AFRICAN SWINE FEVER (ASF)  
USDA PREVENTION, PLANNING, RESPONSE AND OUTREACH IN THE UNITED STATES

BARBARA PORTER-SPALDING, DVM MVPH  
TRAINING AND EXERCISE PROGRAM  
NATIONAL PREPAREDNESS AND INCIDENT COORDINATION  
U.S. DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE  
VETERINARY SERVICES

NATIONAL ASSOCIATION OF FEDERAL VETERINARIANS  
FEBRUARY 27, 2020
What is ASF?

- Infectious disease caused by the ASF virus that affects members of the suidae family: domestic pigs, feral swine, wild boar and other exotic swine species
- Negligible health risk to other livestock species
- Does not infect humans and is not a public health risk
ASF – The Virus

- Unique virus with 20 genotypes and multiple clinical presentations
- Highly resistant in environment, especially at lower temperatures
- Can survive in meat and meat products for extended time
ASF – Transmission

- Direct contact with infected pigs
  - Usually oronasal
  - All secretions/excretions, blood, tissues

- Indirect contact
  - Ingestion of contaminated pork products
  - Contaminated Surfaces & Fomites
  - Vectors
Incubation period of ASF is 5 to 21 days following direct contact with infected pigs

Depending on the virus genotype, ASF manifests as
- Peracute disease
- Acute disease
- Subacute disease
- Chronic disease
ASF – Diagnosis

- Suspect case: Foreign Animal Disease
  Diagnostician (Federal or State) called in

- Samples Submitted
  - Tonsils
  - Spleen
  - Lymph Nodes
  - Whole Blood

- Samples will be run at approved NAHLN labs or FADDL
ASF – Treatment & Vaccination

- **No treatment**
  - Treatment should not be attempted
  - Depopulation of infected and exposed pigs is the best disease control method
  - State and Federal officials will manage depopulation

- **No vaccine currently available**
  - Large gaps in knowledge concerning ASFv infection and immunity
  - Ongoing research
Why Is ASF a Concern to the US?

- Potential health impact on nation’s swine herd
- Potential economic impact on swine/ag sector
- Potential trade restrictions
- Recent spread to previously unaffected areas in Europe and Asia
1921: Discovered in Kenya

Today: endemic in most of sub-Saharan Africa including the islands of Madagascar and Mauritius
ASF Timeline – First Jump to Europe

- 1957: First occurrence outside Africa – Portugal
- 1960s: Portugal and Spain
- 1970-1980s: The Netherlands, Italy, France, Belgium
- 1990s: Disease eradicated
- Remains endemic on the Island of Sardinia

Graphic courtesy of ISU CFSPH
1963: Virus isolated from soft tick
- Ornithodoros erraticus

1971: Western Hemisphere
- Cuba, the Dominican Republic, Haiti, Brazil

No known contemporary cases in this hemisphere
ASF Timeline - Eurasia

- 2007: Republic of Georgia

- Spread in Caucasus Region (Eurasia), including Russia Federation

- 2015: Eastern Europe
  - Lithuania, Latvia, Poland, Romania

- Wild boar in Iran

Graphic courtesy of ISU CFSPH
ASF Timeline – 2018 Outbreaks

- China: First time reported, domestic pigs
- Belgium: Wild boars
- Hungary, Estonia, Latvia, Lithuania, Russia, Poland, Ukraine, Bulgaria, Romania

Graphic courtesy of ISU CFSPH
ASF – Globe Trotter

- Uncooked/undercooked pork products fed to pigs (imported, illegal)
  - Portugal, Spain (1960); Italy (1983); Belgium (1985); Russia (2008); Romania, China (2018)

- Raw pork waste/garbage at airport or shipping ports
  - Lisbon (1957), Malta, Sardinia (1978), Georgia (2007)

- Movement of infected wild boars
  - Russia (2008)
USDA and African Swine Fever

Protecting Our National Herd

Prevention

Planning

Response

Outreach
ASF Prevention

**Barriers to Entry to the US**

- **Import Restrictions**
  - Live swine
  - Products derived from swine

- **International garbage restrictions**
ASF Prevention

*Barriers to Entry to the US*

- Passenger and commercial screening, confiscation/fines
- Partnering with U.S Customs & Border Protection (CBP)
ASF Prevention

