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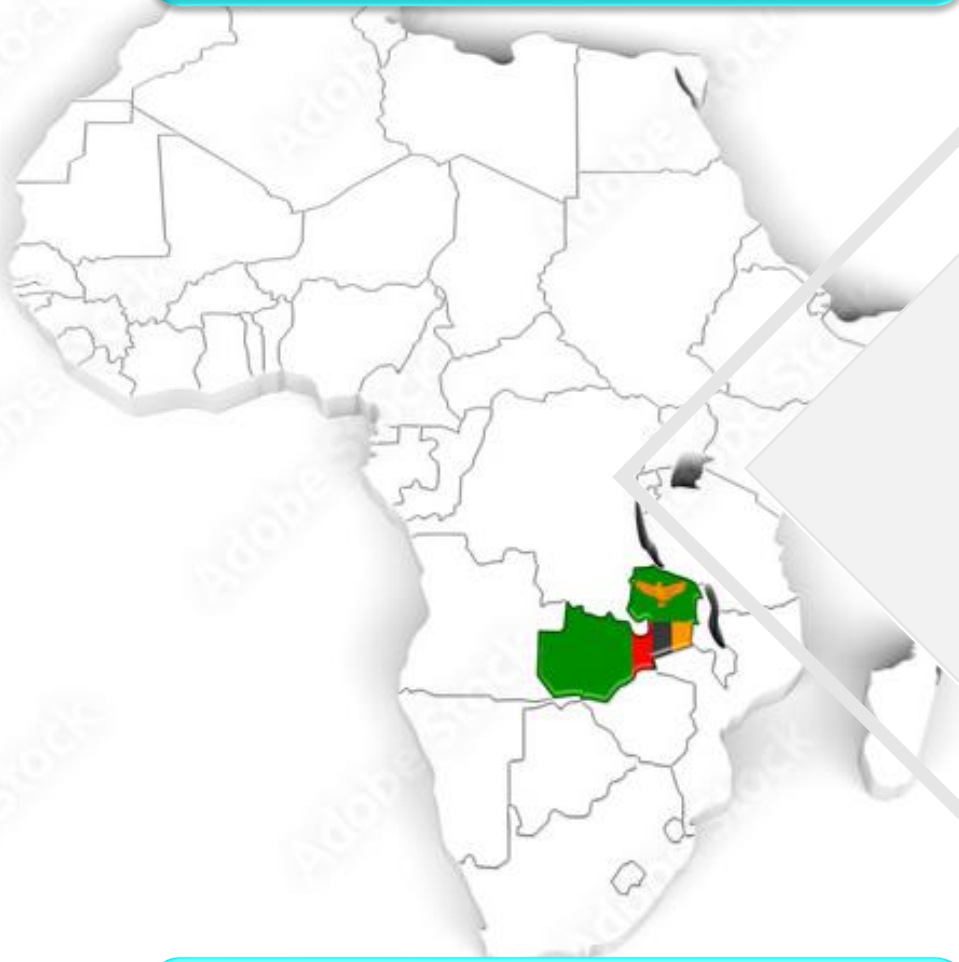
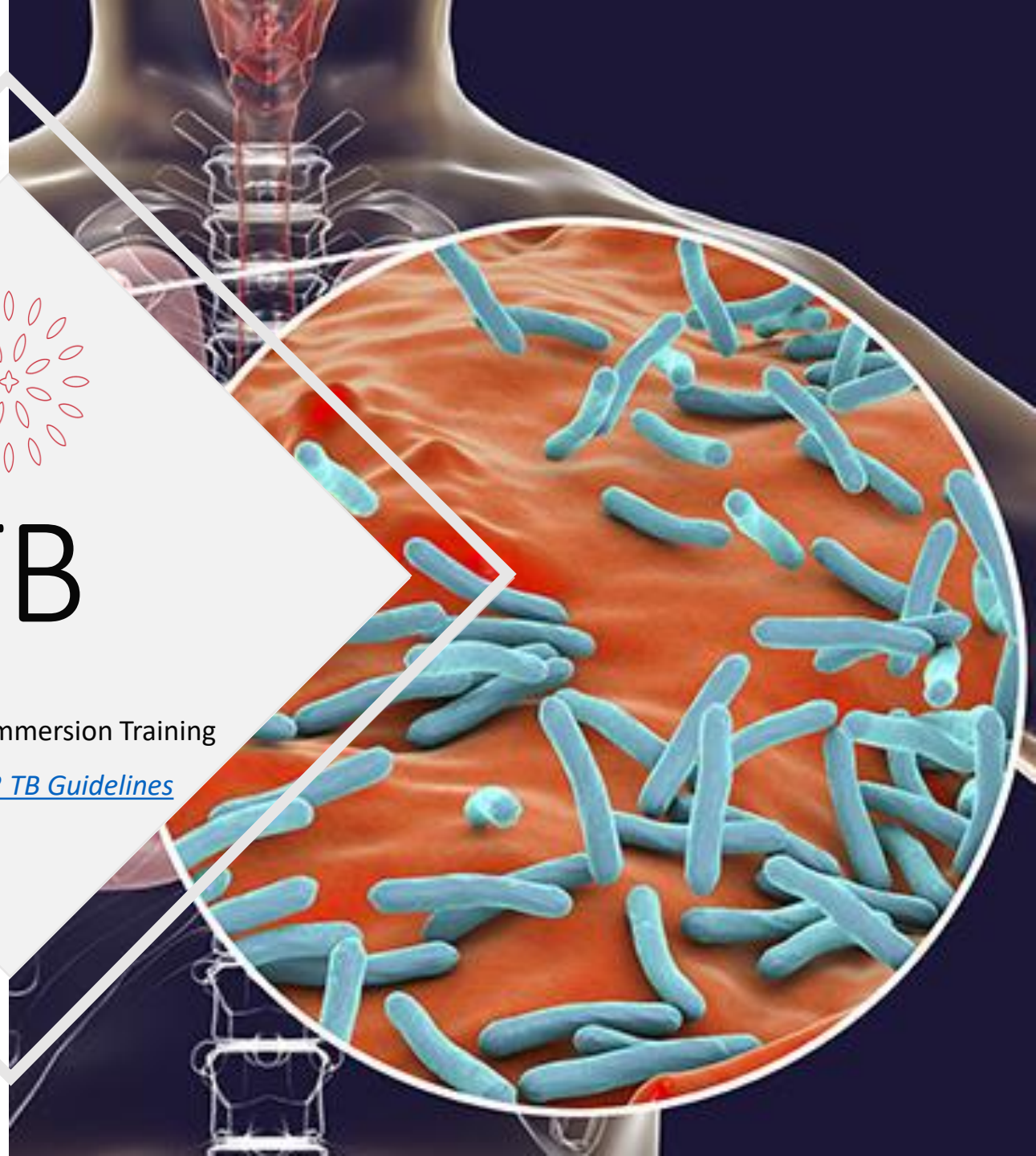


