
- Cervical lymphadenopathy
- Hoarseness
- Dysphagia
- Weight loss

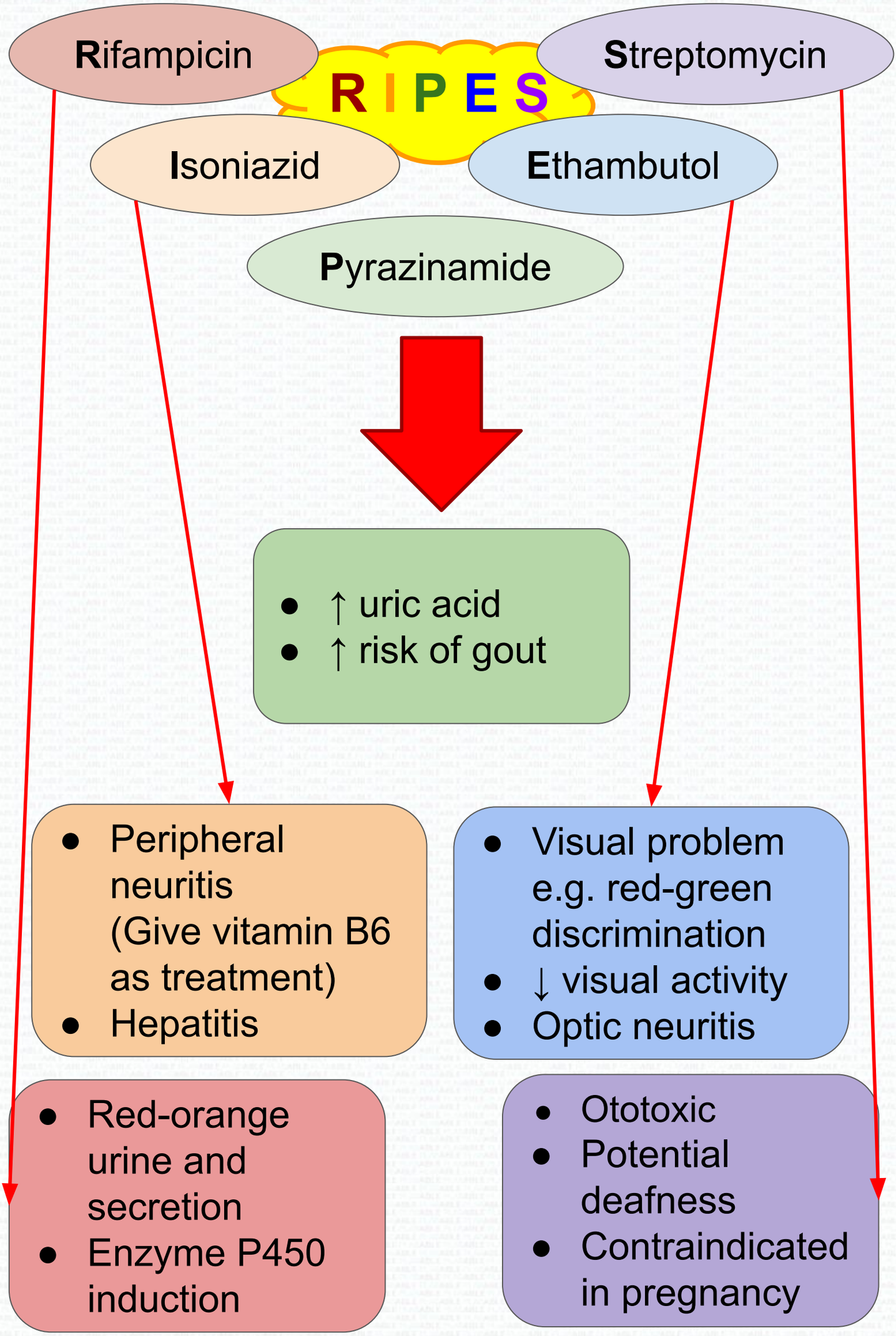
Laryngeal Tuberculosis

Brain trainer:

A 35 year old homeless man presented with dysphagia and hoarseness for the past 4 weeks. He feels tired and has a mild fever everyday. He has also lost 18 kg in the last 4 weeks. The base of his neck has non-tender swelling bilaterally. What is the diagnosis?

➔ **Laryngeal tuberculosis**

Side Effects of Anti-TB drugs



Tuberculosis

Brain trainer:

Which medication for the treatment of tuberculosis is contraindicated in pregnancy?

➔ **Streptomycin**

Tuberculosis

Brain trainer:

An homeless man has tuberculosis. What is the most appropriate management of this patient?

➔ **Directly observed therapy**

Scabies

Facts:

- Organism is *Sarcoptes scabiei*
  → A parasite causes skin infestation
- Transmitted by **skin to skin contact**
- Causes **allergic reaction**
  → Pruritus **NOT** infection

Features:

- Linear tracks on skin (**Burrows**)
- **Severe pruritus** (particularly night time)
- Particularly in area of skin folds, flexures of:
  - Wrists
  - Finger webs
  - Elbow
  - Axilla
  - Areola
  - Genitalia

Treatment:

- Permethrin 5% cream
- Simultaneously treat all close contacts

Hint: Nursing home!!

Scabies Keywords

Keywords to remember for scabies to answer majority of scabies questions

Common in nursing homes

Sarcoptes

Very itchy

Linear tracks on skin

Allergic reaction that causes itch

Permethrin

Scabies

Brain trainer:

What is the mechanism of itching in a scabies infection?

➔ **Allergic reaction**

Gastroenteritis

Features:

- Nausea
- Vomiting
- Diarrhea ± blood
- Abdominal pain

Investigations:

- Stool microscopy, culture and sensitivity
- FBC, renal function and electrolytes

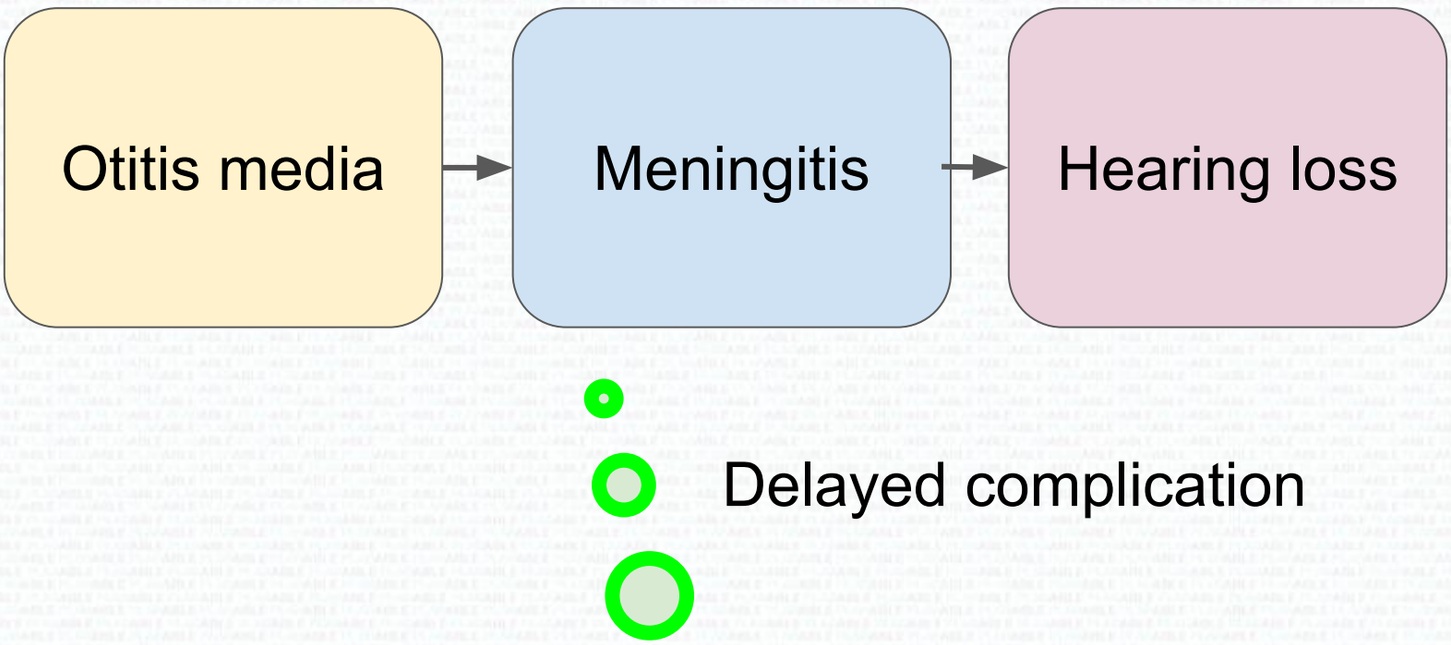
Treatment:

- Usually conservative

- **If severe, bloody diarrhoea**
  - ➔ Campylobacter jejuni - Clarithromycin
  - ➔ Salmonella- Ciprofloxacin

In UK, patients are allowed to return to work **48 hours** after the **last episode of symptoms (Diarrhoea or vomiting)**

Meningitis



Delayed complication

MUST arrange a hearing test

No later than 4 weeks after treatment

Kaposi Sarcoma

Cancer of connective tissue most commonly caused by HIV/AIDS

↓

Blood vessels ↑ in size

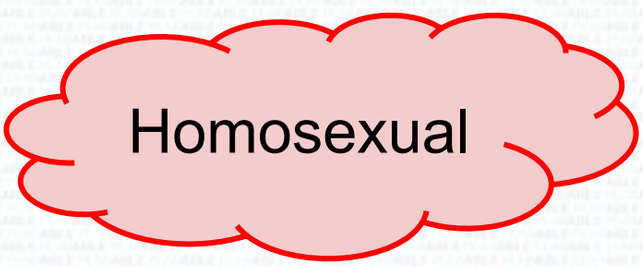
↓

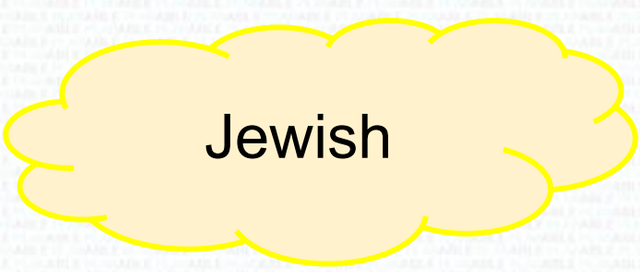
Features:

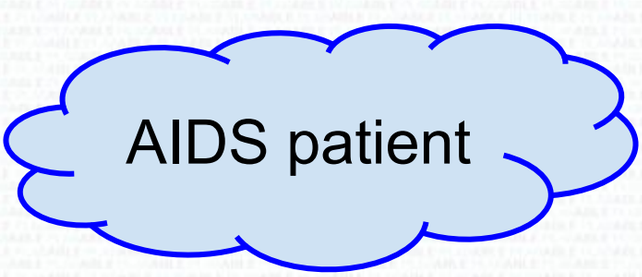
- Red, purple, brown or black nodules or papules
- Usually non-painful
- Mouth, nose or throat are common sites
- Can grow internally (eg. lungs, GI tract)

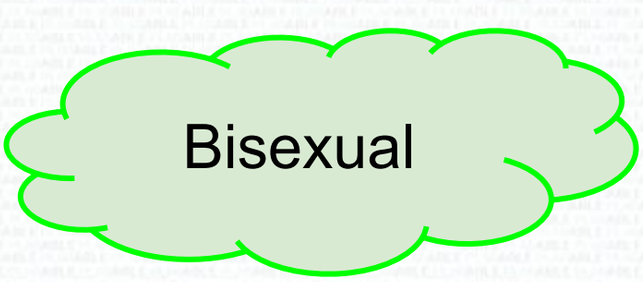
Kaposi Sarcoma

Risk factors









Chicken Pox

Caused by varicella zoster virus

Infectious route:

- Very contagious
- Mainly via **respiratory route - airborne**
- Can be transmitted by direct contact with vesicles
- **Dried out and crusted** vesicles **CANNOT** transmit

Infectious period:

- **2** days BEFORE rash
- **5** days AFTER rash first appeared
- Stop when vesicles dried out and crusted

Features:

- Fever (38-39 ℃)
- Pruritic rash (itchy)
- Rash:
  1. Macules
  2. Papules
  3. Vesicles
  4. Dry crust
- Usually starts on face or trunk and then may spread over entire body

Chicken Pox - Management

< 12 years old

Reassurance + supportive measures.

- Paracetamol for fever
- Antihistamines and calamine lotion for itching

Oral antibiotic if **superimposed infection** is suspected:

- Fever
- Discharging pustules
- Redness around vesicle
- Pinkish fluid secretion

When can children go back to school after chicken pox?

After vesicles dried out and crusted
Usually 5 days after onset

Chicken Pox - Management

Varicella-zoster Immunoglobulin (VZIG)

For Pt with **exposure**:

- Pregnant (20 weeks and less) with no VZ antibodies
- Newborn with peripartum exposure from mother (+/- 7 days of birth)

Aciclovir

For Pt who **develops** chicken pox:

- Immunocompromised
- Pregnancy

For Pt with **exposure**:

- Pregnancy over 20+1 weeks
- Immunocompromised

These changes are new from the guidelines from Public Health England (2019)

On chemotherapy, on long term steroid = **Immunocompromised**

Chicken Pox - Management

Another way to remember the management for those who have been in contact but no rash

Susceptible individuals (ie. contacts - this person has been in contact with a person with chickenpox) are divided into **three**:

1 **<u>Immunosuppressed</u>**

- Oral antivirals first line
- If contraindicated (renal impairment of intestinal malabsp), then VZIG

2 **<u>Neonates</u>**

- VZIG

3 **<u>Pregnant women</u>**

- Up to 20+0 weeks = VZIG
- Over 20+1 weeks = Oral antivirals (preferred over VZIG) → *VZIG can still be used if antivirals not an option in the exam*

This is an interim update → The reasons for the interim update is because of the national VZIG shortage

Chicken Pox

Brain trainer:

An adult has chicken pox with a fever of 39.1 and pinkish white thick fluid is seen secreted from a few of the lesions. What is the most appropriate medication to prescribe?

➔ **Oral antibiotics**

Chicken Pox

Brain trainer:

An immunocompromised man reports that his partner currently has chicken pox. His history is positive for chicken pox in childhood. What is the most appropriate action?

➔ **Obtain serology for varicella immunity**

Chicken Pox

Brain trainer:

A 7 year old boy develops a fever and crops of vesicles on his head, neck and trunk. What is the main mode of transmission?

➔ **Airborne**

Varicella zoster is mainly transmitted via respiratory droplets as opposed to contact

Chicken Pox

Brain trainer:

A 72 year old man is exposed to chickenpox. He has been taking high dose of oral prednisolone over the past 3 months as part of his management for polymyalgia rheumatica. He has not had any chickenpox before previously. What is the most appropriate management?

➔ **Oral acyclovir**

It is improper to stop or reduce his steroid dose.

Chicken Pox

Knowing the infectious period and incubation period of chickenpox is important.

Example
If an asymptomatic woman who is 18 week gestation is in significant contact with a child 8 days ago who later developed chicken pox, ask yourself when did he develop the chicken pox rash?

