



Laos Global  
Health Trip  
2022

11/21-12/18

# Laos

- ♦ Population: 7.4 million people
- ♦ Capital is Vientiane
- ♦ Only landlocked country in SE Asia
- ♦ Official language Lao



# Health Frontiers

- Minnesota based non-profit
- Founded in 1991
- Laos Project: works with the Lao University of Health Sciences to establish an IM residency, peds residency and emergency medicine residency
- Goal is to make the program self-sustained and increase the number of specialists trained in Laos
- Fun facts: Our very own Dr. Quirk was a program director here. Also Dr. Leatherman has been participating in global health trips here for the past several years and introduced ultrasound curriculum






# Vientiane Hospitals



# Labs/ Imaging

- ♦ CXR
- ♦ Pulmonary ward and GI ward have one portable US
- ♦ CT scanner (usually takes 1-2 days)
- ♦ Thailand send-out labs



**ໃບສັ່ງກວດວິເຄາະ ຂອງໂຮງໝໍມະໂຫສິດ.**  
( ກະຊວງສາທິງໃສ່ບ່ອນທີ່ທ່ານຕ້ອງການກວດ  ຫຼື ຕໍ່ມໃສ່ BOX ອື່ນໆ )

ໂຮງໝໍມະໂຫສິດ  
ພະແນກ.....

**I. ເລືອດວິທະຍາ (Hematology)**

<input type="checkbox"/> Complete blood count (CBC) 18 P	<input type="checkbox"/> Ab test	<input type="checkbox"/> SLE	<input type="checkbox"/> Malaria
<input type="checkbox"/> Complete blood count (CBC) 24 P	<input type="checkbox"/> Abnormal Morphology	<input type="checkbox"/> G6PD-M	<input type="checkbox"/> CD4
<input type="checkbox"/> ABO Blood Group	<input type="checkbox"/> Commbs test	<input type="checkbox"/> G6PD-R	<input type="checkbox"/> Myelogramme
<input type="checkbox"/> Rh Group	Direct, Indirect	<input type="checkbox"/> Reticulocyte	<input type="checkbox"/> Hb-Typing
<input type="checkbox"/> Bleeding time (Clotting time, Bleeding time)	<input type="checkbox"/> Heinz-body	<input type="checkbox"/> ອື່ນໆ.....	
<input type="checkbox"/> VS/ESR	<input type="checkbox"/> Inclusion body		
<input type="checkbox"/> HbA1c	<input type="checkbox"/> Bone marrow		
	<input type="checkbox"/> Cyto-chimie		

**II. ຊີວະເລມີ (Biochemistry)**

<input type="checkbox"/> <b>Coagulation Factor</b>	<input type="checkbox"/> <b>Lipid profile</b>	<input type="checkbox"/> <b>Liver function</b>	<input type="checkbox"/> <b>Pancreatic function</b>	<input type="checkbox"/> <b>Kidney function</b>	<input type="checkbox"/> <b>Cardiac profile</b>	<input type="checkbox"/> <b>Other</b>
<input type="checkbox"/> Will-brands	<input type="checkbox"/> Total cholesterol	<input type="checkbox"/> Total protein	<input type="checkbox"/> Amylase	<input type="checkbox"/> Glucose	<input type="checkbox"/> Creatinine kinase	<input type="checkbox"/> Alcoolémie
<input type="checkbox"/> F-VIII	<input type="checkbox"/> HDL-C	<input type="checkbox"/> Albumin	<input type="checkbox"/> Lipase	<input type="checkbox"/> BUN	<input type="checkbox"/> LDH	<input type="checkbox"/> Bicarbonate
<input type="checkbox"/> F-IX	<input type="checkbox"/> LDL-C	<input type="checkbox"/> Total Bilirubin	<input type="checkbox"/> Iron	<input type="checkbox"/> Creatinine	<input type="checkbox"/> CPK	<input type="checkbox"/> Creatinine clearance
<input type="checkbox"/> F-V	<input type="checkbox"/> Triglycerides	<input type="checkbox"/> Direct Bilirubin	<input type="checkbox"/> Uric acid		<input type="checkbox"/> CK-MB	
<input type="checkbox"/> Thrombin time (TT)	<input type="checkbox"/> <b>Electrolytes</b>	<input type="checkbox"/> AST/GOT			<input type="checkbox"/> CK-NAC	
<input type="checkbox"/> PT	<input type="checkbox"/> ISE (Na, K, Cl)	<input type="checkbox"/> ALT/GPT		<input type="checkbox"/> ອື່ນໆ.....		
<input type="checkbox"/> INR	<input type="checkbox"/> Phosphate	<input type="checkbox"/> ALP				
<input type="checkbox"/> APTT	<input type="checkbox"/> Magnesium (Mg)	<input type="checkbox"/> GGT				
<input type="checkbox"/> Fibrinogen	<input type="checkbox"/> Calcium (Ca)					

