

KNOW ABOUT BRUCELLOSIS

- Zoonosis that affects both animals & humans
- Also named as “Malta fever” or “Undulant fever”
- Caused by various species of genus *Brucella*
- Endemic in various regions in India

TRANSMISSION IN ANIMALS

- Contact with infected animals & aborted materials
- Consumption of contaminated feed & water
- By breeding/mating with infected animals

TRANSMISSION IN HUMANS

- Direct contact with infected animals
- Consumption of contaminated animal products
- Laboratory acquired infections in lab workers

SPECIES AFFECTED



CLINICAL SYMPTOMS IN ANIMALS & HUMANS

IN ANIMALS

- Abortion in last trimester of pregnancy
- Reproductive disorders/infertility
- Hygroma of knee joint
- Orchitis (testicular inflammation)



IN HUMANS

- Recurrent Fever
- Night chills & sweating
- Back, muscle & joint pain
- Orchitis (testicular inflammation)



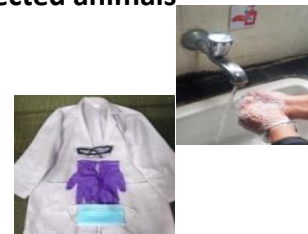
HOW TO DIAGNOSE BRUCELLOSIS ?



PREVENTION & CONTROL

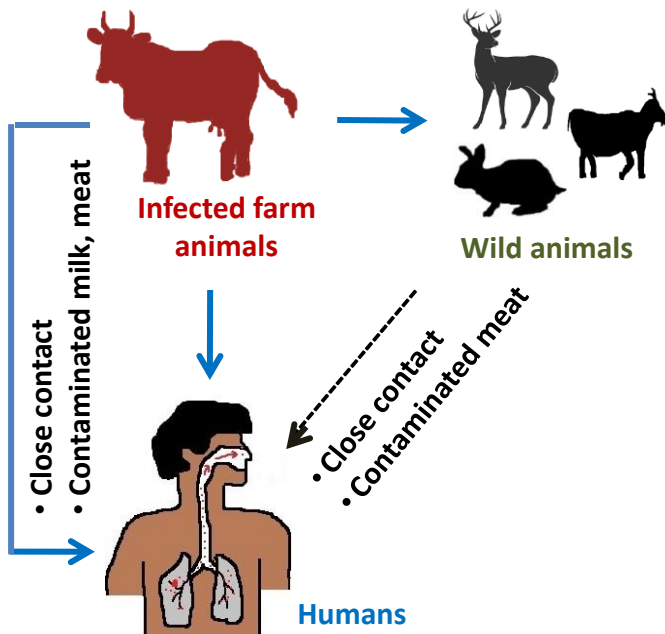
- ✓ Calf-hood vaccination in female calves
- ✓ Isolation of infected animals
- ✓ Avoid breeding of infected animals
- ✓ Proper disposal of animal's infected afterbirth
- ✓ Proper quarantine & testing of newly purchased animal

- ✓ Use PPE kit (protective clothing, mask, gloves, goggles while handling infected animals)
- ✓ Prevent consumption of raw milk & milk products
- ✓ Follow hand hygiene practices

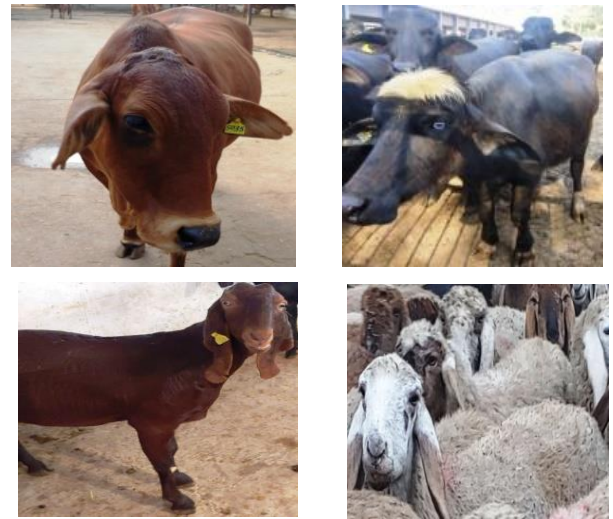


- Bovine tuberculosis (TB) is a bacterial zoonosis caused by *Mycobacterium bovis*
- The disease cause significant socio-economic impact on animal husbandry

TRANSMISSION



SPECIES AFFECTED



CLINICAL SYMPTOMS IN ANIMALS

- Weight loss
- Hide bound condition
- Persistent cough
- Milk reduction



CLINICAL SYMPTOMS IN HUMANS

- Coughing, sneezing, weight loss, extrapulmonary form

HOW TO DIAGNOSE TUBERCULOSIS ?