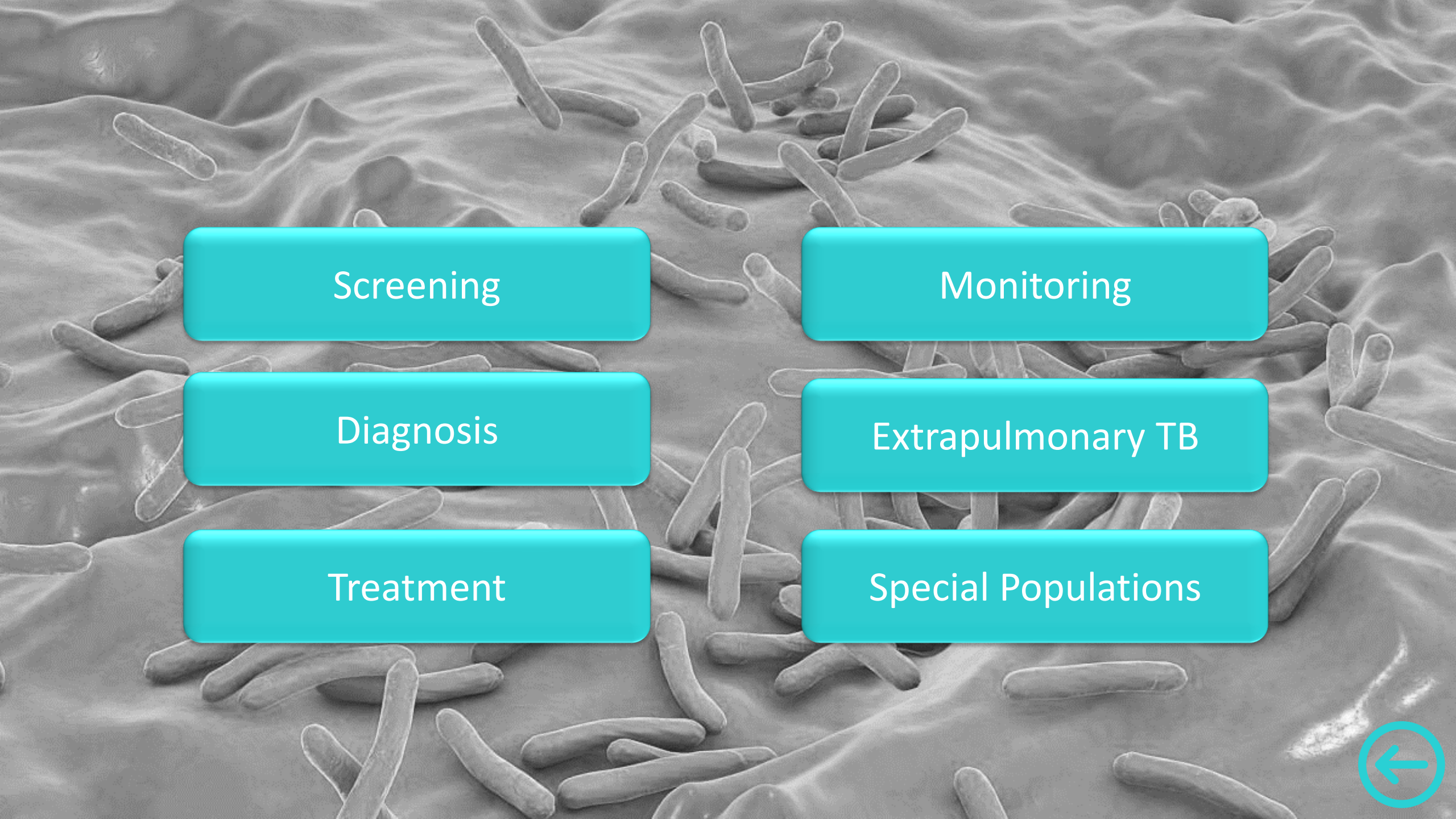
Quick reference

TB

Seed Educator Immersion Training

Zambia 2022 TB Guidelines

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Quick reference

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- Ocular TB
- Pregnancy/Breastfeeding
- Kidney Disease
- Liver Disease
- HIV co-infection

Screening

- What are predisposing factors for TB?
- What are screening methods for TB?

Diagnosis

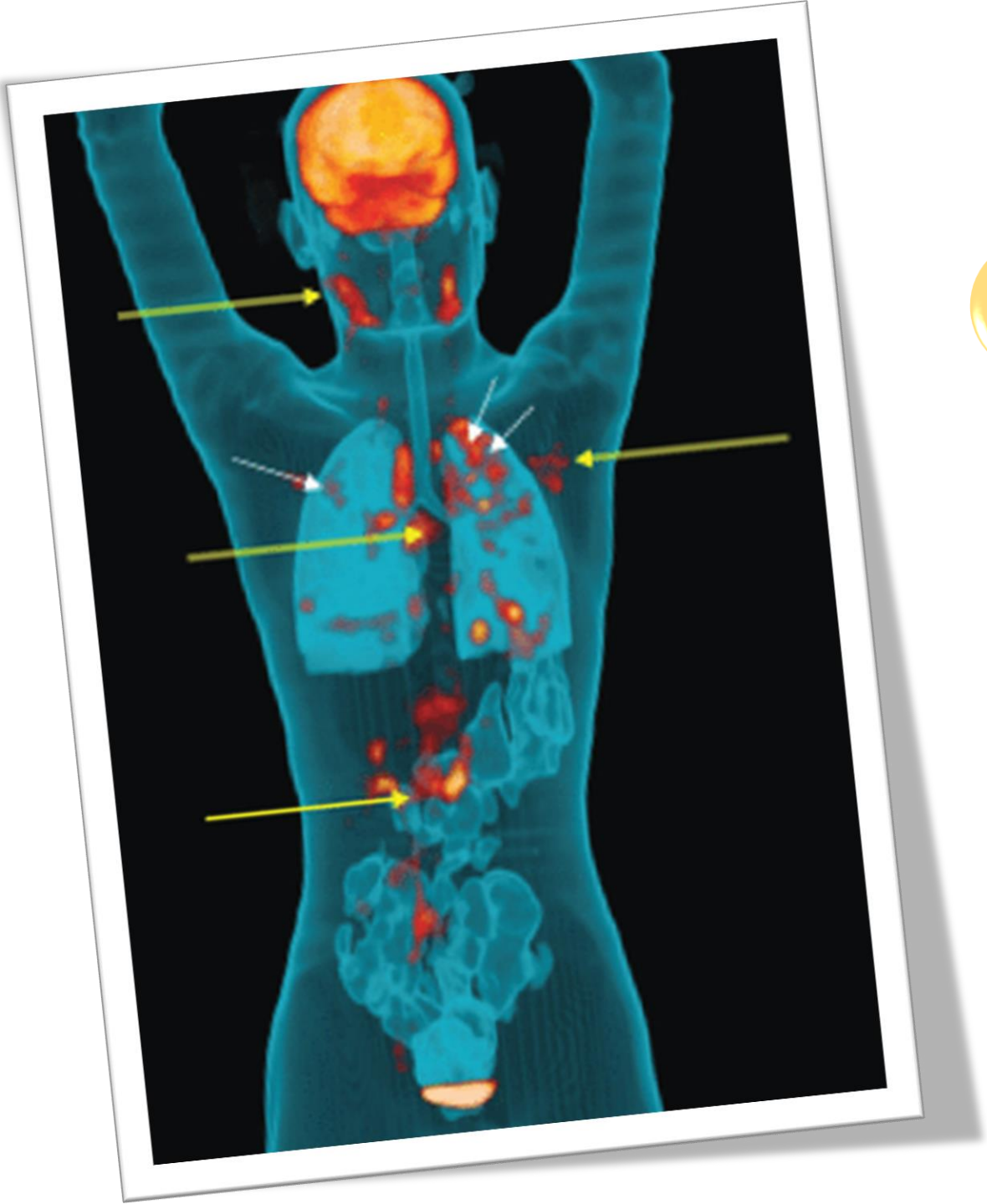
- How is the diagnosis of TB made?
- What are the first line diagnostic tests used in Zambia?