**III. ພູມຄຸ້ມກັນວິທະຍາ (Immunology)**

<input type="checkbox"/> <b>Hepatitis</b>	<input type="checkbox"/> <b>Cardiac Marker</b>	<input type="checkbox"/> <b>Infection Diseases</b>	<input type="checkbox"/> Dengus IgM/IgG (Nsl)	<input type="checkbox"/> D-dimer	<input type="checkbox"/> HIV-Ab
<input type="checkbox"/> Anti-HAV (Total)	<input type="checkbox"/> CK-MB	<input type="checkbox"/> Toxo IgM	<input type="checkbox"/> H-pylori	<input type="checkbox"/> ASLO	<input type="checkbox"/> Syphilis
<input type="checkbox"/> Anti-HAV (IgM)	<input type="checkbox"/> Troponin I	<input type="checkbox"/> Toxo LgM	<input type="checkbox"/> Leptospirosis (IgM)	<input type="checkbox"/> C-RP	<input type="checkbox"/> VDRL
<input type="checkbox"/> HCV-Ab	<input type="checkbox"/> Myoglobin	<input type="checkbox"/> <b>Hormone</b>	<input type="checkbox"/> Scrub-Murine typhus	<input type="checkbox"/> RF	<input type="checkbox"/> Chlamydia
<input type="checkbox"/> HBs-Ag	<input type="checkbox"/> <b>Tumor marker</b>	<input type="checkbox"/> Testosterone	<input type="checkbox"/> Rickettsia	<input type="checkbox"/> Anti-TB rapid test	
<input type="checkbox"/> HBs-Ab	<input type="checkbox"/> AFP	<input type="checkbox"/> Progesterone	<input type="checkbox"/> Widal test	<input type="checkbox"/> PPD test	
<input type="checkbox"/> <b>Thyroid profile</b>	<input type="checkbox"/> PSA	<input type="checkbox"/> Beta-HCG	<input type="checkbox"/> Ferritin	<input type="checkbox"/> Amphetamine	
<input type="checkbox"/> TSH	<input type="checkbox"/> CEA	<input type="checkbox"/> Cortisol			
<input type="checkbox"/> T3	<input type="checkbox"/> CA15-3		<input type="checkbox"/> ອື່ນໆ.....		
<input type="checkbox"/> T4	<input type="checkbox"/> Ca125				
<input type="checkbox"/> Free T3	<input type="checkbox"/> CA19-9				
<input type="checkbox"/> Free T4					

**IV. ບັດສະວະ ແລະ ອາຈິມ (Urinalysis, Stool Examination, and Other)**

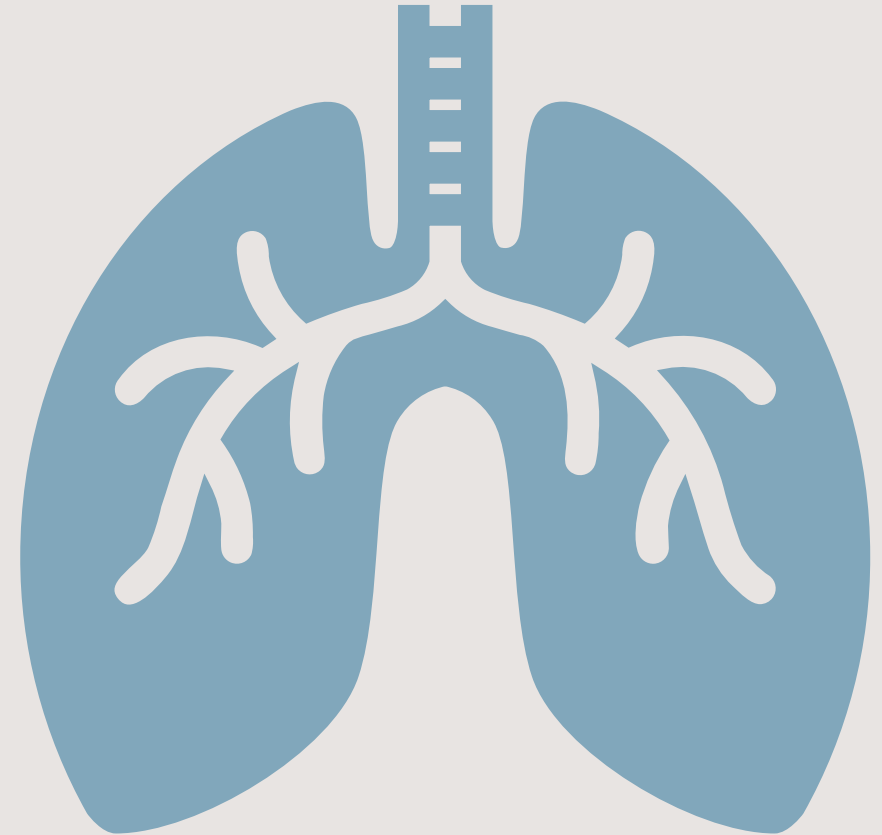
<input type="checkbox"/> <b>Urine</b>	<input type="checkbox"/> <b>Stool</b>	<input type="checkbox"/> <b>Other</b>
<input type="checkbox"/> Pregnancy test	<input type="checkbox"/> Stool examination	<input type="checkbox"/> Spermogramme
<input type="checkbox"/> Urine analysis	<input type="checkbox"/> Occult blood test	<input type="checkbox"/> Larva Detection (Filaires)
<input type="checkbox"/> Amphetamine test	<input type="checkbox"/> Culture ST	<input type="checkbox"/> Cyto Chimie
<input type="checkbox"/> Urine Creatininie	<input type="checkbox"/> Leucocyte ST	<input type="checkbox"/> Pleural (LP) Liquid de Synovial (ls)
<input type="checkbox"/> Urine protein	<input type="checkbox"/> Ritchie ST	<input type="checkbox"/> Atypical Lymphocytes Detection
<input type="checkbox"/> Creatinine clearance	<input type="checkbox"/> Kato-KATE	<input type="checkbox"/> PAP Smear
<input type="checkbox"/> Urine microscopic examination	<input type="checkbox"/> Concentration	<input type="checkbox"/> CSF
<input type="checkbox"/> Glucose	<input type="checkbox"/> H-pyloric Ag	
<input type="checkbox"/> Albumin	<input type="checkbox"/> Others examination	
<input type="checkbox"/> Protein 24		