- Microscopy (Acid fast staining)
- Intradermal skin test
- Molecular test (PCR)
- Culture test (Incubation: 4-6 weeks)
- Serological test (ELISA)

PREVENTION & CONTROL

IN ANIMALS

- ✓ Test & segregation of the suspected animal(s)
- ✓ Sanitization of animal farms
- ✓ Testing of animals before purchase
- ✓ Prevent animal grazing at infected sites

IN HUMANS

- ✓ Use proper PPE kit (protective clothing, mask, gloves, goggles) while handling infected animals
- ✓ Proper cooking of milk and milk products
- ✓ Regular testing in endemic regions & awareness

KNOW ABOUT COXIELLOSIS

- Highly contagious neglected zoonotic disease caused by *Coxiella burnetii*
- Ruminants (e.g., goat, sheep, cattle etc.) are considered as main reservoir hosts

ANIMALS AFFECTED

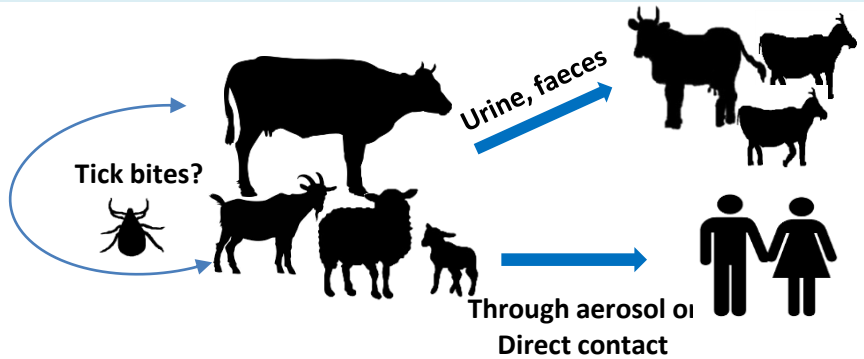


SYMPTOMS

- Stillbirths
- Weak offspring
- Abortions
- Production losses

HOW DOES IT SPREAD ?

- Inhalation of dust contaminated by infected animal faeces, urine and birth products .
- Ingestion of contaminated milk & milk products .



Disease in humans

Acute Q fever



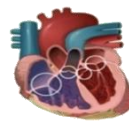
Fever



Pneumonia



Hepatitis



Endocarditis

Chronic Q fever



Chronic Fatigue



Abortion

DIAGNOSIS

- **Serological tests:** ELISA, CF & IFA
- **DNA detection:** PCR
- **Isolation :** cell culture, egg inoculation

PREVENTION & CONTROL

- ✓ Dispose off animal birth products properly & don't throw in open ground
- ✓ Wear protective clothing while handling suspected animals
- ✓ Consumption of pasteurized milk and milk products

- Leptospirosis is a bacterial zoonosis caused by bacteria of the genus *Leptospira* spp.
- Wide host range & causes serious illness in dogs, farm animals and humans
- Leptospire can survive live in stagnant water or warm wet soil for several weeks

SPECIES AFFECTED



TRANSMISSION



Leptospira passes into environment through urine contamination



Contaminated environment

Bathing, drinking, or direct contact with contaminated water



SYMPTOMS & EFFECTS

Cattles

- Drop in milk production and mastitis
- Infertility, abortion, stillbirths

Dogs

- Fever, blood tinged stool & urine
- In severe cases jaundice and multiorgan failure

Humans

- Diarrhoea, vomiting, fever, conjunctivitis
- In severe cases multi-organ failure is reported

DIAGNOSIS

Serological tests:
MAT, ELISA



Molecular test:
PCR



Culture & Isolation



PREVENTION & CONTROL

- ✓ Proper vaccination in dogs
- ✓ Rodent control
- ✓ Wear protective clothing while handling animals
- ✓ Hygiene and sanitation- Farm biosecurity
- ✓ Awareness among at risk groups



WHAT IS LISTERIOSIS?