*Interior Barriers Protecting U.S. Swine*

- Swine Health Protection Act/Garbage-Feeding Restrictions
- Ethnic markets
  APHIS PPQ SITC outreach and enforcement
ASF Planning & Response

*Strategic Plans & Exercises*

- ASF FAD PReP Response Strategy (Dec 2019)
- ASF response exercises 2018-2019
- State ASF response plans
ASF Exercise Series

- Policy workshop
- Plan review workshop
  - Policy Group
- Plan validation tabletop exercise
- SFEAR
  - 14 top swine states
  - 20 operations representing 18 companies
  - Siloed days
  - 1,559 participants over the four days

Key
- States Participating in the September ASF Exercises (SFEAR)
SFEAR Major Findings

- AAR/IP
  - State-VS overarching report
  - 34 areas for improvement
  - 73 corrective actions
- State-specific
FAD Investigation

States wanted to notify select stakeholders before confirmation.

Containing fluids during the necropsy was difficult.

Rigorous disinfection of incoming equipment caused delays.

EMRS2Go in remote locations.

Availability of foreign animal disease diagnosticians.
Movement Standstill

- Initial press releases did not address food safety
- Monitoring the status of states relative to implementing the standstill and their associated restriction/criteria was difficult
- States initiated the standstills with varying grace periods
- States had difficulty identifying allowed “critical” movements
Depopulation & Disposal (D&D)

- Uncertainty that ventilation shutdown would be approved and if indemnity would be paid
- Site management teams were inconsistent in informing producers who was ultimately responsible for depopulation and disposal
- The epi questionnaire and the information required by the indemnity calculators were not aligned
D&D (continued)

Many states did not understand indemnity; how animals are valued, what is covered, and what actions could impact the availability of indemnity payments.

States had difficulty using both internal and EMRS resource ordering systems.

Many states did not understand what was available from NVS.
Permitting

- Destination locations were not informed of pending permitted movements
- States varied in their pre-movement permit requirements
- Information on why a permit was denied was not included with the denial
- Industry felt that it took too long for receiving states to approve interstate movement requests
Permitting (continued)

- The draft pre-movement sampling requirements were considered excessive.
- States had access issues for EMRS.
- The process for permitting the movement of feed and equipment was not understood by industry.
Next Steps
ASF Events

🧬 VS NTEP
  - Packer exercise series
  - Secure Food Supply
    - Plan development workshop
    - Secure Pork Supply plan tabletop (TTX)
  - Webinars
  - ASF exercise series(parts for other states
  - 14 top swine states recycling one of more days of SFEAR

📍 State-specific
  - 3D operations
  - Farm Bill Funding to continue exercises and training
ASF Planning & Response

*Increased Diagnostic Capacity*

- Expanded list of approved tissues for ASF testing
- Increased number of approved NAHLN labs
NAHLN Laboratories Approved to Conduct ASF & CSF Testing

NAHLN Laboratory approved for ASF/CSF testing

National Veterinary Services Laboratories

Designates more than one NAHLN laboratory approved for ASF testing.

October 17, 2019
NAHLN ASF Response - Increasing ASF Capacity

• **Integrated Active Surveillance for ASF and CSF**
  - Start date: June 1, 2019
  - Approximately 3,903 samples have been tested through January 31, 2020

• **Approved NAHLN labs: Quadrupled the number to 46 labs approved**
  - 8 labs provide active surveillance for ASF/CSF
  - 38 additional labs may provide passive surveillance (FAD investigations)
  - All 46 labs available for surge capacity
  - Over 170 Proficiency tested analyst
    - Capable of providing over 40,000 ASF or CSF PCR tests/day

• **Approved sample types**
  - Whole blood (ASF)
  - Tonsil (ASF and CSF)
  - Spleen (ASF and CSF)
  - Lymph node (ASF and CSF)

• **Validation work in progress**
  - Oral fluids
ASF Planning & Response

Surveillance & Analysis

- Swine Hemorrhagic Diseases Targeted Surveillance (June 2019)
- Global monitoring
- Scientific analysis at USDA’s Center for Epidemiology & Animal Health (CEAH)
ASF/CSF Surveillance

