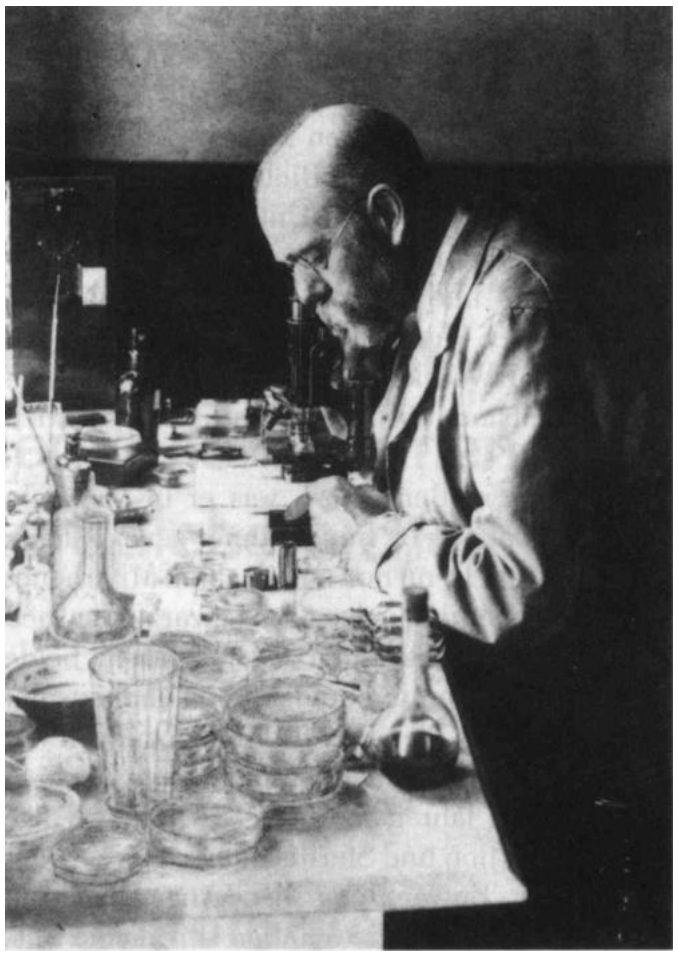
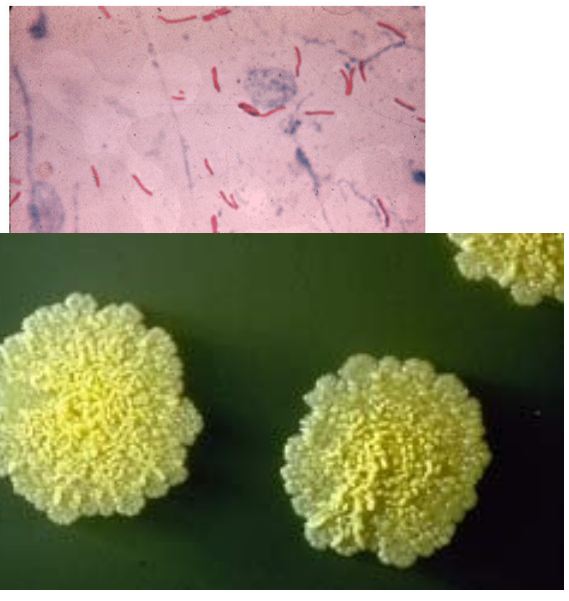
Tropical Surgery: TB, Amoebiasis, Filariasis, Typhoid, Ascariasis

Dept Of Surgery

Tuberculosis

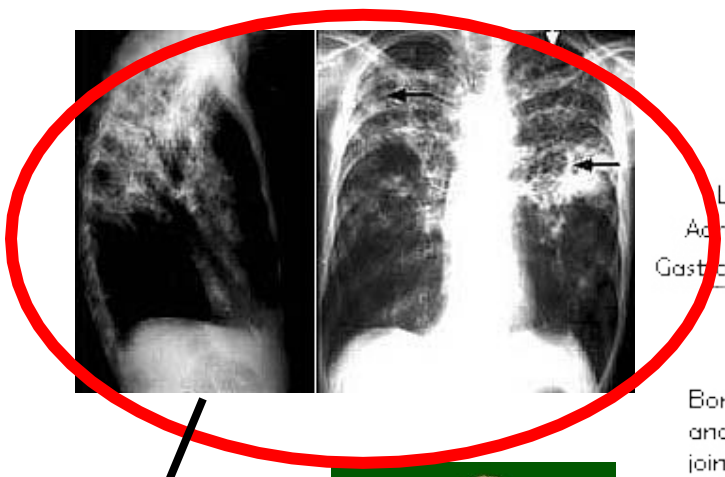
M. tuberculosis as causative agent for tuberculosis

