

Preventing Disease Transmission in Livestock and Poultry

AEROSOL



One way animal diseases can spread is by aerosol or airborne transmission. These prevention measures can help minimize the risk of disease exposures by aerosol transmission for your animals and the people around them.

WHAT IS AEROSOL TRANSMISSION?

Aerosol transmission occurs when disease organisms contained in moisture droplets are passed through the air from one animal to another or even to a human. Often times this occurs microscopically, or invisibly. The spread of disease organisms by aerosol most commonly occurs with coughing and sneezing, but even breathing or vocalization can release particles into the air.

Sometimes disease organisms are released in the body fluids of infected animals, such as reproductive material, feces, or nasal secretions, and can become aerosolized. These disease-causing materials can contaminate the environment and become aerosolized when stirred up by air movement such as winds or even sweeping.



Photo from Clint May, CFSPH

Once disease agents are in the air, they can be inhaled by an animal (or person) and can cause infection. Most disease agents do not survive for long periods of time within the aerosol droplets because sunlight and air dry them out and kill them. Close contact with the infected animal or infected animal area is generally required for disease transmission. For this reason, animals reared in enclosed environments are generally at greater risk of aerosol disease spread than animals raised in more open environments.

WHAT ARE EXAMPLES OF ANIMAL DISEASES TRANSMITTED BY AEROSOL?

	Common	Foreign Animal Diseases
Cattle	Bovine respiratory syncytial virus (BRSV), infectious bovine rhinotracheitis (IBR), parainfluenza virus (PI3), bovine viral diarrhea (BVD), bovine tuberculosis (bTB), anthrax, vesicular stomatitis	Foot and mouth disease, contagious bovine pleuropneumonia, malignant catarrhal fever,
Swine	Atrophic rhinitis (Bordetella bronchiseptica, Pasteurella multocida), porcine reproductive and respiratory syndrome (PRRS), porcine epidemic diarrhea virus (PED), transmissible gastroenteritis (TGE), swine influenza	African swine fever, classical swine fever (hog cholera), foot and mouth disease, Nipah virus
Small Ruminants	Pasteurellosis (<i>Pasteurella multocida</i> , <i>Mannheimia haemolytica</i>); caseous lymphadenitis, enterotoxemia, chlamydiosis, Q fever, anthrax	Sheep pox virus, goat pox virus,
Equids	Equine rhinovirus, equine influenza, equine herpes virus, <i>Rhodococcus equi</i> , <i>Streptococcus equi</i> (strangles), vesicular stomatitis	Hendra virus, glanders, melioidosis
Poultry	Infectious bronchitis, infectious laryngotracheitis, infectious coryza, Marek's disease, psittacosis , histoplasmosis, cryptococcosis	Newcastle disease, avian influenza

Additional disease examples and their transmission routes can be found on the species specific *Disease Exposure Routes* handouts at <https://www.cfsph.iastate.edu/infection-control/routes/>.

Bolded diseases are zoonotic, and can also cause disease in people.

WHAT ARE WAYS TO DECREASE AEROSOL TRANSMISSION OF DISEASES BETWEEN ANIMALS?

Preventing aerosol transmission can be difficult, but there are a few ways to decrease the risk.

- Separate sick animals from healthy animals
- Maintain adequate ventilation and provide fresh air in animal housing areas
- Manage environmental humidity
 - Increased humidity can allow airborne droplets to spread easier and farther
- Manage waste to minimize exposure to waste odors, such as ammonia, that can damage the respiratory tract and increase risk of aerosol disease transmission
- Control dust (e.g., dampen) in animal enclosures



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WHAT ARE WAYS TO DECREASE AEROSOL TRANSMISSION OF DISEASES TO PEOPLE??

Some animal diseases can be spread by aerosol transmission to people (zoonotic). Individuals working with animals should take these precautions to prevent aerosol exposure.

- Wear protective clothing—such as masks – when working in dusty areas or near animals with respiratory diseases that may be zoonotic.
- Wash hands after completing tasks and removing the mask or other protective clothing (e.g., gloves, coveralls, boots)
- Minimize the number of people around sick animals



Photo: Pat Gordon, Iowa State University

FOR MORE INFORMATION

[Animal Diseases By Routes of Transmission](#). Center for Food Security and Public Health.

[Disease Exposure Route Resources](#). Center for Food Security and Public Health.

[Biosecurity Tip Sheets](#). Center for Food Security and Public Health.

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