

DISEASE: Malaria

AGENT

***Plasmodium* spp. (*P. cynomolgi*, *P. knowlesi*, *P. inui* *P. schwetzi* *P. simium*, *P. brazilianum*, *P. eylesi*)**

RECOGNITION

Syndrome: Human: cyclical febrile periods accompanied by chills, sweating, and headache.

Animal: with the exception of ***P. brazilianum***, which can be fatal most infections of nonhuman primates are mild versions of the human form.

Incubation period: Usually **10-30** days, sometimes several months.

Case fatality rate: None. Recovery is spontaneous.

Confirmatory tests: Microscopic examination of Giemsa-stained thick blood smear for presence of parasite.

Occurrence: Rare. Africa, Asia, Latin America.

Transmission: By anopheline mosquitoes.

CONTROL AND PREVENTION

Individual/herd: Treat with chloroquine or amodiaquine. Use repellents. Chemoprophylaxk for human malarias will be effective.

Local/community: Mosquito control, screening.

National/international: None.

DISEASE Piroplasmosis

AGENT: *Babesia* spp. (*B. bovis*, *B. divergens*, *B. microti*)

RECOGNITION

Syndrome: Human: Commonly subclinical. Fever, headache, malaise, myalgia, hemolytic anemia, hemoglobinuria. Severe in splenectomized individuals. May be fatal.

Animal: Fever, anorexia, hemolytic anemia, icterus.

Incubation period: 1-12 months. **Case fatality rate:** Low.

Confirmatory tests: Test paired sera by indirect hemagglutination or fluorescent antibody. Microscopic examination of thin blood smear for parasite in RBCs.

Occurrence: Worldwide. In the United States mainly in the Northeast.

Primary reservoir of species affecting humans is in rodents, but bovines may also serve as reservoir of infection.

Transmission: Transmitted primarily by the bite of the nymphal stage of ixodid ticks. Transovarial and transstadial transmission of *Babesia* spp. exists among many species of these ticks.

CONTROL **AND** PREVENTION

Individual/herd Treat with chloroquine or pentamidine. Tick repellents.

Local/community: Tick control. Rodent control.

National/international: Importation of bovines from endemic areas into areas free of bovine babesiosis is usually restricted, varying from complete prohibition to quarantine and blood testing to ensure freedom from infection.

DISEASE: *Pneumocystis* Infection

AGENT

Pneumocystis carinii

RECOGNITION

Syndrome: Human: Asymptomatic infection common among immunocompetent individuals. Cough, dyspnea, cyanosis. Self-limiting except in debilitated children or immunosuppressed individuals among whom the syndrome will be severe and often fatal.

Animal: Usually subclinical, but interstitial pneumonia may develop if animal is debilitated or stressed.

Incubation period: 1-2 months.

Case fatality rate: Usually fatal in immunosuppressed without treatment.

Confirmatory **tests**: Radiography usually reveals bilateral interstitial pneumonia. Examine lung aspirate or tracheal mucus for organism after staining with Giemsa, Gomori, or toluidine blue O.

Occurrence: Worldwide. Humans are the primary reservoir, but many animals, especially rodent species, harbor the organism.

Transmission: Uncertain. **Assumed to be airborne.**

CONTROL AND PREVENTION

Individual/herd: Treat with trimethoprim, sulfamethoxazole, or pentamidine.

Local/community: Isolation of severely affected patients. Rodent control.

National/international None.

DISEASE: Sarcocystosis

AGENT

***Sarcocystis* spp. (*S. Hominis* {*bovihominis*}, *S. suihominis*)**

RECOGNITION

Syndrome: Human: Intestinal phase-usually asymptomatic. May have nausea, diarrhea, malaise. The tissue phase is rare and also usually asymptomatic, but severely affected individuals may have fever, weight loss, and myoaitis.

Animal: Usually subclinical in adults but may cause abortion. High case fatality rate among young calves and pigs.

Incubation period: 2 weeks.

Case fatality rate: Low.

Confirmatory tests: Microscopic examination of feces for presence of oocysts, or muscle biopsy of intermediate hosts for cysts.

Occurrence: Worldwide. Cysts are found in striated muscles of mammalian intermediate hosts (cattle, swine); oocysts in intestines of definitive hosts (humans).

Transmission: Ingestion of cysts in raw or undercooked beef or pork or ingestion of oocysts in feces of definitive hosts.

CONTROL AND PREVENTION

personal hygiene.

Individual/herd: Treat with sulfonamides. Cook meat. Institute good

Local/community: Prevent human fecal contamination of livestock feed.

National/international: None.