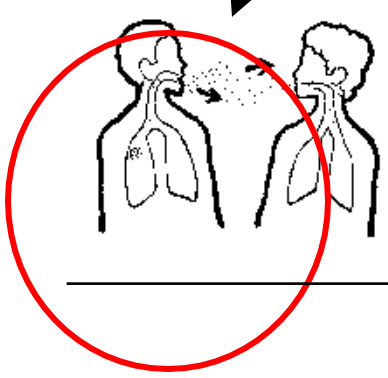


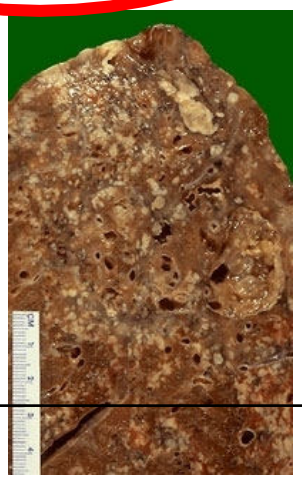


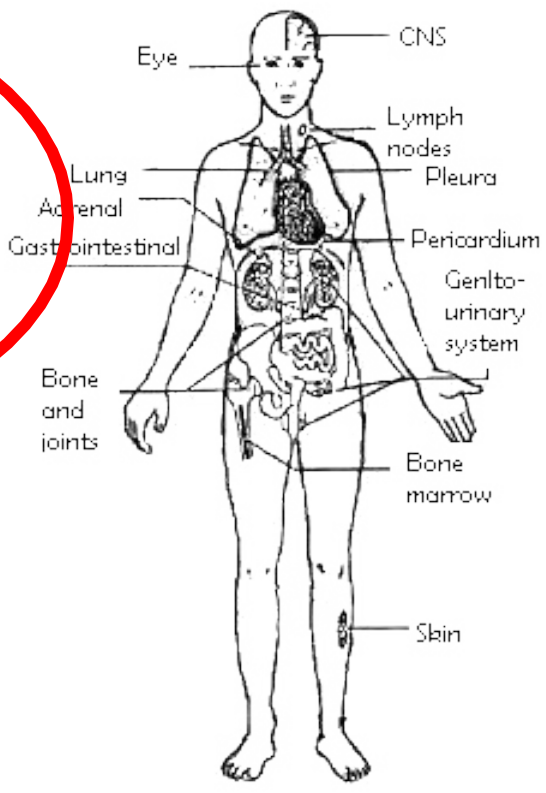
Robert Koch 1886

TB – A Multi-system Infection









- Extra-pulmonary form of TB account for 10-15 per cent of all cases and up to 50 per cent of patients with AIDS.

- TB of the gastrointestinal tract is the sixth most frequent form of extra-pulmonary site, after lymphatic, genitourinary, bone and joint, miliary and meningeal tuberculosis.

Pathogenesis

The postulated mechanisms by which the tubercule bacilli reach the gastrointestinal tract are:

(i) hematogenous spread from the primary lung focus in childhood, with later reactivation;

(ii) Ingestion of bacilli in sputum from active pulmonary focus;

(iii) direct spread from adjacent organs;

(iv) through lymph channels from infected nodes.