ວັນທີ...../...../.....  
ແພດວິເຄາະ

ວັນທີ...../...../.....  
ແພດສະເໜີ

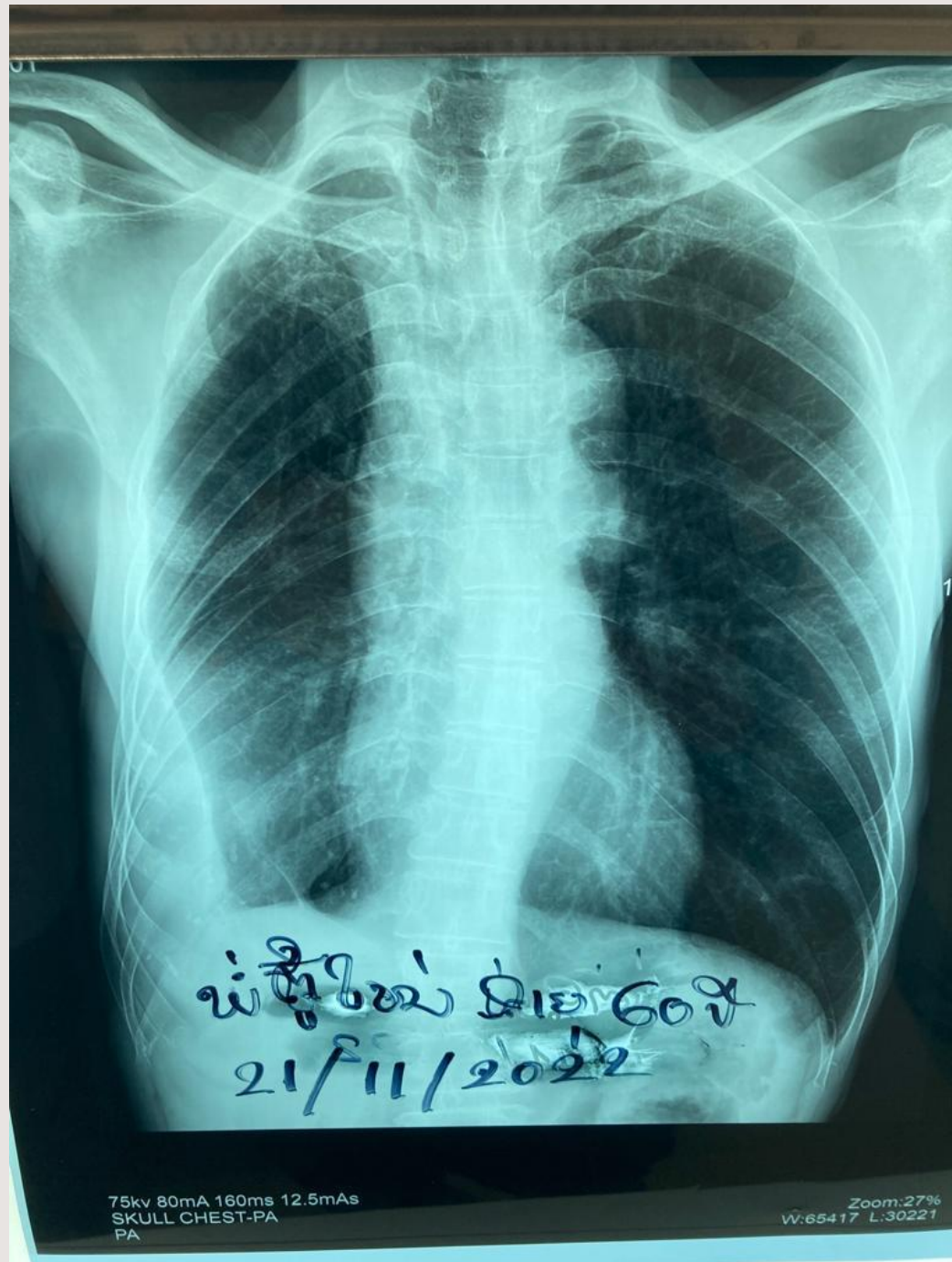
# Case 1

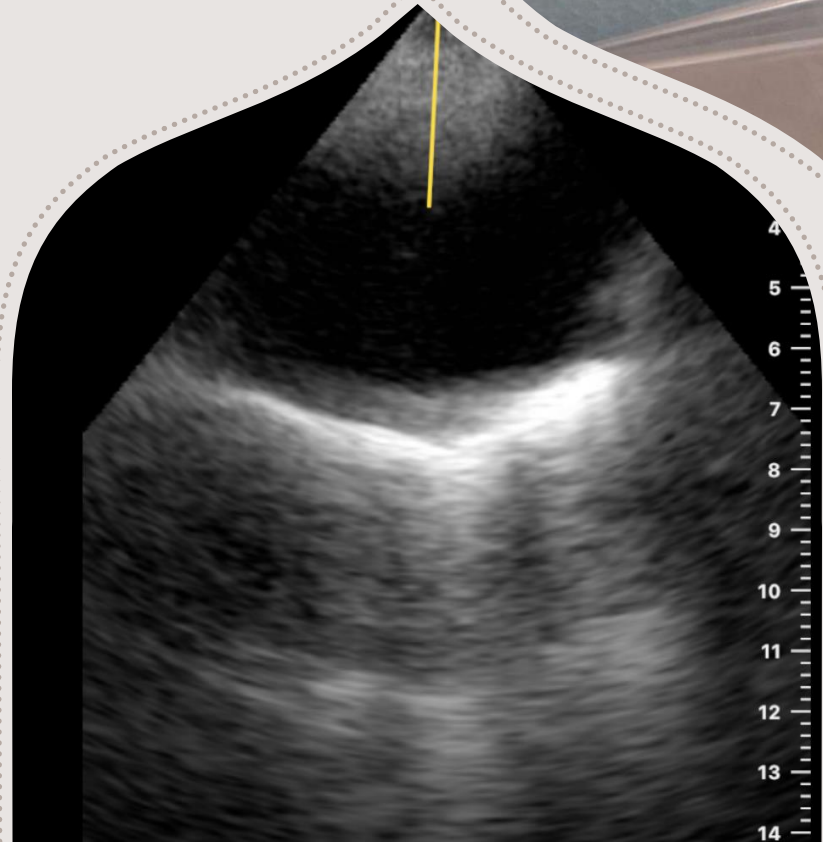
- A 40-year-old male presents from Northern Laos with three months of fever, dyspnea and hemoptysis
- Progressively worsening
