Workbook

Livestock and Horses:

Foreign Animal Disease Recognition

SART Training Media

Livestock and Horses:

Foreign Animal Disease Recognition

Workbook

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SART Training Media are available for download from the Florida SART Web site <www.flsart.org>.

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About Florida SART

SART is a multiagency coordination group consisting of governmental and private entities dedicated to all-hazard disaster preparedness, planning, response, and recovery for the animal and agriculture sectors in the state of Florida.

SART operates at the local level through county SART organizations.

SART utilizes the skills and resources of many agencies, organizations and individuals with its multiagency coordination group structure.

SART supports the county, regional, and state emergency management efforts and incident management teams.

SART Mission

Empower Floridians through training and resource coordination to enhance all-hazard disaster planning and response for animals and agriculture.

SART Goals

- Promote the active engagement of each county coordinator who is responsible for animal and agricultural issues
- Provide assistance in the development and writing of county ESF-17 plans
- Promote the establishment of a county SART to work as a multiagency coordination group to support emergency management and incident management teams
- Provide training for all SART and animal and agriculture personnel
- Identify county resources available for an emergency or disaster
- Work to comply with the National Incident Management System (NIMS) document

Subject: **Foreign animal diseases pose a special danger to Florida agriculture. These dangers are discussed, nine specific diseases are described, and some methods of farm security are recomended.**

Learning Objectives

At the end of this unit, participants will be able to:

1. Define what a foreign animal disease is.
2. Explain how foreign animal diseases are introduced.
3 Explain the consequences of foreign animal disease introduction.
4. Name and provide details of nine specific animal diseases.
5. Describe the difficulty in diagnosing foreign animal diseases and who participates in the diagnosis.
6. Explain how to prevent disease spread and introduction.
7. Identify key resources available for more information.

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Livestock and Horses

Foreign Animal Disease Recognition

Foreign Animal Disease Recognition

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The authors wish to express their appreciation to the various agencies and individuals that have supplied images for this presentation.

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Learning Objectives

- Define foreign animal disease
- Explain how foreign animal diseases (FADs) are introduced
- Explain consequences of FAD introduction
- Name and provide details of nine specific FADs
- Describe the difficulty in diagnosing foreign animal diseases and how diagnosis is confirmed
- Explain how to prevent disease spread and introduction
- Identify key resources that participants can easily access for more information

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What is a FAD?

A foreign animal disease, or FAD, is:

- An exotic, important, transmissible livestock or poultry disease
- Believed to be absent from the United States and its territories
- Has potential to cause significant health or economic impact, should it be introduced

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OIE List of Reportable Diseases

- The World Organization for Animal Health, or OIE*, maintains a list a reportable diseases
- Diseases listed by OIE are considered the greatest threats to animals and livestock worldwide
- More information on these diseases is available on the OIE Wb site <www.oie.int>

* The organization was previously called Office International des Epizooties.

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What is reportable?

- Transmissible diseases with potential for very serious and rapid spread, irrespective of national borders, that are of serious socio-economic or public health consequence and that are of major importance in the international trade of animals and animal products.
- Reports are submitted to the OIE as often as necessary to comply with the International Animal Health Code. Reports are submitted by national delegate. In the US, this is USDA-APHIS International Services.
- During outbreaks, several reports can be filed each day.


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Multiple Species Diseases

- Anthrax
- Aujeszky's disease
- Bluetongue
- Brucellosis (*Brucella abortus*)
- Brucellosis (*Brucella melitensis*)
- Brucellosis (*Brucella suis*)
- Crimean Congo hemorrhagic fever
- Echinococcosis/hydatidosis
- Foot and mouth disease
- Heartwater
- Japanese encephalitis
- New world screwworm (*Cochliomyia hominivorax*)
- Old world screwworm (*Chrysomya bezziana*)
- Paratuberculosis
- Q fever
- Rabies
- Rift Valley fever
- Rinderpest
- Trichinellosis
- Tularemia
- Vesicular stomatitis
- West Nile fever


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Some Reportable Mammalian Diseases

Cattle diseases
- Bovine anaplasmosis
- Bovine babesiosis
- Bovine genital campylobacteriosis
- Bovine spongiform encephalopathy

Equine diseases
- African horse sickness
- Contagious equine metritis
- Dourine
- Equine encephalomyelitis (Eastern and Western)

Swine diseases
- African swine fever
- Classical swine fever
- Nipah virus encephalitis

Sheep and goat diseases
- Caprine arthritis/encephalitis
- Contagious agalactia
- Contagious caprine pleuropneumonia

Lagomorph diseases
- Myxomatosis
- Rabbit haemorrhagic disease


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Some Reportable *Non*-Mammalian Diseases

