

SPECIAL TOPIC

# Swine Zoonotic Disease Risks and Prevention

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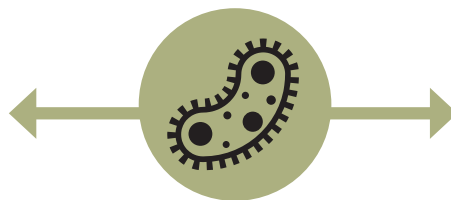
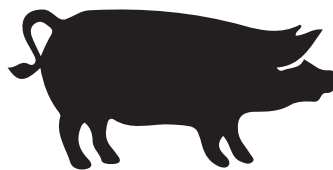
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Diseases commonly spread between swine, and some also spread between swine and humans. As a responsible livestock owner, you can take measures to reduce the spread of pig-to-pig and pig-to-human diseases.

## What Is a Zoonotic Disease?

A zoonotic disease is one that can be spread between animals and people. Many diseases causing illness in humans come from animals. Viruses, bacteria, fungi, and parasites can cause zoonotic diseases. Thus there are various levels of prevention measures and treatments.



Icons from The Noun Project: pig by Ealancheliyan S, germ by Maxim Kulikov, man running by Mungang Kim.

The development of this document was supported by Grant Number 1U38OT000143 from the Centers for Disease Control and Prevention to the Council of State and Territorial Epidemiologists (CSTE). Its contents are solely the responsibilities of the authors and do not necessarily represent official views of the Centers for Disease Control and Prevention.



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## How Do Diseases Spread?

Infectious diseases spread in a variety of ways:

1) through the air; 2) from direct or indirect contact with another person or animal, soiled objects, skin or mucous membrane, saliva, urine, blood, and body secretions; and 3) through contaminated food and water.

Direct contact occurs when there is physical interaction between an infected person or animal and a susceptible person or animal.

Indirect contact occurs when there is no direct contact between a person and an animal. This contact occurs when a susceptible person or animal is exposed to contaminated air (aerosol transmission), objects (fomites), fecal-oral matter, or insects (vector-borne).

**Sneezing and coughing  
can result in indirect  
airborne transmission.**



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### Ways zoonotic diseases are transmitted

#### **Airborne droplets from the nose and throat**

Some infections are spread when an infected person/animal sneezes or coughs out tiny airborne droplets. The droplets in the air may be breathed in directly by another person or animal, or enter another person or animal indirectly through contact with surfaces or objects with the droplets on them.

##### ► Example of airborne disease:

- Influenza

#### **Fecal-oral transmission**

Some infections are spread when microscopic amounts of feces from an infected person or animal with or without signs of disease (a carrier) are taken in by another person or animal by mouth. The feces may be passed directly from soiled hands to the mouth or indirectly by way of objects, surfaces, food, or water soiled with feces.

##### ► Examples of diseases spread from feces:

- Gastrointestinal infections
- Hepatitis E

#### **Contact with skin or mucous membrane (lining of nose and mouth)**

Some infections are spread directly when skin or mucous membrane comes into contact with other skin or mucous membrane. Infections are spread indirectly when skin or mucous membrane comes in contact with contaminated objects or surfaces.

##### ► Examples of diseases spread by skin or mucous membrane contact:

- Erysipelas
- Leptospirosis
- Ringworm
- Streptococcus suis

## Disease Transmission Prevention

Understanding how diseases spread, as outlined above, is critical in preventing them. Prevention strategies include biosecurity, proper hand hygiene, and the use of personal protective equipment.

### What is biosecurity?

Biosecurity is the protection of agricultural animals from any type of infectious agent—viral, bacterial, fungal, or parasitic.

#### ► Examples of biosecurity measures:

- Do not have contact with your pigs if you have been in contact with other pigs in the past 24 hours.
- Limit visitors to your barn. Be sure visitors are wearing clean boots and have not had swine exposure in the past 24 hours.
- Limit the access of rodents and other wildlife in your barn.
- Do not enter the barn if you are ill. Stay out of the barn until your clinical signs have subsided and you are fever-free for at least 24 hours.
- Quarantine animals arriving at the farm for 7 days. Feed and care for existing animals before new or returning animals.
- Do not share animal care or manure hauling equipment.
- Clean and disinfect all equipment between uses, including feeders, waterers, hurdles, and show supplies.



