

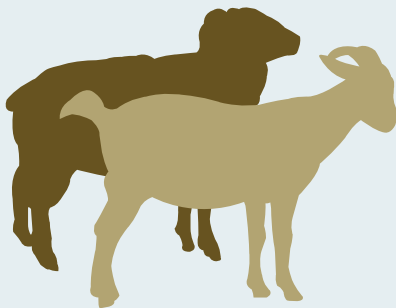
# Small Ruminant Diseases By Transmission Route: ALL ROUTES

Diseases can be spread from animal-to-animal by five main routes of transmission.

The following tables summarize several diseases of sheep and goats and their method of transmission

Many of these diseases can also affect people (zoonotic) or be introduced to the U.S. from other countries (termed "foreign animal disease" or FAD).

Prevention measures directed at stopping disease transmission can protect a wide range of diseases.



## ▲ Zoonotic Disease (Z):

Disease that can be transmitted between animals and humans.

## ● Foreign Animal Disease (FAD):

Never found or previously eradicated within the U.S. animal population. The disease is reportable to State and Federal animal health authorities.



The Center for  
Food Security  
& Public Health

IOWA STATE UNIVERSITY®  
College of Veterinary Medicine

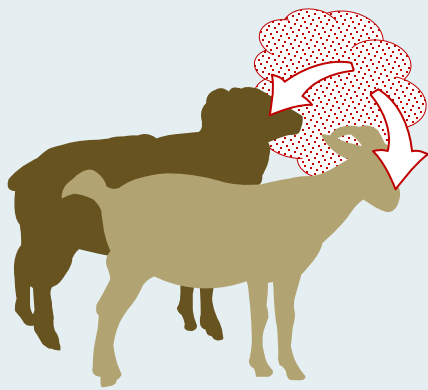
	Aerosol	Direct Contact	Fomites	Oral / Ingestion	Vector	Zoonotic	FAD
Anthrax ( <i>Bacillus anthracis</i> )	■	■	■	■	■	▲	
Blackleg ( <i>Clostridium chauvoei</i> ) [sheep]			■				
Brucellosis ( <i>Brucella melitensis</i> )	■	■		■		▲	
Campylobacteriosis / Vibriosis		■	■	■		▲	
Caseous lymphadenitis ( <i>C. pseudotuberculosis</i> )	■	■	■	■		▲	
Chlamydiosis ( <i>Chlamydia abortus</i> )	■	■				▲	
Clostridial diseases – dysentery, braxy, enterotoxemia	■		■	■			
Colibacillosis ( <i>E. coli</i> )	■		■	■	■	▲	
Contagious ecthyma		■	■			▲	
Cryptosporidiosis	■	■	■	■		▲	
Cysticercosis/Taeniasis ( <i>Taenia ovis</i> , others)			■	■		▲	
Dermatophytosis/Ringworm/Club lamb fungus		■	■			▲	
Echinococcosis		■	■	■		▲	
Foot and mouth disease	■	■	■	■			●
Foot rot/Foot scald		■	■				
Leptospirosis	■	■	■	■		▲	
Listeriosis / Circling disease				■		▲	
Malignant catarrhal fever	■	■	■				
Mycoplasmosis ( <i>M. ovipneumoniae</i> )	■						
Ovine progressive pneumonia/maedi-visna	■						
Paratuberculosis (Johne's disease)		■		■			
Pasteurellosis	■	■		■			
Peste des petits ruminants	■	■	■				
Q fever ( <i>Coxiella burnetii</i> )	■	■	■	■	■	▲	
Rabies		■				▲	
Rift Valley fever	■	■				▲	●
Salmonellosis			■	■	■	▲	
Scrapie			■	■			
Sheeppox virus/Goat pox virus	■	■	■				
Tetanus / Lock jaw ( <i>Clostridium tetani</i> )		■	■	■			
Toxoplasmosis		■	■	■		▲	
Tularemia ( <i>Francisella tularensis</i> )	■			■	■	▲	
Vesicular stomatitis virus		■	■		■	▲	

Prevention measures used to reduce a particular route of transmission can protect against many diseases.