Bird diseases
- Avian chlamydiosis
- Avina infectious bronchitis
- Avian infectious laryngotracheitis
- Avian mycoplasmosis
- Duck virus hepatitis

Bee diseases
- Acarapisosis of honey bees
- American foulbrood of honey bees
- Small hive beetle infestation
- Varroosis of honey bees

Fish diseases
- Epizootic haemotpoietic necrosis
- Spring viremia of carp
- Viral haemorrhagic septicemia

Mollusc diseases
- *Bonamia ostreae*
- *Martellia refringens*
- *Mikrocytos mackini*

Crustacean diseases
- Taura syndrome
- White spot disease

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Consequences of Introduction

- Could devastate livestock or poultry populations through high morbidity or mortality
- Other countries ban import of animals and related animal products to protect their agriculture industry
- Millions, possibly billions, of dollars spent to control or eradicate the disease
  - 2002–2003 Newcastle Disease outbreak in CA, NV, TX and AZ
    - 932 farms identified as infected
    - Taxpayer cost $168-million for eradication
- Spread of disease into a susceptible wildlife population could complicate or prevent disease eradication

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How are FADs introduced?

Florida's vast and diverse agricultural system is susceptible to many FADs due to:

- Geographical location
- Climate
- Numerous ports of entry
- Legal importation of animals for trade
- Smuggling of animals
- International travel by people
- International travel by pets
- Wildlife movement and migration
- Animal products
- Bioterrorism or other malicious introduction

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Current Issues
Exotic reptiles such as this tortoise may harbor vectors of a FAD or be carriers of a FAD themselves
For 20 years, many outbreaks of Newcastle disease have been caused by psittacine birds illegally imported into the U.S.
Orlando International Airport saw over 26 million passengers in 2002, including 1.7 million internationals
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Current Issues
The migratory flight path of these cattle egrets is often directly through Florida
Dogs can also carry ticks or other parasites that could introduce a FAD when they travel with their owners
People can intentionally release diseases or agents of disease
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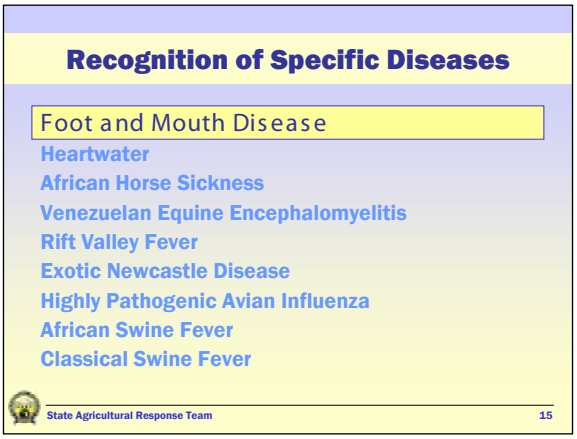
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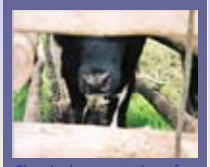
Foot and Mouth Disease

- Highly contagious viral disease
- Important economic losses
- Low mortality rate in adults
- High mortality often in young animals due to myocarditis
- Incubation period 2–14 days
- Recovery often in 8–15 days
- Endemic to parts of Asia, Africa, the Middle East and South America



Classical presentation of a cow afflicted with FMD is excessive salivation and licking of the lips

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Foot and Mouth Disease

Hosts

- Cattle
- Zebu
- Domestic buffalo
- Yaks
- Sheep
- Goats
- Swine
- All wild ruminants and swine
- Camels, llamas, and other *Camelidae* species have lower susceptibility

In endemic areas, multiple species of both domestic and wild animals can be susceptible to FMD

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Foot and Mouth Disease

Transmission and Sources

Transmission by direct or indirect contact with breath, saliva, feces and urine

- Milk and semen can transmit disease up to 4 days before clinical signs
- Animate and inanimate objects (fomites) can be vectors
- Airborne transmission of infectious droplets can occur 35 miles over land or 185 miles over sea

Sources of virus

- Incubating and clinically affected animals
- Meat and by-products in which pH has remained above 6.0
- Carriers
  - Particularly cattle and water buffalo, convalescent animals and exposed vaccinates
  - In Africa, the Cape buffalo is the major maintenance host

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Foot and Mouth Disease

On-Farm Disease Recognition

Cattle

- High temperature
- Lack of appetite
- Shivering
- Reduced milk production for 2–3 days
- Smacking of the lips
- Teeth grinding
- Drooling
- Lameness
- Stomping or kicking
- Vesicles (blisters) in mouth and nose, between hooves, at coronary band – Rupture typically after 24 hours