DISEASE: Toxoplasmosis

AGENT

Toxoplasma gondii

RECOGNITION

Syndrome: Human: Usually asymptomatic. Infection can produce fever, lymphadenopathy, lymphomatosis. If severe-myalgia, pneumonitis, CNS disturbances. Infection during pregnancy can produce chorioretinitis, hydrocephaly, or microcephaly in fetus or fetal death.

Dormant infection can be reactivated in immunosuppressed individuals.

Animal: Infection usually subclinical, except abortion is common among sheep and swine. Fever and **CNS** signs in dogs and cats.

Incubation period: 1-4 weeks, usually 7-14 days.

Case fatality rate: **Low** except for prenatal and neonatal infection or among immunosuppressed.

Confirmatory tests: Paired sera for Sabin-Feldman, indirect fluorescent antibody, complement fixation, indirect hemagglutination, or ELISA testing. Many individuals become infected and infection rate increases with age **so** paired sera are required.

Occurrence: Worldwide. Reservoir is among cats. Intermediate hosts include most species of birds and mammals.

Transmission: Cats excrete oocysts for about **10** days when first infected. Intermediate hosts are infected by ingesting oocysts from soil or vegetables contaminated by cat feces, or ingesting bradyzoites in undercooked meat from infected animals. If newly infected host is pregnant, transplacental infection can **o m** . Most primary infections occur as the result of eating undercooked meat. Some cases have been associated with drinking raw milk.

CONTROL **AND** PREVENTION

Individual/herd: Treat with pyrimethamine and sulfa. Cook meat, and pasteurize milk. Avoid contact with cat feces or soil contaminated with cat feces.

Local/community: Education regarding mechanism of transmission and need for adequate cooking of meat. Avoid feeding cats raw meat.

National/international None.

DISEASE: Trypanosomiasis, African AGENT

Trypanosoma brucei var. *gambiense*, *Trypanosoma brucei* var. *rhodesiensi*

RECOGNITION

Syndrome: Human: Chancre at site of fly bite. Fever, headache, lymphadenopathy, anemia. In later stages--somnolence ("sleeping sickness").

Animal: Usually subclinical. In cattle-lacrimation, anorexia, anemia, and weight loss may occur.

Incubation period *T. rhodesiense*-1-3 weeks. *T. gambiense*-longer, perhaps years.

Case fatality rate: Approaches **100%** without treatment.

Confirmatory tests: Microscopic examination of lymph from nodes and of buffy coat of blood for presence of the parasite. May be found in CNS fluid in later stages of infection. Paired sera for ELISA, complement fixation, and fluorescent antibody testing.

Occurrence: Tropical Africa. *T. rhodesiense* in upland savannas, *T. gambiense* in rain forests. Reservoirs are humans, wild game, and domestic cattle.

Transmission: *Glossina* spp. (tsetse) flies are the biological vector. Mechanical transmission by mouth parts of other biting flies can occur. Carnivores can acquire infection **by** ingestion of infected carcasses.

CONTROL **AND** PREVENTION

Individual/herd Treat with pentamidine, suramin, or melarsoprol.

Chemoprophylaxis with these products will be effective against *T.*

gambiense but cannot be relied upon against ***T. rhodesiense***.

Local/community: Eliminate breeding places of tsetse flies. Mass chemotherapy of infected humans. Provide education regarding method of transmission.

National/international: None.

DISEASE: Trypanosomiasis, American

AGENT

Trypanosoma cruzi

RECOGNITION

Syndrome: Human: Often asymptomatic. Inflammation at site of bite. Fever, malaise, lymphadenopathy, hepatosplenomegaly, unilateral palpebral edema, myocarditis, meningoencephalitis. Chronic form may produce megaesophagus and megacolon.

Animal: Subclinical in wild animals, but syndrome in dogs parallels that in humans.

Incubation **period 1-5** weeks. 30-40 days, if infection derives **from** blood transfusion.

Case fatality rate: 10%.

Confirmatory tests: Microscopic examination of blood for parasite.

Paired sera for ELISA, complement fixation, indirect fluorescent and agglutination testing. Identify parasite by xenodiagnosis (bug fed on patient's blood).

Occurrence: Western hemisphere. South and Central America, Mexico.

Reservoirs are humans, wild (armadillos, opossums, rabbits, rodents) and domestic animals, especially dogs and cats. Most human cases are in children.

Transmission: Contamination of bite wound with feces from infected triatomid bugs of the family Reduviidae (“assassin bugs”) during feeding. **Also** by blood transfusion and prenatal transmission.

CONTROL AND PREVENTION

Individual: Treat with Nifurtimox (Bayer **2502**), aminoquinalone. Utilize insect repellents.

Local/community: Education regarding method of transmission. Vermin control.

Screen blood donors

National/international: None.