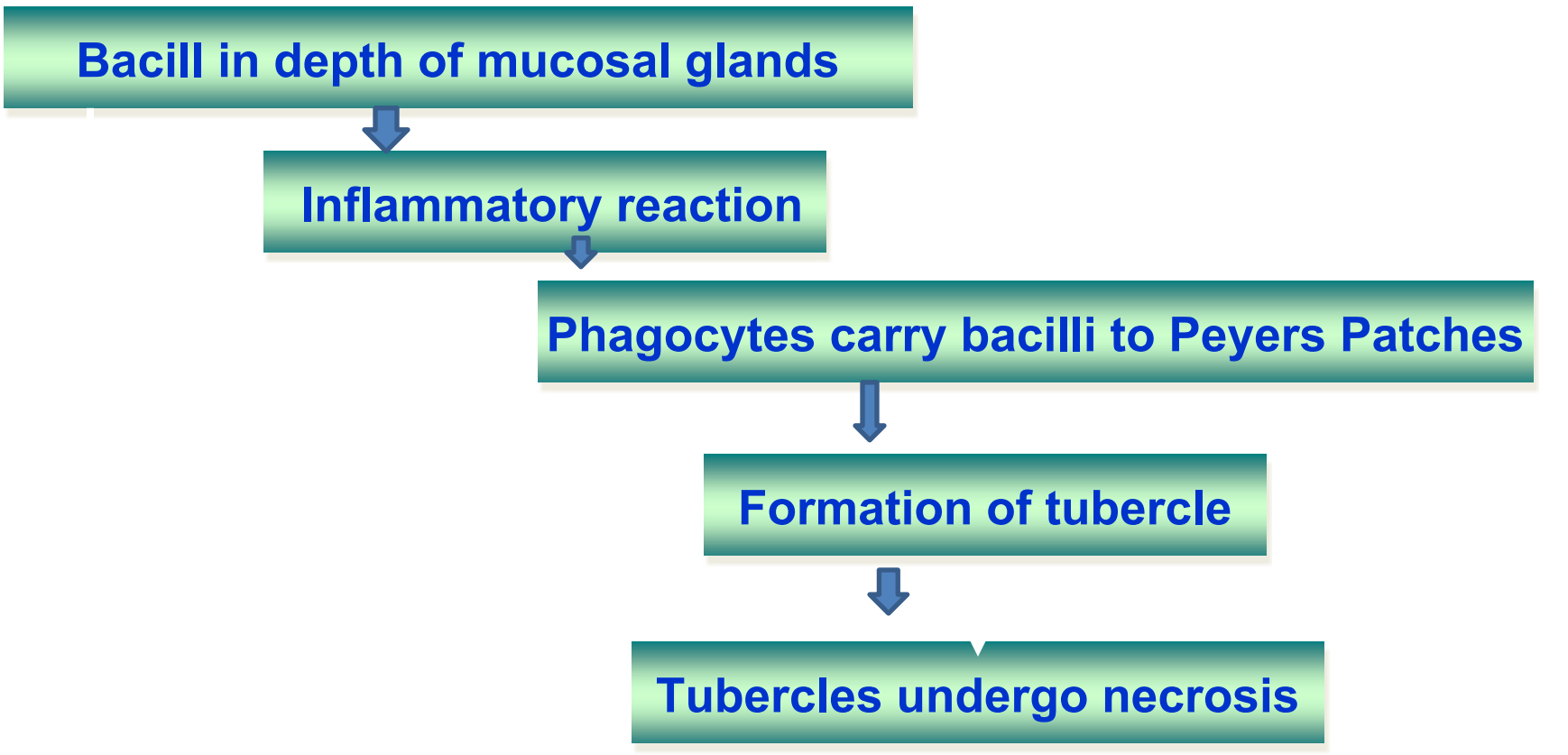
Pathogenesis

- The most common site of involvement- ileocaecal region

- Frequency of bowel involvement declines as one proceeds both proximally and distally from the ileocaecal region.

Pathology

Most active inflammation in submucosa.



Portis (1953)

Pathology

- Submucosal tubercles enlarge
- Endarteritis & edema
- Sloughing
- Ulcer formation
- Accumulation of collagenous tissue
- Thickening & Stenosis

(Howell & Knapton, 1964)