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Foot and Mouth Disease

Recognizing FMD in Cattle

This cow has visible blister ruptures on the nose and signs of drooling

Ruptured vesicle covers large portion of cow tongue

Over time, healing of ruptured vesicles is obvious

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Foot and Mouth Disease

Recognizing FMD in Cattle

A new vesicle that has yet to rupture; about 1-2 days old

Vesicles and erosions can occur on the mammary glands resulting in lowered milk production and nursing problems

Erosion left after vesicle ruptures disrupts foot health; leads to lameness

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Foot and Mouth Disease

Recognizing FMD in Sheep and Goats

- Vesicles less pronounced, easier to miss
  - On dental pad and feet in sheep
- Agalactia in milking sheep and goats
- Death in young stock

Vesicles in small ruminants are often less severe

This sheep has a large erosion on the dental pad

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Foot and Mouth Disease

Recognizing FMD in Swine

- Swine housed on concrete can develop severe foot vesicles as a result of FMD
- Frequently see high mortality in piglets

Early blisters hard to notice; vesicles have not ruptured

Couple days later vesicles become more obvious

Vesicles at healing stage at or over one week old

Lameness resulting from interdigital vesicles

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Foot and Mouth Disease *in Cattle*

Diseases with Similar Symptoms

- Mucosal disease
- Infectious bovine rhinotracheitis
- Bluetongue
- Bovine mammillitis
- Bovine papular stomatitis
- Bovine viral diarrhea

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Heartwater

- Also known as Cowdriosis
- Rickettsial disease of ruminants
- Caused by a bacteria, *Ehrlichia ruminantium (formerly Cowdria ruminantium)*
- Occurs in nearly all sub-Saharan African countries, Madagascar and some islands in the Caribbean
- Concern for Florida exists because
  - Native tick vectors
  - Migratory bird paths between Florida and Caribbean
  - Indigenous and exotic reptiles can be reservoir hosts
  - Large, susceptible deer population

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Heartwater

On-Farm Disease Recognition

Primary vectors: *Amblyomma* ticks
- Larvae and nymphs pick up *E. ruminantium* while feeding
- Adults transmit disease to susceptible animals

Hosts
- Domestic cattle, sheep and goats: *Bos indicus* breeds typically have less severe disease than *Bos taurus* breeds
- Wild ruminants like eland, springbok, blesbock and black wildebeest

Other wild animals act as vector hosts and disease carriers, e.g., helmeted guinea fowl, leopard tortoise, scrub hare

Ticks of varying sizes and at varying stages within their life cycles play an important role in the transmission of Heartwater and other diseases

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Heartwater

On-Farm Disease Recognition

- Body temperature suddenly rises to more than 106°F within 1-2 days, fluctuates, then drops before death
- Lack of appetite
- Listlessness
- Respiratory distress
- Diarrhea common in cattle
  - Not common in small ruminants
- Subacute Heartwater with less pronounced signs, and peracute Heartwater with sudden death, can also occur
  - Depends on ruminant breed and *Ehrlichia* strain

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Heartwater

Signs of Nervous System Impairment

- Walk in circles
- Make sucking movements
- Stand rigidly with tremors of superficial muscles
- Cattle may push head against wall, act aggressive or anxious
- Animal falls to ground, pedals, exhibits opisthotonos (arching), nystagmus (eye movements), and chewing movements
  - Usually die during or after this nervous attack

Nervous signs start with aggression and mania

Cattle die quickly once they fall; only option is euthanasia

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Heartwater

Diseases with Similar Symptoms

- Rabies
- Bacterial meningitis and encephalitis
- Chlamydiosis
- Toxic plants
- Mycotoxin exposure
- Heavy metal toxicity
- Pulpy kidney disease and Bluetongue in sheep

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African Horse Sickness

Mortality rates
- Horses 70–95%
- Mules ~50%
- Donkeys ~10%

Usual hosts are horses, mules, donkeys and zebra
- Occasionally elephants, camels and dogs (after eating infected blood or horsemeat) may become hosts

Zebra believed to be reservoir host

Incubation period
- Usually 7–14 days, but can be as short as 2 days

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African Horse Sickness

Transmission and Sources

Not directly contagious

Requires a biological vector
- Midges and mosquitoes
  - *Culicoides*, *Culex*, *Anopheles* and *Aedes* spp.
- Ticks (occasionally)
  - *Hyalomma* and *Rhipicephalus* spp.