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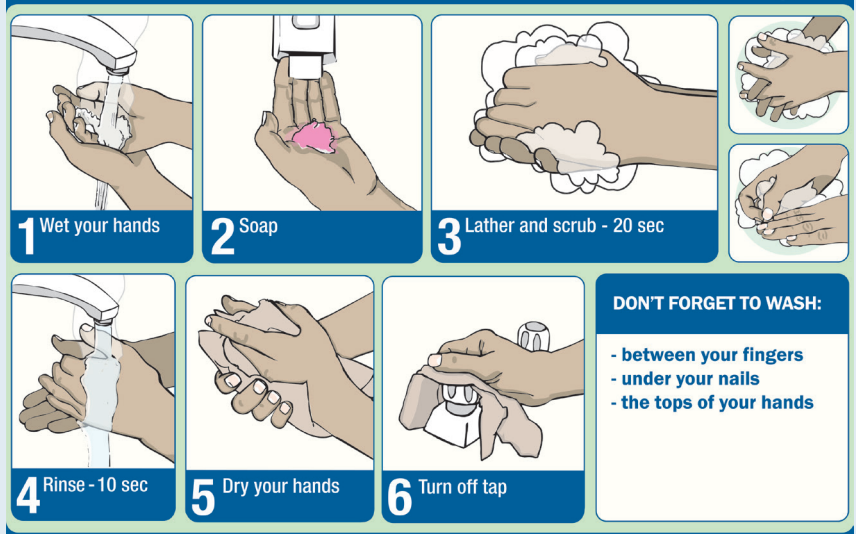
**Direct contact can be avoided with the use of personal protective equipment (PPE) like gloves.**

### What is proper hand hygiene?

Hand washing is the most effective method to reduce the spread of disease by direct or oral routes. To reduce the spread of zoonotic disease between you and your pig, properly wash your hands before and after touching animals or animal husbandry items.

Wash your hands after being in a barn or trailer too, even if you didn't touch a pig. Objects such as gates can serve as fomites for disease.

#### How To Wash Your Hands Properly.







Lung Association, [http://sct.poumon.ca/protect-protegez/germs-microbes\\_e.php](http://sct.poumon.ca/protect-protegez/germs-microbes_e.php)

**Follow these steps when washing your hands.**



## What is personal protective equipment?

Personal protective equipment, or PPE, is items used to protect you from contact with agents that cause disease. You should consider wearing PPE when caring for pigs, especially when they are ill.

These are common types of PPE to be used in a swine barn:	
	<b>Rubber boots</b> protect your feet from manure and moisture. They are also easy to clean and disinfect.
	<b>Gloves</b> protect against infectious agents entering the body through small cuts.
	<b>Protective clothing</b> protects against direct contact with infectious agents.
	<b>Face masks</b> protect from inhaling airborne droplets.

Icons from The Noun Project: Protective Clothing by Yorlmar Campos, Boots by Fabio Meroni, Glove by Dolly Vu.

## Preventing disease transmission when showing swine

Exhibition swine are more frequently exposed to disease because they encounter other pigs and people at shows. The following measures should be considered to keep you and your pig healthy before, during, and after the show.

### Before the swine show:

- Develop and implement applicable biosecurity and swine health practices at home.
- Clean and disinfect facilities, feeders, and chore boots.
- Limit pig's exposure to people and traffic.
- Control exposure to wildlife, birds, and other pests.
- Take only clean and disinfected equipment to the show.
- Don't show a pig or pen-mates for at least seven days after returning from an exhibition.
- Never bring an unhealthy animal to exhibition. Sick pigs and sick people need to stay home so they do not risk infecting other pigs or people.
- Evaluate your pig's health daily. Ask these questions:
  - Is your pig eating normally?
  - Is your pig coughing or having trouble breathing
  - Does your pig have a fever?
  - Does it appear depressed?
  - Does your pig have loose stool?
  - Seek veterinary assistance if a pig becomes sick.
- Discuss the use of vaccines with a veterinarian and check the exhibition rules for any requirements. Swine vaccinated for infectious diseases may be less likely to become ill, and if they become sick, they may be contagious for a shorter time.

## During the swine show:

- Continue to evaluate your pig's health daily.
  - Is your pig eating normally?
  - Is your pig coughing or having trouble breathing?
  - Does your pig have a fever?
  - Does it appear depressed?
  - Does your pig have loose stool?
- Report any illness to the designated exhibition veterinarian or the appropriate exhibition staff so the pig can be evaluated.
- Use precautions when caring for sick pigs to minimize the opportunity for disease transmission to other swine or people.
- If you feel ill, see your doctor and tell them you have had pig exposure. People with illness should stay away from pigs until they are fever-free for at least 24 hours without the use of fever-reducing medication.
- Do not borrow or share equipment with other exhibitors.
- Keep your area and equipment clean.