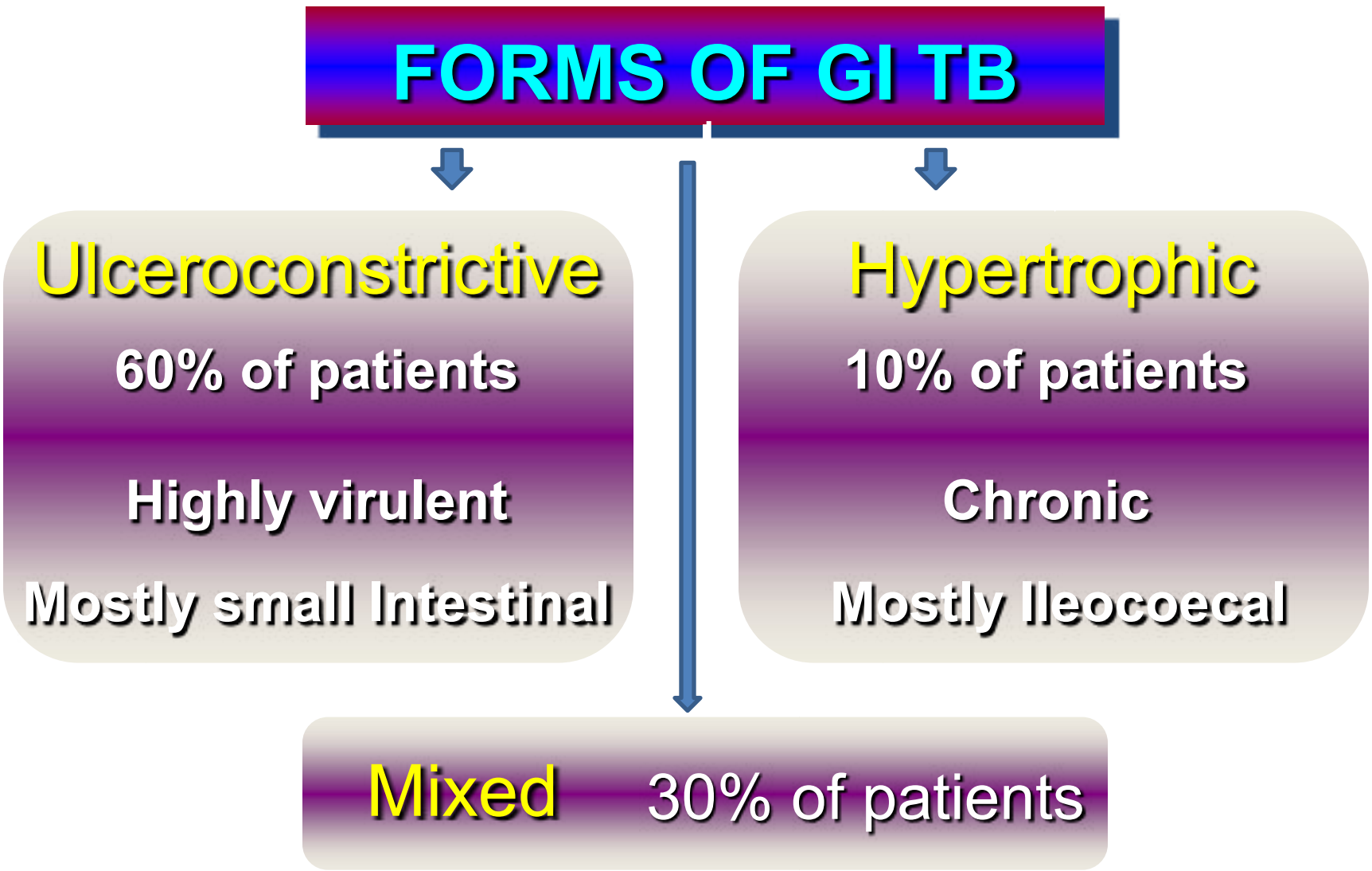
Pathology

- Inflammatory process in submucosa penetrates to serosa
- Tubercles on serosal surface
- Bacilli reach lymphatics
- Bacilli via lymphatics

Lymphatic obstruction of mesentery and bowel
→ Thick fixed mass

Regional lymph nodes
- Hyperplasia
- Caseation necrosis
- Calcification

(Boyed, 1943)



Clinical Features

- acute, chronic or acute on chronic.
- Constitutional symptoms of fever (40-70%), pain (80-95%), diarrhoea (11-20%), constipation, alternating constipation and diarrhoea, weight loss (40-90%), anorexia and malaise.
- Pain-either colicky due to luminal compromise, or dull and continuous when the mesenteric lymph nodes are involved.

Diagnosis

Paustian in 1964 stated that one or more of the following four criteria must be fulfilled to diagnose abdominal tuberculosis:

(i) Histological evidence of tubercles with caseation necrosis;

(ii) a good typical gross description of operative findings with biopsy of mesenteric nodes showing histologic evidence of tuberculosis;

(iii) animal inoculation or culture of suspected tissue resulting in growth of M. tuberculosis

(iv) histological demonstration of acid fast bacilli in a lesion

Non specific findings include raised ESR, anemia, hypoalbuminemia

- Plain X ray
- Small Bowel Barium Meal
- Barium Enema
- Ultrasonography
- CT Scan
- Colonoscopy
- Laparascopy
- Immunological Tests (value undefined)
- Ascitic Fluid Examination

Management

- Antitubercular therapy

- The recommended surgical procedures today are conservative:
  - Stricturoplasty
  - Resection Anastomosis