- If he developed it a day ago then at that time he saw her, he was not infectious
  → **Action: Reassure** *(infectious period 2 days before the rash starts)*
- If he developed it a day after he has seen her, then he would be infectious at that time
  → **Action: Give woman intravenous IVIG if she is tested negative for VZV antibodies**
  (incubation can be as long as 21 days so even if she has not developed the rash, she still can)

Infectious period:

- **2** days BEFORE rash
- **5** days AFTER rash first appeared
- Stop when vesicles dried out and crusted

Incubation period:

- As long as **21** days

Chicken Pox

RECAP - Numbers to remember in Chickenpox

2, 5, 21, 7

Infectious period:

- **2** days BEFORE rash
- **5** days AFTER rash first appeared
- Stop when vesicles dried out and crusted

Incubation period:

- As long as **21** days

Newborn administration of IVIG

Newborn with peripartum exposure from mother (+/- **7** days of birth) → Administer IVIG to newborn

Shingles

Facts:

- It is caused by varicella zoster virus (VZV)
- It is a reactivation of VZV especially in immunocompromised / old patients
- Presented as chicken pox at initial VZV infection
- Virus remain inactive in nerve cells

Features:

- Painful skin rash with blisters in localized area

Management:

- Obtain serology for varicella immunity in immunocompromised patients
- Immunocompromised- HIV positive, diabetic, on long term steroids

Treatment:

- Aciclovir
- Pain management

Ramsay Hunt Syndrome (Herpes zoster oticus)

Facts:

- It is a reactivation of VZV
- Localised in geniculate ganglion of the facial nerve (7th CN)

Features:

- Facial palsy (ipsilateral facial palsy, loss of taste)
- Otalgia - ear pain
- Tinnitus
- Vertigo
- Unilateral hearing loss
- Painful rash or vesicles around ears or on auditory canal

Treatment:

- Oral aciclovir
- Oral corticosteroid
- Amitriptyline for pain

Ramsay Hunt Syndrome (Herpes zoster oticus)

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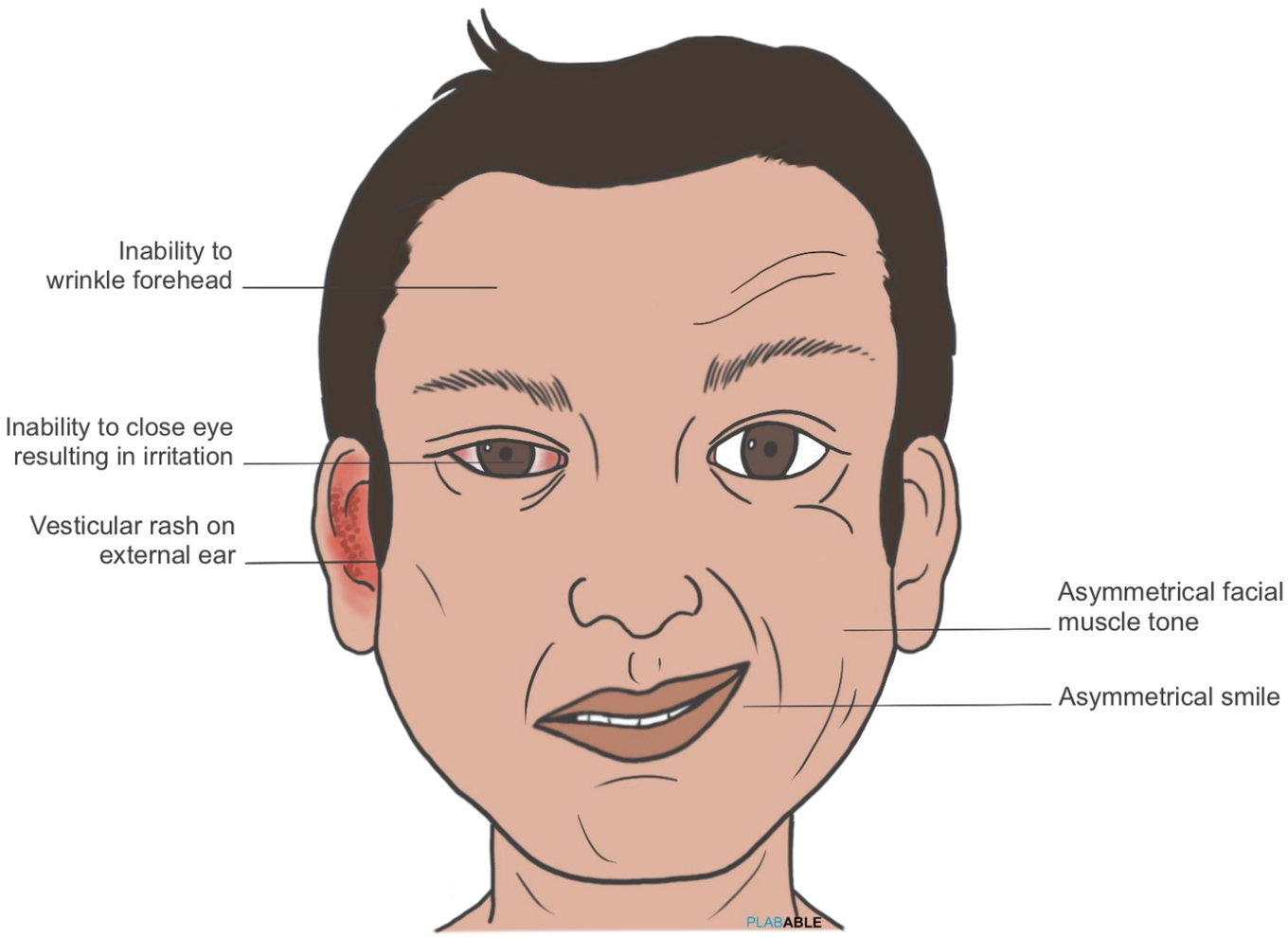


Ramsay Hunt Syndrome

Herpes Zoster Ophthalmicus

Facts:

- It is a reactivation of VZV
- Localised in ophthalmic branch of trigeminal nerve (5th CN)

Features:

- Conjuntivitis
- Keratitis
- Painful rash or vesicles around eyes

Treatment:

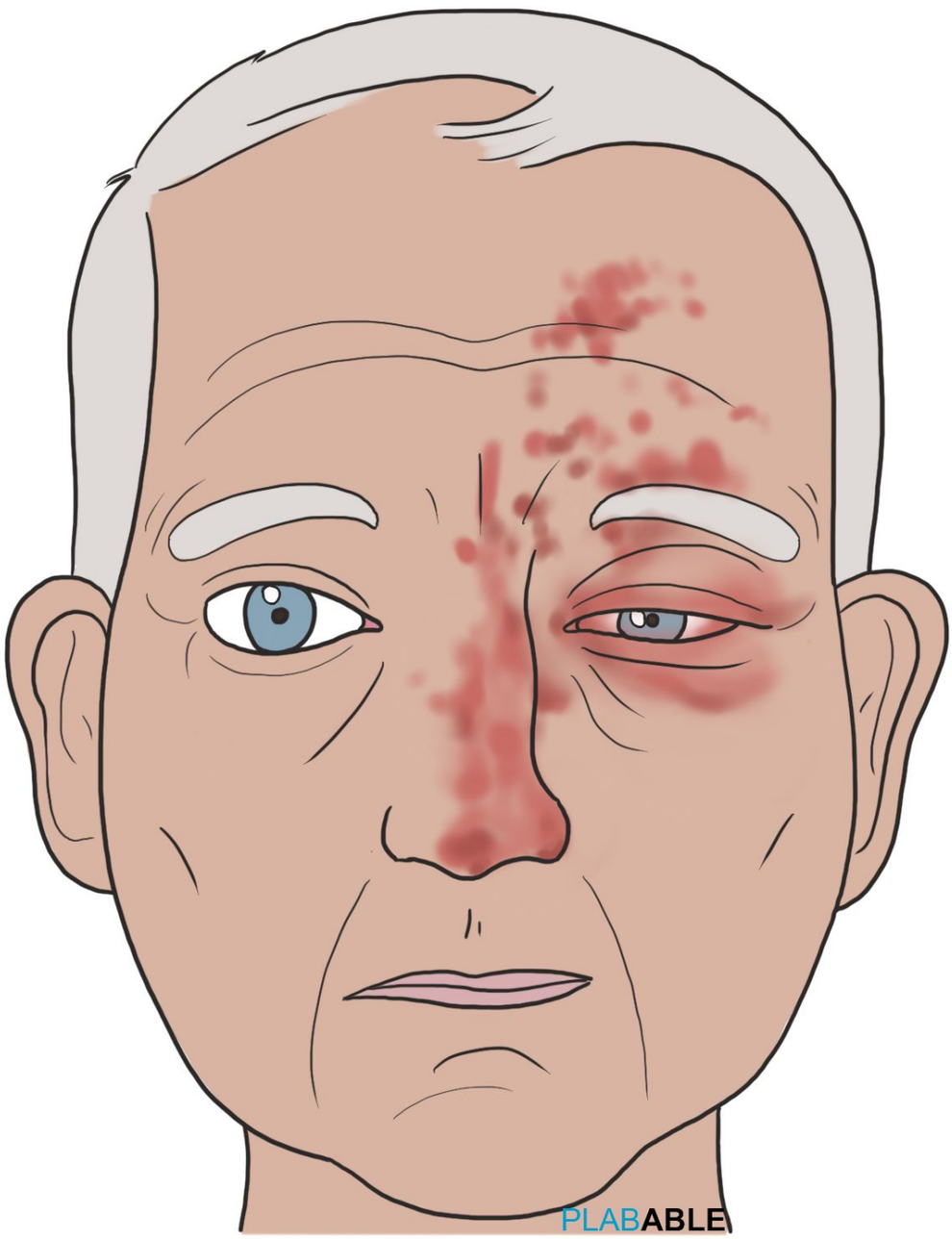
- Oral aciclovir
- Oral corticosteroids
- Same day ophthalmology review

Even immunocompromised patients can still take oral aciclovir

There is still a role for **intravenous aciclovir** but it is usually reserved for:

- Severely immunocompromised with a widespread rash
- Systemically unwell
- Issue with absorption of oral aciclovir (e.g. inflammatory bowel disease)

Herpes Zoster Ophthalmicus



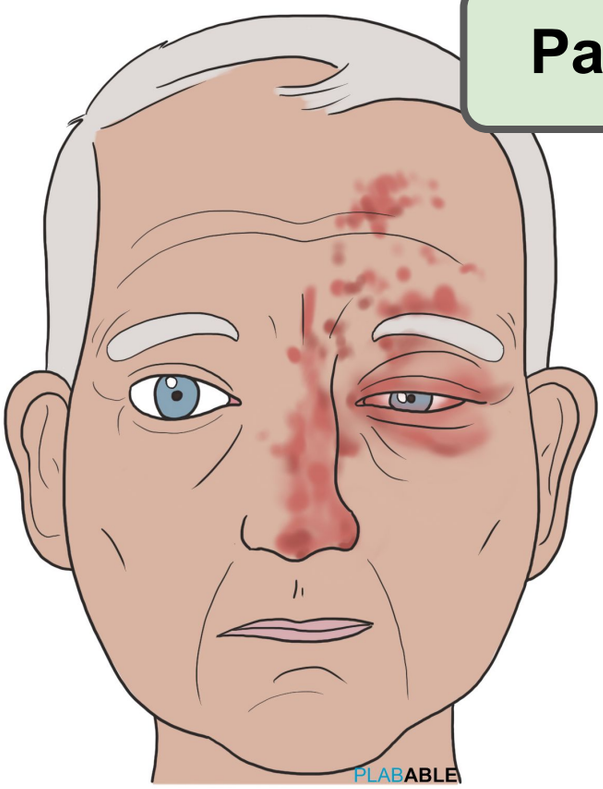
Hutchinson's Sign

Hutchinson's sign

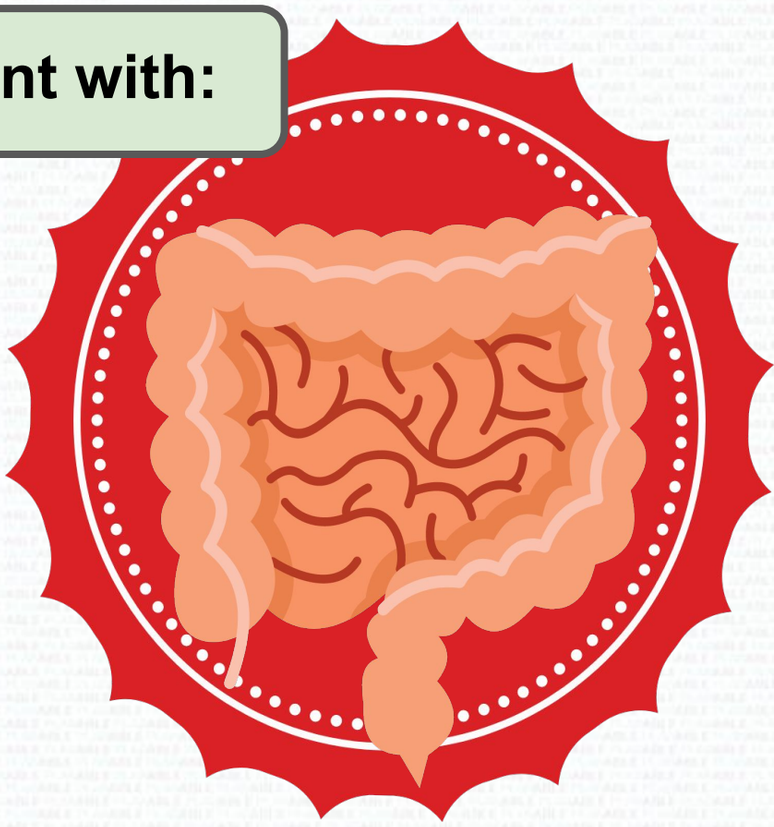
Vesicles on the tip of the nose increases the risk of eye involvement

Herpes Zoster Ophthalmicus

Patient with:



Hutchinson's sign



History of Crohn's disease

Best not to use oral aciclovir but to use **IV aciclovir**

Herpes Zoster Ophthalmicus

Brain trainer:

A patient has suspected shingles with a rash present on the tip of the nose. What is this finding called? and what is its significance?

➔ **Hutchinson's sign → ocular involvement**

Lyme disease (Lyme borreliosis)

History of camping or walking in jungles or gardens >>>**Ticks bite**

Beginning stage:

Erythema migrans (erythematous, painless, non-itchy)
± fever, headache, myalgia and general aches)

It could present as an **annular rash** with scaly edge, slow growing with general aches and pain

Later stage:

- Facial paralysis
- Meningitis
- AV heart block
- Myocarditis
- Arthritis

Lyme Disease (Lyme borreliosis)

Diagnosis:

- Check for **antibodies to Borrelia- Burgdorferi**

Treatment:

- **Doxycycline** or **amoxicillin** if contraindicated e.g. pregnancy
- **Ceftriaxone** in disseminated disease

Lyme Disease

Brain trainer:

A pregnant woman has lyme disease in the early stages. What is the most appropriate management?