Virus sources
- Viscera and blood of infected horses

Viremia (virus in blood stream)
- Horses: up to 18 days, often 4–8 days
- Zebra and donkeys: up to 28 days

Wildlife often host or carry viral diseases; this often makes eradication very difficult

Midges (*Culicoides sp.*) are efficient vectors of AHS

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African Horse Sickness

On-Farm Disease Recognition

Subclinical form
- Fever (104–104.9°F)
- General malaise for 1–2 days

Subacute or cardiac form
- Fever (102–105.8°F)
- Swelling of eyelids and above, facial tissues, neck, thorax, brisket and/or shoulders
- Death usually within one week

Acute respiratory form
- Fever (104–105.8°F)
- Difficulty breathing (dyspnea)
- Spasmodic coughing
- Dilated nostrils with frothy fluid oozing out
- Redness of conjunctiva
- Death within one week

Swollen eyelids and area above eye (supraorbital fossa)

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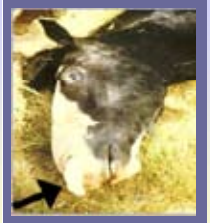
African Horse Sickness

On-Farm Disease Recognition

Mixed form (cardiac and respiratory) occurs frequently
- Pulmonary signs of a mild nature that do not progress
- Edematous swellings and effusions
- Death from cardiac failure usually in one week

Nervous form is rare



Severe case with collapse and frothy discharge from nose; indicates pulmonary failure due to fluid buildup

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African Horse Sickness

Diseases with Similar Symptoms

- Anthrax
- Equine infectious anemia
- Equine viral arteritis
- Trypanosomosis
- Equine encephalosis
- Piroplasmosis
- Purpura hemorrhagica

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Venezuelan Equine Encephalomyelitis

- **Mosquito-borne virus**
- **Similar to Eastern and Western Equine Encephalomyelitis (EEE and WEE)**
  - Similar clinical signs
  - Ultimately fatal in many cases
- **Endemic in Central and northern South America**
- **Last reported U.S. outbreak in 1971**
  - Lower virulence strains endemic to southern Florida


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Venezuelan Equine Encephalomyelitis

Hosts and Sources

Hosts
- Rodents, birds, humans and horses (VEE, EEE, WEE can infect all)
- Bats, reptiles, and amphibians (EEE)
- Bats and marsupials (VEE)
- Humans are dead-end hosts for VEE, EEE, WEE
- Cattle, swine and dogs can be infected, often do not show signs of illness and do not spread the disease

Virus sources
- Blood of VEE infected horses
- Rodent-mosquito infection cycle
- Bird-mosquito infection cycle for EEE and WEE

Incubation period
- VEE: 2–6 days
- EEE and WEE: 5–15 days


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Venezuelan Equine Encephalomyelitis

Transmission and Subtypes

Transmission
- VEE virus transmitted by mosquitoes that had blood meal from animal with sufficient blood levels of virus (viremia)
  - Subsequent feeding on animals transmits virus via mosquito saliva

Subtypes
- Endemic
  - Disease endemic to a specific area
  - Associated with rodent-mosquito transmission cycle
  - Can cause human illness, but not affect equine health
- Epidemic
  - Spread rapidly through large populations
  - Highly pathogenic to humans and horses
  - Horses are primary reservoir (not true for EEE and WEE)

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Venezuelan Equine Encephalomyelitis

On-Farm Disease Recognition

- Mild, vague signs of fever, lack of appetite, depression
- Increased or decreased response to external stimuli
- Unusual behavior
- Appear blind and ataxic, or walk in small circles with progressive lose of motor control
- Nervous signs may progress until collapse with violent and uncontrolled movements of limbs, head, mouth and eyes
- Death without preceding signs is possible
- Humans typically have headaches, fever and other flu-like symptoms

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Venezuelan Equine Encephalomyelitis

Diseases with Similar Symptoms

- West Nile Virus
- Eastern Equine Encephalomyelitis
- Western Equine Encephalomyelitis (and related viruses)
- Equine Herpes Virus 1 Encephalomyelitis
- African Horse Sickness
- Rabies
- Toxins
- Botulism
- Trauma

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Rift Valley Fever

- Acute hepatic and hemorrhagic disease
- Caused by mosquito-borne virus
- Affects domestic ruminants and humans
- Very high mortality rate in young animals
- High abortion rate in ruminants
- Hosts
  - Cattle, sheep, goats
  - Dromedaries
  - Several rodents
  - Wild ruminants, buffaloes, antelopes, wildebeest, etc.
  - Humans very susceptible
  - African monkeys and domestic carnivores present a transitory viremia

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Rift Valley Fever

Transmission and Sources

- Mosquitoes of many genera are effective biological vectors
  - *Aedes*, *Anopheles*, *Culex*, *Eretmapodites*, *Mansonia*, etc.
  - *Aedes* mosquitoes are reservoir hosts
- Direct contamination can occur in humans when handling infected animals and meat
- Incubation period ranges from 1–6 days
- Recognized exclusively in African countries; enhanced by high rainfall and dense populations of vector mosquitoes
- Sources of virus...