Treatment

- What investigations should be done prior to starting medications?
- What are the four main medications used to treat tuberculosis?
- What medications are used in the intensive phase?
- What medications are used in the continuation phase?
- How long is each phase?
- When is TB treatment extended for a longer period?
- When are steroids indicated as adjunctive treatment?

Monitoring

- How often should a patient be seen for follow-up during treatment and why?
- When during treatment are sputum samples collected?



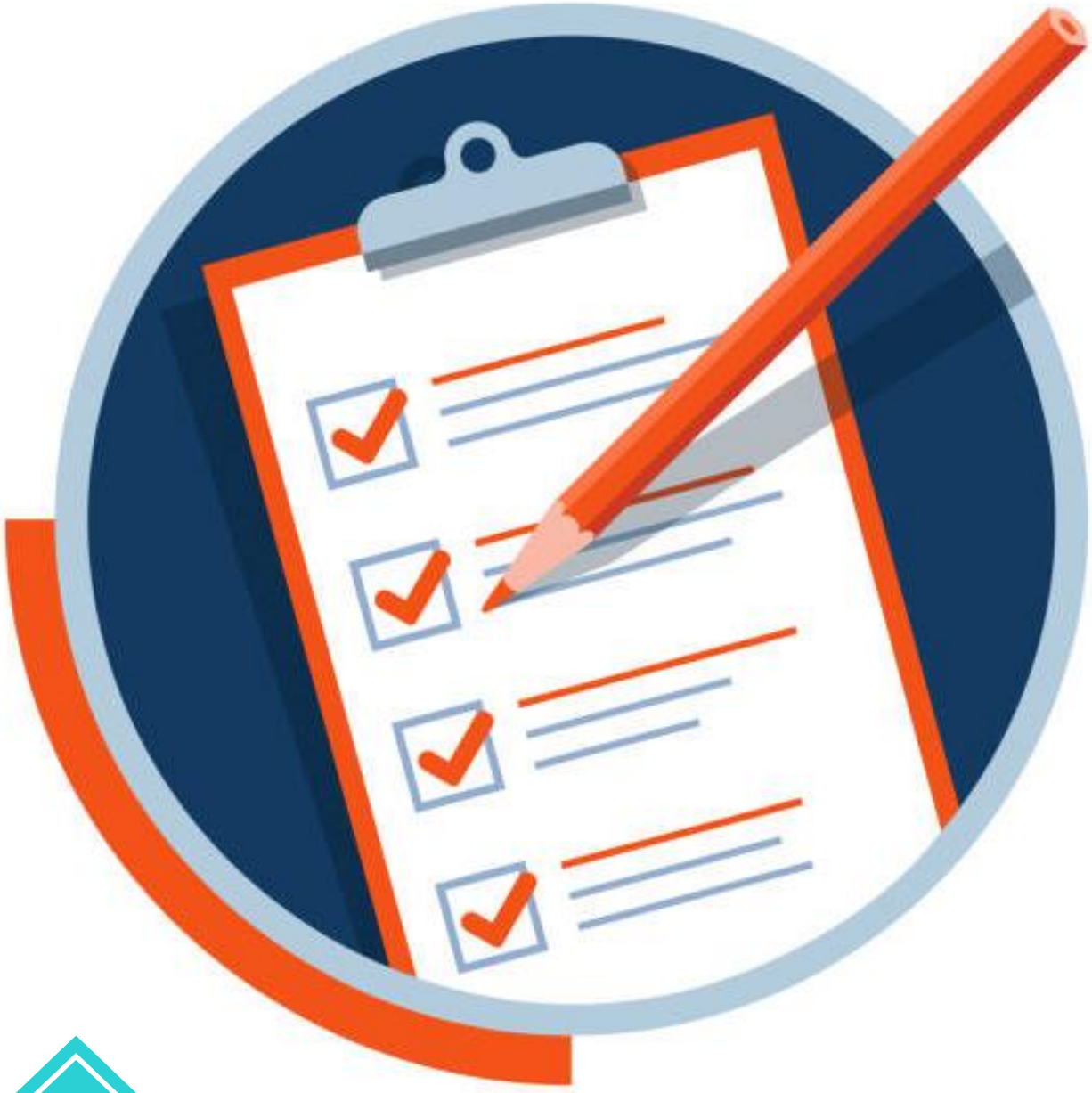
Extrapulmonary TB

What is the typical presentation, work up and treatment of site specific extrapulmonary TB?

- Lymph Nodes
- Pleura
- Pericardial
- Spine
- Joint
- Abdomen
- Meninges
- GU
- Skin
- Eyes

Special populations

- Pregnancy/breast feeding
- Kidney disease
- Liver disease
- HIV co-infection



Screening

Predisposition for those with: HIV, smoking, alcohol, substance abuse, diabetes, undernutrition, history of contact with a person with confirmed TB

SYMPTOM SCREENING

- Do you have a cough?
  - HIV negative: cough of ≥ 2 years
  - HIV positive: cough of any duration
  - Is it productive?
  - If productive, are there streaks of blood?
- Do you have a fever?
- Have you lost weight?
- Do you have night sweats?
- Do you have chest pains?