➔ **Amoxicillin**

Meningitis In Babies And Toddlers

Fever, cold hands and feet

Refusing food and vomiting

Fretful, dislike being handled

Rapid breathing and grunting

Unusual crying, moaning

Stiff neck, dislike bright lights

Pale, blotchy skin, spot/rash

Tense, bulging fontanelle (soft spot)

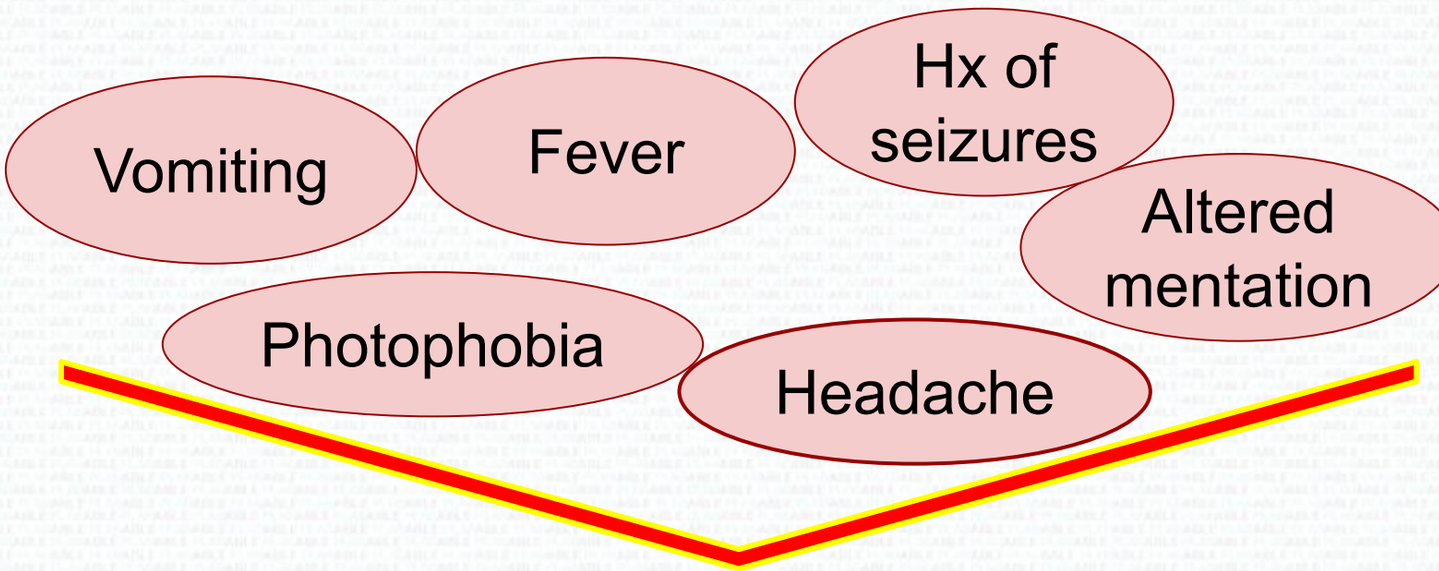
Drowsy, floppy, unresponsive

Convulsion or seizures

Meningitis
In Babies And Toddlers

Behaviour changes	• Irritable: unusual crying/moaning • Refusing food • Drowsy, floppy, unresponsive
Neurologic findings	• Tense bulging fontanelle • Stiff neck • Photophobia
Associated findings	• Fever • Vomiting • Rapid breathing/grunting • Rash (suspect meningococcal)
Complications	• Seizures

Meningitis



Diagnostic investigation

Without rash

Lumbar puncture = CSF analysis

Contraindications:

- ↑Intracranial Pressure
- Bulging, tense fontanelle
- Ongoing seizures
- GCS < 9 or a drop of ≥ 3
- Unequal, dilated, unresponsive pupils
- Papilledema

With rash

Blood culture

Check for **Meningococcal septicemia**

→ *Neisseria meningitidis*

Meningitis

Treatment for meningitis

ASAP

Health protection team must be **notified immediately** once there is a clinical suspicion of meningitis!!!

In exam, look out for the points below:

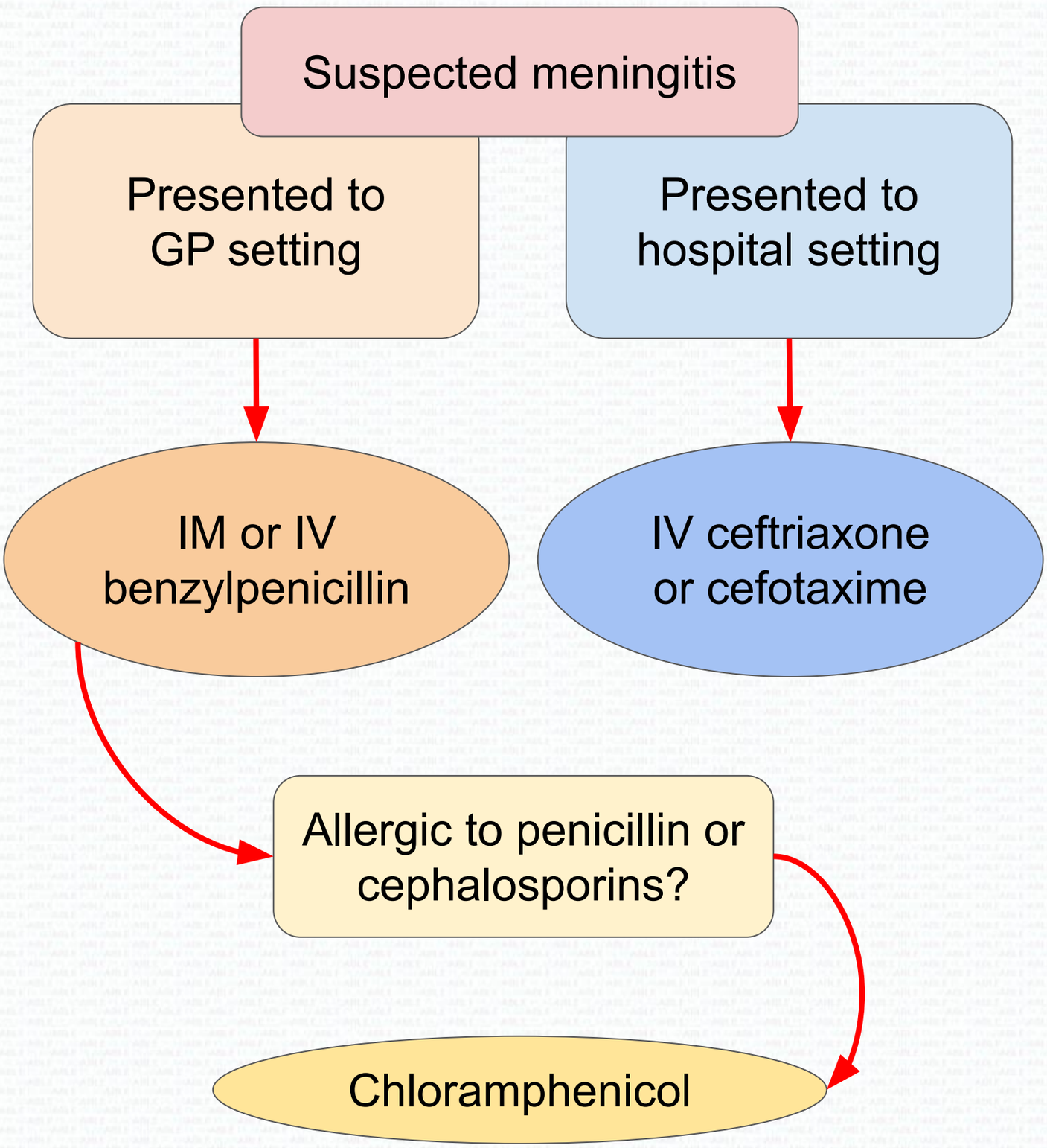
- Arthralgia and muscle aches
- Cold periphery
- Pale or mottled skin
- SOB
- Rash

Septicemia

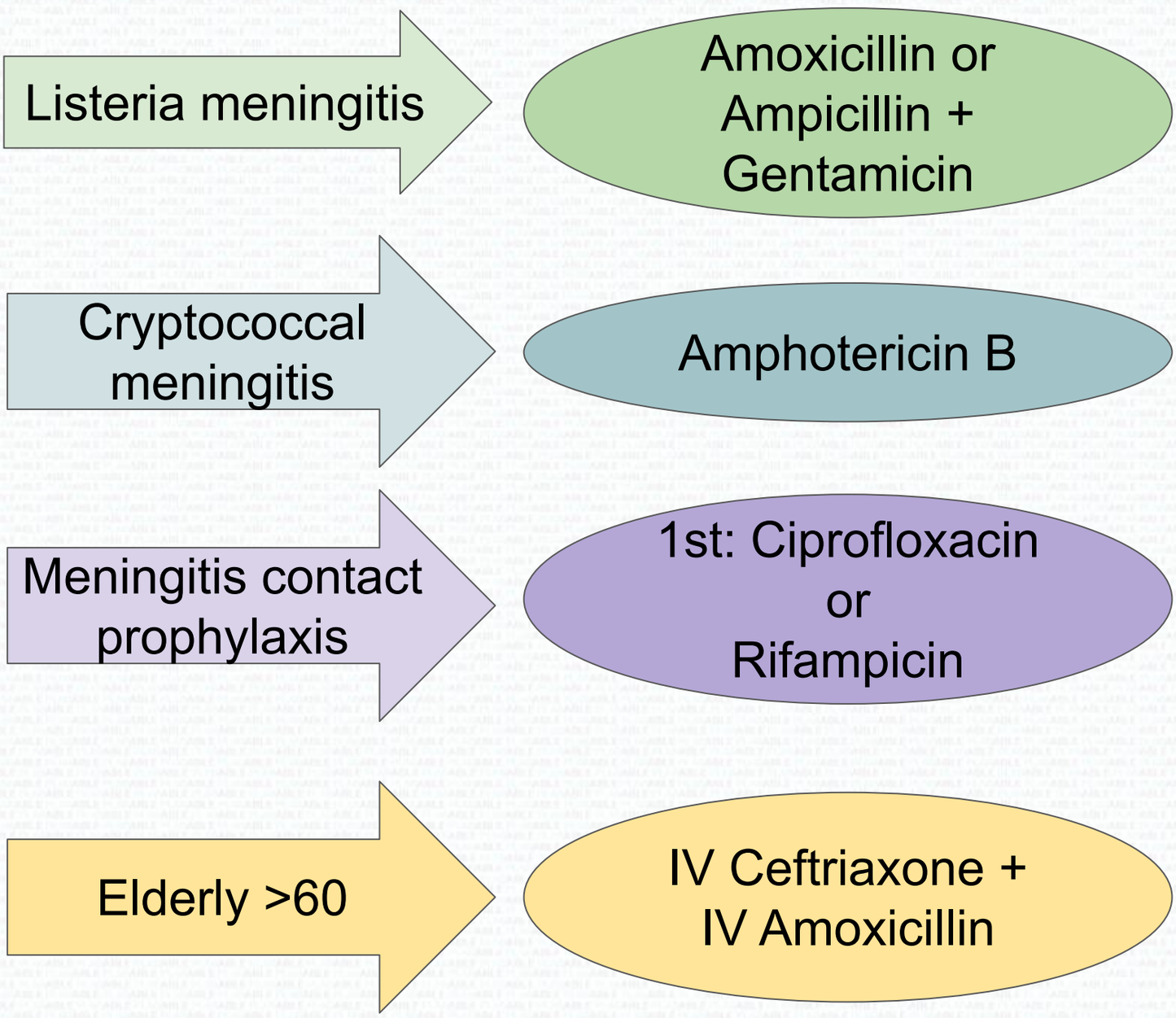
- Photophobia
- Severe headache
- Neck stiffness

Meningitis

Meningitis Treatment



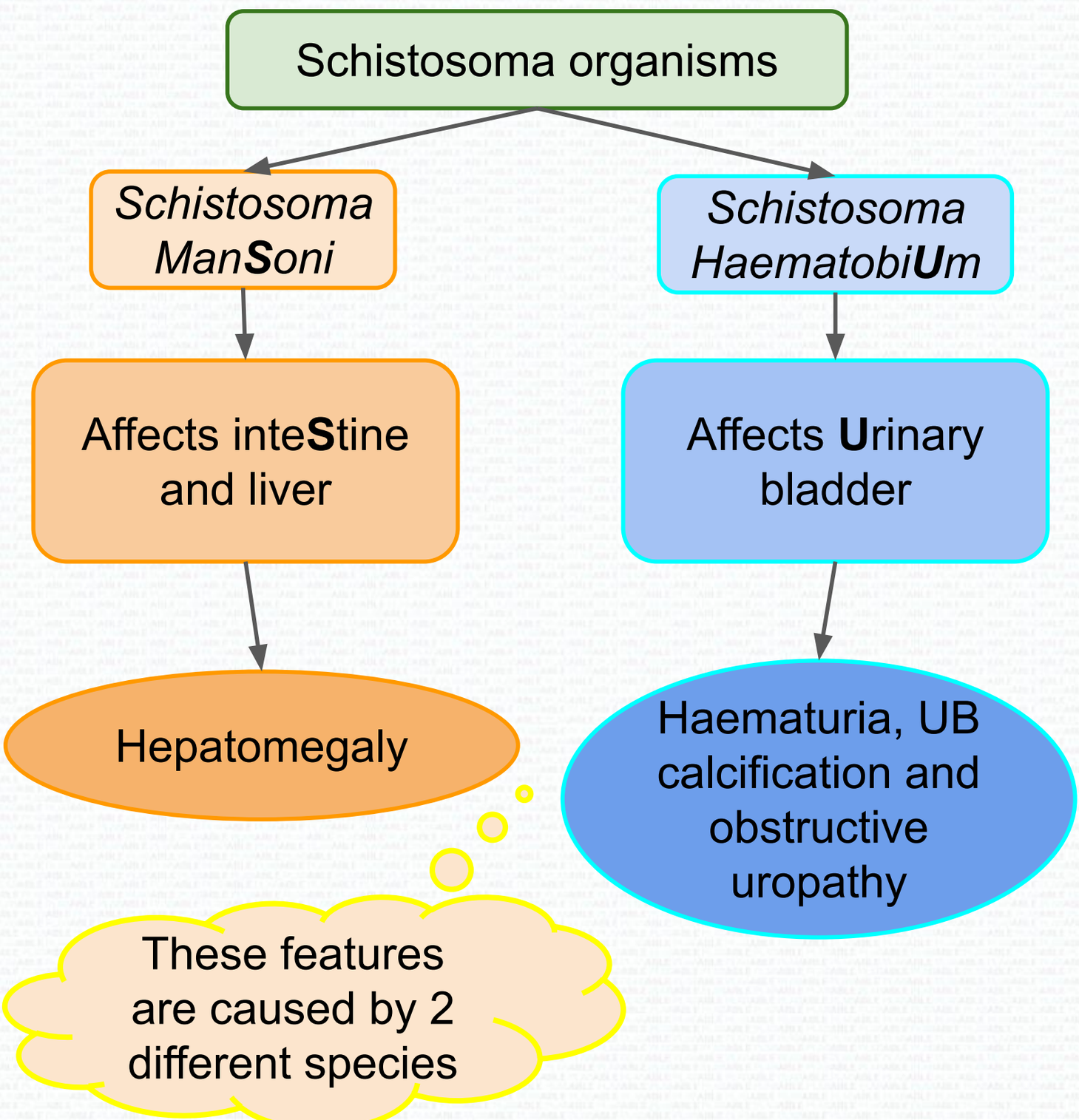
Meningitis Treatment



Schistosoma

Features:

- Hx of travelling to **Africa** (mostly)
- Pruritic skin rash at site of penetration
- Fever, maculopapular rash, headache, weight loss
- ± Hepatomegaly
- Haematuria (dark and red urine)



Schistosoma Haematobium

Features:

- **Hx of travel to Africa (mostly)**
- Haematuria
- Urinary bladder calcification
- Ulceration and obstructive uropathy
- Increased bladder cancer risk

Investigations:

- X-ray:
  - Urinary bladder calcification
- Ultrasounds:
  - Hydronephrosis
  - Thickened bladder wall
- CT scan
  - Urinary bladder calcification
  - Obstructive uropathy

Important notes:

- Can lead to bladder cancer
- May be after up to 20 years post-infection

Similar organisms:

- *Schistosoma mansoni*
  - Affects intestines, liver and spleen
  - Hepatomegaly