- Listeriosis is a serious food born infection caused by the bacterium *Listeria monocytogenes*
- Also known as “Circling Disease”
- Organism can survive at refrigeration temperature in contaminated food



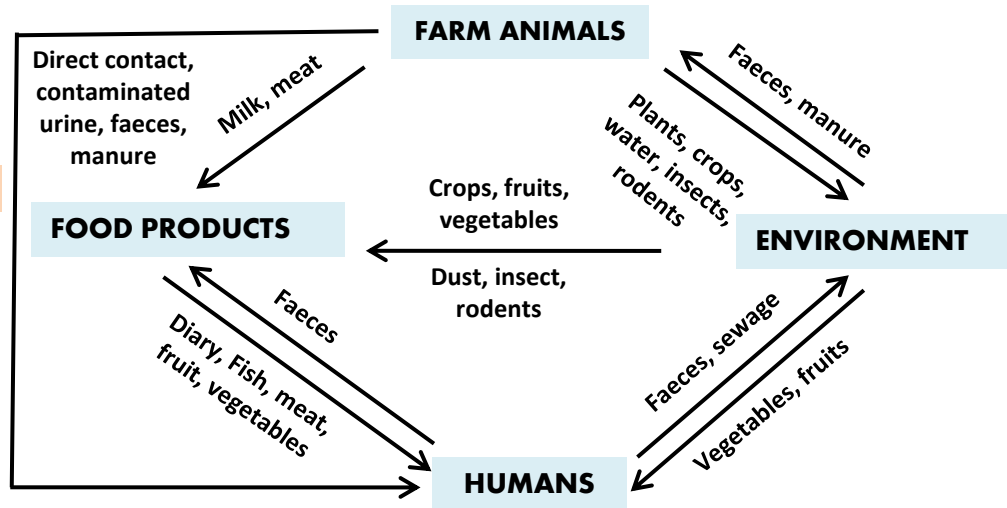
WHO IS AT HIGH RISK?

- Pregnant woman
- Children
- Aged people
- Immuno-compromised people

ANIMALS AFFECTED



TRANSMISSION



SYMPTOMS OF LISTERIOSIS

IN ANIMALS

- Abortion
- Unilateral facial paralysis
- Difficulty in swallowing
- Encephalitis

IN HUMANS

- Diarrhoea, fever, Stiff neck
- Meningitis, loss of balance
- Abortion in pregnant women
- Can affect abdomen, chest, bones & joints

DIAGNOSIS

- Based on clinical symptoms (nervous signs)
- Bacterial culture
- Molecular testing: PCR
- Serological tests: ELISA

PREVENTION & CONTROL

- Isolation & segregation of infected animals
- Prevent animal grazing at contaminated areas
- Avoid consumption of raw milk products and meat
- Break the transmission cycle by adopting good farm management practices
- Safe handling, cooking and consumption of hygienic food
- Wear protective clothing while handling infected animals



WHAT IS CRYPTOSPORIDIOSIS?

- It is a contagious disease caused by intestinal parasite *Cryptosporidium spp.*
- Infection is common among cattle, young lambs & goats, pigs, foals and deers
- One of the common cause of calf diarrhoea
- Can infect humans, especially young children & persons with low immunity