CXR: scored as normal, any abnormality or abnormality suggestive of TB

- Findings suggestive of TB: cavitation, consolidations in the upper zones, pleural and pericardial effusions, pleural reaction, pneumothorax, hilar lymphadenopathy, miliary infiltrates, nodules and fibrotic changes, lower zone infiltrates in people living with HIV

Diagnosis

Diagnosis is made by bacterial confirmation or clinical presentation

- Clinical findings and CXR suggestive of TB with negative bacteriologic tests
- Ultrasound for extrapulmonary TB and TB in HIV (FASH)
- MRI: TB of spine and brain

First line molecular rapid diagnostic tests are:

- GeneXpert MTB/RIF or Ultra, Truenat, TB loop-mediated isothermal amplification (LAMP)
- Use sputum, stool, gastric lavage, nasopharyngeal
  - Gastric lavage is useful in children who cannot produce sputum. Performed first thing in the morning to collect swallowed respiratory secrections from the stomach
  - Extrapulmonary TB: sputum, CSF, lymph node asp/bx, pleural fluid, pericardial fluid, synovial fluid, urine, pus
  - Disseminated TB: above plus blood

Urine LAM: detection of mycobacterial LAM antigen

- Always follow a positive LAM with sputum, stool or gastric lavage Xpert
- HIV: CD4<100 outpatient, CD4<200 inpatient, advanced HIV, severely ill
- Non-HIV: malnourished children under 5yo, CKD 4-5

Treatment

Investigations: FBC, renal and liver functions tests, HepB/C, HIV, uric acid

If drug resistance is suspected or rapid molecular testing detects rifampicin-resistant TB send for full drug resistance investigation

Steroids may be indicated for:

- TB meningitis, TB pericarditis, TB Immune Reconstitution Inflammatory Syndrome, Massive pleural effusion, Massive lymphadenopathy with pressure effects, Severe hypersensitivity reactions to anti-TB drugs.
- More rarely: Hypoadrenalism, Renal tract TB (to prevent ureteric scarring), TB laryngitis with life-threatening airway obstruction

- R — Rifampin 150
- H — Isoniazid 75
- Z — Pyrazinamide 400
- E — Ethambutol 275

Type	Intensive Phase	Continuation Phase
All forms of non-severe TB	2RHZE	4RH
Meningitis, tuberculoma, osteoarticular, ocular, spinal	2RHZE	10RH
BODY WEIGHT (Kg) for dosing		
25 - 37	2	
38 - 54	3	
55 - 70	4	
≥ 71	5	

Monitoring/Follow up

Monthly visit

- To monitor: adherence and side effects
- Make dose adjustments as needed for weight change

Sputum sample after 2 months, 5 months and 6 months of treatment

Lymph Nodes - TB Adenitis

Presentation: Painless swelling in neck – can affect axilla and inguinal

Physical: asymmetrical enlarged lymph nodes, cold abscess

Investigation: Needle aspiration or biopsy for Xpert and culture

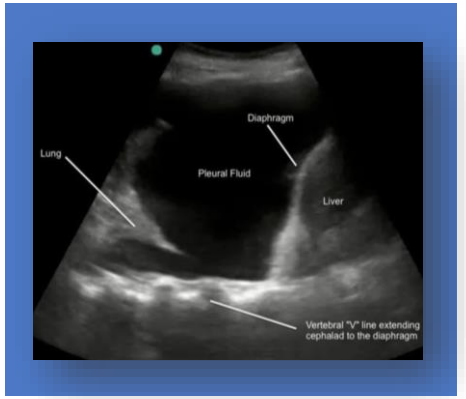
- CXR, Abdominal U/S, CT

Start TB treatment 2RHZE followed by 4RH

Consider adjunct steroids for massive lymphadenopathy with pressure effects

Revisit differential if poor clinical response and no bacteriologic diagnosis

Pleural TB



Presentation: Initially asymptomatic then unilateral chest pain and shortness of breath

Physical: reduced breath sounds and dullness on percussion

Investigations:

- Pleural tap for GeneXpert, smear and culture although there is a low positivity rate: AFB<5%, Culture<15%
- CXR: obliteration of costo-phrenic angle if massive homogenous opacity with fluid level

Start TB treatment 2RHZE followed by 4RH

Drain pleural effusion if massive, if pus or blood refer to higher care

Consider adjunct steroids for massive pleural effusion

- Prednisolone 0.5 – 1.0mg/kg (max 30mg) for one week followed by long taper

Pericardial TB

Presentation: chest pain, shortness of breath, CCF presentation

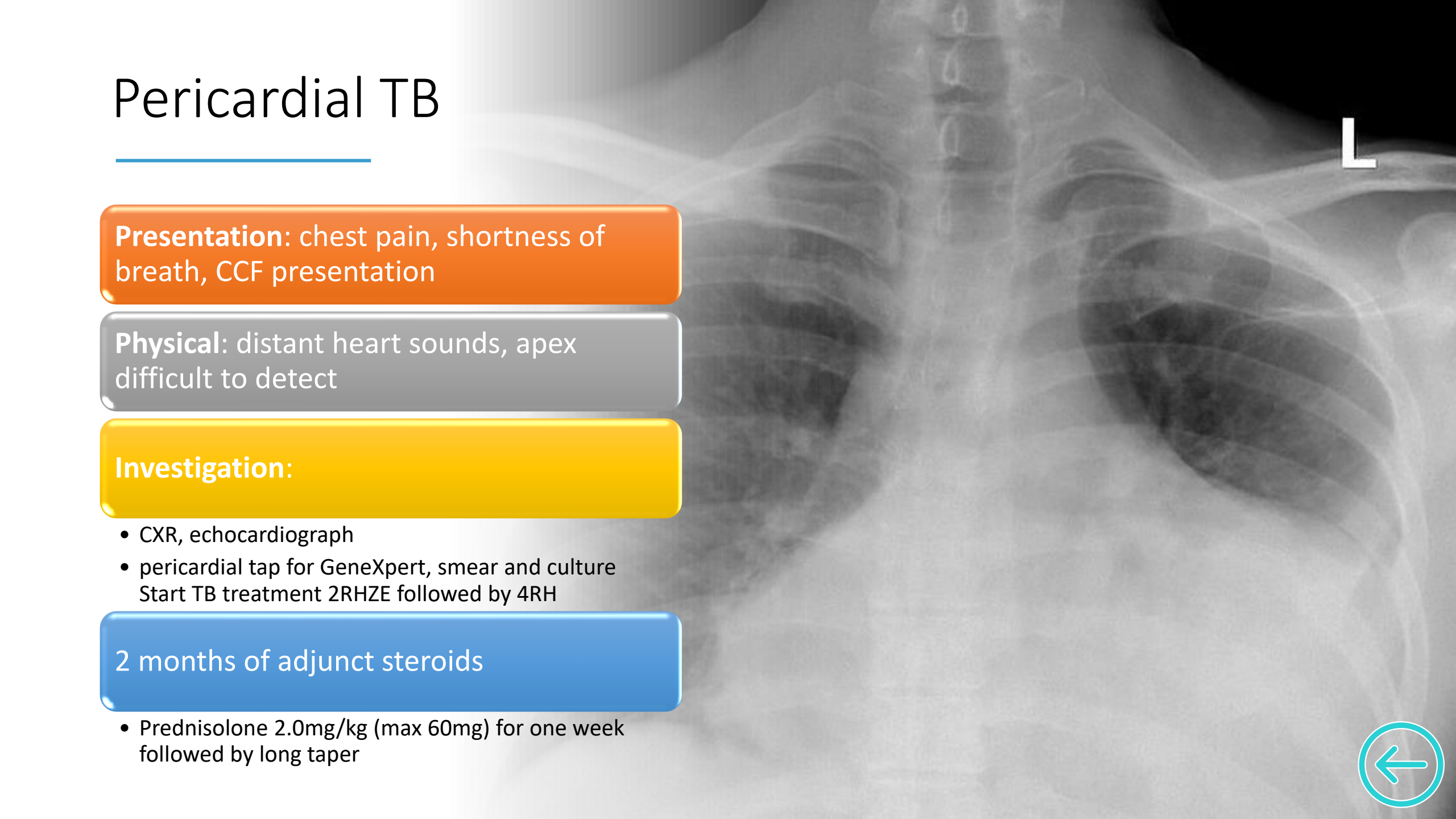
Physical: distant heart sounds, apex difficult to detect