Schistosoma Haematobium

SChistosoma **HAEMA**tobium

SCc (squamous cell carcinoma) of bladder as a complication years later

HAEMAturia as part of the clinical features

Malaria

Features:

- **Hx of travel to Africa**
- Intermittent fevers
- Rigours
- Headache
- Malaise
- Cough
- Myalgia
- Gastrointestinal upset
- Hepatosplenomegaly
- Jaundice

Investigations:

- Microscopy of thick and thin blood film (most accurate)
- Full blood count may show anaemia and thrombocytopenia
- Rapid diagnostic test → Used as adjunct to blood films and not a replacement

Important note:

Avoid the belief that prophylaxis prevents all malaria

Cerebral Malaria

Features:

- Hx of travelling to **Africa**
- Meningitis-like symptoms:
  - Fever and chills
  - Neck stiffness
  - Vomiting
  - Impaired consciousness
- **Anaemia**

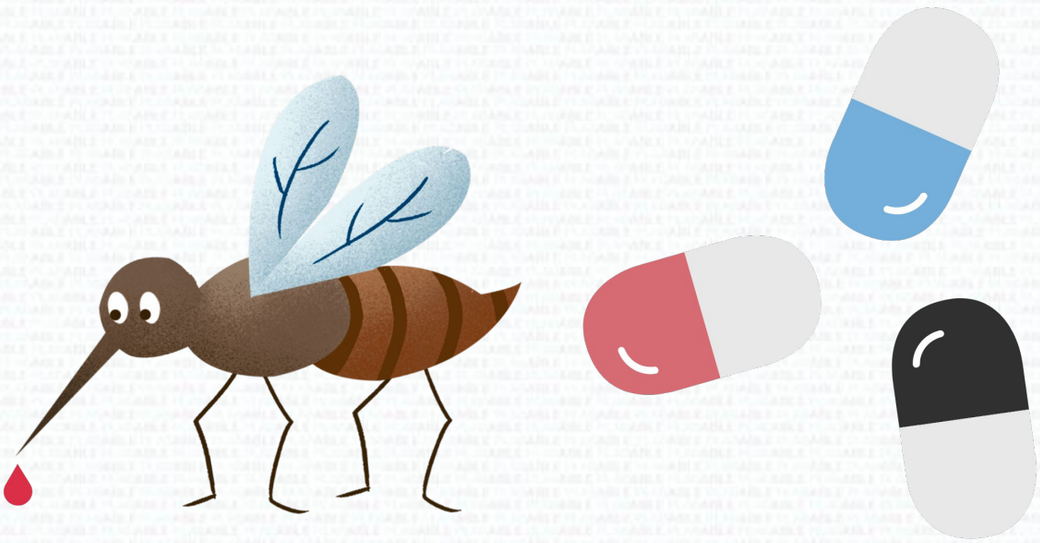
  → Differentiate from meningitis

To suspect!

- Hx of travel to malaria affected area(s)
- In the past year particularly over the **last 3 months**

Malaria prophylaxis does not guarantee full protection against all subtypes of malaria

Treatment For Malaria



Our honest opinion is that Malaria treatment is so low yield in the exam that you would be able to get away without remembering Malaria treatment at all.

If at all, perhaps just remember this:

- Chloroquine is the drug of choice for non-falciparum malaria
- Primaquine is used to destroy liver stage parasites an prevent relapse

*The next card **(Treatment for Malaria)** is only applicable if you really want to know it in depth but again, it is LOW YIELD (unlikely to be asked).*

Treatment For Malaria

1. Primaquine

- If blood film shows ring form *Plasmodium* with schuffner's dots
- **To be used at latent/dormant stage of Plasmodium ovale or vivax latent hypnozoites in liver**
- Targets and eradicate all stages - liver latent and RBCs
- Contraindicated for patients with G6PD as it can cause severe haemolysis
- Contraindicated for pregnant and breastfeeding patients

*__MUST__ *screen for G6PD deficiency before commencing on therapy**

2. Chloroquine

- In non-falciparum / non-hypnozoite malaria
- **To be used in active stage** and targets RBCs
- Can be used in pregnancy
- Not effective in chloroquine-resistant area(s) e.g. Sub-Saharan Africa

3. Quinine

- To be used when chloroquine fails

4. Mefloquine

- To be used if travelling to chloroquine-resistant area(s)
- Can be used in pregnancy

Treatment For Malaria

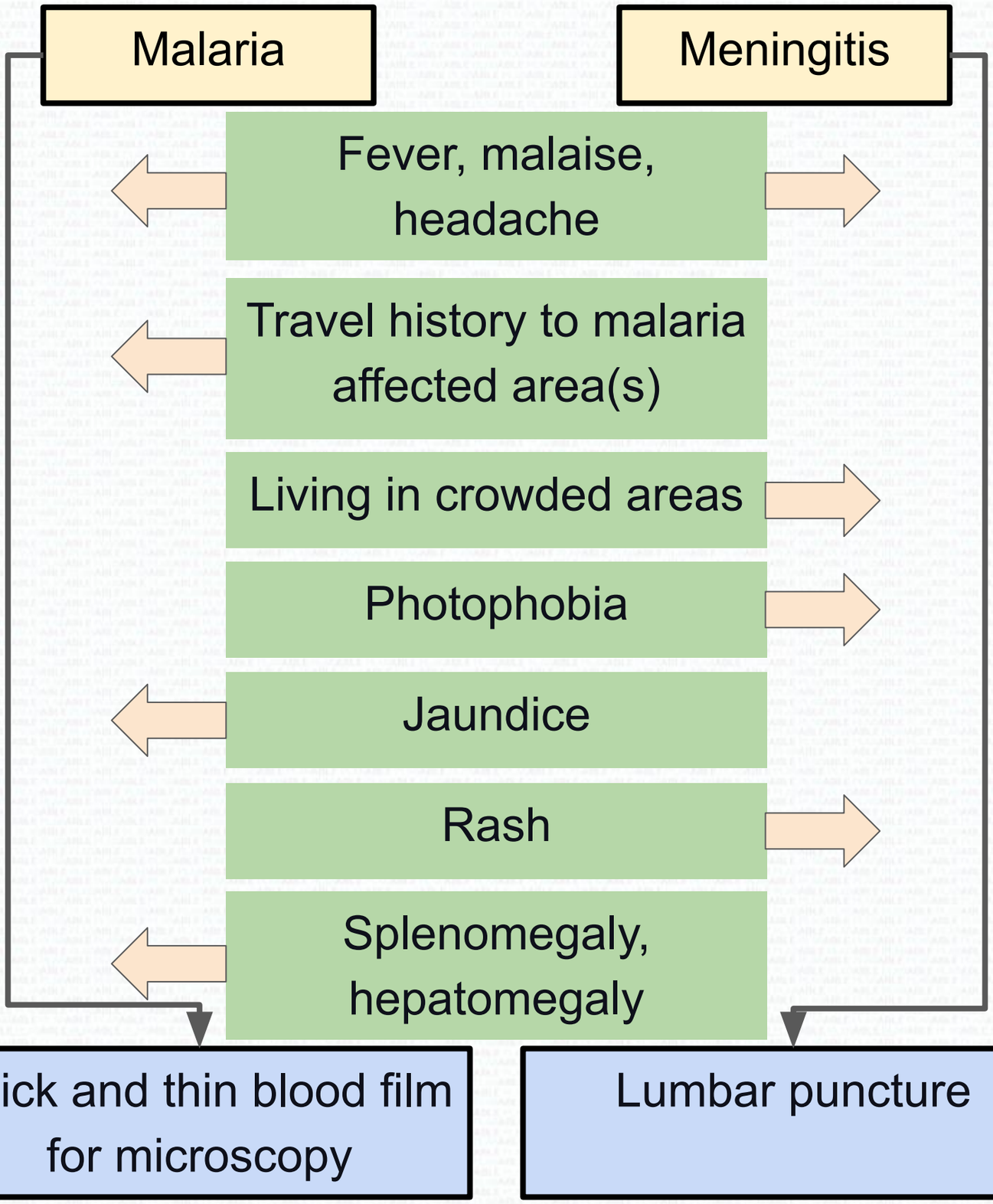
Brain trainer:

An African woman has malaria. Blood film shows ring form plasmodium with schuffner's dots in red blood cells. What is the SINGLE most appropriate drug to eradicate this infection?

➔ **Primaquine**

Malaria Vs Meningitis

The following points would lean you towards a suspected diagnosis



- Malaria prophylaxis does not guarantee full protection against all subtypes of malaria
- Malaria rarely presents with signs of meningism

Needle Stick Injuries

Being pricked by a needle

Basic 1st aid

- Washing with soap under running water
- Encouraging bleeding in affected area

Request patient's permission to investigate any blood-borne infection **(HIV, HCV and HBV)**

Low risk:

- Safe sexual intercourse
- Does not use IV drugs

High risk:
e.g. IV drug abuser, drug addicts

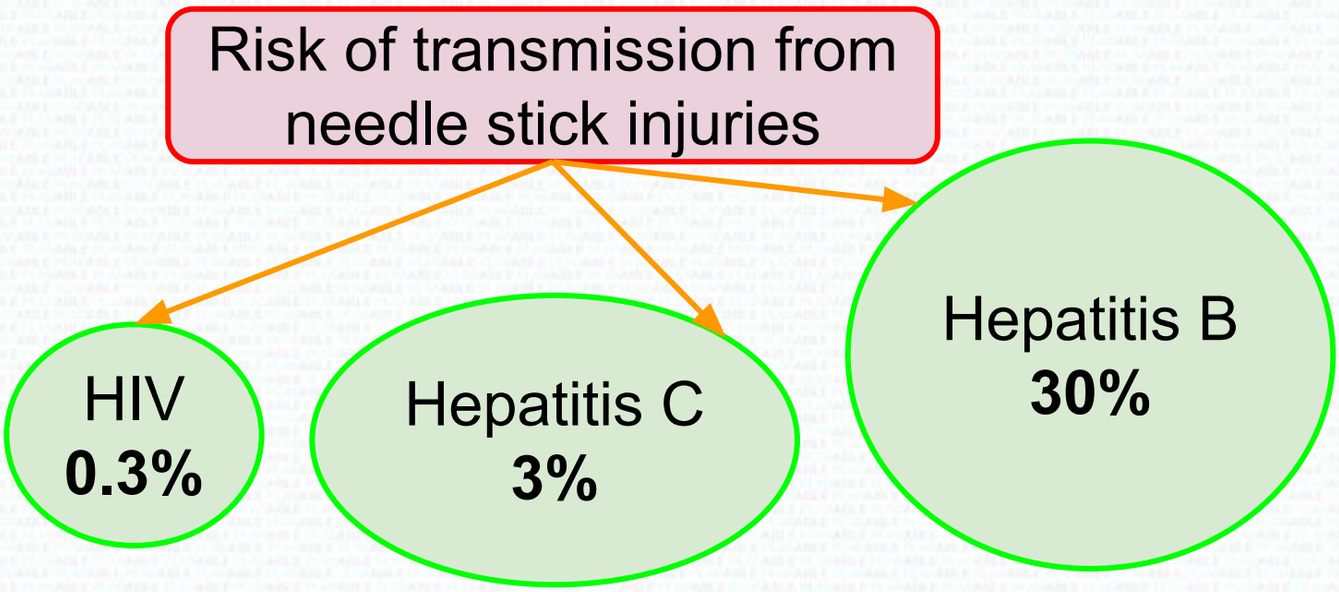
Test healthcare professional for **hepatitis B surface antibody**

Start **post-exposure prophylaxis (PEP)**

Offer hepatitis B booster

- If booster was not received previously
- If healthcare professional cannot remember when last dose was

Needle Stick Injuries



Healthcare professionals should return in **6 weeks** and **check for HIV and HCV**

Patient should always be **tested for HIV, HCV and HBV**

Healthcare professional should always be tested for **hepatitis B surface antibody** and **offer hepatitis B booster** if cannot remember when was last dose in **low risk injuries**

PEP should be offered to healthcare professionals if injuries is **high risk**

Surgical Prick Injury

Brain trainer:

A surgeon is pricked by a needle used during an appendectomy. What action should be taken?

➔ **Patient: test HBV, HCV, HIV**
➔ **Surgeon: store blood, test HBV, offer HBV booster**

HIV Post-Exposure Prophylaxis (PEP)

Antiretroviral medications to be given as soon as possible after exposure:

- **Non-safe sexual intercourse** with high risk individual
- **Needle stick injury** when from:
  - High risk source
  - High risk bite e.g drug addict

To be started ASAP
1-2 hours, up to **72 hours** after exposure

To complete a 28 days course of PEP

If human bite: co-amoxiclav 7 days or metronidazole + doxycycline if penicillin allergic

Recheck HIV viral load after 6 months
Aim: viral load < 200

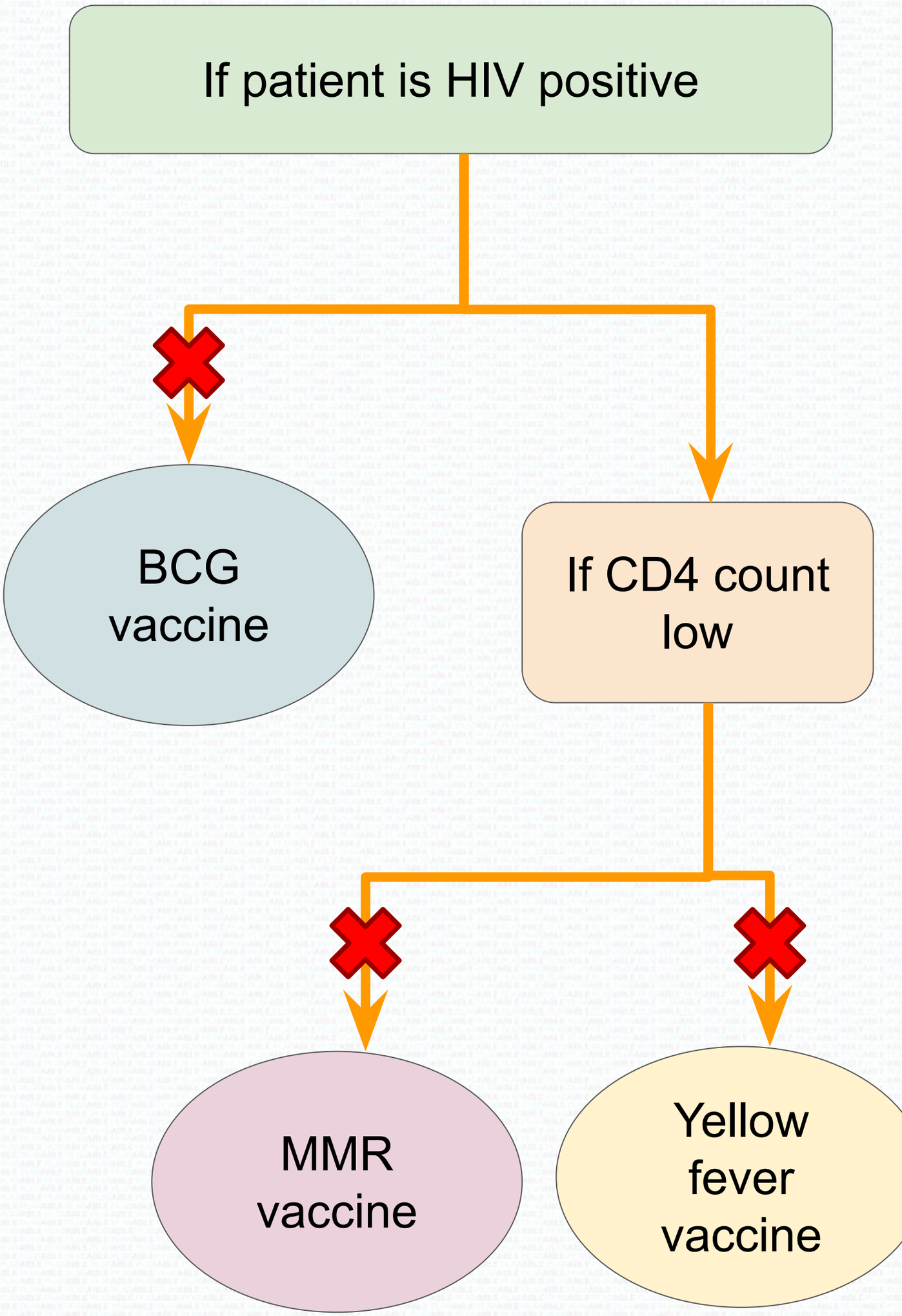
Bite Injury

Brain trainer:

A police officer is bitten by a drug user. What would you offer the police officer?