KEY FACT

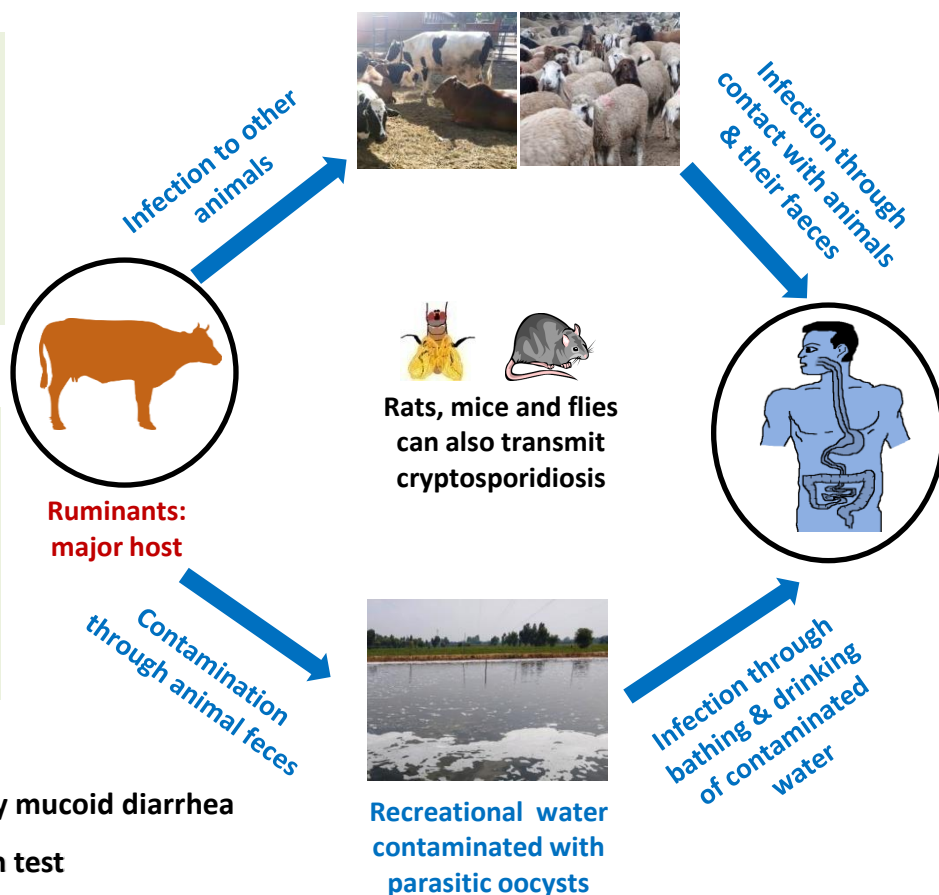
Billions of parasitic oocysts can be excreted per day from infected calf which can remain alive in environment for longer period

SYMPTOMS IN ANIMALS

- Fever
- Diarrhea
- Poor appetite
- Weight loss
- Vomiting

DIAGNOSIS

- Persistent yellowish and watery mucoid diarrhoea
- Fecal smear staining & flotation test
- ELISA, PCR and immunochromatographic techniques



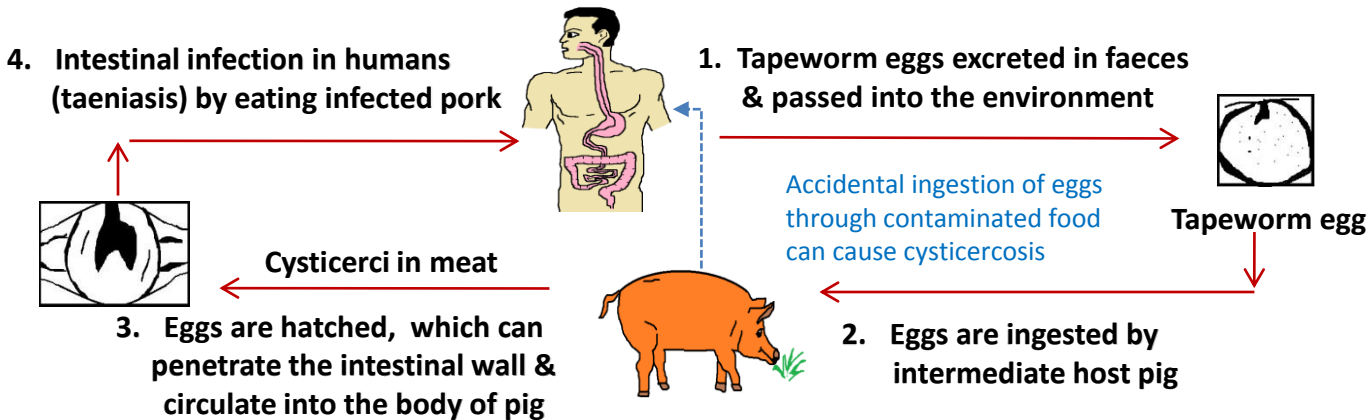
PREVENTION & CONTROL

- ✓ Symptomatic treatment & nutritional support
- ✓ Fluid and electrolyte replacement
- ✓ Use of prescribed anti-parasitic drugs
- ✓ Antidiarrheal remedies
- ✓ Rats and mice should be controlled at farms
- ✓ Use drinking water after proper treatment
- ✓ Calf rearing houses at farms should be cleaned
- ✓ Calving should take place in clean environment

WHAT IS CYSTICERCOSIS ?