Investigation:

- CXR, echocardiograph
- pericardial tap for GeneXpert, smear and culture
  Start TB treatment 2RHZE followed by 4RH

2 months of adjunct steroids

- Prednisolone 2.0mg/kg (max 60mg) for one week followed by long taper



Spine TB – Pott's disease

Presentation: Localized spinal pain with possible numbness, tingling, and weakness in the lower limbs

Physical: pain, deformation, sensory loss, incontinence, paralysis

Investigations:

- X-ray of spine: wedge shaped collapse of the vertebra
- CT scan/MRI

Start TB treatment 2RHZE followed by 10RH

Refer to physiotherapy and orthopedic surgery

Joint

TB arthritis

Presentation: chronic swelling usually in a hip, knee or elbow

Physical: monoarthritic limitation of movement, unilateral joint effusion

Investigations:

- X-ray of joint: destruction
- CT scan/MRI
- Synovial fluid aspiration, synovial biopsy sent for Xpert although low positivity rate

Start TB treatment 2RHZE followed by 10RH

Refer to physiotherapy and orthopedic surgery

Abdominal TB

Presentation: Nonspecific abdominal pain, distention, chronic diarrhea, bloody stool, abdominal mass

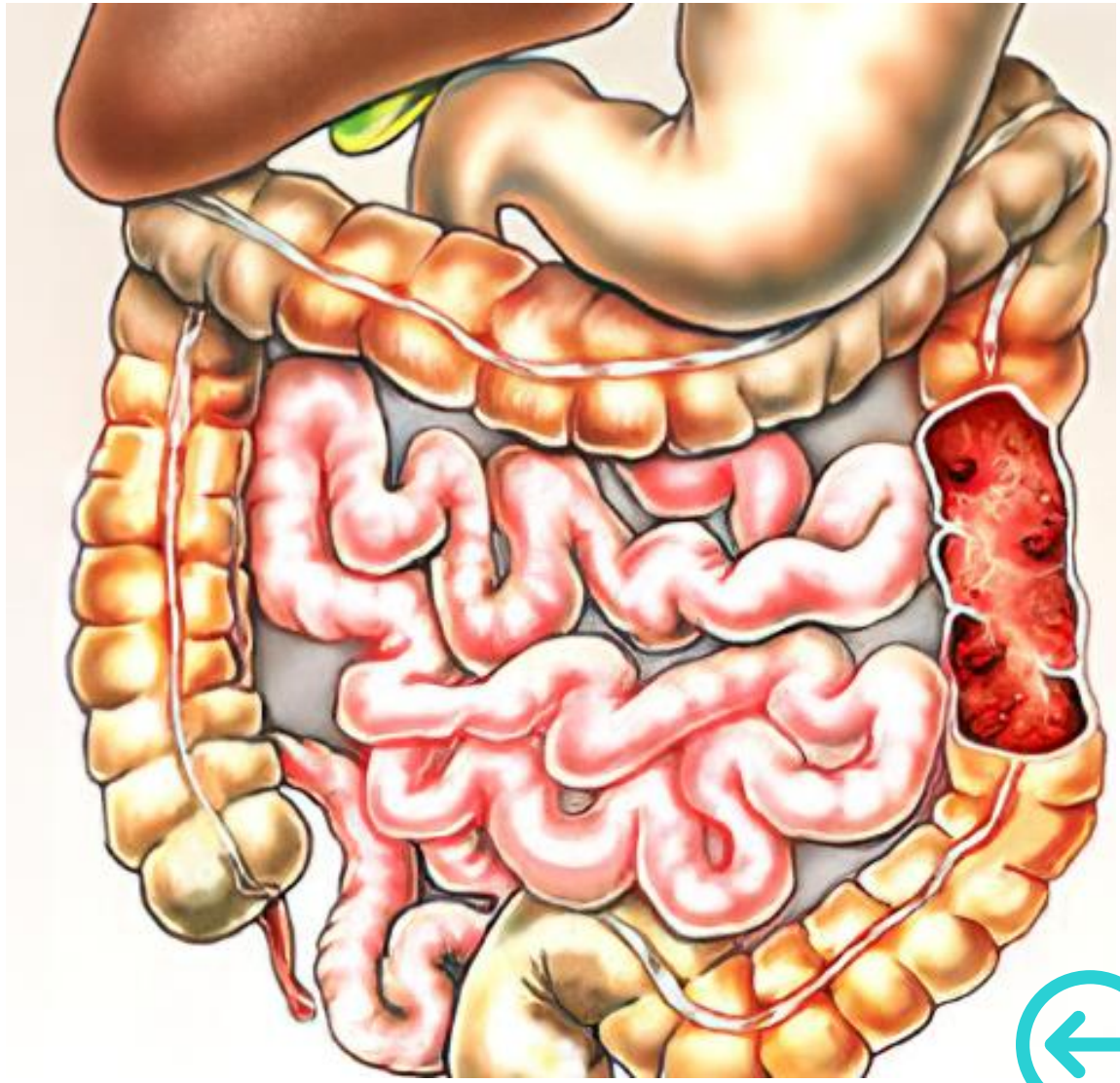
Physical: ascites or mass

Investigations:

- Abdominal U/S
- Ascitic tap
  - Xpert/culture have low positivity, SAAG ratio <1.1 g/dL
- Elevated adenine deaminase
- EGD

Start TB treatment 2RHZE followed by 4RH

Ascitic drainage if needed



TB Meningitis

Presentation: Headache, fever, confusion, vomiting, stiff neck, lethargy, photophobia

Physical: fever, nuchal rigidity, altered mental state, cranial nerve palsies

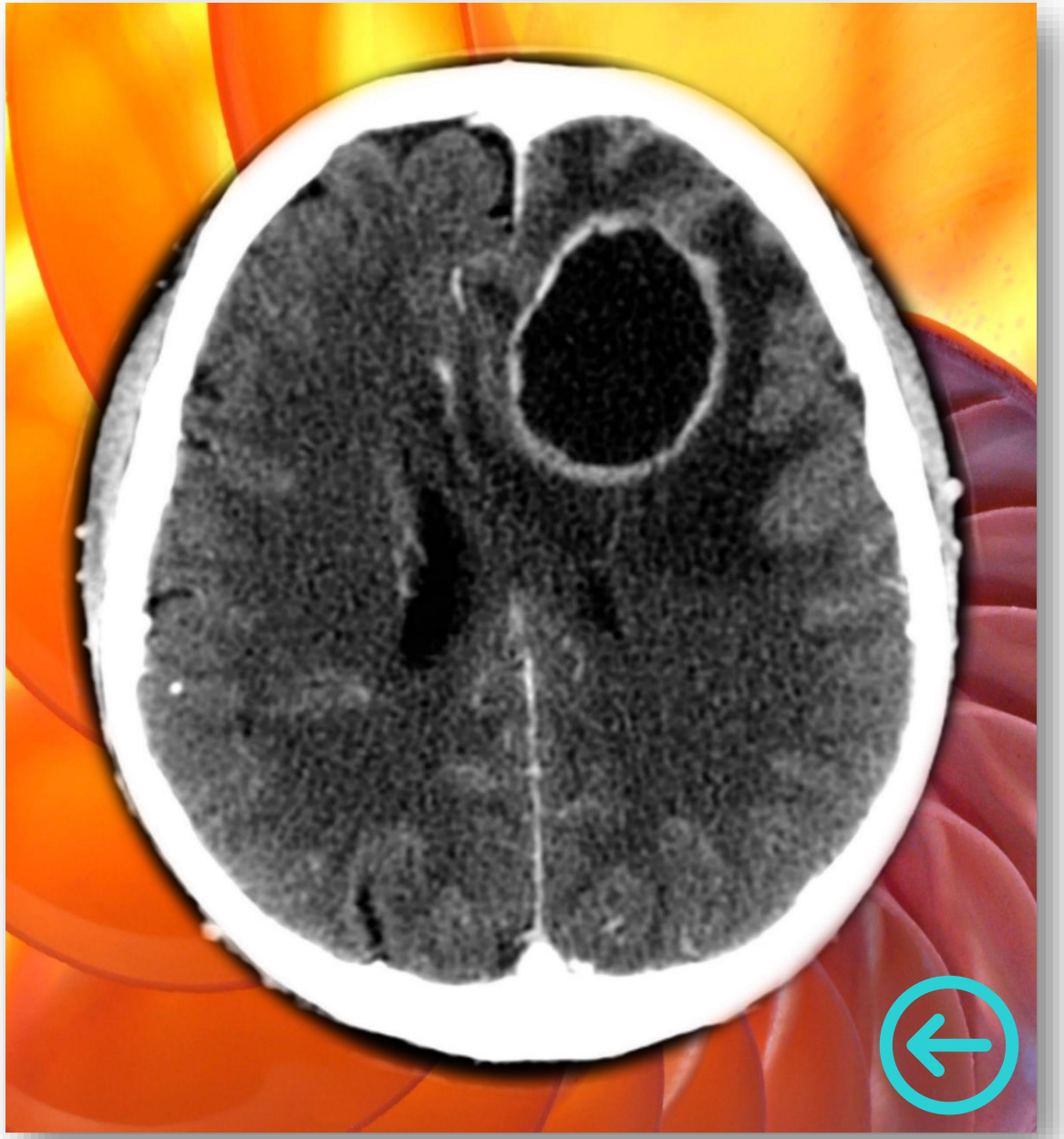
Investigations:

- LP with CSF sent for Xpert and culture
  - CSF: Increased protein and lymphocytes, decreased glucose
- CT or MRI

Start TB treatment 2RHZE followed by 10RH

Adjunct steroids

- Prednisolone 1.0 – 2.0mg/kg (max 60mg) for four weeks followed by long taper



Genitourinary TB

Presentation: Asymptomatic followed by insidious dysuria, back/flank pain, hematuria, swelling and pain in testes, infertility in women and nonspecific abdominal pain