➔ **Post-exposure prophylaxis**

Vaccine To Avoid In HIV Patients



Vaccine To Avoid In HIV Patients

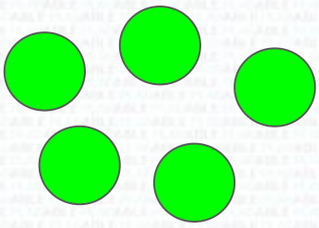
Brain trainer:

How is the vaccination schedule for a HIV positive infant?

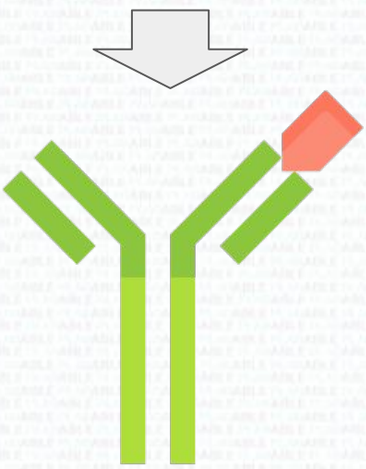
➔ **All vaccines as scheduled except BCG vaccine**

Tetanus Vaccination Vs Tetanus Immunoglobulins

Vaccination



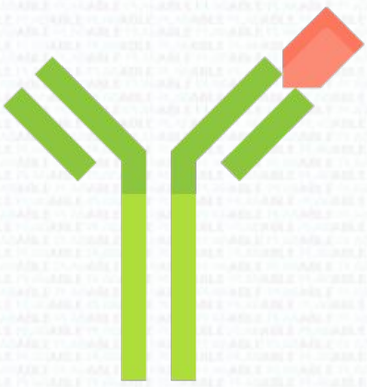
Contains deactivated exotoxins (toxoids)



Immune response resulting in antibodies

Takes time to take effect (upto a month)

Immunoglobulins



Ready made antibodies against the tetanus toxin

Administered if tetanus toxin is already present in the body or the patient is suspected of getting it (in certain situations)

Takes effect almost immediately

Tetanus Prophylaxis (after injury)

1. Is wound high risk - dirty, contaminated or compound fracture?

Yes

- Give IM human **tetanus immunoglobulins**
- If booster given 10+ yrs ago or uncertain immune status

No

- No need for IM human tetanus immunoglobulins

+

2. Person's immunization status?

Fully immunised and up-to-date
i.e. completed 5 doses of tetanus vaccine + last dose within 10 years

No need for tetanus vaccine

Unknown or incomplete

- Give complete course of tetanus vaccine (5 doses)
- Or full course of diphtheria, tetanus and pertussis vaccine

Sometimes we give Abx for wound with high risk of infection

Tetanus Prophylaxis

Terms to remember

Priming course
→ First 3 doses of vaccine

Tetanus-prone wound examples:

- Puncture type injuries in garden
- Burns
- Bites from animals in agricultural environment

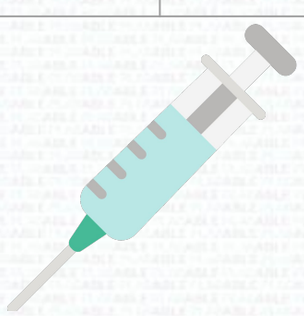
High-risk tetanus prone wound examples:
Tetanus prone wounds containing one of the following:

- Soil
- Wounds/burns displaying extensive devitalised tissue
- Wounds/burns requiring surgical intervention that has been delayed for more than 6 hours

Tetanus Prophylaxis

ADULTS

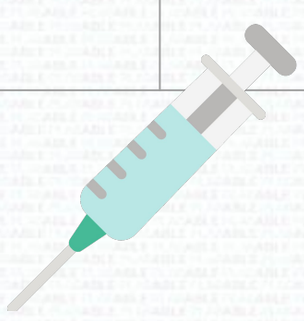
Immunisation status	WOUND type		
	Clean	**Tetanus-prone**	**High-risk tetanus prone**
Completed priming course + Booster in past 10 years	Reassure	Reassure	Reassure
Completed priming course + NOT had booster in past 10 years	Reassure	Tetanus vaccine	Tetanus vaccine and tetanus Ig
Unsure of vaccination status	Tetanus vaccine	Tetanus vaccine and tetanus Ig	Tetanus vaccine and tetanus Ig



Tetanus Prophylaxis

CHILDREN

Immunisation status	WOUND type		
	Clean	Tetanus-prone	High-risk tetanus prone
Up to date with vaccination schedule	Reassure	Reassure	Reassure
Completed priming course + Overdue next routine tetanus immunisation	Reassure + Booster to bring them up to date with vaccine schedule	Tetanus vaccine	Tetanus vaccine and tetanus Ig
Not completed priming course or unsure of vaccination status	Tetanus vaccine	Tetanus vaccine and tetanus Ig	Tetanus vaccine and tetanus Ig



How To Give Tetanus Vaccine

Adult who has not been immunised

- 5 doses required
- First 3 doses should be given 1 month apart
- Remaining 2 are boosters
- 1st booster give at **5** years after primary course
- 2nd booster give at **10** years after first booster

Children (below 10) who has not been immunised

- 5 doses required
- First 3 doses should be given 1 month apart
- Remaining 2 are boosters
- 1st booster give at **3** years after primary course
- 2nd booster give at **10** years after first booster
- **Can be given as diphtheria, tetanus, pertussis combined vaccine**

Remember:

1. Dirty wound? → Immunoglobulines
2. Immunisation status? → Vaccine
3. High risk infection? → Antibiotics

Tetanus Prophylaxis

Brain trainer:

A man presents with a deep penetrating wound after stepping on a nail which was heavily contaminated with soil. He has completed a full priming course of tetanus vaccine with the last dose within 10 years. What is the most appropriate management to be given?

➔ **Reassure**

Tetanus Prophylaxis

Brain trainer:

A man presents with a penetrating wound after cutting his arm on the fence at the garden. He has completed a full priming course of tetanus vaccine. His last vaccine was more than 10 years ago. What is the most appropriate management to be given?

➔ **Tetanus booster vaccine**

Tetanus Prophylaxis

Brain trainer:

A 3 year old child has sustained a clean wound injury. She has not had any immunisations before. There are no contraindications to immunisation for her. What is the most appropriate management?

➔ **Administer DTP vaccination immediately and arrange follow up with GP to complete DTP vaccination course**

Tetanus Prophylaxis

One word of advice

Remember what options **NOT** to pick in the exam

Any option that says "**Tetanus immunoglobulins alone**" can be crossed out.

Why?
This is because in any case where you give tetanus immunoglobulins, you would also give a tetanus vaccination.

Mumps - Paramyxovirus

Facts:

- Contagious and infectious virus
- Transmitted via close contact e.g. droplet of saliva

Features:

- Bilateral parotitis: pain and tender swelling at angles of jaw - periauricular
- Swelling of parotid salivary gland
- Fever
- Dry mouth - due to blockage of salivary gland
- DIfficulty in opening mouth or talk - due to swelling
- Orchitis (4-5 days post parotitis) - **NOT always**
  - Severe testicular pain
  - Swollen edematous scrotum
  - Impalpable testes
  - Risk of sterility in males

Treatment:

- Symptomatic relief only - paracetamol or ibuprofen
- Reassurance

Hepatitis A

Transmission → Faecal oral route

Presentation

- Pruritus
- Jaundice
- Prodromal symptoms like myalgia athralgia

Investigations

- ALT much higher than AST
- Anti HAV **IgM** antibody → Detected around the time symptoms develop
- Anti HAV **IgG** antibody → Detectable soon after IgM and remains detectable for life

Tip

If suspect acute hepatitis A infection
→ Request IgM antibody

Hepatitis B Serology

HB Hepatitis B	**Ag** Antigen	**S** Surface	**E** Envelope	**Anti** Antibodies	**C** Core

In acute and chronic infection

→ HBs **Ag** +ve →

1st marker that become abnormal after acquiring hepatitis B infection

+ve HBs **Ag**

+

+ve HB **eAg**

→

- Highly infectious - active viral replication
- eAg to spread

+ve Anti-HBe →

- Antibodies against **eAg**
- Develops of eAg indicates response to treatment

+ve Anti-HBs →

- Post vaccination against HBV
- Recovery and immunity against HBV

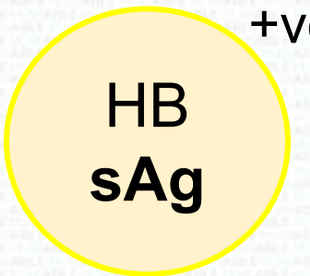
+ve Anti-HBe →

Anti-HBc

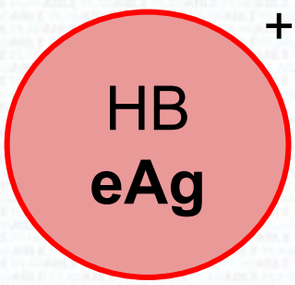
- At onset of symptoms
- Remain +ve after treatment

Due to reaction to **core antibody** against HBV

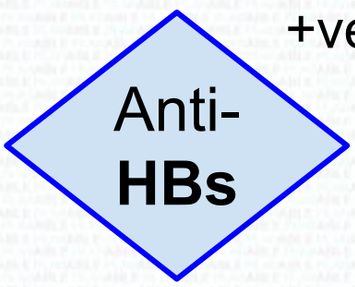
Hepatitis B Serology



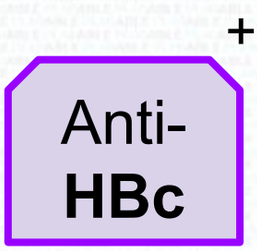
First marker to become abnormal in both acute and chronic infection



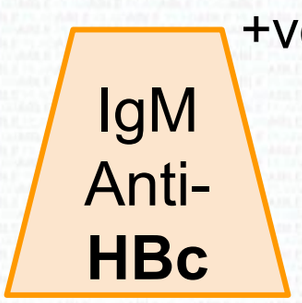
Indicates highly infectivity



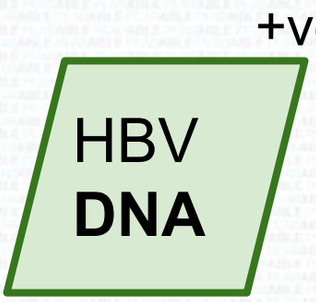
Indicates recent vaccination



Indicates past infection and remain positive after recovery

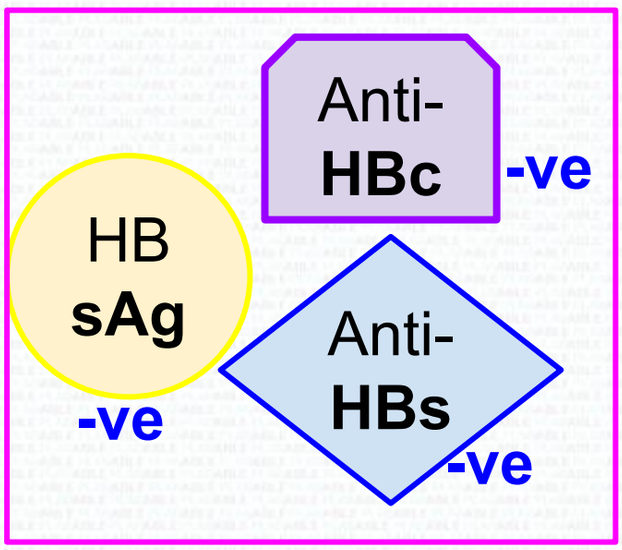


Indicates recent acute infection

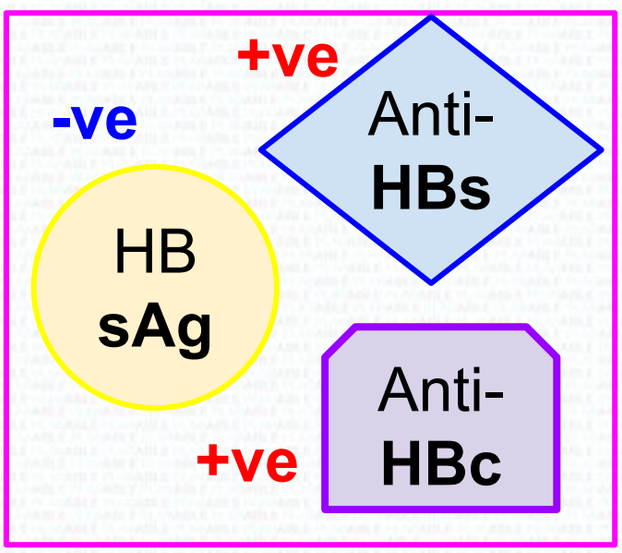


Shows infectivity (Acute viral replication)