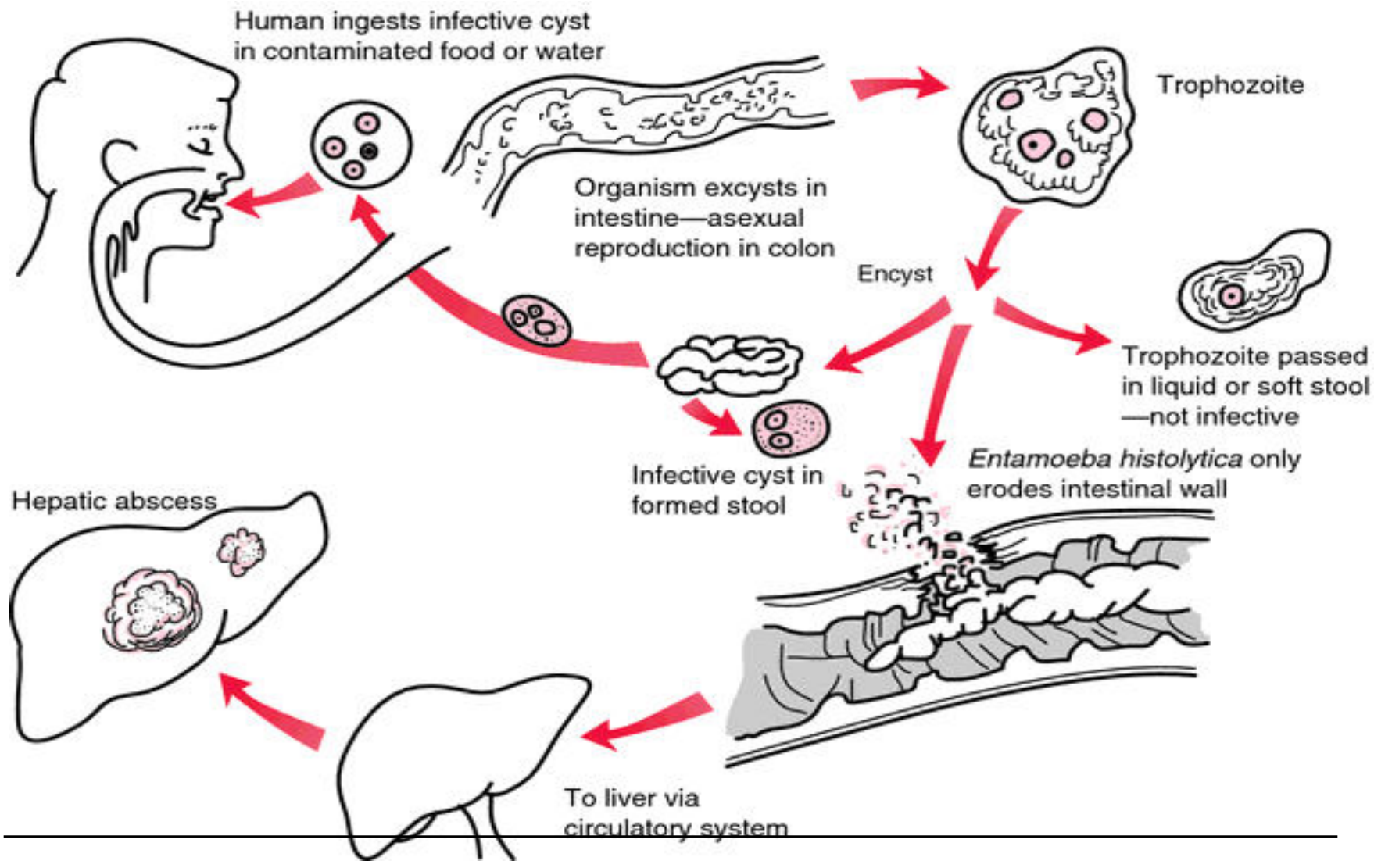
Amoebiasis

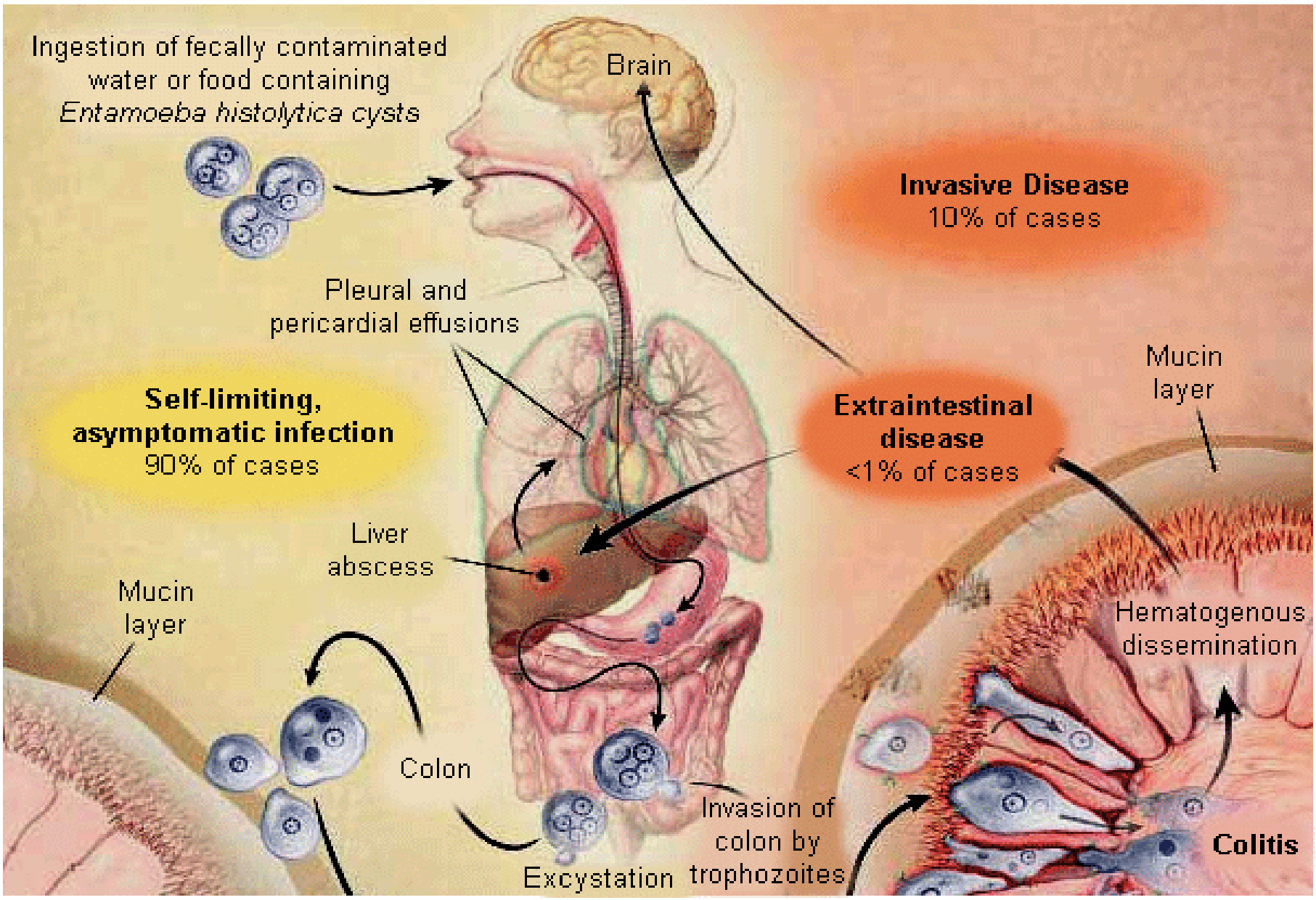
Introduction

- Causative agent: Entamoeba histolytica

- **Entamoeba histolytica** is the second leading cause of mortality due to parasitic disease in humans. (The first being malaria). Amebiasis is the cause of an estimated 50,000-100,000 deaths each year.

Entamoeba histolytica : life cycle





Clinical manifestations

- Dysentery- principal manifestation
- Appendicitis or amebic ceacal mass
- Amoebic granuloma
- Fibrous stricture
- Intestinal obstruction
- Paracolic abscess, ischiorectal abscess and fistula

Diagnosis

- Sigmoidoscopic examination
- Immunodiagnosis
- Microscopy
- Antigen Detection
- Molecular diagnosis

Amoebicides

Tissue amoebicides

- Metronidazole 500–750 mg three times a day for 5–10 days
- Tinidazole 2g once a day for 3 days is an alternative to metronidazole

Luminal Amoebicides

- Paromomycin 500 mg three times a day for 10 days
- Iodoquinol 650 mg three times a day for 20 days

Surgical Intervention

Filariasis

- MC cause of lymphedema
- *Wucheria bancrofti (*nematode) in 90% of cases
- Features

  Acute
  - Fever
  - Headache
  - Malaise
  - Inguinal & axillary lymphadenitis
  - Lymphangitis, Cellulitis
  - Funiculo-epididymo-orchitis

  -Chronic

  Lymphedema of legs
  Hydrocele
  Abdominal lymphatic varices

Treatment

- Elevation or periodic compression
- Firm support bandage or compression garment (MLLB)
- Complex decongestive therapy (CDT)
- Massage (MLD)
- Drugs
- Foot and skin hygiene
- Surgery is rarely performed to remove hypertrophied lymph channels or obstructed lymph channels

Symptomatic and supportive Treatment for other symptoms and signs

Typhoid

Introduction

- Acute enteric infectious disease
- Caused by salmonella typhi (S.Typhi)
- Prolonged fever, relative bradycardia, apathetic facial expressions, roseola, splenomegaly, hepatomegaly, leukopenia.
- Intestinal perforation, intestinal hemorrhage

- **Antigens: located in the cell capsule**

  H (flagellar antigen).

  O (Somatic or cell wall antigen).