# Small Ruminant Diseases By Transmission Route: **AEROSOL**

**Aerosol transmission** occurs when droplets containing disease agents that pass through the air and are inhaled. Most infective particles only travel short distances, and require close contact.

The following diseases of sheep and goats spread by aerosol or droplets.



**▲ Zoonotic Disease (Z):**

Disease that can be transmitted between animals and humans.

**● Foreign Animal Disease (FAD):**

Never found or previously eradicated within the U.S. animal population. The disease is reportable to State and Federal animal health authorities.

	Zoonotic	FAD
Anthrax ( <i>Bacillus anthracis</i> )	▲	
Brucellosis ( <i>Brucella melitensis</i> )	▲	
Caseous lymphadenitis ( <i>C. pseudotuberculosis</i> )	▲	
Chlamydiosis ( <i>Chlamydia abortus</i> )	▲	
Clostridial diseases – dysentery, braxy, enterotoxemia		
Colibacillosis ( <i>E. coli</i> )	▲	
Cryptosporidiosis	▲	
Foot and mouth disease		●
Leptospirosis	▲	
Malignant catarrhal fever		
Mycoplasmosis ( <i>M. ovipneumoniae</i> )		
Ovine progressive pneumonia/maedi-visna		
Pasteurellosis		
Peste des petits ruminants		
Q fever ( <i>Coxiella burnetii</i> )	▲	
Rift Valley fever	▲	●
Sheep pox virus/Goat pox virus		
Toxoplasmosis	▲	
Tularemia ( <i>Francisella tularensis</i> )	▲	



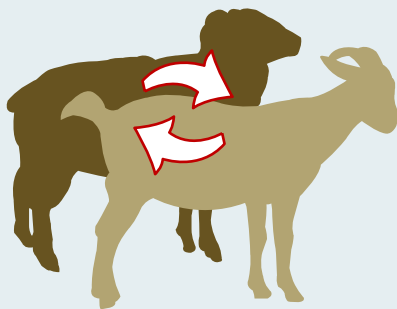
IOWA STATE UNIVERSITY®  
College of Veterinary Medicine

Using prevention measures to reduce aerosol transmission can protect against all of the listed diseases.

# Small Ruminant Diseases By Transmission Route: **DIRECT CONTACT**

**Direct contact transmission** occurs when animals touch or have physical contact with the body fluids of an infected animal. Some are transferred reproductively during breeding or from the mother to offspring.

The following diseases of sheep and goats spread by direct contact.



## ▲ Zoonotic Disease:

Disease that can be transmitted between animals and humans.

## ● Foreign Animal Disease (FAD):

Never found or previously eradicated within the U.S. animal population. The disease is reportable to State and Federal animal health authorities.



**IOWA STATE UNIVERSITY®**  
College of Veterinary Medicine

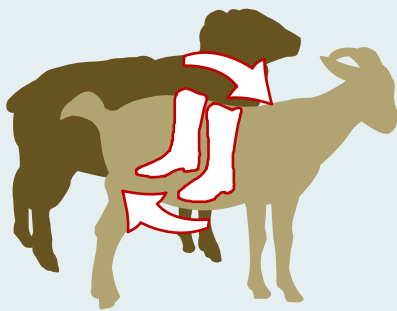
	Reproductive	Zoonotic	FAD
Anthrax ( <i>Bacillus anthracis</i> )		▲	
Brucellosis ( <i>Brucella melitensis</i> )	■	▲	
Campylobacteriosis / Vibriosis	■	▲	
Caseous lymphadenitis ( <i>C. pseudotuberculosis</i> )		▲	
Chlamydiosis ( <i>Chlamydia abortus</i> )		▲	
Colibacillosis ( <i>E. coli</i> )		▲	
Contagious ecthyma		▲	
Cryptosporidiosis		▲	
Dermatophytosis/Ringworm/Club lamb fungus		▲	
Echinococcosis		▲	
Foot and mouth disease			●
Foot rot/Foot scald			
Leptospirosis	■	▲	
Malignant catarrhal fever	■		
Paratuberculosis (Johne's disease)			
Pasteurellosis			
Peste des petits ruminants			
Q fever ( <i>Coxiella burnetii</i> )	■	▲	
Rabies		▲	
Rift Valley fever	■	▲	●
Scrapie	■		
Sheep pox virus/Goat pox virus			
Tetanus / Lock jaw ( <i>Clostridium tetani</i> )			
Toxoplasmosis	■	▲	
Vesicular stomatitis virus		▲	