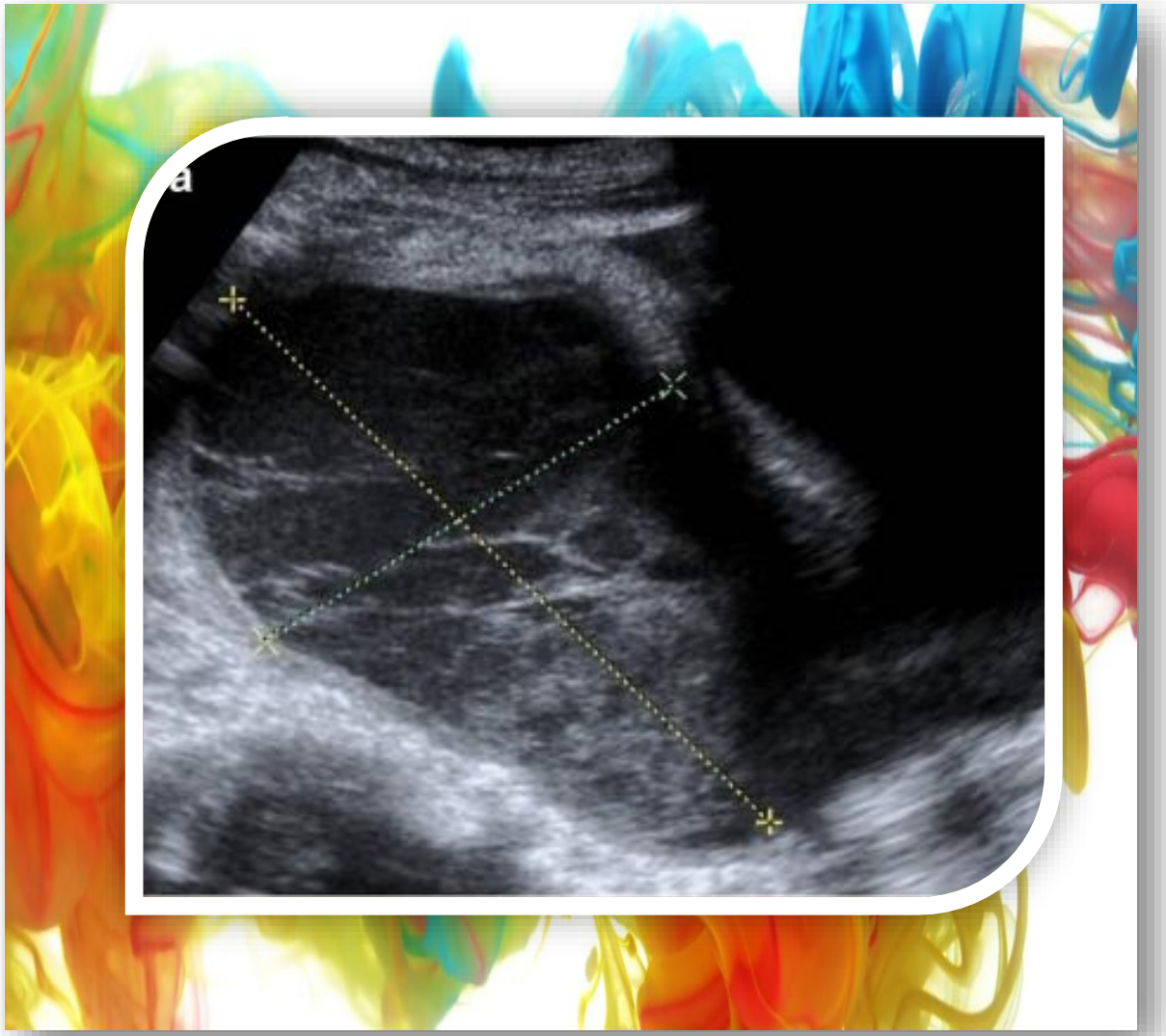
Physical: Nonspecific

Investigations:

- Urine Xpert or Ultra, LAM
- UA: low pH, hematuria, leukocytes, bacteria with a negative culture
- U/S renal, scrotal, ovarian, gynecologic
- Cystoscopy: urethral strictures
- Biopsy/needle aspiration

Start TB treatment 2RHZE followed by 4RH

Consult urology or gynecology as needed



Cutaneous TB

Presentation: Chronic, painless, non-pathognomonic lesions

Physical: undermined edges of an ulcer, erythema or large tuberculomas

Investigation:

- Punch biopsy for smear, culture and pathology

Start TB treatment 2RHZE followed by 4RH

- 10RH for tuberculoma

Ocular TB

Presentation: Pain in eyes, vision changes, swelling or mass with foreign body sensation

Physical: non-specific findings.

- Granulomatous uveitis, endophthalmitis, retinal detachment, retrobulbar mass, disc edema

Investigation:

- None

Start TB treatment 2RHZE followed by 10RH

Consult ophthalmology

Pregnancy and breastfeeding

- What TB medications are safe in pregnancy?
- Can moms breastfeed?
- Do babies need treatment?
- How should women taking ATT avoid getting pregnant?

Pregnancy and breastfeeding

All first line anti-TB medications are safe during pregnancy

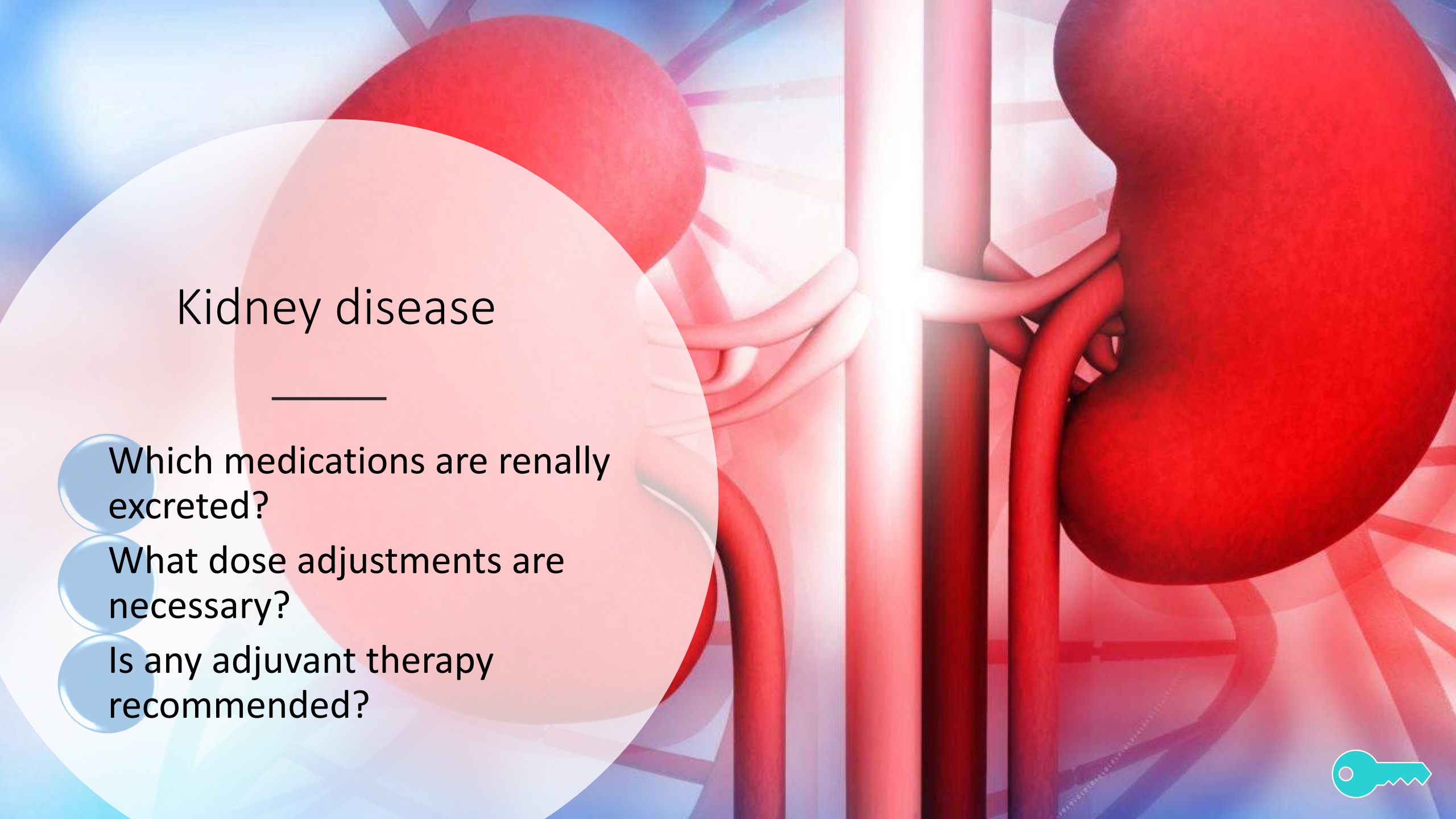
If sputum is positive the mother should spend less time with the child and wear a mask in a location with good ventilation when breast feeding