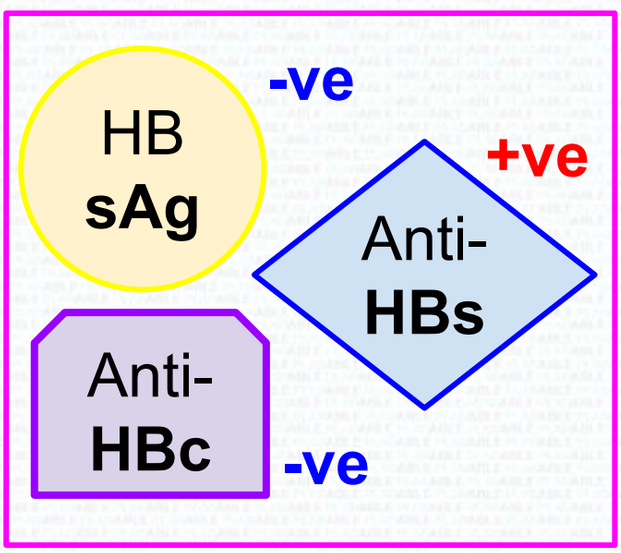
Hepatitis B Serology



Susceptible

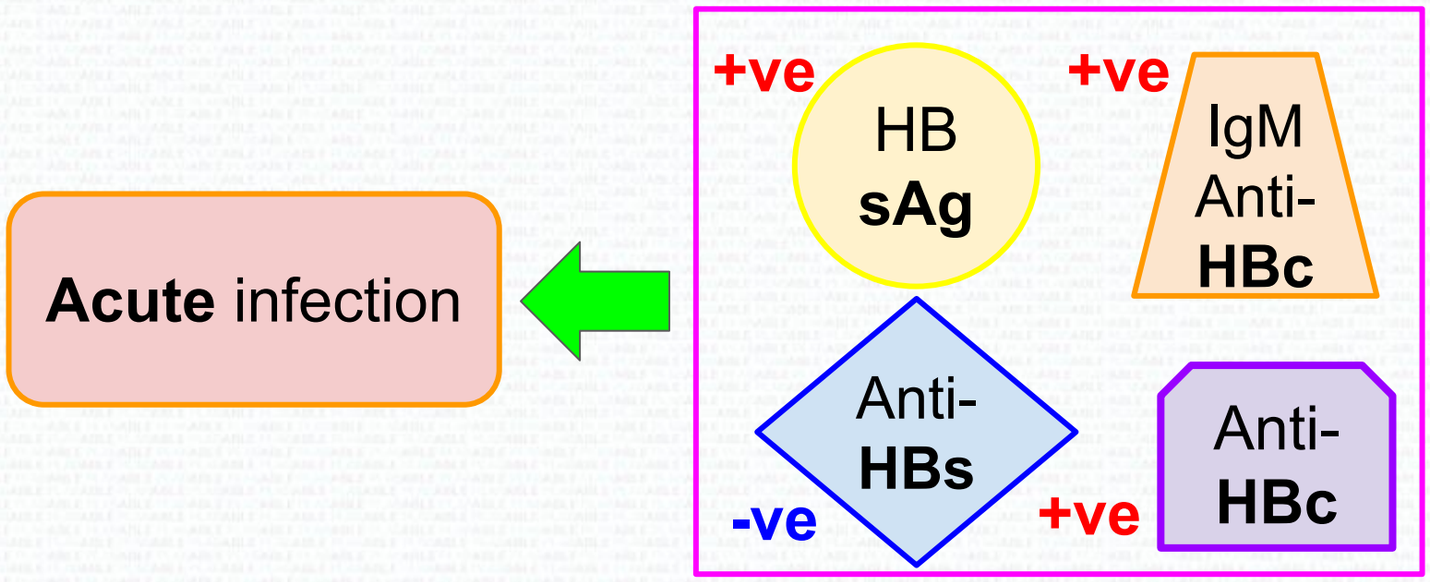


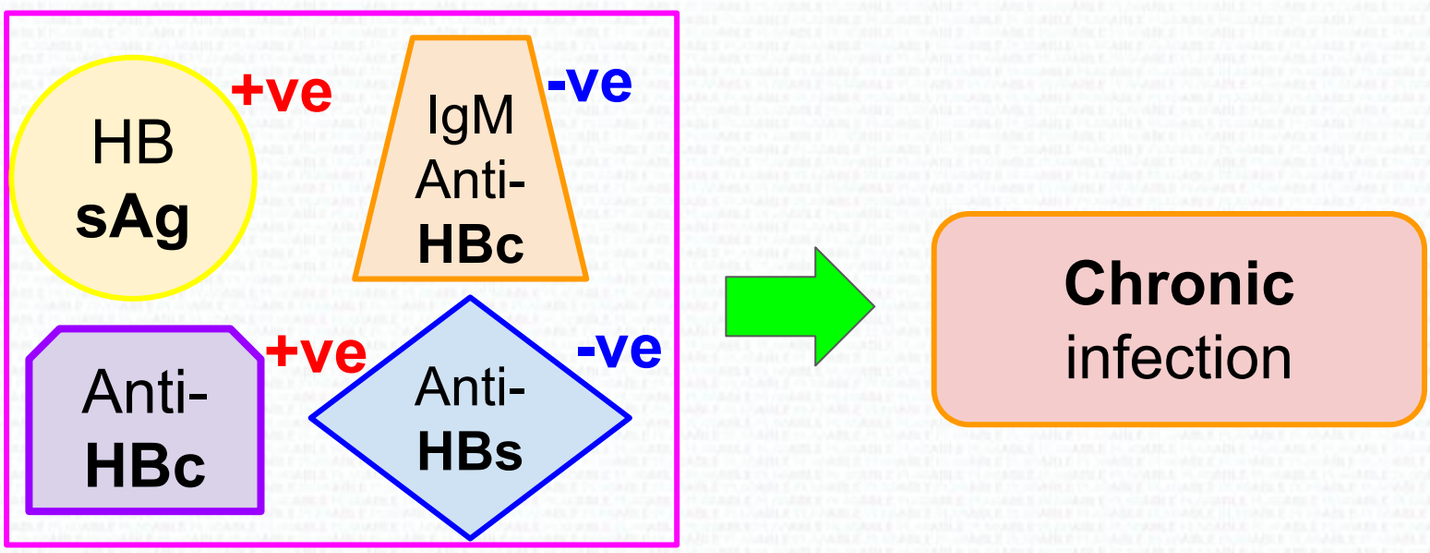
Immune due to **natural infection**



Immune due to Hep B **vaccination**

Hepatitis B Serology





Press the icon for one of our teaching videos by Dr Asim Ahmad

Hepatitis C Workup

IV drug user + abnormal LFTs (high bilirubin, high ALT, high AST, **ALT>AST**)

↓

Suspect **viral hepatitis**

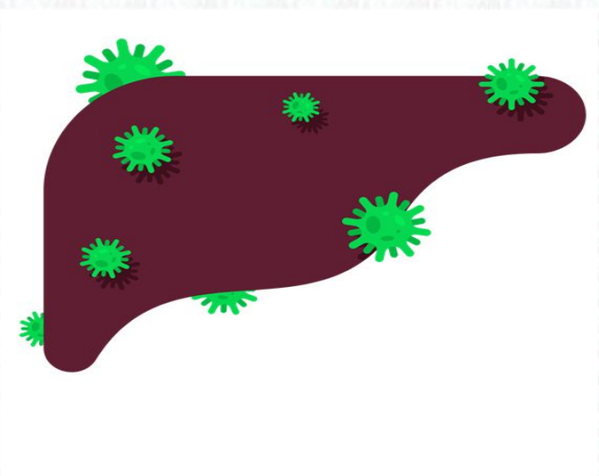
↓

Suspecting hepatitis C?

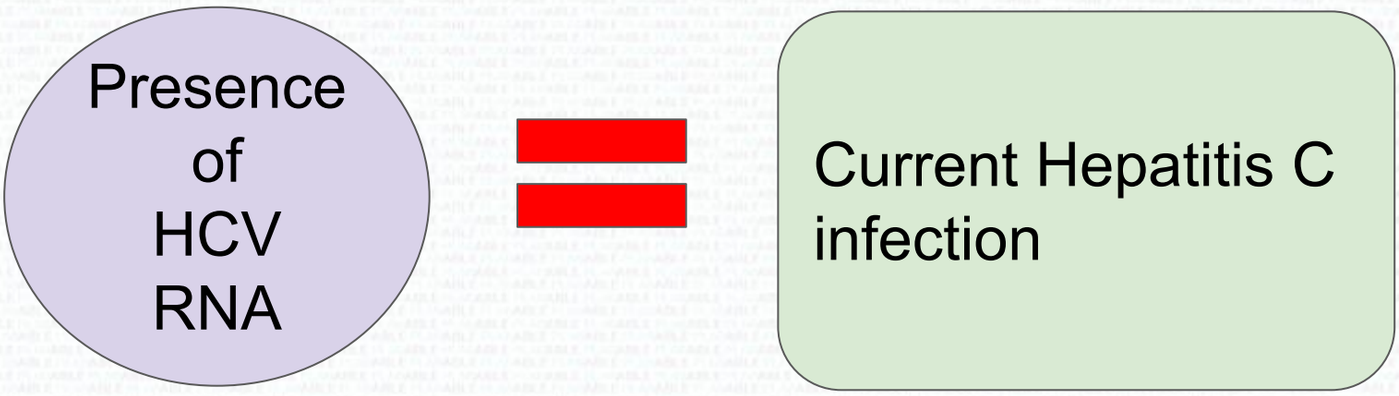
↓

Remember to perform a hepatitis C antibody test first!

HCV RNA test (PCR) is performed later on if antibody tests come out to be positive



Hepatitis C



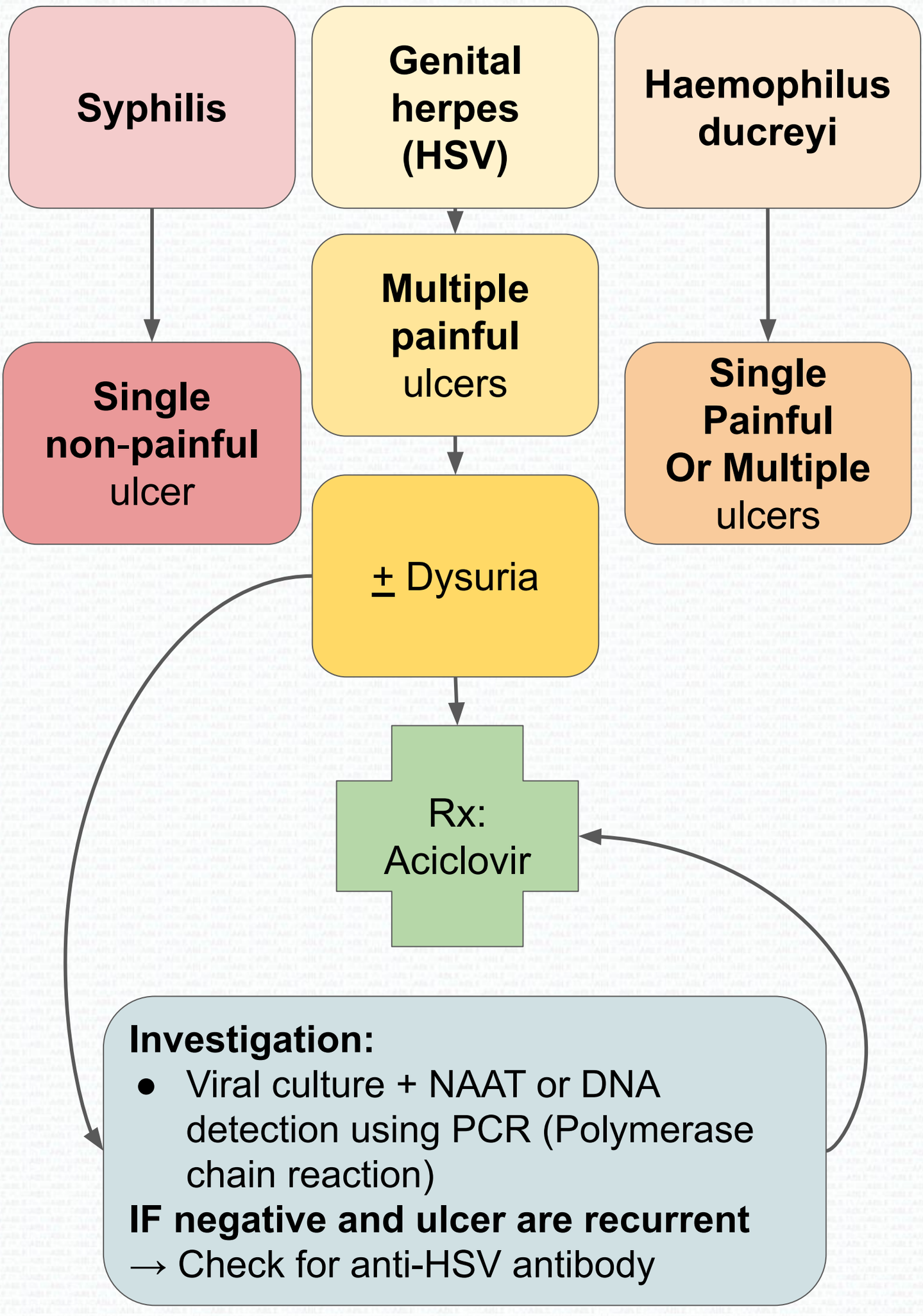
Hepatitis B Serology

Brain trainer:

What blood result confers successful vaccination for hepatitis B?

➔ **Positive: anti-HBs**
➔ **Negative: HBsAg, anti-HBc**

Genital Ulcers



Painful Genital Ulcer(s)

Painful ulcer(s) on Genitalia → Herpes simplex virus or Haemophilus ducreyi?

Herpes simplex virus (genital herpes)

Starts off as multiple painful vesicles

Progresses to **multiple** painful ulcers

Associated with malaise, fever, myalgia

Haemophilus ducreyi (chancroid)

Starts off as an erythematous papular lesion

Progresses to a **single** or **multiple** painful ulcers *(Usually single and deep)*

May have history from coming from a developing country

Type of Test

Brain trainer:

A man presents with a painful deep ulcer on the penis. It is associated with painful inguinal lymphadenopathy. He is sexually active. What investigations is indicated?

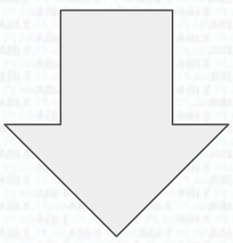
➔ **Swab for haemophilus ducreyi**

Painful Genital Ulcer(s)

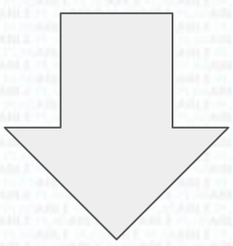
Painful ulcer(s) on Genitalia → Herpes simplex virus or Haemophilus ducreyi?

In terms of investigation, does it matter?

No



Both can be diagnosed if required by a **PCR** swab of the base of the ulcer



If PCR, not present in the options, then choose a **viral culture**.

Type of Test

Brain trainer:

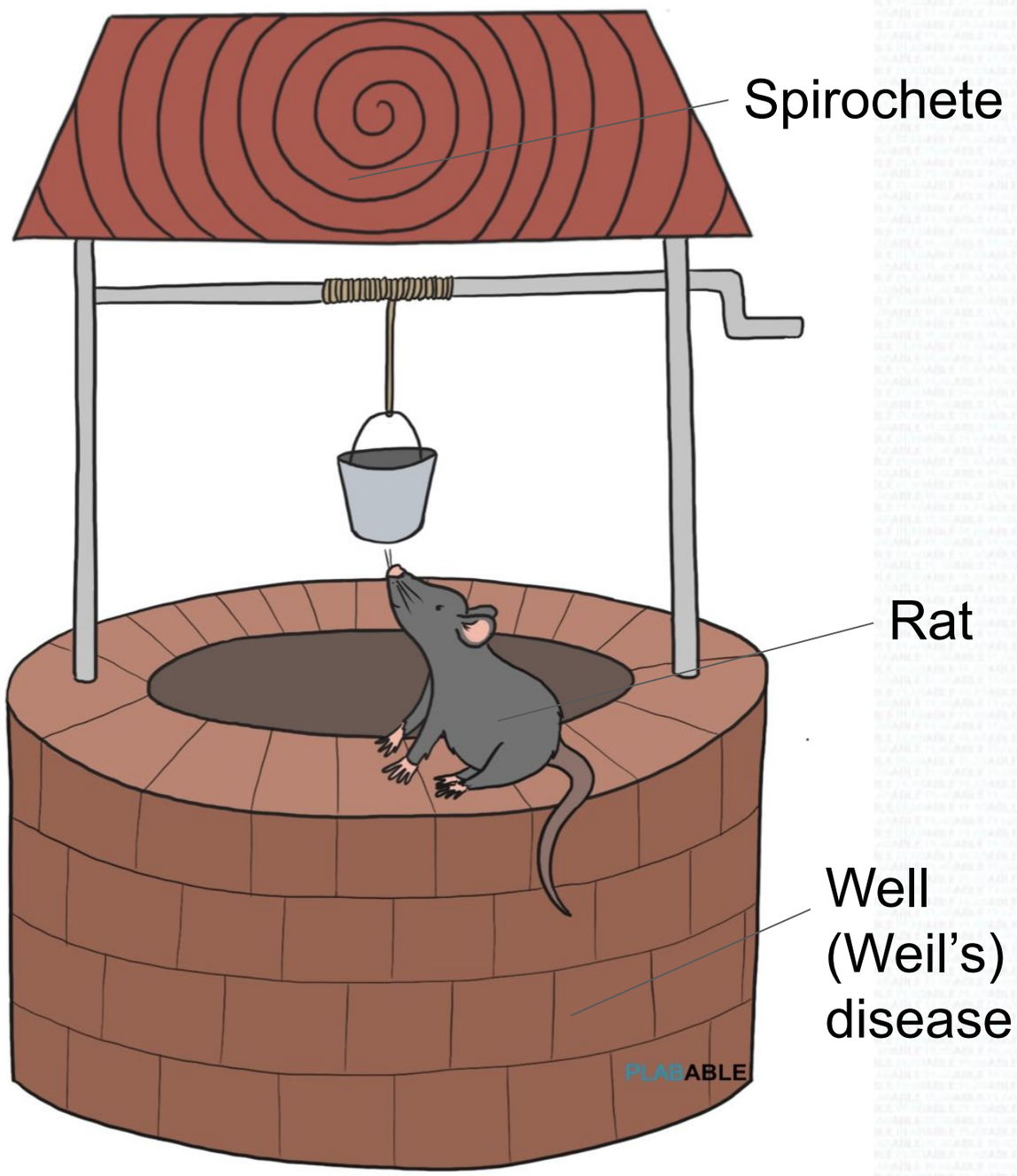
What diagnostic tests are utilised for diagnosing a primary herpes simplex virus infection?