Using prevention measures to reduce direct contact transmission can protect against all of the listed diseases.

# Small Ruminant Diseases By Transmission Route: **FOMITES**

**Fomite transmission** occurs when there is contact with objects or surfaces contaminated by body fluids or feces of an infected animal. Many disease-causing agents are able to persist in the environment, resulting in exposure risks.

The following diseases of sheep and goats spread by fomites.



## ▲ Zoonotic Disease (Z):

Disease that can be transmitted between animals and humans.

## ● Foreign Animal Disease (FAD):

Never found or previously eradicated within the U.S. animal population. The disease is reportable to State and Federal animal health authorities.



**IOWA STATE UNIVERSITY®**  
College of Veterinary Medicine

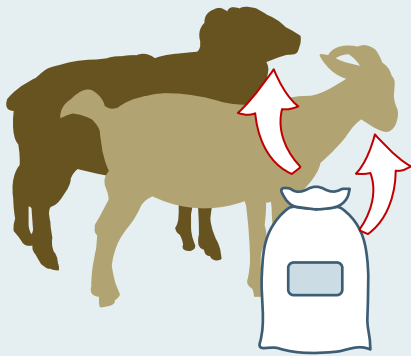
	Feed/Water Equipment	Footwear	Handling Equipment	Housing	Soil	Treatment Equipment	Water	Hide/Wool	Zoonotic	FAD
Anthrax ( <i>Bacillus anthracis</i> )					■			■	▲	
Blackleg ( <i>Clostridium chauvoei</i> ) [sheep]				■	■					
Campylobacteriosis / Vibriosis	■	■	■	■	■	■	■		▲	
Caseous lymphadenitis ( <i>C. pseudotuberculosis</i> )	■		■		■	■	■		▲	
Clostridial diseases (dysentery, braxy, enterotoxemia)	■	■	■	■	■	■				
Colibacillosis ( <i>E. coli</i> )	■	■	■	■	■	■	■		▲	
Contagious ecthyma	■		■	■	■				▲	
Cryptosporidiosis	■	■	■	■	■	■	■		▲	
Cysticercosis/Taeniasis ( <i>Taenia ovis</i> , others)					■		■		▲	
Dermatophytosis/Ringworm/Club lamb fungus	■		■	■	■			■	▲	
Echinococcosis					■				▲	
Foot and mouth disease	■	■	■	■		■				●
Foot rot/Foot scald		■		■	■		■			
Leptospirosis	■			■	■		■		▲	
Malignant catarrhal fever	■		■		■	■				
Peste des petits ruminants	■			■			■			
Q fever ( <i>Coxiella burnetii</i> )				■	■	■			▲	
Salmonellosis	■	■	■	■	■	■			▲	
Scrapie	■			■	■	■				
Sheep pox virus/Goat pox virus	■	■	■	■	■			■		
Tetanus / Lock jaw ( <i>Clostridium tetani</i> )				■	■					
Toxoplasmosis	■			■	■		■		▲	
Vesicular stomatitis virus	■			■			■		▲	

Using prevention measures to reduce oral transmission can protect against all of the listed diseases.

