

## **Foreign Animal Disease Guidance #2: Clinical Signs of Foreign Animal Diseases in Mammalian Species**

### **Section 1: Overview**

Before a foreign animal disease outbreak occurs, it is important for individuals who work with livestock know and are able to recognize the signs of various foreign animal diseases. Since livestock are observed by slaughter facility employees and thoroughly inspected by the Food Safety and Inspection Service, it is possible that a foreign animal disease could be discovered in a packing plant. This document will list the clinical signs of various foreign animal diseases threatening the United States, and can be used to train establishment employees on signs they should report to plant management.

## Section 2: Clinical signs of African Swine Fever

African Swine Fever (ASF) is a viral disease that only impacts pigs. It is not a food safety or human health threat. Signs of the disease include:<sup>1</sup>

- Fever
- High mortality (death loss)
- Loss of appetite
- Depression
- Hyperemia (redness) of the ears, abdomen (belly), and legs
- Vomiting
- Respiratory distress (breathing problems)
- Sometimes diarrhea
- Hemorrhage (bleeding), particularly on post-mortem examination

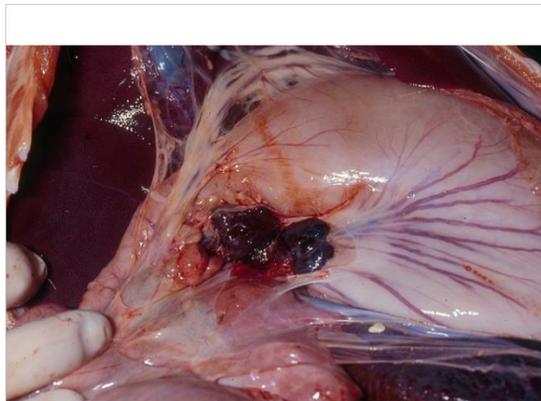
Photos (courtesy of Dr. C.A.L. Oura via the Merck Veterinary Manual):



*Hyperemia of the abdomen (red belly)*



*Hyperemia of the ears (red ears)*



*Hemorrhagic lymph nodes (bloody lymph nodes)*

<sup>1</sup> Merck Veterinary Manual, Overview of African Swine Fever, by Chris Oura, School of Veterinary Medicine, Faculty of Medical Sciences, University of the West Indies. <https://www.merckvetmanual.com/generalized-conditions/african-swine-fever/overview-of-african-swine-fever>. Accessed June 17, 2019.

### Section 3: Clinical signs of Classical Swine Fever

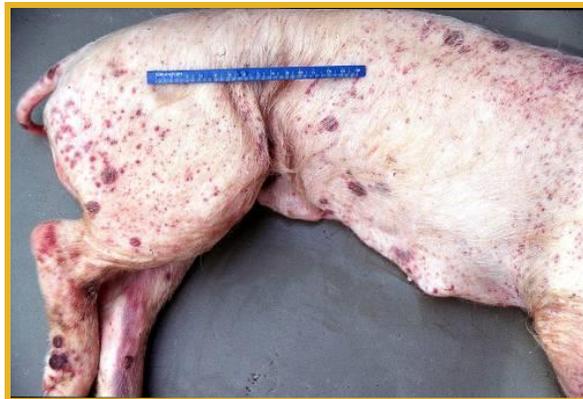
Like African Swine Fever, Classical Swine Fever (CSF) is a viral disease that only impacts pigs. It is not a food safety or human health threat. Signs of the disease are almost identical to those of African Swine Fever, and include:<sup>2</sup>

- Fever
- Lethargy (tiredness, depression)
- Yellowish diarrhea
- Vomiting
- Purple skin discoloration
- Petechial hemorrhages (blood spots) on the skin or internal organs

Photos (courtesy of The Center for Food Security & Public Health, Iowa State University):



*Hyperemia of the ears (red ears)*



*Hemorrhages on the skin*



*Petechial hemorrhages (blood spots) on the kidney*

<sup>2</sup> Merck Veterinary Manual, Overview of Classical Swine Fever, by Guillermo R. Risatti, University of Connecticut, and Manual Borca, USDA. <https://www.merckvetmanual.com/generalized-conditions/classical-swine-fever/overview-of-classical-swine-fever>. Accessed June 17, 2019.

## Section 4: Signs of Foot and Mouth Disease

Foot and Mouth Disease (FMD) is a highly communicable viral disease of cloven-hooved (two-toed) animals. Common livestock affected include cattle, pigs, and sheep. The disease is highly contagious, and will affect almost 100% of animals exposed. It has been eradicated from North America. Like ASF and CSF, Foot and Mouth Disease is not a food safety or human health threat. Signs of FMD include:<sup>3</sup>

- High fever
- Loss of appetite
- Vesicles (blisters)
  - In the mouth: tongue, lips, dental pad, gums, muzzle/snout
  - On the hooves: around the coronary band (top of hoof) and in between the toes of the hoof
  - On the teats: especially in lactating cows
- Animals with vesicles in the mouth may salivate profusely
- Animals with vesicles around the hooves will look lame and prefer to lie down
- The vesicles usually rupture and leave sores/scabs

Photos (courtesy of World Reference Laboratory for FMD):

*Vesicle (blister) on pig snout*



*Ruptured vesicles (blisters) on pig foot*



*Vesicle (blister) in between toes of calf*



*Vesicle (blister) on cow tongue*



*Healing vesicle (blister) on cow tongue*

<sup>3</sup> Merck Veterinary Manual, Overview of Foot-and-Mouth Disease, by David Ashford, International Services, USDA APHIS. <https://www.merckvetmanual.com/generalized-conditions/foot-and-mouth-disease/overview-of-foot-and-mouth-disease>. Accessed June 17, 2019.

## Section 5: Signs of Bovine Spongiform Encephalopathy

Bovine spongiform encephalopathy (BSE) is a progressive and fatal neurologic disease of cattle. It is transmitted by an abnormal protein, called a prion. This prion is resistant to rendering and most disinfection treatments. BSE is not contagious, but is most commonly spread through feed contaminated with the prion, which could come from ingredients derived from infected cattle. Humans can only acquire the disease if they consume contaminated feed or meat, and there are stringent regulations in place in the U.S. to help prevent such contamination. To learn more about BSE, see NAMI's BSE Fact Sheet. Clinical signs of BSE in cattle include: <sup>4</sup>

- Behavioral changes
- Coordination problems
- Weight loss
- Decreased milk production

## Section 6: Conclusion

This guidance document is meant to aid slaughter establishments in training management and employees to recognize clinical signs of major foreign animal diseases **before** an outbreak occurs. If you have questions or concerns about this document or anything else regarding foreign animal disease, please contact the North American Meat Institute at 202-587-4200.

---

<sup>4</sup> United States Department of Agriculture's Animal and Plant Health Inspection Service: Bovine Spongiform Encephalopathy (BSE) website. <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/cattle-bse/cattle-bse>. Accessed June 18, 2019.