

433 Teams

# MEDICINE

35 | Endemic Infections in Saudi Arabia



[433medicine.team@gmail.com](mailto:433medicine.team@gmail.com)



جامعة  
الملك سعود  
King Saud University



COLOR INDEX

[Slides](#) - [Step-Up medicine](#) - [Kaplan Notes](#) - [Extre explanation](#) - [Doctor Notes](#)

## Endemic Infections in Saudi Arabia

Objectives : not given.

## Some Definitions:

- ✚ The amount of a particular disease that is usually present in a community is referred to as **baseline or endemic level**.
- ✚ **Sporadic** is a disease that occurs infrequently and irregularly.
- ✚ **Endemic** refers to the constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographic area.
- ✚ **Hyperendemic** refers to persistent, high levels of disease occurrence.
- ✚ **Epidemic** refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area.
- ✚ **Out break** carries the same definition of epidemic, but is often used for a more limited geographic area.
- ✚ **Pandemic** refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people.

## Typhoid fever:

- It is an acute febrile disease, caused by *Salmonella typhi* and *S. paratyphi* A, B,C
- *S. typhi* and *paratyphi* lives only in humans.
- Persons with typhoid fever carry the bacteria in their bloodstream and intestinal tract.
- Carriers recovering from typhoid fever shed *S.Typhi* in their feces.
- It is transmitted through the ingestion of food or drink contaminated by infected people.

### ***Pathogenesis of Enteric fever:***

- The organisms penetrate ileal mucosa
- Reach mesenteric lymph nodes - multiply there.
- Invade Blood stream
- Infect Liver, Gall Bladder,, spleen, Kidney, Bone marrow.
- After 7-10 days bacilli pass into blood stream (secondary bacteremia ).

## **Clinical feature :**

- Develop 1- 3 weeks after exposure.
- May be mild or severe. Gradual onset
  - intermittent fever
  - malaise, headache
  - abdominal pain
  - constipation or diarrhoea
  - rose-colored spots on the chest
  - enlarged spleen or liver.
- Healthy carrier state may follow acute illness.



**Rose spots: 2 -4 mm in diameter raised discrete irregular blanching pink maculae's found in front of chest**

**Appear in crops of up to a dozen at a time**

**Fade after 3 – 4 days**

### **Complications:**

Pneumonia, meningitis, osteomyelitis

Severe intestinal hemorrhage and intestinal perforation

If not treated can be fatal.

### **Carriers:**

5% of the survivors continue to excrete the organism for months = carriers.

In carriers the bacteria remain in the gall bladder and are shed into the intestine.

### **Investigations :**

WBC

ESR

Blood, bone marrow, or stool cultures

(Serology is not recommended because of false positives; culture is the best)

Widal test (serum agglutination test). It has cross reactions– false positives. Also false negatives. Not a good test.

### **Blood Cultures in Typhoid Fevers:**

Bacteremia occurs early in the disease

Blood Cultures are positive in the :

1<sup>st</sup> week in 90%

2<sup>nd</sup> week in 75%

3<sup>rd</sup> week in 60%

4<sup>th</sup> week and later in 25%

## **Differential Diagnosis:**

- Brucellosis
- Tuberculosis
- Infective endocarditis
- Lymphoma
- Adult Still's disease
- Malaria

**Treatment:**

- 3rd generation cephalosporins, like Ceftriaxone are effective
- Fluoroquinolones, like ciprofloxacin are the **drugs of choice** for treatment of typhoid fever.
- **Fever may continue for several days after starting therapy.**
- The majority are cured with antibiotics, 10% may relapse.

Shift from IV ceftriaxone to ORAL cefixime on discharge or if the patient can tolerate (no vomiting).

**Prevention and Control (WHO, 2009):**

Control measures:

- Health education
- Antibiotic treatment
- Excluding disease carriers from food handling.
- A vaccine is available recommended for travelers to high risk areas. It does not provide full protection.

**Brucellosis** : Gram -ve coccobacilli (comma shape)

- Systemic febrile illness
- Zoonosis. It occurs worldwide.
- B. melitensis and B. abortus are the most frequent.
- The incubation period is 1 – 4 weeks.

**Transmission:**

Infection transmitted to humans by:

- contact with fluids or meat from infected animals (sheep, cattle, goats, pigs, camels or other animals)
- eating food products such as unpasteurized milk and cheese
- The disease is rarely, if ever, transmitted between humans

**Pathogenesis:**

- Enters the body → To lymph nodes → To blood stream  
 → Reticulo-endothelial System → Blood → Any organ.