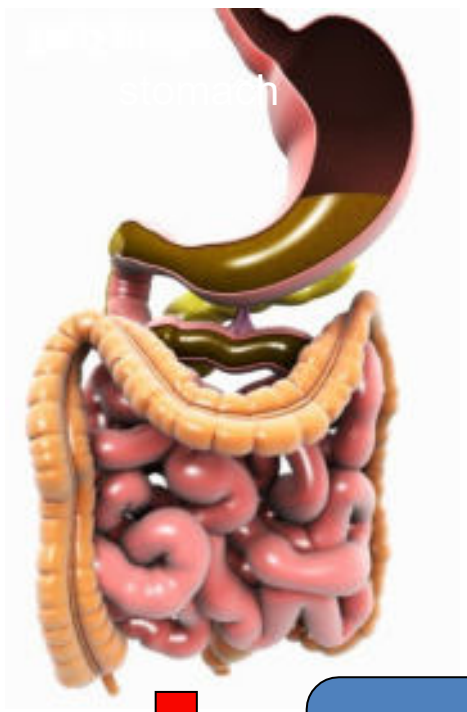
  Vi (polysaccharide virulence)

  “widal test”

Transmission

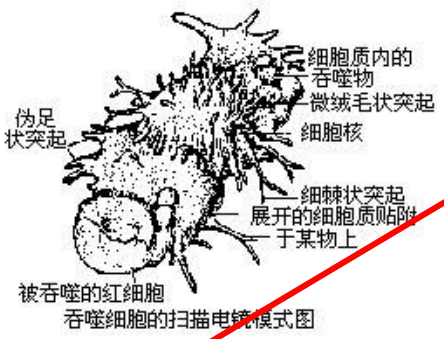
- Fecal-oral route
- Close contact with patients or carriers
- Contaminated water and food
- Flies and cockroaches

S.Typhi.



Lower ileum

(mononuclear phagocytes)



2nd bacteremia

liver、spleen、gall、BM ,ect
early stage&acme stage
(1-3W)

Bac. In gall

Bac. In feces

S.Typhi eliminated
convalvescence stage
(4-5w)

peyer's patches & mesenteric lymph nodes

LN Proliferate,swell necrosis
defervescence stage
(3-4w)

Enterorrhagia,intestinal perforation

thoracic duct

1st bacteremia
(Incubation stage)
10-14d

Pathology

- **Essential lesion:**

Proliferation of RES (reticuloendothelial system)

specific changes in lymphoid tissues & mesenteric lymph nodes.
"Typhoid nodules“

- **Most characteristic lesion:**

ulceration of mucous in the region of the peyer’s patches of the small intestine

Complications

- Intestinal hemorrhage
- Intestinal perforation
- Toxic hepatitis
- Acute cholecystitis
- Nephritis
- Hemolytic uremic syndrome.
- Toxic myocarditis
- Bronchitis, bronchopneumonia
- Toxic encephalopathy
- Meningitis

Diagnosis

- white blood cell count is normal or decreased
- Blood culture
- Urine and stool cultures
- Serological tests(Widal test)

Treatment

- Isolation and rest
- Good nursing care and supportive treatment
- Intravenous injection to maintain water and acid-base and electrolyte balance
- Antibiotics:
  - Quinolones
  - Chloramphenicol
  - Cephalosporines
- Treatment of complications

Ascariasis

Introduction

- a common cream colored roundworm that is parasitic in the intestines of humans
- Most common helminthic human infection
- Largest nematode to infect the human intestine
- Definitive host : Humans or pigs

Modes of transmission

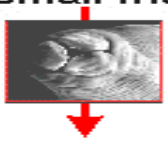
- Occurs mainly via ingestion of water or food
- Occasionally inhalation of contaminated dust
- Children playing in contaminated soil may acquire the parasite from their hands

Prior infection does not confer protective immunity

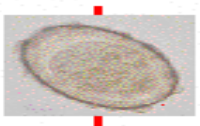
Life Cycle

THE LIFE CYCLES OF *ASCARIS LUMBRICOIDES* AND *ASCARIS SUUM*
(INTESTINAL ROUNDWORMS OF HUMANS AND PIGS)

Adult males and females in the small intestine.



Females produce eggs that are passed in the host's feces. (A single female can produce 200,000 eggs per day!)

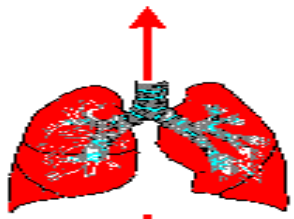


Juveniles in eggs mature to the infective (second) stage.

Eggs ingested by host and hatch in the small intestine. The juveniles penetrate the tissues of the intestine and enter the blood stream.