For animals: Wild fauna and vectors

For human: Nasal discharge
Blood and vaginal secretions after abortion in animals
Mosquitoes
Infected meat
Possibly aerosols and consumption of raw milk

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Rift Valley Fever

Disease Recognition in Animals

Adult Cattle
- Fever (104–105.8°F)
- Excessive salivation
- Lack of appetite
- Weakness
- Fetid diarrhea
- Jaundice
- Drop in milk production
- Abortion may reach 85% in the herd
- Mortality rate usually <10%
- Inapparent infections quite frequent

Calves
- Fever (104–105.8°F)
- Depression
- Jaundice
- Mortality rate 10–70%

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Rift Valley Fever

Disease Recognition in Animals

Adult sheep, goats and swine
- Fever (104–105.8°F)
- Increased respiratory rate
- Bloody, mucopurulent nasal discharge
- Vomiting
- In pregnant ewes, abortion may reach 100%
- Inapparent infections in goats and swine quite frequent

Lambs have different signs from adult sheep
- Fever (104–107.6°F)
- Increased respiratory rate
- Lack of appetite
- Weakness
- Death within 36 hours after inoculation
- Mortality rate: Under 1 week of age: up to 90%
  Over 1 week of age: up to 20%

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Rift Valley Fever

Disease Recognition in Animals

- **Influenza-like syndrome in humans**
  - Fever (100–104°F)
  - Headache
  - Muscular pain
  - Weakness
  - Nausea
  - Epigastric discomfort
  - Photophobia
- **Inapparent infection quite frequent**
- **Recovery occurs within 4–7 days**

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Rift Valley Fever *in Sheep*

Diseases with Similar Symptoms

- Bluetongue
- Wesselsbron disease
- Enterotoxemia of sheep
- Ephemeral fever
- Brucellosis
- Vibriosis
- Trichomonosis
- Nairobi sheep disease
- Heartwater
- Ovine enzootic abortion
- Toxic plants
- Bacterial septicemias

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Exotic Newcastle Disease

- Highly contagious avian disease producing severe neurologic and gastrointestinal signs in poultry
- High mortality rates possible
- Not endemic to U.S., but outbreaks occur due to illegal importation of exotic birds
- Economic losses can be significant
- Mortality and morbidity rates vary among host species and with strains of virus
- Sources of virus
  - Respiratory discharges, feces and other bodily secretions
  - All parts of carcass

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Exotic Newcastle Disease

Hosts and Transmission

Hosts
- Many species of birds, both domestic and wild
- Chickens are the most susceptible poultry
- Ducks and geese are the least susceptible poultry
- A carrier state may exist in psittacine and some other wild birds

Transmission by direct contact with feces and other secretions from infected birds

Virus shed during the incubation period, convalescence
- Some psittacine birds shed END virus off and on for >1 year

Virus persists in the environment
- Infection can be spread by Contaminated feed, Water, Implements, Premises, Human clothing, etc.

Incubation period is 4–6 days

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Exotic Newcastle Disease

On-Farm Disease Recognition

- **Gasping and coughing are common respiratory signs**
- **Nervous system signs include**
  - Drooping wings
  - Dragging legs
  - Twisting of the head and neck
  - Circling
  - Depression
  - Lack of appetite
  - Complete paralysis
- **Partial or complete cessation of egg production with misshapen, rough or thin-shelled eggs that contain watery albumen**
- **Greenish watery diarrhea**
- **Swelling of the tissues around the eyes and in the neck**

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Exotic Newcastle Disease

On-Farm Disease Recognition

Example of profuse respiratory discharge that may be present with END in chickens

Eyelids and conjunctiva are swollen, edematous and inflamed

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Exotic Newcastle Disease

Diseases with Similar Symptoms

- Fowl cholera
- Avian influenza
- Laryngotracheitis
- Fowl pox (diphtheritic form)
- Psittacosis (chlamydiosis in psittacine birds)
- Mycoplasmosis
- Infectious bronchitis
- Pacheco's parrot disease (psittacine birds)
- Management errors such as deprivation of water, air, and/or feed

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Highly Pathogenic Avian Influenza

- Capable of producing disease in many species of animals, including humans
- Ability for genetic shift
  - Difficult to develop vaccine
- High mortality rate and extremely contagious
- Recent U.S. outbreaks have been different strains than the 2004 > Asian epidemic
  - Lower pathogenic strains may have ability to mutate and become highly pathogenic

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Highly Pathogenic Avian Influenza

Hosts and Sources

Hosts
- Assume all avian species are susceptible to infection
- Highly pathogenic avian influenza isolates obtained primarily from chickens and turkeys
- Pigs considered as "mixing vessel" for influenza viruses and should be considered when examining any influenza outbreak

Sources of virus
- Feces and respiratory secretions
- Highly pathogenic viruses may remain viable for long periods of time in infected feces, but also in tissues and water

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Highly Pathogenic Avian Influenza