**Clinical Manifestations:**

Often fits one of the three pattern:

- Acute febrile illness resembling typhoid
- Fever & acute mono-arthritis (hip/knee)
- low grade fever, low back pain, hip pain

**Symptoms:**

Fever, Night sweats, Fatigue, Anorexia, Weight loss, Arthralgia, Low back pain, Depression.

**Signs:**

Arthritis, Lymphadenopathy, Hepatosplenomegaly.

**Localised Brucellosis:**

- Osteoarticular disease: especially sacroileitis, vertebral spondylitis and large joints arthritis.
- Genitourinary disease, especially epididymo-orchitis.
- Neurobrucellosis, usually presenting as meningitis, radiculopathy.
- Abscess involving the liver, spleen, abdomen.

**Differentials:**

- Typhoid fever
- Tuberculosis
- Infective endocarditis
- Collagen vascular disease
- lymphoma

**Investigations:**

WBC

ESR

Blood cultures: slow growth = 4 weeks

Serology: SAT positive in recent infection

No diagnostic level...>1:360

## Treatment:

- Treatment for uncomplicated Brucellosis
- Streptomycin (10 days) + Doxycycline for 6 weeks
- Rifampicin + Doxycycline for 6 weeks
- TMP/SMX + Doxycycline for 6 weeks
- Treatment of complicated Brucellosis : Endocarditis, meningitis
- No uniform agreement
- Usually 3 antibrucella drugs for 3 months

- Rifampicin is not preferred in endemic TB areas, may lead to rifampicin resistant TB.
- IV gentamycin + doxycycline used in hospital.

## Relapse:

- About 10 percent of patients relapse after therapy.
- Most relapses occur within three months following therapy and almost all occur within six months.
- Relapse should prompt assessment for a focal lesion, especially hepatosplenic abscess
- Most relapses can be treated successfully with a repeat course of a standard regimen.

These are 3 indications of using Rifampicin in Saudi Arabia :  
Pregnancy ,, Neurobrucellosis ,,Endocarditis

**Case scenario :**

- A 22 year old student presented with nausea, abdominal pain and diarrhea for 2 days. On examination, he was febrile with mild peri-umbilical tenderness.

**Gastroenteritis:**

	<b>Intestinal Amebiasis</b> Causes invasive colitis	<b>Giardiasis</b> Colonies upper small intestine
<b>Transmission</b>	by cysts	-
<b>Presentation</b>	Asymptomatic but may present acute dysentery	asymptomatic – mild to moderate:abdominal pain, flatulence. May become chronic.
<b>Diagnosis</b>	Stool microscopy serology.	stool microscopy
<b>Treatment</b>	metronidazole	Metronidazole
<b>Complications</b>	liver abscess	-

**Dengue Virus:**

- Causes dengue and dengue hemorrhagic fever
- Is an **arbovirus** single-stranded RNA ,has 4 serotypes (DEN-1, 2, 3, 4)
- **Transmitted** by mosquito: AedesAegypti

**Dengue Clinical Syndromes:**

- Classic dengue fever
- Dengue hemorrhagic fever (causes neutropenia and thrombocytopenia).
- Dengue shock syndrome (happens in case of repeated attacks from deferent serotypes)

**Clinical Characteristics of Dengue Fever:**

Fever, Headache  
Muscle and joint pain,  
Nausea/vomitingRash,  
Hemorrhagic manifestations

**Hemorrhagic Manifestations of Dengue:**

Skin hemorrhages:petechae, purpura, ecchymosis  
Gingival bleeding , Nasal bleeding  
Gastro-intestinal bleeding: hematemesis, melena,  
Hematuria  
Increased menstrual flow.



## **Danger Signs in Dengue Hemorrhagic Fever:**

**Abdominal pain , Persistent vomiting , Restlessness or somnolence**

**Abrupt change from fever to hypothermia, with sweating and prostration**

## **Prevention:**

- Elimination & destruction of mosquitos and larval habitat:
  - Space Spraying of insecticide is not usually effective.
  - Spraying residual insecticides in-door.
  - Larval source reduction : Cover water holding containers.
- Personal protection against mosquito biting:
  - Screening
  - Protective clothing
  - Repellents
- Centralized, vertically-structured programs with military-type organization, strict supervision, high level of discipline.
- Vaccine not yet available, though human trials conducted

## **Treatment:**

- ✓ Symptomatic treatment.
- ✓ Hydration.
- ✓ Avoid NSAIDS or Aspirin, only acetaminophen for fever, headache or arthralgia.
- ✓ Platelet transfusion only if platelets <10-20.
- ✓ Vaccines for veterinary use are available.

