

Life cycle of *F. hepatica and Strongyloides stercoralis*

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Fasciola hepatica

Fascioliasis is a trematode flatworm infection caused by *Fasciola hepatica* or *Fasciola gigantica*

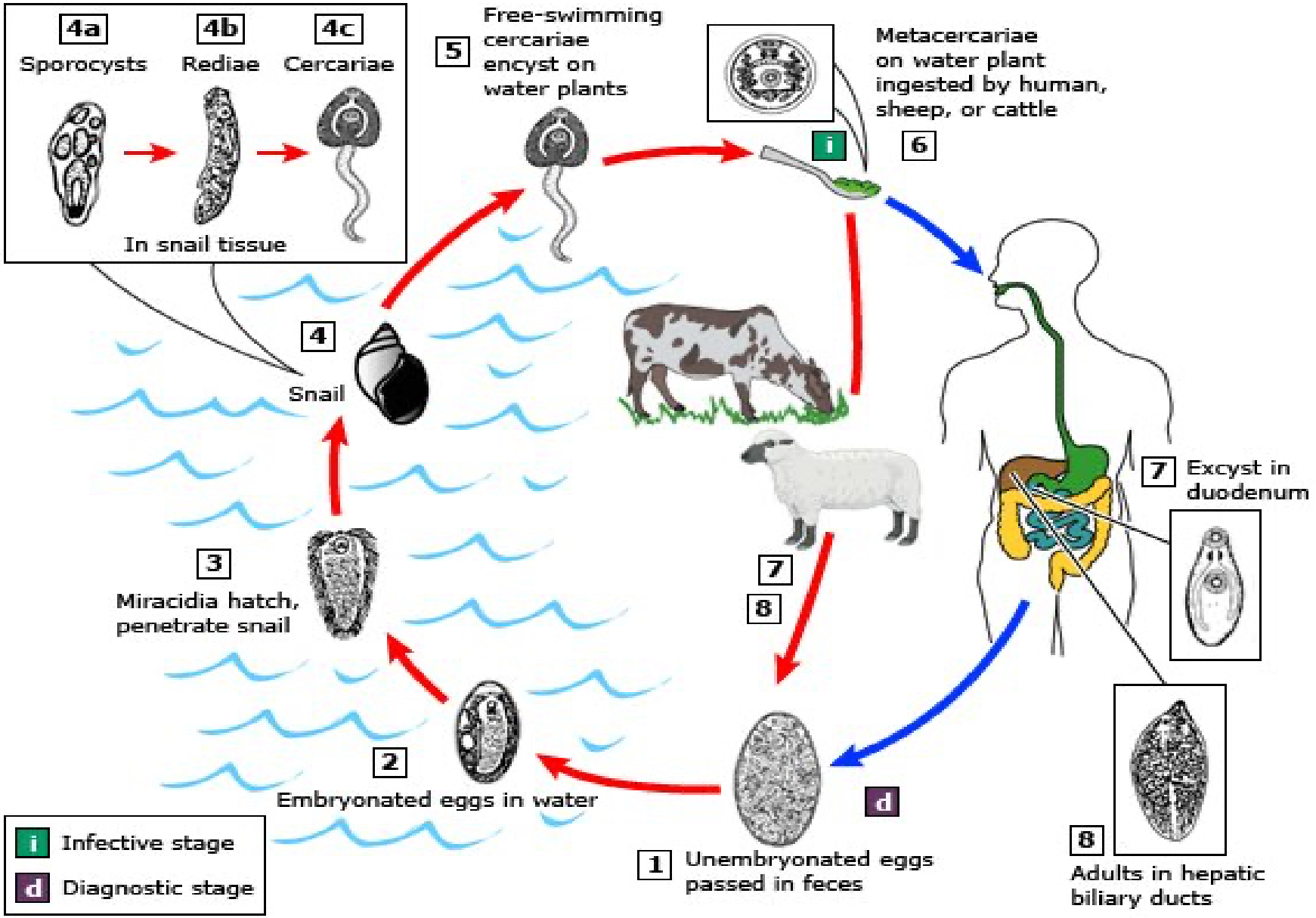


Life cycle

The life cycle of fascioliasis begins with release of unembryonated eggs into the biliary ducts, which are then passed in the stool of herbivores (defnitive hosts) or humans (incidental hosts)

Sheep, cattle, or humans acquire infection by eating vegetation containingmetacercariae. After ingestion, the metacercariae excyst in the duodenum and migrate through the intestinal wall, peritoneal cavity, and liver parenchyma into the biliary ducts, where they develop into adults; in humans, this takes three to four months

The life span of adult *F. hepatica fl*ukes within humans is estimated to be 9 to 13 years


4a
Sporocysts
4b
Rediae
4c
Cercariae
In snail tissue
5
Free-swimming cercariae encyst on water plants
Metacercariae on water plant ingested by human, sheep, or cattle
i
6
4
Snail
3
Miracidia hatch, penetrate snail
7
8
7
Excyst in duodenum
2
Embryonated eggs in water
d
1
Unembryonated eggs passed in feces
8
Adults in hepatic biliary ducts
i Infective stage
d Diagnostic stage

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The duration of the cycle from dermal penetration of filariform larvae to appearance of rhabditiform larvae in the stool is approximately three to four weeks.