Transmission and Incubation

Transmission
- Direct contact with secretions from infected birds, especially feces
- Contaminated feed, water, equipment and clothing
- Clinically normal waterfowl and sea birds may introduce the virus into flocks
- Broken, contaminated eggs may infect chicks in the incubator

Incubation period is 3–5 days

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Highly Pathogenic Avian Influenza

On-Farm Disease Recognition

- Severe depression
- Lack of appetite
- Nasal and oral cavity discharge
- Drastic decline in egg production
- Facial edema with swollen and cyanotic combs and wattles
- Petechial hemorrhages on internal membrane surfaces
- Sudden deaths (mortality can reach 100%)

The comb and wattle on this chicken are swollen and cyanotic

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Highly Pathogenic Avian Influenza

Diseases with Similar Symptoms

- Acute fowl cholera
- Velogenic Newcastle disease
- Respiratory diseases, especially infectious laryngotracheitis

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African Swine Fever

- Endemic in most sub-Saharan Africa
  - Reported in Europe, Iberian Peninsula, and Sardinia
  - Now eradicated from four South American and Caribbean countries
- Hosts
  - Pigs
  - Wart hogs, Bush pigs (often show no symptoms)
  - American wild pigs

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Slides 64-66

African Swine Fever

Transmission and Sources

Transmission
- Contact between sick and healthy animals
- Indirect transmission
  - Example: Feeding on garbage containing infected meat
- Biological vectors
  - Soft ticks of the genus *Ornithodoros*
- Contaminated premises, vehicles, implements and/or clothes

Incubation period is 5–15 days

Sources of virus
- Blood, tissues secretions and excretion of sick and dead animals
- A carrier state exists
  - Especially in African wild swine and domestic pigs in endemic areas
- Soft ticks of genus *Ornithodoros*

Soft ticks are the main method of virus maintenance

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African Swine Fever

On-Farm Disease Recognition

Acute form (highly virulent virus)
- Fever (104.9–107.6°F)
- Reddening of the skin (visible in white pigs)
  - Tips of ears, tail, limbs and underside of chest and abdomen
- Lack of appetite
- Listlessness
- Cyanosis
- Incoordination within 24–48 hours of death
- Increased pulse and respiratory rate
- Vomiting
- Diarrhea (sometimes bloody)
- Eye discharges
- Death within a few days
- Abortions
- Survivors are carriers for life
- In domestic swine, mortality approaches 100%

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African Swine Fever

On-Farm Disease Recognition

Sub acute form (moderately virulent virus)
- Less intense symptoms
- Duration of illness is 5–30 days
- Abortion
- Mortality rate is lower
  - Varies widely
  - Between 30–70%

Chronic form
- Various signs: weight loss, irregular peaks of temperature, respiratory signs, necrosis in areas of skin, chronic skin ulcers, arthritis
- Pericarditis
- Adhesions of lungs
- Swelling over joints
- Develops over months
- Low mortality

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Slides 67-69

African Swine Fever

On-Farm Disease Recognition

Skin of pig severely inflamed, reddened

Depressed piglet also with signs of erythema

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African Swine Fever

Diseases with Similar Symptoms

- Classical swine fever
  - It is not possible to differentiate African and Classical Swine fever by clinical or post-mortem exam; must send samples to laboratory
- Erysipelas
- Salmonellosis
- Pasteurellosis
- All septicemic conditions

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Recognition of Specific Diseases

Foot and Mouth Disease
Heartwater
African Horse Sickness
Venezuelan Equine Encephalomyelitis
Rift Valley Fever
Exotic Newcastle Disease
Highly Pathogenic Avian Influenza
African Swine Fever
Classical Swine Fever

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Slides 70-72

Classical Swine Fever

- Occurs in much of Asia, Central and South America, and parts of Europe and Africa
  - Many countries free of the disease
- Hosts
  - Pigs and wild boar are the only natural reservoir
- Transmission
  - Direct contact between animals: Secretions, excretions, semen and/or blood
  - Spread by farm visitors, veterinarians, pig traders
  - Indirect contact through premises, implements, vehicles, clothes, instruments and needles
  - Insufficiently cooked waste food fed to pigs
  - Transplacental infection to unborn piglets

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Classical Swine Fever

Sources of Infection

Incubation period is 2–14 days

Sources of virus

- Blood, all tissues, secretions and excretions of sick and dead animals
- Congenitally infected piglets persistently viremic, may shed virus for months
- Infection routes are
  - Ingestion
  - Contact with the conjunctiva, mucous membranes, skin abrasions
  - Insemination

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Classical Swine Fever

On-Farm Disease Recognition

Acute form

- Fever (105.8° F)
- Lack of appetite
- Lethargy
- Multifocal hyperemia and hemorrhagic lesions of the skin and conjunctiva
- Cyanosis of the skin especially the extremities
- Transient constipation followed by diarrhea
- Vomiting (occasionally)
- Dyspnea, coughing
- Ataxia, paresis and convulsion
- Pigs huddle together
- Death occurs 5–15 days after onset of illness
- Mortality in young pigs can approach 100%