- ❑ Cysticercosis is a parasitic infection caused by the cysticerci of the tapeworm *Taenia solium*
- ❑ Taeniasis is the intestinal form of infection in humans
- ❑ Can infects brain, muscle, and/or other tissues of the body

TRANSMISSION CYCLE



CLINICAL SYMPTOMS IN ANIMALS & HUMANS

SYMPTOMS IN ANIMALS

- Most of the animals remain asymptomatic, sometimes symptoms like trembling, eye blinking and salivation can be observed

SYMPTOMS IN HUMANS

- Taeniasis: Abdominal pain, and vomiting
- Cysticercosis stage can affect various organs depending on the lodgement site of the cyst
- Neurocysticercosis: Seizures, stroke, numbness

HOW TO DIAGNOSE CYSTICERCOSIS ?



- Stool analysis to check for the presence of tapeworm eggs
- Imaging tests: CT scan, MRI, and X-ray
- Blood sample for the presence of parasite antigens or antibodies against the parasite

PREVENTION & CONTROL

- ✓ Treatment is based on the type of organ affected
- ✓ Prophylactic anthelmintics in pigs and humans
- ✓ Restrain free roaming of pigs in endemic regions
- ✓ Break the pig - human transmission cycle
- ✓ Avoid human open defecation
- ✓ Proper cooking of meat (above 70°C)

ABOUT TOXOPLASMOSIS

- A foodborne parasitic disease caused by *Toxoplasma gondii*, infecting both animals and humans
- Can be transmitted through ingestion of *Toxoplasma* oocyst directly from environment, contaminated food or water, soil
- Emerging infection among immunocompromised persons

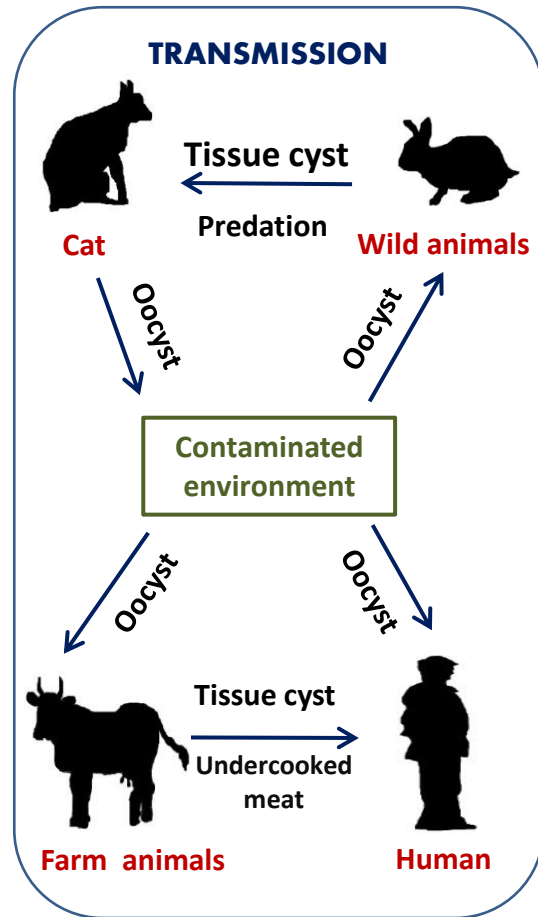
CLINICAL SYMPTOMS

IN ANIMALS

- Fever, anorexia
- Abortion, stillbirth
- Respiratory disorders
- Neurologic disorders
- Multiorgan failure

IN HUMANS

- Abortion in pregnant ladies
- Headache, fever
- Muscle pain, skin lesions
- Ocular toxoplasmosis
- Congenital toxoplasmosis



HOW TO DIAGNOSE FOR TOXOPLASMOSIS ?

- Detection of oocyst in faecal samples, histological examination
- Serological testing: ELISA, latex agglutination test, indirect fluorescent antibody assay
- Molecular testing by PCR