1. **PCR-based method**
2. **Viral culture**

Leptospirosis

Leptospirosis

Ask yourself, what do you see in this picture that reminds you of weil's disease?



Campylobacter Jejuni

Facts:

- It is gram -ve on stool culture and sensitivity
- It is a gram -ve curved bacilli ‘rods’

Features:

- Hx of travel
- Prodrome (initially): **High fever 40℃**
- Watery diarrhoea at start
- Headache
- Myalgia
- **Bloody diarrhoea** after

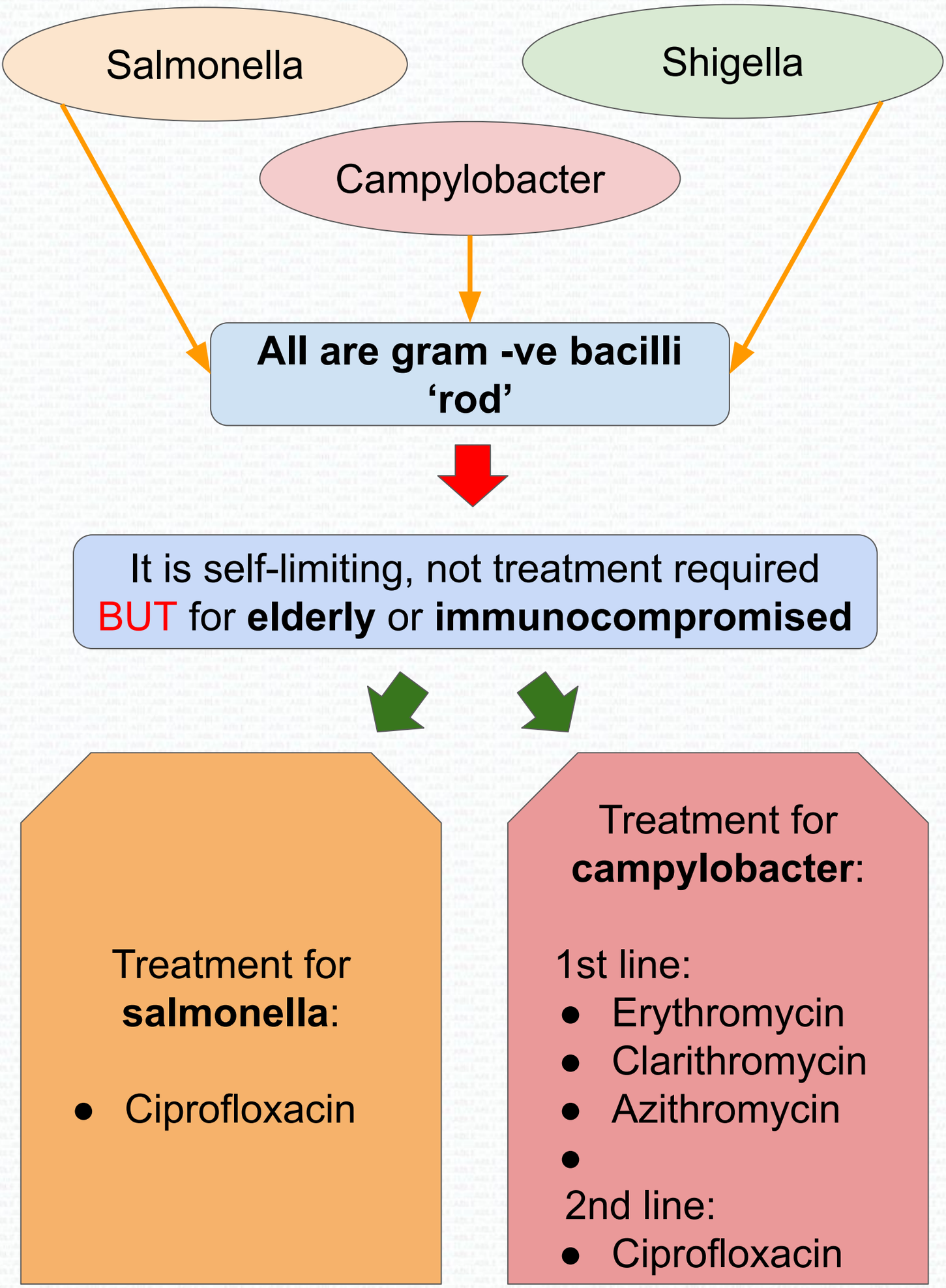
Treatment:

- It is mostly self-limiting with good hydration
- Abx in severe cases:
  - Erythromycin or clarithromycin or azithromycin
  - 2nd line - ciprofloxacin

Notes on other suspected infections:

- Cholera is gram -ve comma-shapes
- *Streptococcus pneumoniae* is gram +ve diplococci
- *Staphylococcus aureus* is gram +ve and coagulase +ve cocci ‘round’

Travellers' Diarrhoea



Leptospirosis

Facts:

- It is spread by contact with urine of infected animals (direct transmission)
- Or water that has been contaminated by urine of infected animals (indirect method)

Features:

- Hx of travel and water exposure
- ± Animal contact
- Presented initially with red eyes (subconjunctival haemorrhage)
- Then yellow eyes (jaundice)
- Fever, rigors, malaise, arthralgia, myalgia

Investigations:

- **Serology (mainstay)**
  - Ab detectable 10d after infection
- PCR allows early detection
- Culture can take months

Treatment:

- Self-limiting
- Oral doxycycline for mild cases
- Ampicillin or benzylpenicillin for severe cases

Brucellosis

Facts:

- It is most commonly spread by inhalation from infected livestock in endemic areas
- Or skin contact by veterinarians or abattoir workers

Features:

- Hx of travel to endemic area (e.g. South America)
- Animal or raw meat contact
- Presents initially with flu-like symptoms
- Lymphadenopathy, splenomegaly, hepatomegaly
- Arthritis

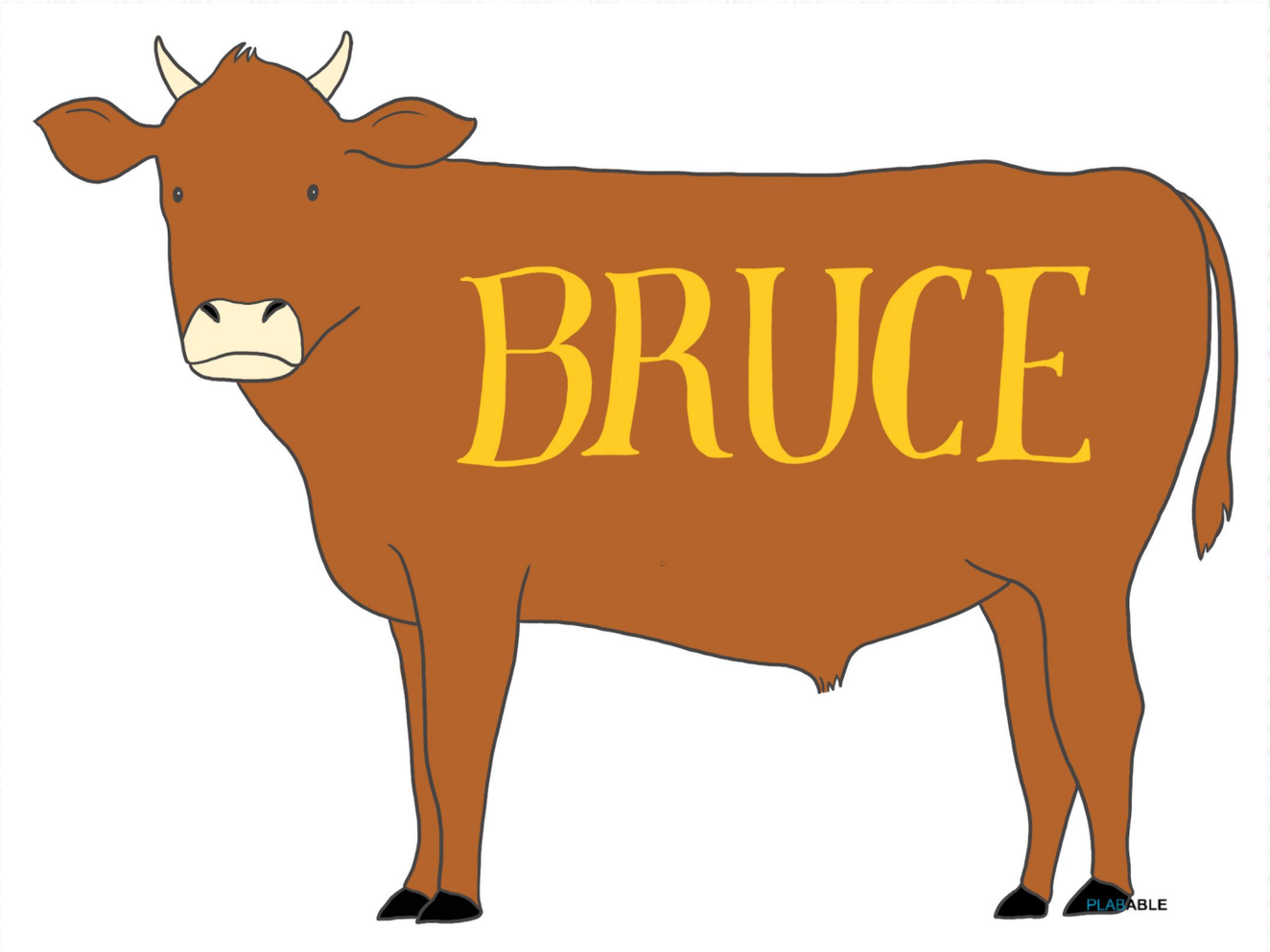
Investigations:

- Presumptive diagnosis by serum agglutination or rose Bengal test
- Direct isolation of Brucella spp (Gold standard)

Treatment:

- Simple infection - doxycycline

Brucellosis



Think South America Farms

Infected animals

Unpasteurized milk

Febrile disease, enlarged spleen, sweating, arthralgia

Remember, if the patient is traveling from Central America, the answer CANNOT be Brucellosis because it is virtually eliminated in developed countries

Cerebral toxoplasmosis

Facts:

- Caused by ***Toxoplasma gondii***
- Lives and reproduces in Cat's guts
- **Reactivated** in patients with **HIV infection when CD4 is low (<100)**

Features:

- **Increased intracranial pressure**
- Headache
- Eye pain
- Seizures
- Focal neurologic deficits
- Confusion
- Visual disturbances
- Facial Weakness

Investigations:

- Brain MRI
- → Shows ring enhancing lesion(s)

Treatment:

- Pyrimethamine
- Sulfadiazine

Infectious Mononucleosis (Glandular fever)

Facts:

- Caused by **Epstein-Barr Virus**

Features:

- Sore throat
- Fever
- Malaise
- Cervical lymphadenopathy
- Exudates of tonsils

Investigations:

- Heterophile antibodies:
  - Paul Bunnell
  - Monospot
- EBV specific antibodies

Treatment:

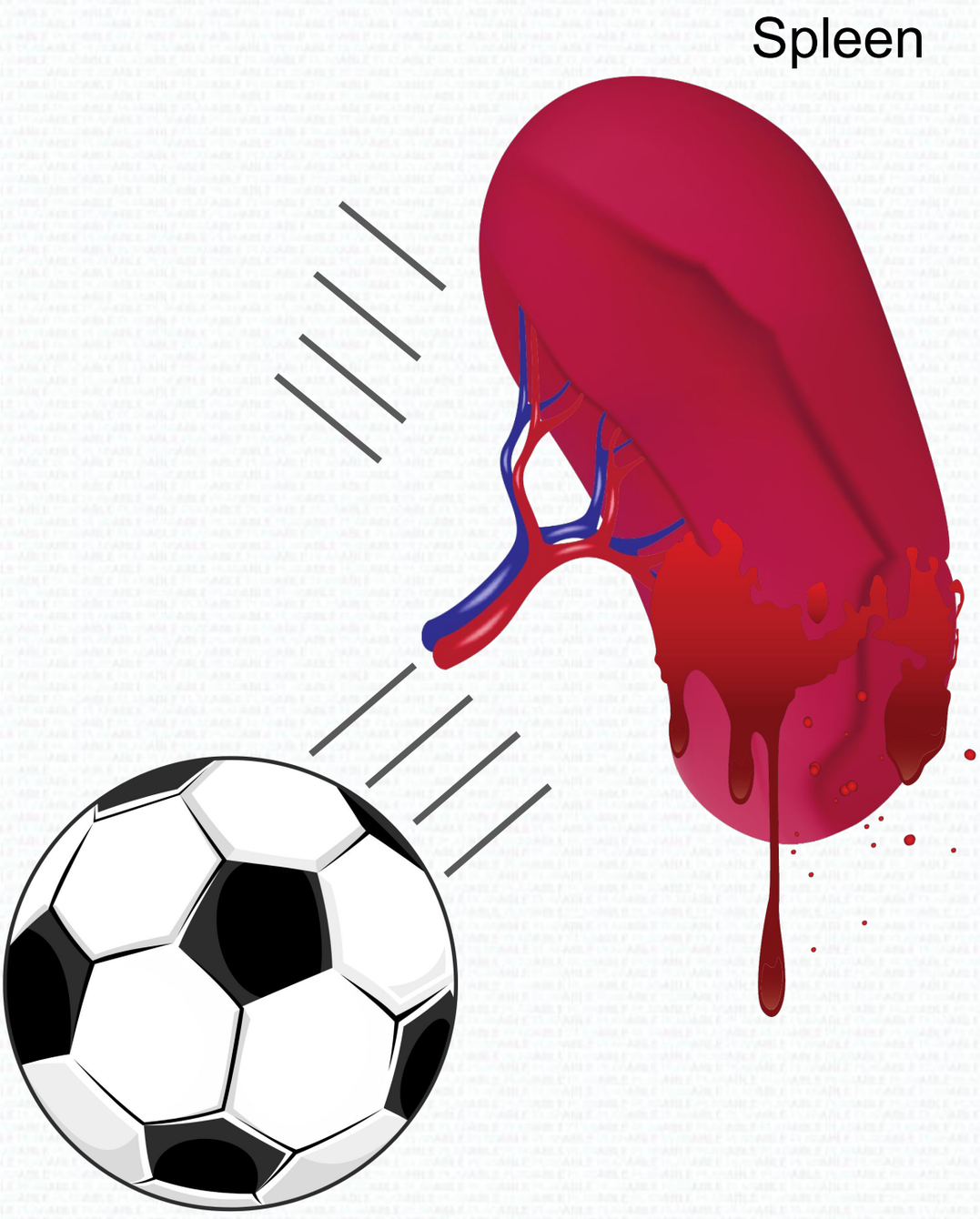
- Supportive measures e.g. paracetamol and ibuprofen for pain / fever