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Slides 73-75

Classical Swine Fever

On-Farm Disease Recognition

Chronic form
- Dullness
- Capricious appetite
- Fever
- Diarrhea for up to one month
- Apparent recovery with eventual relapse then death

Congenital form
- Congenital tremor
- Weakness
- Runting, poor growth over a period of weeks or months leading to death
- Clinically normal, but persistently viremic pigs, with no antibody response

Mild form
- Transient fever
- Lack of appetite
- Fetal death, mummification, resorption, still birth
- Birth of live, congenitally affected piglets
- Abortion (rare)

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Classical Swine Fever

Disease with Similar Symptoms

- African Swine fever
  - Indistinguishable clinicopathologically, must send samples to laboratory
- Bovine viral diarrhea virus infection
- Salmonellosis
- Erysipelas
- Acute pasteurellosis
- Other viral encephalomyelitis
- Streptococcosis
- Leptospirosis
- Coumarin poisoning

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Diagnosing, Controlling, and Reporting FADs

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Slides 76-78

A Difficult Diagnosis

- FADs often resemble many other diseases
- Attention to clinical signs and ruling out other diseases is often the first step to making an accurate diagnosis
- Some clinical signs are more suggestive of a FAD
  - Vesicles/blisters on the mouth, nose and feet of ruminants or swine
  - Sudden death in livestock
  - Abortions in otherwise healthy and well vaccinated herds

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Reporting a Suspected FAD

- Cases of suspected FADs must be reported to federal and state authorities
- Federal
  - Area Veterinarian in Charge or AVIC (See Web site)
- State
  - State Veterinarian (See Web site)
- Federal and State authorities work together to obtain appropriate samples for FAD diagnosis
  - Samples are handled with special processing and handling
- Movement of people and animals should be restricted to limit the potential spread of infection

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Controlling FADs

- Maintain good biosecurity practices on farms
- Insect, rodent and parasite control
- Up-to-date vaccination schedule
- Isolate and quarantine new animals
- Limit contact between animals of differing species
- Limit contact between livestock and wildlife

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Slides 79-81

Key Resources 1

- Florida Department of Community Affairs, Division of Emergency Management
  http://www.floridadisaster.org
- United States Department of Agriculture (USDA)
  http://www.usda.gov
- Florida Department of Agriculture and Consumer Services (FDACS)
  http://www.doacs.state.fl.us


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Key Resources 2

- FDACS Division of Animal Industry
  http://www.doacs.state.fl.us/ai/
- USDA Animal and Plant Health Inspection Service (APHIS)
  http://www.aphis.usda.gov
- Iowa State University Center for Food Security and Public Health
  http://www.cfsph.iastate.edu


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Key Resources 3

- USDA-APHIS fact sheets
  http://www.aphis.usda.gov/lpa/pubs/fsheet_faq_notice/fsfaqnot_animalhealth.html
- World Organisation for Animal Health (OIE)
  http://www.oie.int
- APHIS's Center for Emerging Issues worksheets
  http://www.aphis.usda.gov/vs/ceah/cei/worksheets.htm


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Key Resources 4

- **UF-IFAS EDIS fact sheets on veterinary and animal health topics**
  - http://edis.ifas.ufl.edu/DEPARTMENT_VETERINARY_MEDICINE
  - http://edis.ifas.ufl.edu/TOPIC_Livestock_by_Animal
  - http://edis.ifas.ufl.edu/TOPIC_Livestock_Health_by_Animal
- **UF-IFAS Extension Disaster Handbook**
  - http://disaster.ifas.ufl.edu
- **United States Animal Health Association (USAHA) home page and animal disease information links**
  - http://www.usaha.org/index.shtml
  - http://www.usaha.org/links.shtml#disease

Key Resources 5

- **USDA-APHIS Veterinary Services publication, "Animal Health Hazards of Concern During Natural Disasters"**
  - http://www.aphis.usda.gov/vs/ceah/cei/EmergingAnimalHealthIssues_files/hazards.PDF
- **USDA-APHIS fact sheets for various animal disease are available on the World Wide Web**
  - http://www.aphis.uda.gov/lpa/pubs/fsheet_faq_notice/fsfaqnot_animalhealth.html
- **USDA-APHIS Area Veterinarians in Charge (AVICs) office locations**
  - http://www.aphis.usda.gov/vs/area_offices.htm