## Leishmaniasis:

- is a protozoal disease
- Caused: by Leishmania parasite,
- transmitted: by sand fly.
- Leishmaniasis is of three types: (cutaneous leishmaniasis, muco-cutaneous and the visceral (Kala-azar) ).

### Types of Cutaneous Leishmaniasis:



**Hyperkeratotic**



**Mucosal**



**Plaqu**



**Recidivans**



**Erysipeloid**

## MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-CoV):

### OUTBREAK :

-2012 emerged in Saudi Arabia.

-2014 March -April increased dramatically in Arabian Peninsula → declined sharply in ensuing months. → still detected cases.

-2015 May -early July : in South Korea : large outbreak (the index case was an individual who had traveled to the Arabian Peninsula ).

-2015: large outbreak began in a hospital in Riyadh, Saudi Arabia.

### Where Does the Virus Come From?

Partial sequence found in **bat** in Saudi Arabia near location of human case

Growing evidence that **camels play an important role** in transmission across the region

Virus has been detected in dromedary camels in: Qatar, Saudi Arabia and Egypt

Antibodies have been found in camels in: (? Crosse reactivity !! )

Jordan, Tunisia, Ethiopia, Nigeria, Egypt, Saudi Arabia, Canary Islands, UAE

MERS-CoV likely widespread in camels throughout region

**Transmission likely occurring from camel to human**



### II. Case definition and surveillance guidance [2]

#### Suspect case (patients who should be tested for MERS-CoV)<sup>1,2</sup>

- I. A person with fever and community-acquired pneumonia or acute respiratory distress syndrome based on clinical or radiological evidence.<sup>3</sup>  
**OR**
- II. A hospitalized patient with healthcare associated pneumonia based on clinical and radiological evidence.<sup>3</sup>  
**OR**
- III. A person with 1) acute febrile ( $\geq 38^{\circ}\text{C}$ ) illness, **AND** 2) body aches, headache, diarrhea, or nausea/vomiting, with or without respiratory symptoms, **AND** 3) unexplained leucopenia ( $\text{WBC} < 3.5 \times 10^9/\text{L}$ ) and thrombocytopenia ( $\text{platelets} < 150 \times 10^9/\text{L}$ ).<sup>4</sup>  
**OR**
- IV. A person (including health care workers) who had protected or unprotected exposure<sup>5</sup> to a confirmed or probable case of MERS-CoV infection and who presents with upper<sup>6</sup> or lower<sup>7</sup> respiratory illness within 2 weeks after exposure.<sup>8</sup>

**DIAGNOSIS:**

Real-time reverse-transcriptase polymerase chain reaction (rRT-PCR) for respiratory secretions

**EXPERIMENTAL TREATMENT:**

- Convalescent plasma
- IVIG
- IFN
- Protease Inhibitors used In HIV infection
- Ribavirin
- Corticosteroids
- Nitazoxanide
- Cyclosporin A
- Combination therapy

**Treatment is mainly SUPPORTIVE**

**No vaccine available**

## Other Endemic Diseases of Saudi Arabia:

- Malaria is endemic in Saudi Arabia
- Tuberculosis is endemic in Saudi Arabia

These are amongst the most important of the endemic diseases

**Rift Valley Fever** : acute, fever

caused by the RVF virus, a member of the genus Phlebovirus in the family Bunyaviridae

RVF is most commonly associated with mosquito-borne epidemics during years of unusually heavy rainfall.

that affects domestic animals (such as cattle, buffalo, sheep, goats, and camels) and humans

**Clinical manifestations:**

low-to-moderate-grade fever,

abdominal pain, vomiting, diarrhea, and elevated liver enzyme levels progressing to liver failure, encephalopathy or encephalitis,

disseminated intravascular coagulation (DIC), renal failure, and, in 5 of the 7 patients, death

**Treatment** is symptomatic

**Vaccines** : for veterinary use are available

## MCQs

1. Pregnant women come to the hospital with Brucellosis, what is the of choice for this condition should be avoided?

- A- Doxycycline
- B- Cotrimoxazole
- C- Rifampicin

2. Which of the following is the gold standard to diagnose Typhoid fever?

- A- ESR
- B- CT scan
- C- Blood culture
- D- CBC

3. When you treat patient with typhoid with ciprofloxacin and the fever continue for several days what should you do ?

- A- Stop the treatment
- B- Choose another drug
- C- continue the treatment

- |                               |
|-------------------------------|
| <p>1. A<br/>2. C<br/>3. C</p> |
|-------------------------------|

# Done By:

Feras Alfawaz	Lulwah Alturki
Mosa'ab Almessry	Abdullah Alzahrani
Faroq Abdulfattah	Areej Alwahaib