- He was from the Borikhamsai province in the Parkading district





CXR





## Pleural ultrasound and thoracentesis



# Sputum Culture



Microbiology Laboratory, Mahosot Hospital, Vientiane, Lao PDR

# Microbiology Laboratory Report

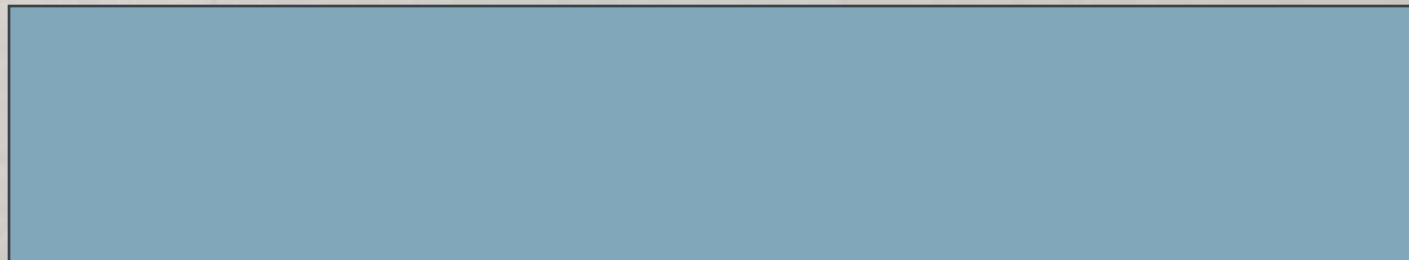
(Still not finalized and approved)