Key Resources 6

- **State Veterinarian list**
  - http://www.aphis.usda.gov/vs/sregs/official.html
- **Saunders Comprehensive Veterinary Dictionary**, 2nd edition by D.C. Blood and V. P. Studdert, 1999
- **Recognizing and Responding to Foreign Animal Diseases**, web-based training from Florida Dept. of Agriculture and Consumer Services; available for continuing education credit
  - http://www.sarttraining.com/courses/FADS_Beta/

Slides 85-86

Summary

- Defined foreign animal disease
- How foreign animal diseases are introduced and consequences of the introduction
- Overviewed nine specific animal diseases
- Described the difficulty in diagnosing foreign animal diseases and how diagnosis is confirmed
- How to prevent disease spread and introduction
- Resources available for further information

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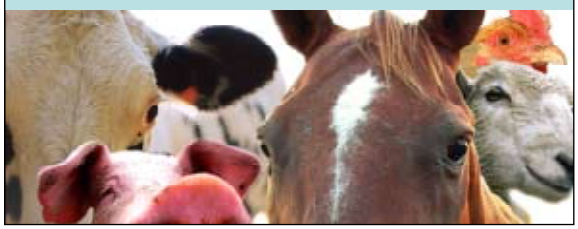
Thank You!

SART Training Media



Resources

The following are sources of information, including agencies mentioned in this unit that may be helpful.

- Florida Department of Community Affairs, Division of Emergency Management
  Web site: http://www.floridadisaster.org

- United States Department of Agriculture (USDA)
  Web site: http://www.usda.gov

- Florida Department of Agriculture and Consumer Services (FDACS)
  Web site: http://www.doacs.state.fl.us

- FDACS Division of Animal Industry
  Web site: http://www.doacs.state.fl.us/ai/

- USDA Animal and Plant Health Inspection Service (USDA-APHIS)
  Web site: http://www.aphis.usda.gov

- World Organisation for Animal Health (OIE)
  Web site: http://www.oie.int

- APHIS Center for Emerging Issues (CEI) has various worksheets available on animal health and diseases of concern as well
  Web site: http://www.aphis.usda.gov/vs/ceah/cei/worksheets.htm

- University of Florida Institute of Food and Agricultural Sciences Extension publication resource (EDIS) offers many fact sheets for various veterinary and animal health
  Web sites: http://edis.ifas.ufl.edu/DEPARTMENT_VETERINARY_MEDICINE
  http://edis.ifas.ufl.edu/TOPIC_Livestock_by_Animal
  http://edis.ifas.ufl.edu/TOPIC_Livestock_Health_by_Animal

- The University of Florida IFAS Extension Disaster Handbook
  Web site: http://disaster.ifas.ufl.edu

- United States Animal Health Association (USAHA) web address and animal disease information links
  Web sites: http://www.usaha.org/index.shtml
  http://www.usaha.org/links.shtml#disease

- USDA-APHIS Veterinary Services division publication, "Animal Health Hazards of Concern During Natural Disasters," published in February 2002 is available at the following link. The goal of the publication is to "describe some of the natural disasters that have occurred in the U.S. during recent years and to review some infectious and noninfectious hazards that, at the very least, are perceived to be related directly to natural disasters."
  Web site: http://www.aphis.usda.gov/vs/ceah/cei/EmergingAnimalHealthIssues_files/hazards.PDF

- USDA-APHIS fact sheets for various animal diseases are available at the following Web address
  Web site: http://www.aphis.usda.gov/lpa/pubs/fsheet_faq_notice/fsfaqnot_animalhealth.html

- The Animal and Plant Health Inspection Service has veterinarians serving as Area Veterinarian's in Charge (AVICs) who are part of the chain to whom foreign animal diseases are reported. The list of all states' AVICs are found on the following website
  Web site: http://www.aphis.usda.gov/vs/area_offices.htm

- State Veterinarian Office contact information for each state
  Web site: http://www.aphis.usda.gov/vs/sregs/official.html

- Saunders Comprehensive Veterinary Dictionary 2nd edition, written by D. C. Blood and V. P. Studdert. Published in 1999 by W. B. Saunders.

- Iowa State University Center for Food Security and Public Health
  Web site: http://www.cfsph.iastate.edu

- Web-based Training: Recognizing and Rsponding to Foreign Animal Diseases. Florida Department of Agriculture and Cosumer Services; available for continuing education credit. http://www.sarttraining.com/courses/FADS_Beta/

- Video Resources:

  Foreign Animal Diseases: Foot and Mouth Disease. USDA. Length: 7:22. (Download) Provides a helpful description of FMD, especially to see FMD's symptoms and effects.

  Foot-and-Mouth Disease (originally broadcast March 30, 2001 on the News Hour with Jim Lehrer). PBS Online. Length: 14 min. (Streaming) Describes the 2001 FMD outbreak in Britain and discusses spread of FMD and primary and secondary economic impacts.

  Access these clips through the Florida SART Training Materials page.