Starting June 1, 2019 began testing certain samples for ASF & CSF

- Piggybacks on old CSF surveillance program
- ~90% of samples will come from private practitioner routine submissions – clinical compatibility necessary for testing
- ~9% of samples will come from VS or State field employees
- ~1% feral swine FADIs
<table>
<thead>
<tr>
<th>Number</th>
<th>Surveillance stream</th>
<th>Substream</th>
<th>Who collects samples</th>
<th>Who does testing</th>
<th>Sample type</th>
<th>Test Type</th>
<th>Forms</th>
<th>Database used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sick pigs submissions to VDLS</td>
<td></td>
<td>Private practitioners--VDLs redirect to ASF/CSF surveillance</td>
<td>10 designated NAHLN labs</td>
<td>Approved tissues: Tonsil/Spleen/LNs</td>
<td>RT-PCR</td>
<td>Lab-specific submission form</td>
<td>LMS-results messaged</td>
</tr>
<tr>
<td>2</td>
<td>Slaughter samples/roaster pig condemnations</td>
<td></td>
<td>VS and State field personnel</td>
<td>10 designated NAHLN labs</td>
<td>Approved tissues: Tonsil/Spleen/LNs</td>
<td>RT-PCR</td>
<td>CLSM online or CLSM paper form</td>
<td>Comprehensive Lab Submission Module-CLSM</td>
</tr>
<tr>
<td>3</td>
<td>High risk--on Farm</td>
<td>Backyard Swine: Garbage Feeders</td>
<td>VS and State field personnel</td>
<td>Serum FADDL; Tissues 10 designated NAHLN labs</td>
<td>CSF-serum or tissues if dead hogs; ASF tonsil, spleen or LNs</td>
<td>Serum:ELISA/IP VN; Tissues RT-PCR</td>
<td>CLSM online or CLSM paper form</td>
<td>CSF FADDL STRAND; ASF CLSM+LMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aggregation points</td>
<td>VS and State field personnel</td>
<td>Serum FADDL; Tissues 10 designated NAHLN labs</td>
<td>CSF-serum or tissues if dead hogs; ASF tonsil, spleen or LNs</td>
<td>Serum:ELISA/IP VN; Tissues RT-PCR</td>
<td>CLSM online or CLSM paper form</td>
<td>CSF FADDL STRAND; ASF CLSM+LMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Backyard swine/contact with feral pigs</td>
<td>VS and State field personnel</td>
<td>Serum FADDL; Tissues 10 designated NAHLN labs</td>
<td>CSF-serum or tissues if dead hogs; ASF tonsil, spleen or LNs</td>
<td>Serum:ELISA/IP VN; Tissues RT-PCR</td>
<td>CLSM online or CLSM paper form</td>
<td>CSF FADDL STRAND; ASF CLSM+LMS</td>
</tr>
<tr>
<td>4</td>
<td>Feral Swine</td>
<td>CSF active</td>
<td>WS personnel</td>
<td>FADDL</td>
<td>Serum</td>
<td>ELISA-IPVN</td>
<td>WS sample collections forms</td>
<td>STRAND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASF morbidity mortality events-FADI</td>
<td>WS/State/Federal</td>
<td>FADDL; one set to NAHLN lab if directed by State Vet</td>
<td>Full FADi tissue set: tonsil, spleen, LN’s, Lung, etc</td>
<td>Full testing workup</td>
<td>VS 10-4</td>
<td>EMRS</td>
</tr>
</tbody>
</table>
ASF/CSF Slaughter Surveillance

Types of samples we are looking for (first ask: FADI?)

- Spleen or tonsil work equally well, lymph node (hemorrhagic?) works but less desirable
  - Only need to collect one
- Dead garbage-fed hogs are great candidates
  - Old CSF serum program on garbage-fed hogs will continue
- Condemnations/dying/dead hogs at slaughter or aggregation points
  - Skin and ear discoloration (erysipelas-like)
  - Septicemia
  - Hemorrhagic lymph nodes
  - Enlarged spleen
  - Kidney petechia
  - Nasal bleeding
  - Knuckled over
  - Dying
  - Febrile (may present as huddling)
  - Tonsil pathology (tonsillitis, hemorrhagic, necrotic foci, etc.)
  - Central nervous system signs (incoordination, paddling, circling, head tilt, abnormal mentation)
ASF Outreach