Important notes:

- Ampicillin / amoxicillin can lead to development of pruritic maculopapular rash

Infectious Mononucleosis (Glandular fever)

Be careful not to play contact sports with EBV infection due to the risk of **splenic rupture**



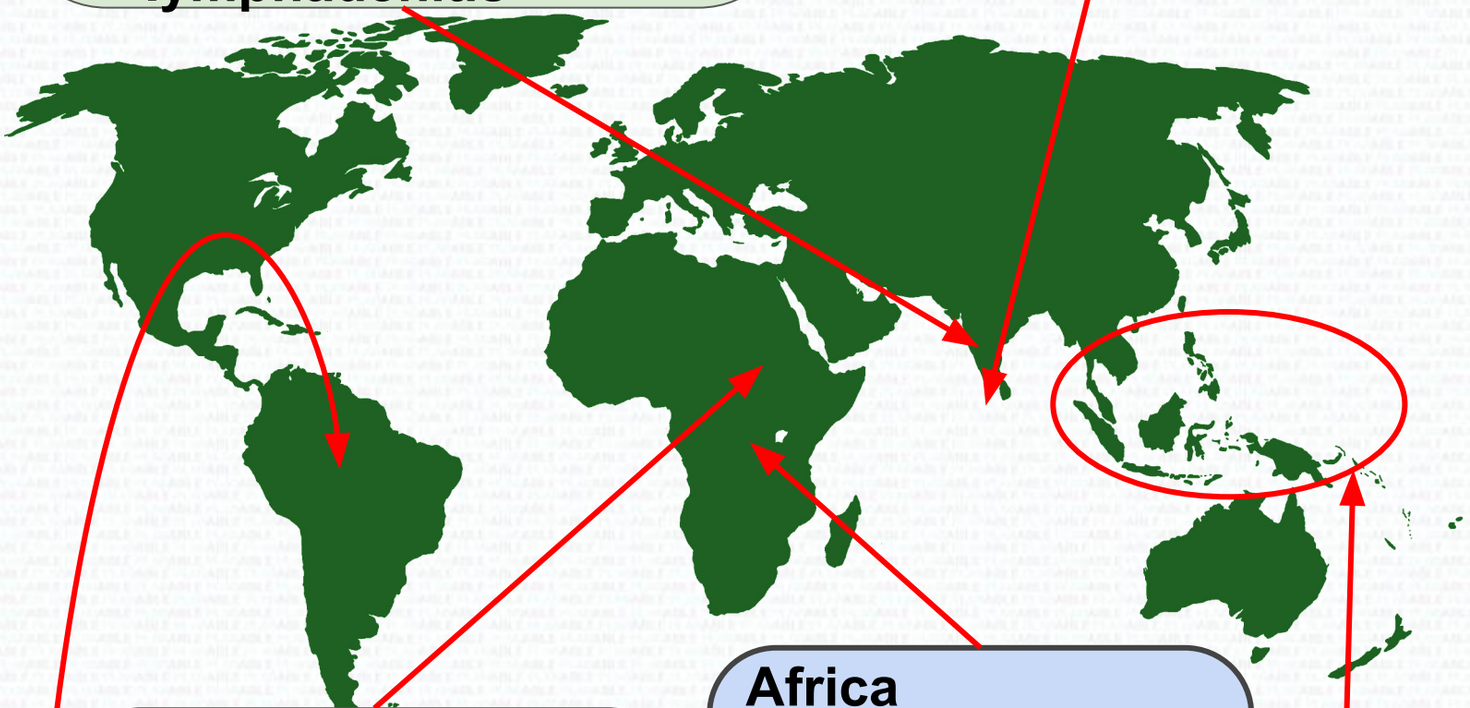
Summary Of Common Infections Related To Travel

India

- Fever
- Cough
- Cervical lymphadenopathy
- Caseating granuloma in LN
- **Tuberculous lymphadenitis**

India

- Flu like symptoms
- Enlarged anterior cervical LNs
- **Diphtheria**



Africa

- Meningitis-like symptoms
- Anaemia
- **Cerebral malaria**

Africa e.g. Sudan

- Intermittent fevers
- Rigors
- Malaise
- Headache
- **Malaria**

South America

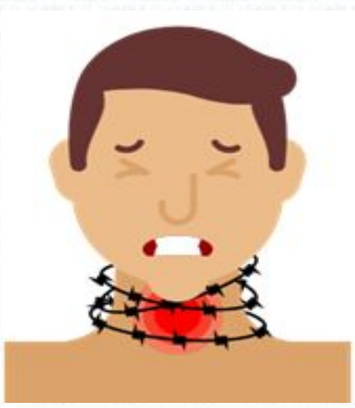
- Severe headache
- Adopts a crouching position
- **Typhoid**

Far East Asia e.g. Indonesia, Thailand

- Fever
- Headache
- Retro-orbital pain
- General rash
- **Dengue fever**

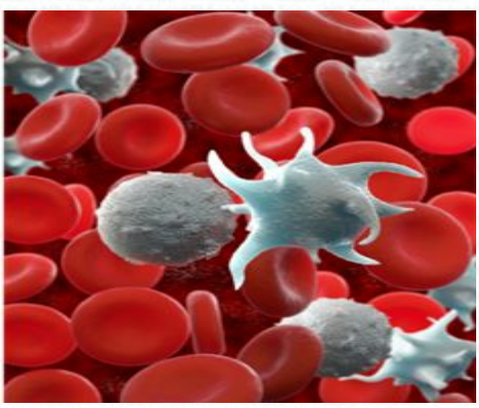
Dengue Fever

Fever + myalgia + arthralgia + stayed in Bangkok for 3 days + returned to the UK 1 week back



Pharyngeal erythema

Maculopapular rash



Thrombocytopenia

Dengue fever

HIV seroconversion illness may have a similar presentation but, **it occurs weeks after exposure**

Febrile Neutropenia (Neutropenic sepsis)

Facts:

- Mainly after initiation of chemotherapy
- This is due to bone marrow suppression which led to ↓ blood cells production
- Can also caused within 1 year of bone marrow transplantation

Features:

- Fever - $\geq$ 38.5℃ or 2 consecutive temperature $\geq$ 38℃
- Neutrophil count $\leq$ 0.5 x 10^9/L

Treatment:

- Start empirical antibiotic **IMMEDIATELY**
- IV tazocin (tazobactam + piperacillin)
- If patient still present with feature(s) above after **48 hours**:
  → Meropenem ± vancomycin
- If patient remain unwell after **4-6 days**:
  → Investigate for fungal infection
  → Continue antibiotics
  → Add IV antifungal

Start IV Abx in all patients who are unwell with fever and have recent chemotherapy, regardless of neutrophil count

Necrotising Fasciitis

Facts:

- Mainly caused by **group A beta-hemolytic streptococci**
- An infection spread deep and involves deep layers (dermis, subcutaneous tissues, fascia and muscles)
- Life threatening and rapidly spread into deep layers
- IM and SC injections, immunosuppression and diabetic are risk factors

Features:

- Presented as cellulitis initially (first 1-2 days)
  - Erythema
  - Swelling
  - Pain over the affected area(s)
- Then it will be presented as bullae
  - Grey/black skin (necrosis)
  - Hard subcutaneous tissue
- Eventually septic shock
- Severe Pain

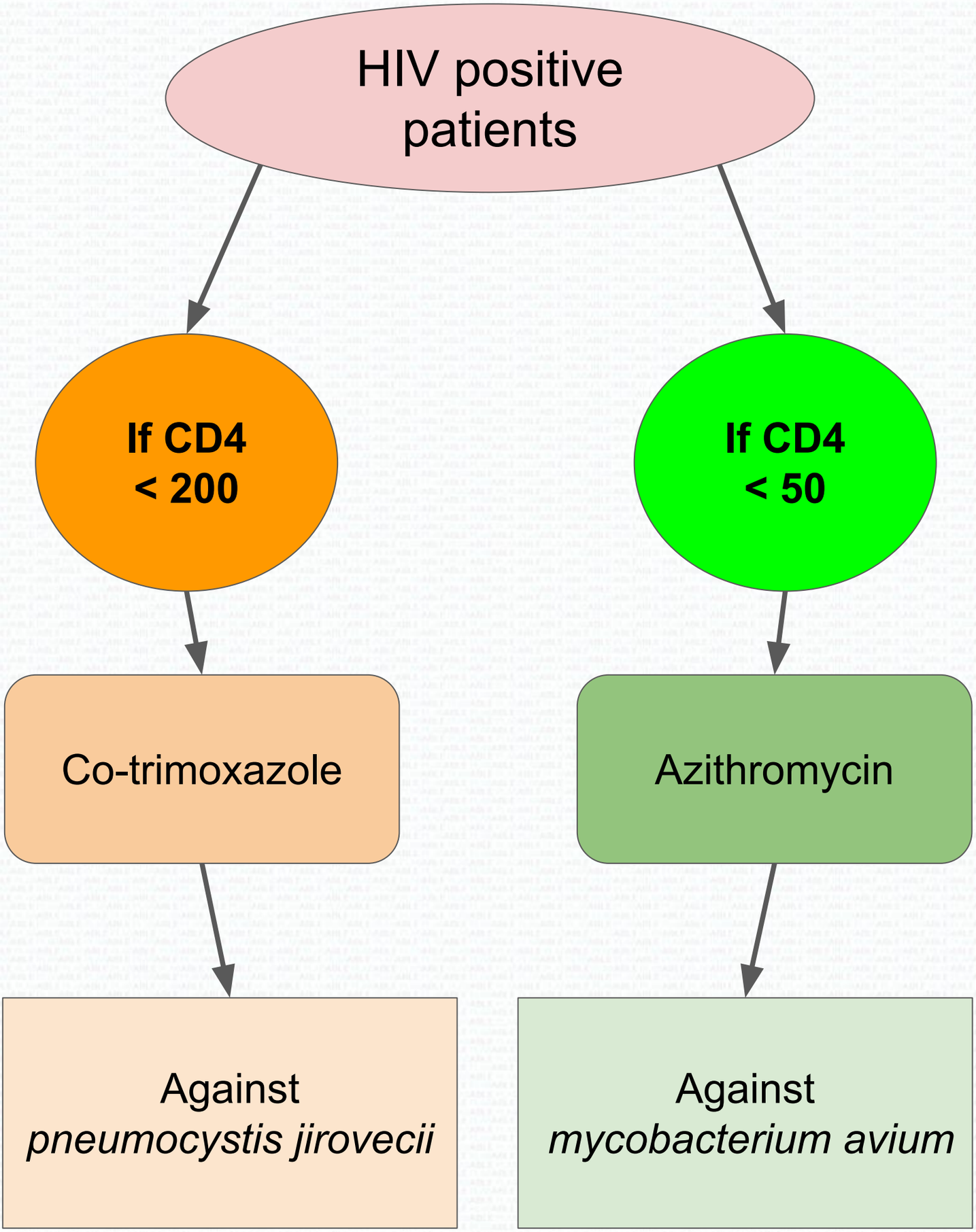
Treatment:

- Urgent surgical debridement
- IV antibiotics - clindamycin or benzylpenicillin

*This condition **DOES NOT** respond to flucloxacillin*

Differ from erysipelas as necrotising fasciitis **is diffuse and deep.**
Erysipelas is **well demarcated** infection

Prophylaxis Antibiotics For HIV Positive Patients



Abscess

Features:

- High fever
- Erythematous skin swelling
- Neck abscess if large enough can cause dysphagia

Treatment:

- IV antibiotics
- Incision
- Drainage

Key point to **THINK SEPSIS**

- Unresponsive or response to only voice/pain
- Acute confusion state
- **Systolic blood pressure ≤ 90 mmHg**
- **Heart rate ≥ 130/min**
- **Respiratory rate ≥ 25/min**
- Require oxygen support to keep SaO2 ≥ 92%
- Non-blanching rash
- Mottled, ashen, cyanotic
- Not passed urine over last 18 hrs or **urinary output < 0.5 mL/kg/hr**
- **Lactate ≥ 2 mmol/L**

IV antibiotic ASAP if sepsis, **NOT oral**

Whipple's Disease

Facts:

- It is a rare **multisystem disorder**
- Caused by **tropheryma whippelii infection**

Features:

- **Malabsorption** - weight loss and diarrhoea
- Large joint arthralgia
- Lymphadenopathy
- Skin hyperpigmentation and photosensitivity
- Pleurisy
- Pericarditis
- Neurological symptoms (rare):
  - Ophthalmoplegia
  - Dementia
  - Seizure
  - Ataxia
  - Myoclonus

Investigations:

- Jejunal biopsy shows:
  - Stunted Villi
  - Deposition of **macrophages containing Periodic acid-Schiff (PAS) granules**

Treatment:

- Co-trimoxazole for a year
- ± preceded by course of IV penicillin

Important Investigation Result For Diagnosis

Whipple's Disease:

- Jejunal biopsy shows:
  - Deposition of macrophages containing periodic acid-Schiff (PAS) granules

Celiac Disease:

- Jejunal/duodenal biopsy shows:
  - Villous atrophy 'shortening'
  - Crypt hyperplasia
  - Lymphocytosis

Lymphoma:

- Patient with **known celiac disease**
- Duodenal biopsy shows:
  - Lymphomatous infiltrates

T-cell lymphoma is a rare complication of celiac disease

Mastitis / Breast Abscess

- Commonly caused by Staph. Aureus
- Via breast feeding

Notes on breastfeeding

If mother has:

HIV	**AVOID** breastfeeding
Breast abscess	**Continue** breastfeeding
Nipple Candidiasis	**Continue** breastfeeding
Hepatitis B	**Continue** breastfeeding (if baby has received Hep B vaccine)
Hepatitis C	**Continue** breastfeeding (unless nipples is cracked or bleeding)
Tuberculosis	**Continue** breastfeeding (Baby needs BCG vaccinated ASAP)
Depression	**Continue** breastfeeding (if mother is on Sertraline)

Rabies

Brain trainer:

What is the only circumstance in which rabies vaccination is indicated in the United Kingdom?

➔ **Bat bite**

Neither domestic nor wild animals (aside from bats) are carriers of the rabies virus in the UK

Staphylococcus Aureus

Staphylococcus aureus is a Gram-positive, round-shaped bacterium

Which conditions do you pick it as the most likely aetiology?

- Breast abscess
- Osteomyelitis
- Elderly patient with bilateral cavitation with a recent history of influenza

Cellulitis Treatment

First line (uncomplicated)	→	Flucloxacillin
Penicillin allergy	→	Doxycycline Erythromycin Clarithromycin
Other options	→	Clindamycin can be used as an alternative to fluclox (usually in severe infections)

Ways to remember

This depends on how much brain space you have

<u>Small brain space (Basic level)</u>

Just remember:

- *F*lucloxacillin → *F*irst line
- Clarithromycin → Penicillin allergy

<u>More brain space (Advance level)</u>

Use mnemonic DECC

- *F*luclox *F*irst
- *DEC* → Doxy, erythro, clarithro for penicillin allergy
- *C*lindamycin → Alternative for severe infections

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