Babies

- BCG vaccination at birth
- TPT if no signs or symptoms of congenital TB
- After TPT revaccinate if there is no BCG scar

Rifampicin lowers blood concentration of OCPs

Kidney disease



- Which medications are renally excreted?
- What dose adjustments are necessary?
- Is any adjuvant therapy recommended?

Kidney disease

Ethambutol and metabolites of pyrazinamide are renally excreted and doses need to be adjusted

- Ethambutol ½ dose daily
  - If Creatinine clearance is < 30mL/minute give 15mg/kg
- Pyrazinamide dose adjusted per creatinine clearance
  - If Creatinine clearance is < 30mL/minute give 25mg/kg

If severe renal insufficiency give pyridoxine to prevent peripheral neuropathy

Liver disease

- What is lab findings would be concerning for liver disease?
- Which medications should be avoided in liver disease?
- What are alternative regimens for liver disease?

Liver disease

Most anti-TB medications can cause liver injury

Pyrazinamide is the most toxic and should not be used in patients with liver disease

- LFTs 2x the upper limit of normal and symptomatic
- LFTs 3x the upper limit of normal and asymptomatic

Intensive phase:

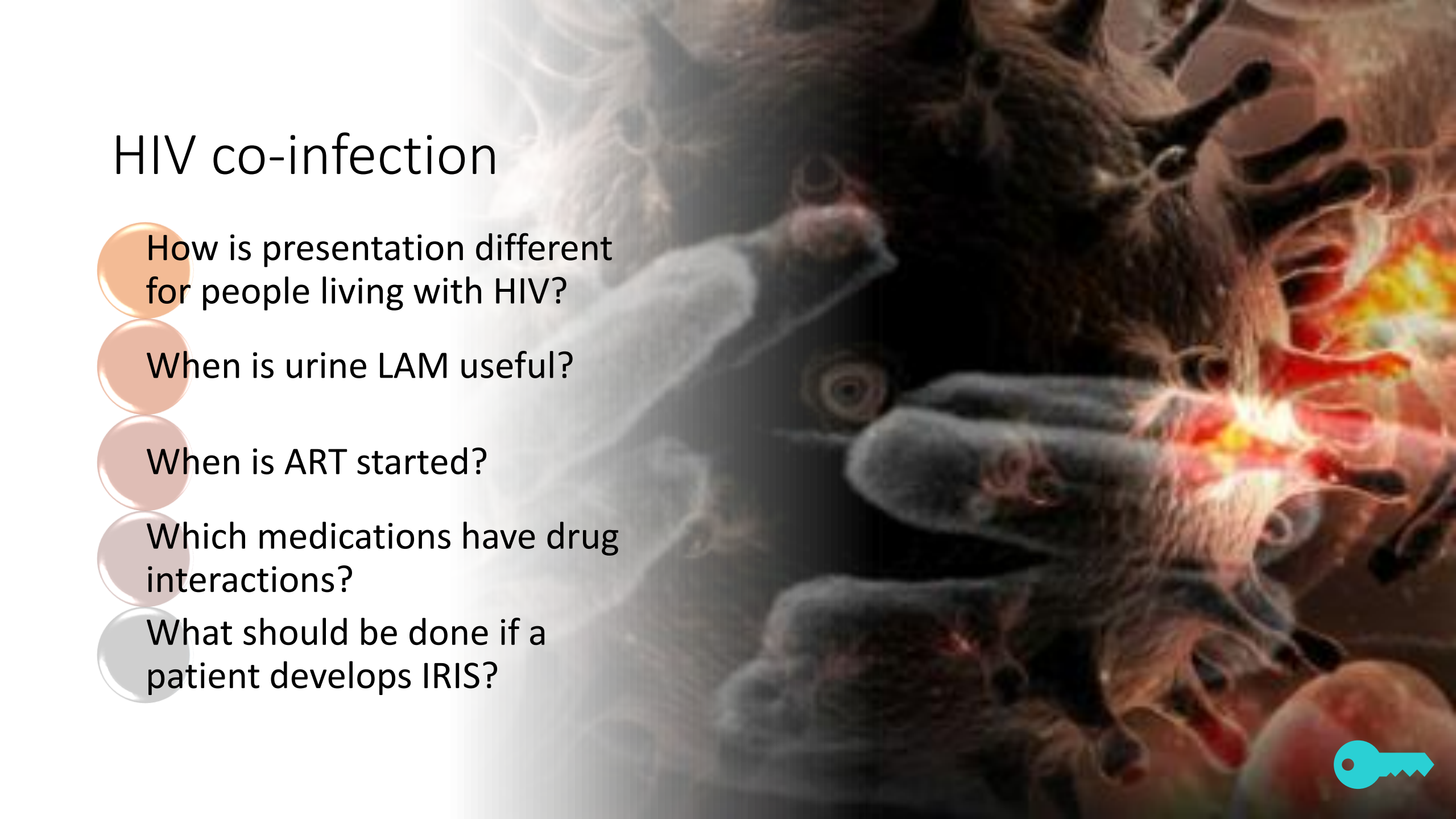
- Streptomycin, isoniazid and ethambutol

Continuation phase:

- Rifampin and isoniazid for 4 months
- or isoniazid and ethambutol for a total of 12 months

HIV co-infection

- How is presentation different for people living with HIV?
- When is urine LAM useful?
- When is ART started?
- Which medications have drug interactions?
- What should be done if a patient develops IRIS?



HIV co-infection

Due to immune suppression there are more atypical presentations and negative investigation results with more frequent extrapulmonary TB

LAM can be used if CD4<100 OP or <200 IP

Start ATT followed by ART within 2 weeks

Drug interactions are common with rifampicin and integrase strand transfer inhibitors, non-nucleoside reverse transferase inhibitors, and protease inhibitors

IRIS is common

- Continue ATT
- Consider holding ART if life-threatening
- Prednisolone 0.5–1.0 mg/kg/day tapered over weeks for moderate to severe cases