PREVENTION & CONTROL

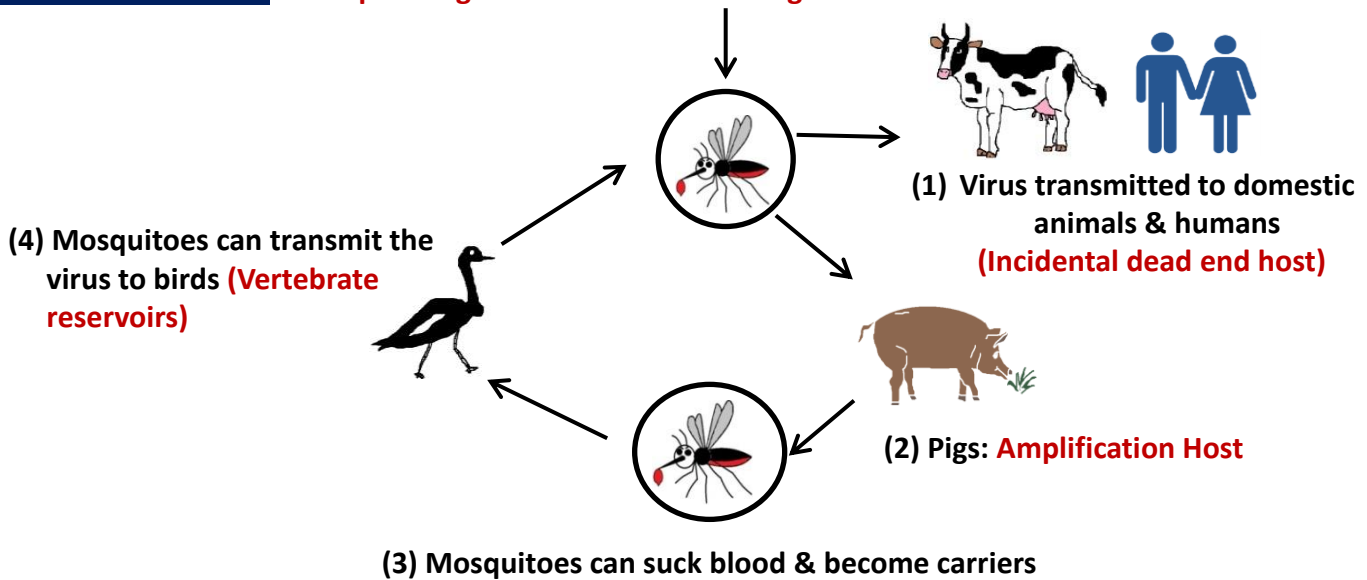
- ✓ Vaccination of at risk population
- ✓ Carefully replacement of cat litter
- ✓ Pregnant ladies & immunocompromised people should avoid changing of cat litter
- ✓ Prevent animal grazing of animals at contaminated environment
- ✓ Do not eat raw or under cooked meat
- ✓ Do not eat unwashed fruits & vegetables
- ✓ Do not drink unpasteurized milk
- ✓ Wash hands with soap after contacting with contaminated environment
- ✓ Avoid contact with infected animals

Cause of epidemic encephalitis worldwide

- Mosquito (*Culex* spp.) born zoonotic disease caused by Japanese encephalitis virus (JEV)
- Pigs are the reservoir & amplifier hosts
- Humans, especially children, are affected incidentally

TRANSMISSION

Mosquitoes gets infected after sucking blood from infected vertebrate reservoirs



CLINICAL SYMPTOMS

PIGS

- Abortion & stillbirths
- Tremors & convulsions in piglets with high mortality

HORSES

- Fever
- Inability to walk and stupor
- Teeth grinding

HUMANS

- Fever, headache, weakness
- Severe encephalitis can be observed in children

DIAGNOSIS

PCR



ELISA



Isolation in cell culture & egg inoculation

PREVENTION & CONTROL

- ✓ Careful rearing of pigs in endemic regions
- ✓ Vaccination in children, especially in endemic regions
- ✓ Use mosquito nets & sprays in highly endemic areas
- ✓ Eliminate mosquito breeding areas
- ✓ Wear protective clothing during outdoor activities



WHAT IS SCRUB TYPHUS ?

- Caused by *Orientia tsutsugamushi*
- Also known as bush typhus
- Spread to humans by bites of infected chiggers (larval mites)
- Chiggers acts both as reservoir & vector for the bacterium
- Rodents are primary and humans are secondary hosts



Chigger mite
Main cause of
transmission

HOW DOES SCRUB TYPHUS SPREADS ?

