The Perspective of USDA APHIS Veterinary Services Emergency Management and Diagnostics in Preparing and Responding to a Foreign Animal Disease

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Safeguarding Animal Health
Emergency Management and Diagnostics

EM&D
Chief Science Officer

- Center for Veterinary Biologics
- National Veterinary Services Laboratories
- National Center for Animal Health Emergency Management

Safeguarding Animal Health
The Center for Veterinary Biologics

• Responsible for evaluating, inspecting, and licensing all veterinary biologics distributed in the United States

• Implements the provisions of the Virus-Serum-Toxin Act
The National Veterinary Services Laboratories

- Provides confirmatory and reference laboratory diagnostic services and establishes standards for foreign animal disease testing for member laboratories of the National Animal Health Network
The National Center for Animal Health Emergency Management

NCAHEM

Preparedness and Incident Coordination

Interagency Coordination

The National Veterinary Stockpile

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Surveillance

• Active and passive surveillance programs to detect pathogens of concern
• Testing results reported by State approved laboratories based on submissions from industry and regulatory sources
• Passive surveillance through a network of Federal and State veterinarians and Federally accredited private sector veterinarians
Preparedness

Secure Food Supply Plans

NAHERC
National Animal Health Emergency Response Corps

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Response

• NCAHEM guides and coordinates the response to an outbreak in accordance with Federal regulation using the Incident Command System (ICS)

• NCAHEM and local officials determine strategies and countermeasures and coordinates with other Federal agencies

• A Unified Field Command oversees the response

• National Veterinary Stockpile
EM&D Novel Response Tools

• H5N1 resulted in allocation of resources to develop tools and diagnostics for poultry
• APHIS is better prepared to quickly neutralize foreign animal diseases that may threaten poultry health
• Advances in diagnostic and response technologies for FADs affecting hoofstock have not been as fortunate
Foot-and-Mouth Disease

Traditional Response Goals

Focus: Eradication with no vaccination

1. Detect, control, & contain FMD quickly

2. Stamp out FMD while stabilizing agriculture, the food supply, the economy, & protecting public health

3. Provide science, risk-based approaches, & systems that allow commerce to continue

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Challenges to Traditional Response Strategies

Mobility of animals

625,000 pigs in transit every day

Huge herds, highly concentrated

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Strategies for the use of FMD Vaccine

**Stamping Out with No Vaccination**
- Highly circumscribed and limited outbreak
- Small number of animals

**Stamping Out with Emergency Vaccination to Slaughter/Kill**
- Animals that proceed to slaughter

**Stamping Out with Emergency Vaccination to Live**
- Preserves the integrity of the food supply chain
- Longer time to effect an eradication
- Animals complete their productive lifespan
- Closes international export markets

**Vaccination to Live with no Stamping Out**
- Routine production procedure
- Time to eradicate is indefinite
- Export agreements would be developed
- Limits the production of key industries

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The Bank

• Recommends which topotypes to stock, in the form of vaccine antigen concentrate, to produce emergency vaccines of high potency

• Supplies are based on the old model of selective and restricted use of vaccine

• Emergency vaccine stocks are far below what would be required to address a livestock dense state or multi-state outbreak
Commercial FMD Vaccines

- NVS engages CVB to determine foreign manufacturing facilities
- Manufacturer demonstrates a pure, safe, potent, and effective product
- CVB ensures that the minimal permitting requirements are met
- NVS engages the commercial vaccine manufacturer in contract arrangements
The Ideal FMD Vaccine

- Domestically manufactured
- Relatively inexpensive
- Flexibility to rapidly change the target epitope(s)
- Rapid onset of protection with a single dose
- Require only yearly (or longer) boostering
- Effective in a variety of livestock species, ages, and breed types
- Provide an umbrella of immunity over closely related but poorly cross-reactive topotypes
- Provide the ability to differentiate infected from vaccinated animals
High Consequence Animal Diseases and Pests

• Criteria to determine whether to include an animal disease as high consequence:
  ➢ High epidemic potential
  ➢ High economic impact
  ➢ Large impact on trade (both domestic and international)
  ➢ High zoonotic potential
  ➢ High morbidity and mortality
  ➢ High potential to infect multiple species
  ➢ Inability to detect rapidly
  ➢ Inability to vaccinate
Questions?

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