SPUTUM

SPECIMEN NUMBER LSP2226087

SPECIMEN DATE 06-Dec-2022

## PATIENT DETAILS



Village Thongnami-Nua

Ward Lung- Lung ward

District Pak Kading

Province Baulikhamxai

## PRECULTURE RESULTS

PRECULTURE DATE 06-Dec-2022

### WET PREP

Parasite Paragonimus westermani

Seen

Validated by senior lab technician

*Penp Sth*

Date 06.12.2022

Authorised by doctor

*Davanh*

Date 06.12.2022

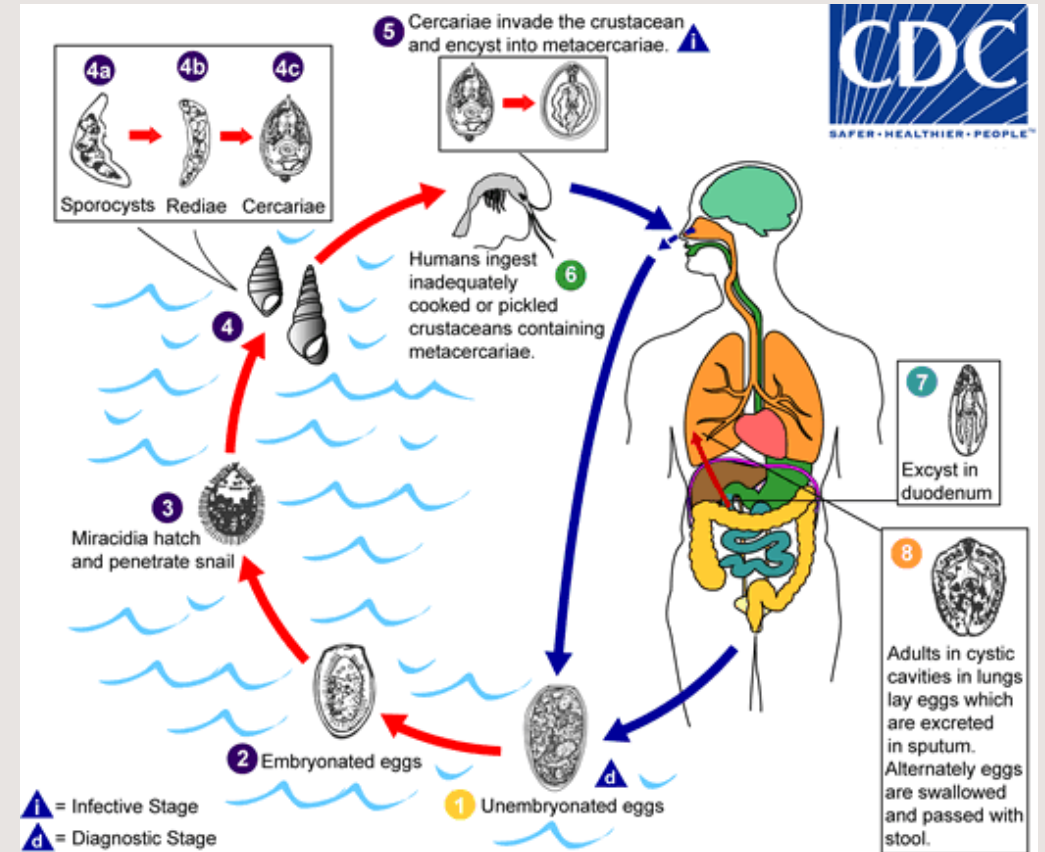
- Dengus IgM/IgG (Ns)
- H-pylori
- Leptospirosis (IgM)
- Scrub-Murine typhus
- Rickettsia
- Widal test
- Ferritin

ອື່ນໆ.....

- Other
- Spermogramme
- Larva Detection (F)
- Cyto Chimie
- Pleural (LP) Liquid
- Atypical Lymphocyt
- PAP Smear

# Paragonimiasis

- Trematode= lung fluke; 16 species total but most common is *Paragonimiasis westermani*
- Transmitted via consumption of raw or undercooked crab or crayfish (papaya salad)





# Clinical Manifestation

- ♦ Acute phase (occurs from time of infection and first egg production; approx. 2M)
  - Fever, malaise, diarrhea or epigastric pain
  - Urticaria can be seen
  - Pleuritic chest pain (from migration of larvae into the pleural space from the duodenum)
- ♦ Chronic phase (mature flukes inhabit the lungs; can last for years)
  - Recurrent hemoptysis
  - Malaise
  - Pleural effusions

# Diagnosis

- ♦ Early phase: difficult to determine other than clinical suspicion
- ♦ Late phase:
  - Microscopy: Can see eggs in sputum, BAL or stool; Pleural fluid will have lymphopenia, eosinophilia, low glucose, low pH and high LDL
  - Serology: ELISA (serum or cerebral fluid)