Mainly spreads through mites of cats, dogs, rats or other small animals infected with *O. tsutsugamushi*

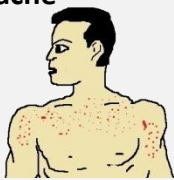
CLINICAL SYMPTOMS

IN ANIMALS

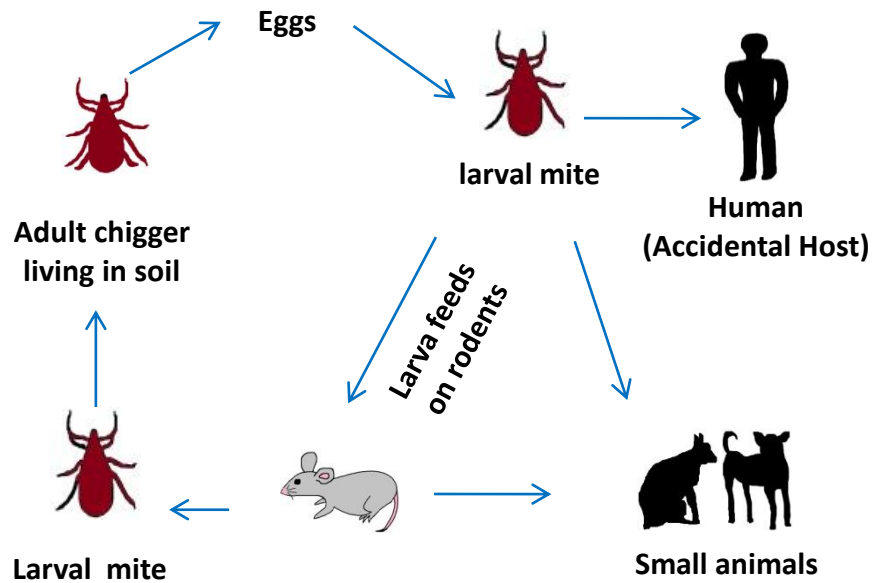
Scrub typhus is not known to occur naturally, if present then the following symptoms such as, bloody diarrhoea, chills, foul breath odour & darkening of eye membranes can be observed

IN HUMANS

- High Fever & headache
- Body ache
- Muscle pain
- Scars and rashes



TRANSMISSION CYCLE OF SCRUB TYPHUS



DIAGNOSIS

SEROLOGICAL TEST

ELISA

MOLECULAR TESTING

PCR

ISOLATION

Egg inoculation, cell culture

PREVENTION & CONTROL OF SCRUB TYPHUS ?

- ✓ Use flea & tick collars or sprays for pets
- ✓ Rodent control
- ✓ Wash hands thoroughly after petting a dog
- ✓ Wear protective clothing while caring infected animals

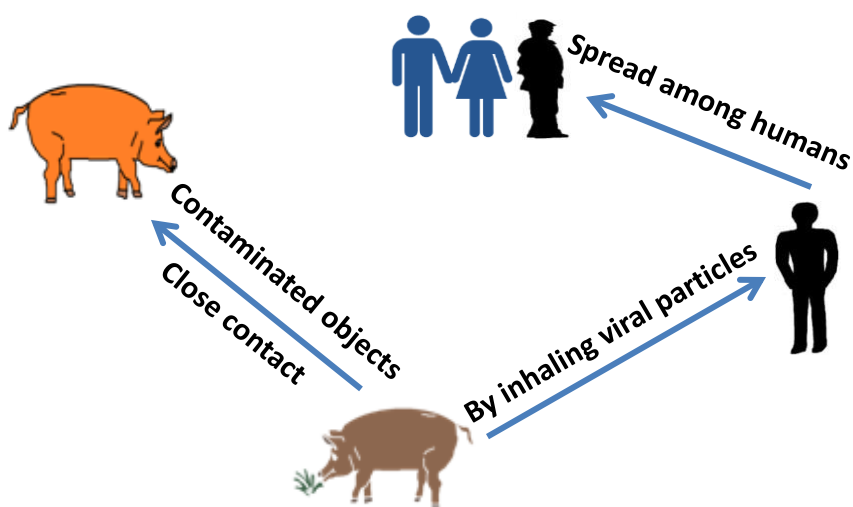


ABOUT SWINE INFLUENZA

- Swine Influenza (swine flu) is a respiratory disease of pigs caused by type A influenza virus.
- Morbidity rates can reach 100% and most outbreaks occur during the late fall and winter months.
- In rare cases, influenza virus can also infect humans.



TRANSMISSION



Spread among pigs mostly through close contact and possibly from contaminated objects moving between infected and uninfected pigs

SYMPTOMS

PIGS:

- Fever, depression, coughing
- Discharge from the nose or eyes
- Sneezing and breathing difficulties
- Eye redness or inflammation
- Anorexia

HUMANS:

Flu like symptoms may appear like Fever, Cough, Sneezing.