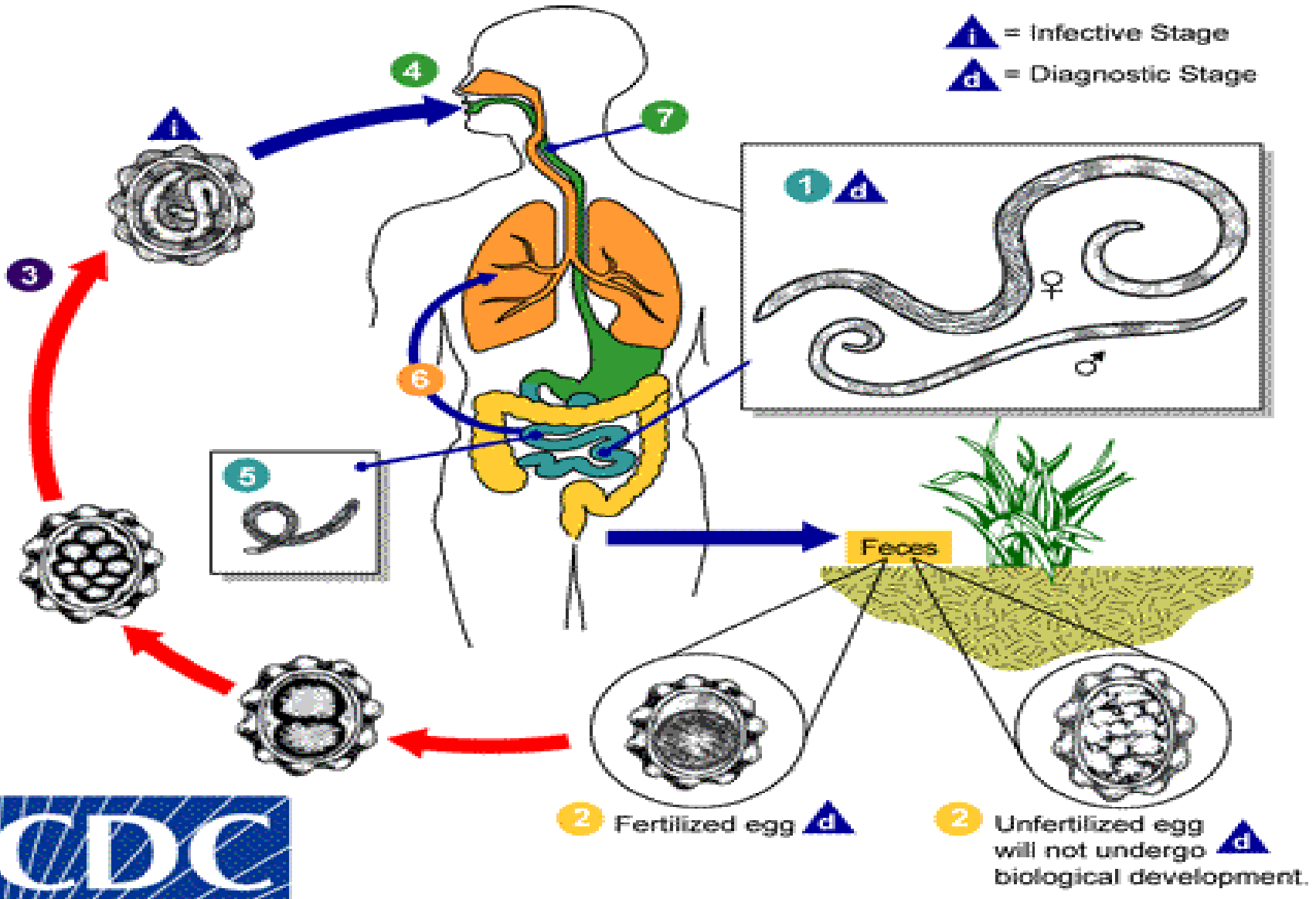
The juveniles are "coughed up" and swallowed. The juveniles complete their development in the small intestine.

The third stage juveniles migrate from the pulmonary capillaries into the alveoli (air sacs).



The juveniles migrate to the lungs and molt into third stage juveniles.

(Parasites and Parasitological Resources)



CDC
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http://www.dpd.cdc.gov/dpdx

Symptoms

Symptoms associated with larvae migration

- hemorrhagic/ eosinophilic pneumonia, cough (Loeffler's Syndrome)
- Breathing difficulties and fever
- asthmatic attacks, pulmonary infiltration and urticaria

Symptoms associated with adult parasite in the intestine

- Usually asymptomatic
- Abdominal discomfort, nausea in mild cases
- Malnutrition in host especially children in severe cases
- Sometimes fatality may occur when mass of worm blocks the intestine

Diagnosis

- Stool microscopy
- Eosinophilia
- Imaging
  - Ultrasound
  - Endoscopic Retrograde Cholangiopancreatography

Treatment

- Mebendazole
- Albendazole
- Pyrantel pamoate
- Ivermectin
- Piperazine citrate
- Levamisole