Keeping that  
differential  
fresh

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Tuberculosis

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Loeffler's Syndrome

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Coccidiomycosis

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Aspergillous

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Histoplasmosis

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Nocardiosis

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Bronchiectasis

---

Malignancy



# Treatment



Treat both symptomatic and asymptomatic patients



Praziquantel (75mg/kg/day divided in three doses for three days)



Triclabendazole 10/mg/kg; beware qTC prolongation

Case 2:  
Consult for  
dyspnea and  
hypoxia

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26 yo male admitted to psychology ward for psychosis

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PMH significant for amphetamine use disorder, previous pulmonary TB status/post treatment

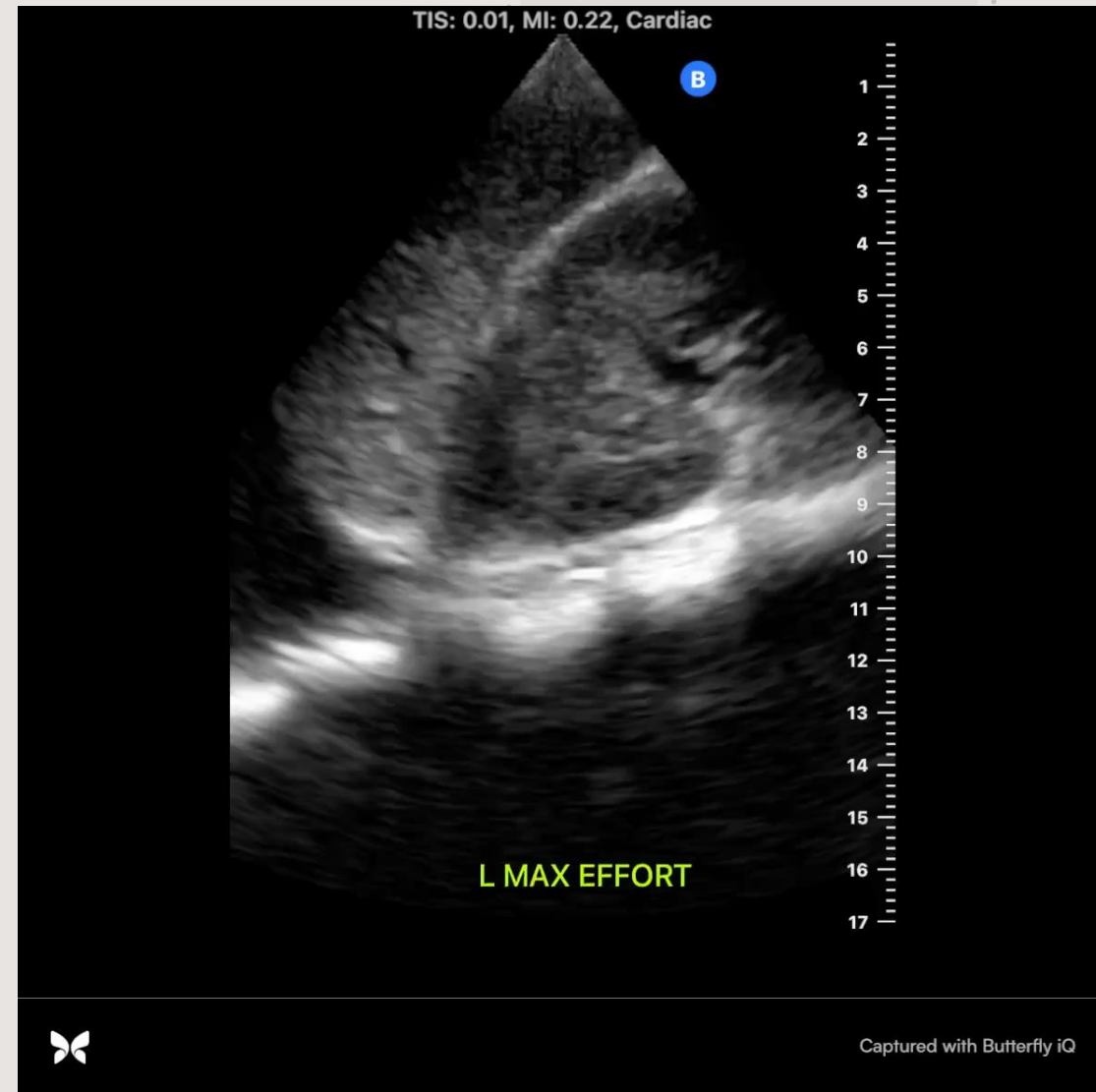
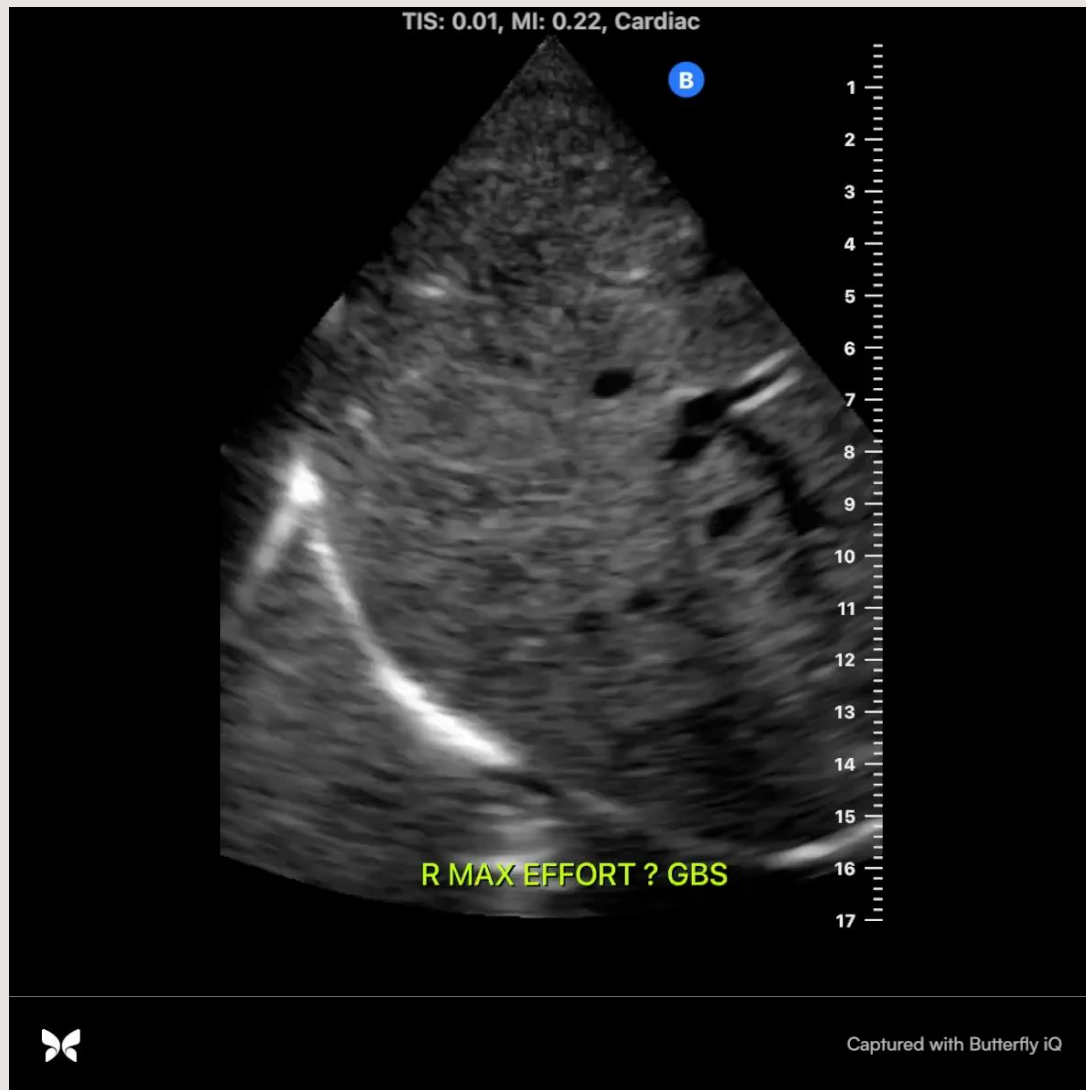
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ROS