DIAGNOSIS

Serological test
ELISA



Molecular test
PCR



Virus Isolation
Cell culture

TREATMENT AND CONTROL

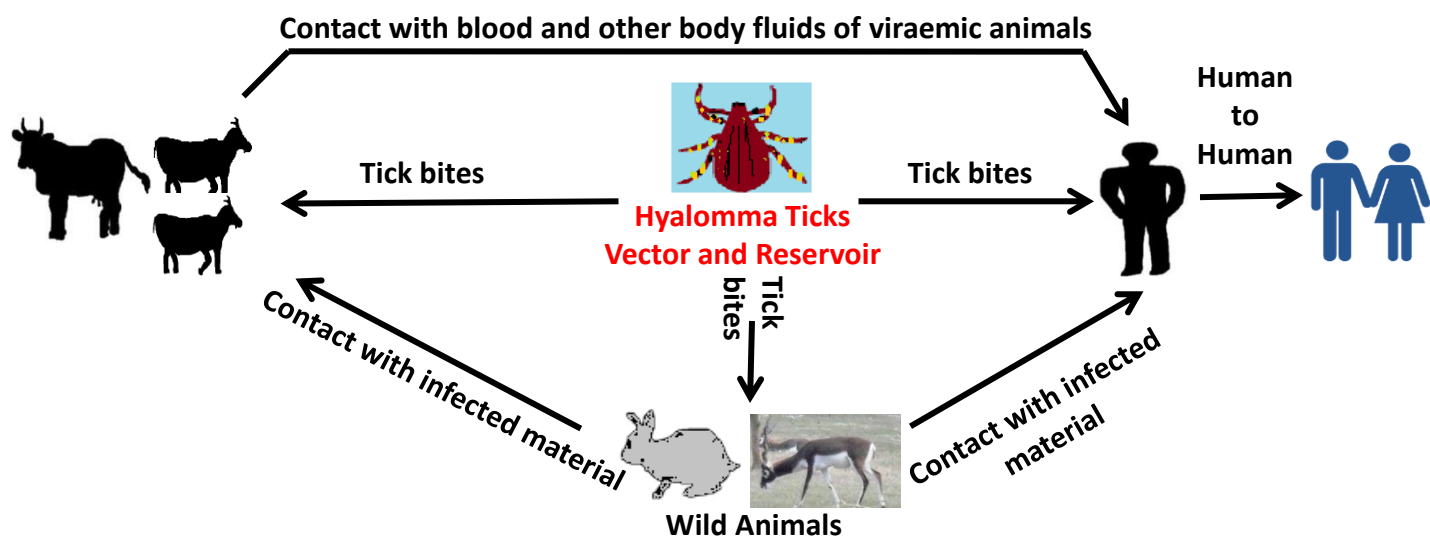
- ✓ Good biosecurity measures to prevent transmission through fomites and mechanical vectors.
- ✓ Depopulation of infected Pigs.
- ✓ Avoid close contact with suspected pig cases in endemic regions.
- ✓ Wash your hands properly before and after handling the pigs.



ABOUT CCHF

- Zoonotic disease caused by Crimean-Congo haemorrhagic fever virus (CCHFV).
- Affects both humans and animals through tick bite.
- Infections in humans can result in the development of a severe disease with high case fatality rate.

HOW IT SPREADS?



SYMPTOMS

HUMANS

- Sudden fever, myalgia (muscle ache), dizziness, neck pain, backache, headache.
- Nausea, vomiting, diarrhoea, abdominal pain and sore throat

ANIMALS

- Infections are usually asymptomatic among animals.

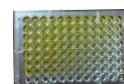
DIAGNOSIS

✓ Serum neutralization

✓ ELISA

✓ RT-PCR

✓ Virus isolation by cell culture



TREATMENT & CONTROL

- ✓ General supportive care with treatment of symptoms
- ✓ Prevention by reducing the risk of tick-to-human transmission using protective clothing, acaricides etc
- ✓ Wear gloves and other protective clothing while handling animals or their tissues in endemic areas to reduce animal-to-human transmission
- ✓ Avoid close physical contact with CCHF-infected people and wash hands regularly after caring for or visiting ill people to prevent human-to-human transmission