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### **Wash boots in between visiting different premises.**

- Wash your hands after contact with pigs and equipment.
- No eating or drinking in the animal areas.
- Do not sleep in animal areas.

## After the swine show:

- Consult a health care provider and public health official as soon as possible if exhibitors or family members develop illness.
- Inform the health care provider of close contact with swine and/or exhibition attendance.
- Ill people should avoid all contact with swine until they are fever-free for at least 24 hours without the use of fever-reducing medications.
- Isolate and observe animals daily for illness after returning home and before allowing contact with other animals. The isolation/observation period for clinical signs of disease should be no fewer than 7 days.
- Clean and disinfect equipment, clothing, shoes, and vehicles/trailers that were at the exhibition.
- Consult a veterinarian if pigs become ill.

## Zoonotic Diseases in Swine

You can promote good pig health and reduce the chance of human infection by understanding the signs of disease. Observe your pig daily for changes in behavior and appearance. If you see clinical signs like the ones below, follow these steps:

1. Talk to your veterinarian.
2. Practice good biosecurity to prevent disease transmission to other animals.
3. Use proper PPE to prevent transmission to humans.

### ERYSIPELAS

**Cause of disease:** *Erysipelothrix rhusiopathiae*

**Clinical signs in swine:** fever, anorexia, red diamond shaped patches, lameness



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Swine with erysipeloid lesions

**Clinical signs in humans:** Erysipeloid—painful, red/purple swelling on the hands. Lesions are usually confined to the hands and finger. Severe cases can progress to systemic infection with endocarditis.

**Route of Transmission:** Direct contact (usually enters through cuts in the skin)

**Suggested PPE**



Dr. Pat Halbur, Iowa State University

Diarrhea caused by gastrointestinal infection

### GASTROINTESTINAL INFECTIONS

**Cause of disease:** *Salmonella* spp., *Escherichia coli*, *Campylobacter* spp., *Yersinia enterocolitica*, *Cryptosporidium parvum*, *Giardia intestinalis*, *Balantidium coli*.

**Clinical signs in swine:** diarrhea

**Clinical Signs in humans:** nausea, vomiting, abdominal pain, and diarrhea

**Route of Transmission:** Fecal-oral

**Suggested PPE**



### HEPATITIS E

**Cause of disease:** hepatitis E virus

**Clinical signs in swine:** none

**Clinical signs in humans:** mild fever, anorexia, nausea and vomiting, lasting for a few days; some persons may also have abdominal pain, itching (without skin lesions), skin rash, or joint pain, jaundice, with dark urine and pale stools; and a slightly enlarged, tender liver

**Route of Transmission:** Fecal-oral

**Suggested PPE**



## INFLUENZA

**Cause of disease:** Influenza A virus

**Clinical signs in swine:** fever, depression, coughing (barking), discharge from nose or eyes, sneezing, difficulty breathing, anorexia

**Clinical signs in humans:** fever, lethargy, lack of appetite, coughing, nausea, vomiting, and diarrhea

**Routes of transmission:** Direct, Aerosol, Fomites

**Suggested PPE**



## LEPTOSPIROSIS

**Cause of disease:** Leptospira spp.

**Clinical signs in swine:** from unapparent to decreased weight gain, anorexia, abortion, still births, fever, diarrhea, and generalized neurological signs.

**Clinical signs in humans:** fever, chills, headache, muscle ache, vomiting, liver and kidney failure

**Routes of Transmission:** direct, Aerosol, Fomites, Ingestion (spread in urine)

**Suggested PPE**



## STREPTOCOCCUS SUI

**Cause of disease:** Streptococcus suis

**Clinical signs in swine:** depression, tremors, incoordination, blindness, paralysis, and convulsions or paddling of the legs

**Clinical signs in humans:** meningitis, sepsis, endocarditis, arthritis, hearing loss, and skin lesions

**Routes of Transmission:** direct contact

**Suggested PPE**



## RINGWORM

**Cause of disease:** Dermatophytosis

**Clinical signs in swine:** crusty, dark, hairless patches; common on the skin around the head and neck; thorax, flank, behind the ears, on the legs



nadis.org.uk

Typical ringworm in a sow

**Clinical signs in humans:** local itching, reddish skin, and hairless at the point of contact



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Ringworm in a person

**Routes of Transmission:** Direct and Fomites

**Suggested PPE**