Informed Partners = Key to Success

- Raising awareness of ASF: how to prevent it from entering the U.S. and encouraging reporting
- Sharing information and communicating priorities and activities with key partners
- Preparing communications materials to respond in the event of a detection
ASF Outreach

International Coordination

- North American ASF Symposia
- APHIS International Services Reporting & Coordination
- USDA ASF Exercises – Mexico & Canada participation
REVISED FRAMEWORK FOR THE PREVENTION & CONTROL OF AFRICAN SWINE FEVER

OBJECTIVE: To prevent entry and mitigate the impacts of ASF in the Americas

FOUR PILLARS FOR ACTION BASED ON A FOUNDATION OF SCIENCE

1. PREPAREDNESS PLANNING
   Expected outcome: Countries have a high state of readiness to swiftly control ASF should it enter the Americas region.

   Areas for action:
   - Increase readiness by validating ASF preparedness plans and testing response capabilities through exercises involving all stakeholders.
   - Find solutions to deficiencies in ASF response capabilities and planning gaps.
   - Optimize rapid ASF detection in the Americas by ensuring capacity for surveillance.
   - Develop the appropriate process and capacity for rapid risk assessment to identify risks for ASF and inform policy decision as situations evolve.
   - Continue to collaborate internationally on critical ASF research with particular attention to the development of vaccines and other tools to prevent or respond to an ASF outbreak.

2. ENHANCED BIOSECURITY
   Expected outcome: Key biosecurity measures are in place to prevent the entry of ASF into the domestic and wild pigs populations of the Americas, and mitigate its spread within these populations.

   Areas for action:
   - Identify key threats, gaps, and best practices in national border biosecurity, including establishment of appropriate level of activity, informed by risk assessment.
   - Establish coherent collaboration to ensure border authorities share intelligence and best practices to mitigate the entry.
   - Foster collaboration and compliance to address biosecurity ensuring responsibilities of all stakeholders are identified.
   - Involve stakeholders in government, industry, and academia to gain an understanding of the wild pigs populations, and share best management practices at borders and the interface with domestic pigs.

3. ENSURE BUSINESS CONTINUITY
   Expected outcome: Mitigate the trade impacts of ASF on the swine sector, both nationally and internationally, while controlling and eradicating the disease.

   Areas for action:
   - Ensure risk based movements of animals and animal products domestically to keep industry viable in the face of an outbreak.
   - To provide guidance and technical support for the development of common standards for zone establishment to gain wider acceptance.
   - Proactively negotiate the recognition of zoning approaches with trading partners to reduce impediments to trade.
   - Work with international partners and the OIE to develop globally recognized and accepted guidance on the application of compartmentalization for ASF to gain wider acceptance, both in infected and uninfected countries.

4. COORDINATED RISK COMMUNICATIONS
   Expected outcome: Effective risk communication on ASF with target audiences to encourage informed decision making, behaviour modification, and trust in governments and industry.

   Areas for action:
   - Develop a consistent approach and strategies to communicating risk, adapted to the specific needs and circumstances, including disease status, of various countries.
   - Identify or develop platforms and mechanisms for ongoing coordination of messaging and for sharing of communications-related information between countries.
   - Establish mechanisms for monitoring public narrative on ASF to ensure information in media and social media is accurate.
   - Develop notification protocols to update partners on disease status.

PARTNERSHIPS
Leverage existing partnerships or build new ones to engage stakeholders in areas which require collaboration to attain expeditious and responsive solutions to manage ASF. Clearly define the roles and responsibilities of the partners in accordance with their respective mandates.

GOVERNANCE
Optimize the potential of existing governance mechanisms at international, regional, sub-regional and national levels to ensure effective coordination and co-operation among all parties to implement appropriate measures to achieve common objectives for the prevention and control of ASF.

version 15.05.2019
What Can You Do?

- Report suspect cases to your AVIC or State Vet
- Practice Good Biosecurity
  - On the farm
  - Returning from international travel

1-866-536-7593
Acknowledgement: Parts of this presentation were adapted from an ASF presentation created by the Iowa State University Center for Food Safety & Public Health (CFSPH) and last updated in 2018. The full presentation is available at http://www.cfsph.iastate.edu/.

Thanks to Alan Huddleston, Christina Loiacono, Ross Free and Eric Hess