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Exam, Labs, Imaging

# Ultrasound





# Guillain-Barre Syndrome in adults

- One of the most common cases of acute, acquired weakness; incidence of 1-2/100,000 cases per year
- Complicated by respiratory failure or autonomic dysfunction
- Multiple triggers: infection, vaccinations, small percentage related to surgery, trauma, BMT
- Symptoms: bilateral weakness, cranial nerve and bulbar symptoms; loss of DTR, paresthesia, dysautonomia

Case 3:  
28-year-old  
presenting for  
fever, fatigue,  
myalgias

Presenting from northern Laos  
for 1 month of symptoms

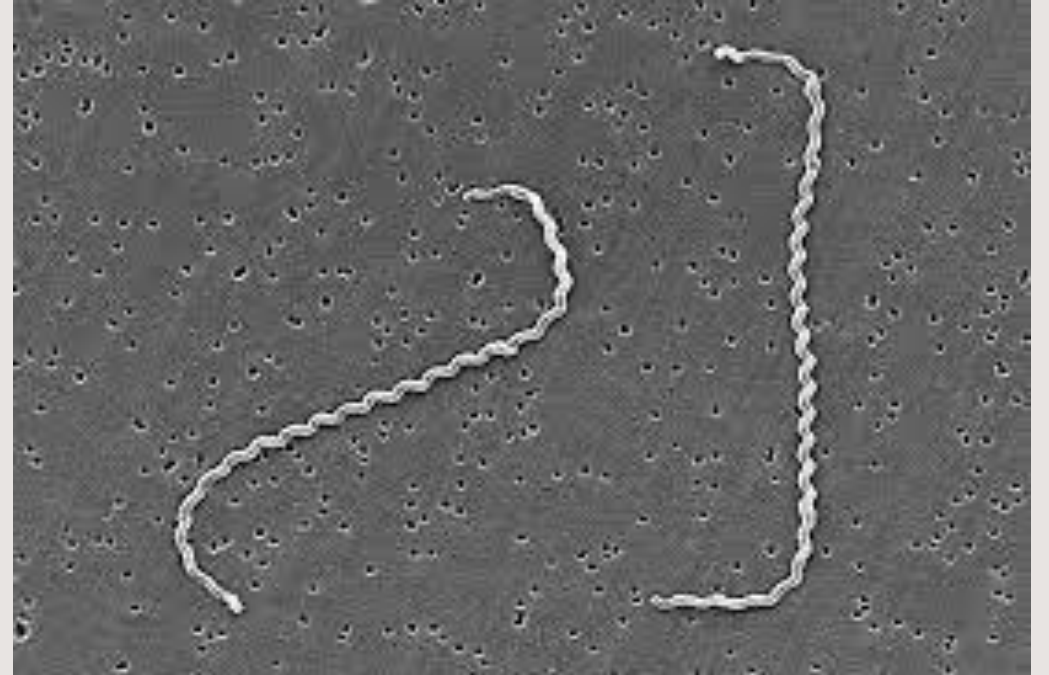
PMH with previous TB s/p  
treatment

ROS

Exam, Labs, Imaging

# Leptospirosis

- ♦ Spiral-shaped, highly motile aerobic spirochetes
- ♦ Transmission is often from contact from urine-contaminated soil or fresh water
- ♦ Wide spectrum of illness: asymptomatic to fatal
- ♦ Anicteric leptospirosis: Acute vs Immune phase
- ♦ Icteric leptospirosis (more severe)
  - Fever, jaundice, renal failure
  - Sometimes pulmonary hemorrhage, myocarditis, rhabdomyolysis, conjunctival suffusion, rarely liver failure



### What are the symptoms?

Symptoms usually occur 2 days to 4 weeks from time of exposure. Leptospirosis can cause a wide range of symptoms in humans, including:



High fever



Headache



Chills



Muscle aches



Vomiting



Jaundice  
*(yellow skin and eyes)*



Red eyes



Abdominal  
Pain



Diarrhea



Rash

*Note: Some infected persons may have no symptoms, at all.*

# Leptospirosis

- Diagnosis: PCR, serology (IGM and IGG), culture if available
- Treatment
  - Mild disease: doxycycline or azithromycin
  - Severe disease: ceftriaxone or cefotaxime
  - Duration 7 days





## Case 4:

- 51-year-old presents with four days of fever and progressive epigastric abdominal pain
- CT with liver mass
- Blood cultures pending





# Melioidosis

- Facultative intracellular gram-negative bacterium *Burkholderia pseudomallei*
- Found in soil and fresh water
- Endemic in SE Asia, northern Australia, South Asia, China
- Transmission is by percutaneous inoculation (especially during wet season), inhalation, aspiration
- Acute infection: usually resembles pneumonia, skin/soft tissue infxn, GU infxn
- Chronic infection: pulmonary symptoms that mimic TB (cough, hemoptysis, NS, increased sputum production), non-healing skin ulcer or abscess



### Central nervous system (1–5%)

- Encephalomyelitis
- Brain abscess

### Cardiovascular system (40–60%)

- Bacteraemia (40–60%; bacteria without evident focus 10%)
- Pericarditis
- Mycotic aneurysm

### Urinary tract system (14–28%)

- Acute pyelonephritis
- Kidney abscess
- Prostatic abscess (20% of males in Australia)

### Other

- Mastitis
- Mediastinal mass
- Corneal ulcer
- Epididymo-orchitis
- Scrotal abscess



### Head and neck (0–30%)

- Parotid abscess (30% of children in Thailand)
- Neck abscess
- Lymphadenitis

### Respiratory system (40–60%)

- Pneumonia (40–60%)
- Pulmonary abscess
- Pleuritis

### Gastrointestinal system (10–33%)

- Liver abscess
- Splenic abscess
- Para-intestinal mass

### Skin and soft tissue (13–24%)

- Skin ulcer
- Soft tissue abscess

### Musculoskeletal system (4–14%)

- Septic arthritis
- Myositis
- Osteomyelitis





# Diagnosis and Treatment

- Microscopy and culture: blood, sputum, urine, throat swab, rectal swab, skin/ulcer swab, pus/fluid from abscess, CSF
- Serology is not useful
- Rapid immunofluorescence used in Thailand
- Treatment:
  - Main treatment is beta-lactams can use carbapenems, TMP-SMX, doxycycline
  - Avoid penicillin, ampicillin, first gen cephalosporins and aminoglycosides