Delayed onset of symptomatic infection has been observed among World War II ex-prisoners of war who worked on the BurmaThailand railroad and presented with clinical manifestations more than 40 years after initial exposure

Strongyloides stercoralis



Transmission

The most common mode for transmission of strongyloidiasis is via skin contact with contaminated soil. Lack of adequate sanitation facilities is an important risk factor

Less common modes:

1;fecal oral

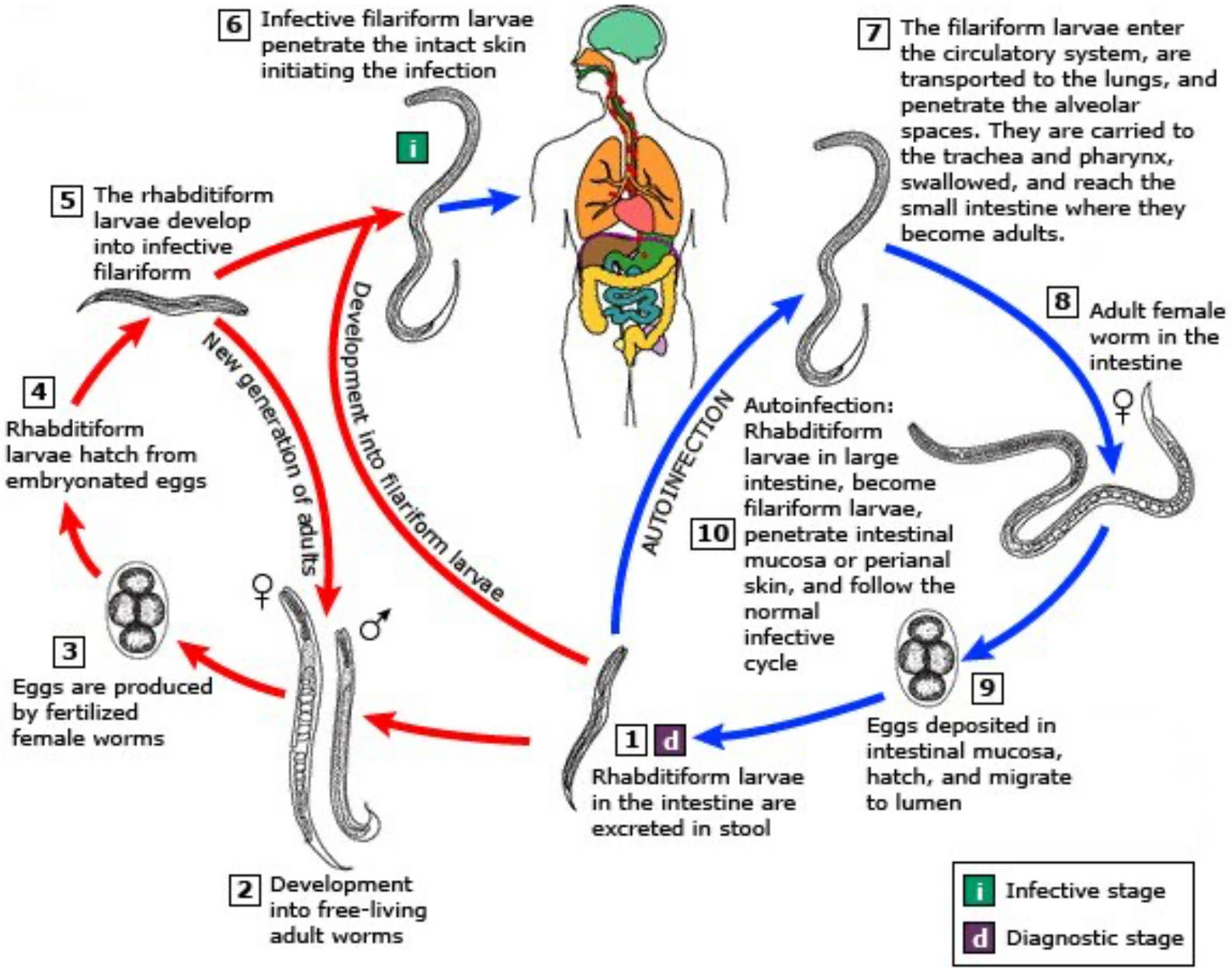
2;person to person transmission

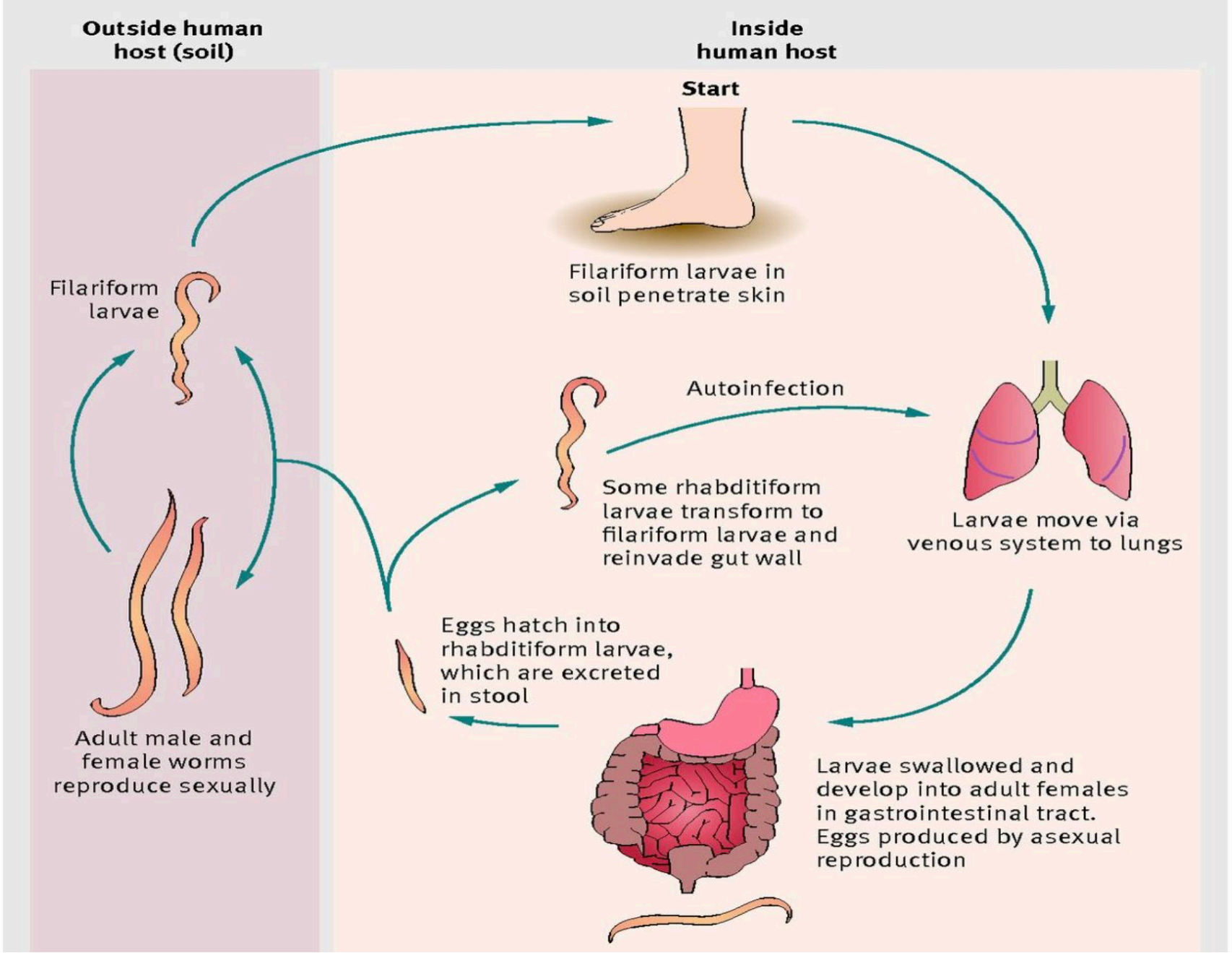
3;Nasocominated

4;organ transplantation

Life cycle and autoinfection

The life cycle begins when human skin contacts filariform larvae (the infective larval stage) of *S. stercoralis*, which are found in soil or other materials contaminated with human stool


6 Infective filariform larvae penetrate the intact skin initiating the infection
i
7 The filariform larvae enter the circulatory system, are transported to the lungs, and penetrate the alveolar spaces. They are carried to the trachea and pharynx, swallowed, and reach the small intestine where they become adults.
5 The rhabditiform larvae develop into infective filariform
Development into filariform larvae
New generation of adults
AUTOINFECTION
8 Adult female worm in the intestine
♀
4 Rhabditiform larvae hatch from embryonated eggs
Autoinfection: Rhabditiform larvae in large intestine, become filariform larvae, penetrate intestinal mucosa or perianal skin, and follow the normal infective cycle
10
3 Eggs are produced by fertilized female worms
♀
♂
9 Eggs deposited in intestinal mucosa, hatch, and migrate to lumen
1 d Rhabditiform larvae in the intestine are excreted in stool
2 Development into free-living adult worms
i Infective stage
d Diagnostic stage


Outside human host (soil)
Inside human host
Start
Filariform larvae in soil penetrate skin
Filariform larvae
Autoinfection
Some rhabditiform larvae transform to filariform larvae and reinvade gut wall
Larvae move via venous system to lungs
Eggs hatch into rhabditiform larvae, which are excreted in stool
Adult male and female worms reproduce sexually
Larvae swallowed and develop into adult females in gastrointestinal tract. Eggs produced by asexual reproduction