# Small Ruminant Diseases By Transmission Route: **ORAL/INGESTION**

**Oral transmission** occurs when an animal ingests disease-causing agents. This can occur from in contaminated feed or water, or by licking or chewing on contaminated environmental objects.

The following diseases of sheep and goats spread by ingestion.



## ▲ Zoonotic Disease (Z):

Disease that can be transmitted between animals and humans.

## ● Foreign Animal Disease (FAD):

Never found or previously eradicated within the U.S. animal population. The disease is reportable to State and Federal animal health authorities.



**IOWA STATE UNIVERSITY®**  
College of Veterinary Medicine

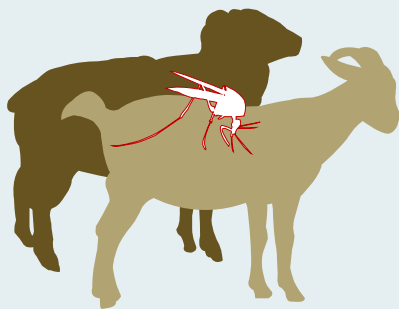
	Zoonotic	FAD
Anthrax ( <i>Bacillus anthracis</i> )	▲	
Blackleg ( <i>Clostridium chauvoei</i> ) [sheep]		
Brucellosis ( <i>Brucella melitensis</i> )	▲	
Campylobacteriosis / Vibriosis	▲	
Caseous lymphadenitis ( <i>C. pseudotuberculosis</i> )	▲	
Chlamydiosis ( <i>Chlamydia abortus</i> )	▲	
Clostridial diseases – dysentery, braxy, enterotoxemia		
Colibacillosis ( <i>E. coli</i> )	▲	
Contagious ecthyma	▲	
Cryptosporidiosis	▲	
Cysticercosis/Taeniasis ( <i>Taenia ovis</i> , others)	▲	
Dermatophytosis/Ringworm/Club lamb fungus	▲	
Echinococcosis	▲	
Foot and mouth disease		●
Foot rot/Foot scald		
Leptospirosis	▲	
Listeriosis / Circling disease	▲	
Malignant catarrhal fever		
Mycoplasmosis ( <i>M. ovipneumoniae</i> )		
Ovine progressive pneumonia/maedi-visna		
Paratuberculosis (Johne's disease)		
Pasteurellosis		
Peste des petits ruminants		
Q fever ( <i>Coxiella burnetii</i> )	▲	
Rabies	▲	
Rift Valley fever	▲	●
Salmonellosis	▲	
Scrapie		
Sheep pox virus/Goat pox virus		
Tetanus / Lock jaw ( <i>Clostridium tetani</i> )		
Toxoplasmosis	▲	
Tularemia ( <i>Francisella tularensis</i> )	▲	
Vesicular stomatitis virus	▲	

Using prevention measures to reduce oral transmission can protect against all of the listed diseases.

# Small Ruminant Diseases By Transmission Route: **VECTORS**

**Vector transmission** occurs when a living organism moves a disease-causing agent from an infected animal to another. Insects are common disease-carrying vectors.

The following diseases of sheep and goats spread by vectors.



		Zoonotic	FAD
Anthrax ( <i>Bacillus anthracis</i> )	biting flies	▲	
Colibacillosis ( <i>E. coli</i> )	flies	▲	
Q fever ( <i>Coxiella burnetii</i> )	ticks	▲	
Rift Valley fever	mosquitoes	▲	●
Salmonellosis	flies, cockroaches	▲	
Tularemia ( <i>Francisella tularensis</i> )	ticks	▲	
Vesicular stomatitis virus	black flies, biting midges	▲	

▲ **Zoonotic Disease (Z):**

Disease that can be transmitted between animals and humans.

● **Foreign Animal Disease (FAD):**

Never found or previously eradicated within the U.S. animal population. The disease is reportable to State and Federal animal health authorities.



IOWA STATE UNIVERSITY®  
College of Veterinary Medicine

Using prevention measures to reduce direct contact transmission can protect against all of the listed diseases.