

REPORT OF THE COMMITTEE ON TRANSMISSIBLE DISEASES OF SWINE

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The Committee met on October 29, 2008 at the Sheraton Greensboro Hotel, Greensboro, North Carolina, from 8:00 a.m. to 12:00 p.m. There were 15 members and 31 guests present.

Feral Swine Subcommittee on Brucellosis and Pseudorabies (PRV) update was presented by Dr. Carter Black, Subcommittee Chair. The full report was accepted by the Committee and is included as part of the report on the Committee on Brucellosis, elsewhere in these proceedings .

Swine Influenza Update was presented by Dr. Amy Vincent, National Animal Disease Center. Dr. Vincent presented a background on the rise of influenza virus infections in swine. H1N1, H1N2, and H3N2 viruses are currently circulating in the U.S. swine population. Emerge via drift, shift, interspecies transmission, or re-emergence. Double and triple reassortants emerged in 1997-1998. In 2003-2005, a human-like H1N1 emerged. H1N1 viruses have predominated since 2007. New genetic cluster of influenza viruses have been detected in the U.S. Two separate introductions of human H1 viruses have occurred containing the TRIG cassette which has been highly successful in swine. Limited serum cross-reactivity with swine H1. Zoonotic potential is unknown.

An H2N3 virus has been detected from two swine farms in Missouri with some changes suggesting adaptation from avian to mammal receptor binding. No human illness has been reported. No evidence that the virus is still circulating.

During the 2007 Ohio county fair, pigs and people had flu-like symptoms. A swine H1N1 from the pigs was detected. Clinical signs were reproduced in pigs at the National Animal Disease Center (NADC). These produced more severe clinical signs than normally observed with influenza alone. They also produced severe lung lesions. Genetically there is nothing different about this group of viruses, but has increased virulence, increased shedding, potential to infect people, poor cross-reactivity with other H1 strains.

We need: better vaccines for pigs and people including modified live viruses (MLV), personal protective equipment (PPE) for people, and minimize contact between swine and avian species.

Swine Influenza Virus (SIV) Vaccinology:

In 2006, approximately 70 percent of sow herds were vaccinated (20 percent using autogenous vaccines). Circulating viruses are constantly changing. Maternal antibodies interfere with active immunity. Commonly circulating strains are genetically distinct from the vaccine source strains. Practitioners have seen enhancement of lesions in the field and laboratory (likely immune mediated). Studies have shown correlation of lesion enhancement with high IgA and low IgG responses. Live vaccines showed strong induction of mucosal antibody and high IgA and IgG.

MLV vaccines have shown better protection against heterologous challenge even in the face of maternal antibodies (although there was a decreased antibody response). Researchers saw no lesion enhancement using the MLV vaccine compared to the inactivated vaccine. Killed virus vaccines have been

shown to enhance disease particularly in the face of a heterologous challenge. Killed vaccines work well when dealing with a homologous challenge.

Swine Influenza Surveillance System was presented by Dr. John Korslund, Veterinary Services (VS). VS submitted 2010 budget request for SIV reagent preparation, strain prevalence data, and reports of declining efficacy of commercial vaccines. CDC approached VS with request for proposals for SIV surveillance related to zoonotic issues. VS put together a proposal to CDC's Coordinating Center for Infectious Diseases under Dr. Lonnie King.

VS' proposed 2015 vision SIV goals:

- improve SIV epidemiology;
- speed vaccine approval;
- improve swine diagnostics;
- proactive response toward a potential pH issue; and
- retain jurisdiction over animal health issues.

SIV Surveillance plan:

Case definition for isolates of interest:

- Diagnostic laboratory submissions:
 - non-typable isolates;
 - "novel" SIV isolates; and
 - unusually severe or atypical clinical presentations
- Suspected concurrent human and swine SIV infection:
 - public venue; and
 - pig herd linked epidemiologically.

The current plan would ask veterinarians to voluntarily report suspected human infection and lays out the distribution of isolates and information between stakeholder groups. All on-farm submissions are voluntary because SIV is not a reportable disease in livestock.

Feral Swine Control in Kansas was presented by Dr. Chad Richardson, Wildlife Services (WS). Richardson described the feral swine control program in Kansas which is somewhat unique compared to other states. He discussed the documented feral pig population in 1994. Kansas legislature passed act prohibiting import and possession of feral swine in 1995. Kansas Animal Health Dept. asked WS to help develop a statewide feral swine control program in 2006. Feral swine are considered livestock. two goals: stop importation and stop current population spread.

Kansas law bans sport hunting, but retained the right of landowners to kill feral swine as a pest on their own property. Hunting tends to scatter the population. Trapping has been found to be more effective along with aerial hunting. Estimates are that there are approximately 1500 feral swine in Kansas. This program has removed approximately 500 to date.

In Summary, hunting isn't an effective control measure, while trapping and aerial hunting is effective but more costly.

Classical swine fever (CSF) in the Dominican Republic and Haiti was presented by Dr. John Shaw, International Services (IS).

African swine fever (ASF) was eliminated from Hispaniola by depopulation of swine in 1979 – 1983. CSF was found in the Dominican Republic (DR) in 1997 (reported 228 outbreaks in 1998). USDA support in 2000 was \$200,000 and then \$5.1 million for five years in 2002.

CSF is a politically important disease in Haiti. Production there is nearly all backyard operations, except for five medium-sized production units, with few veterinarians available. The country vaccinated 627,290 animals in 2008 out of 820,216. However, they vaccinated only once.

Ten outbreaks were reported in 2008, with increased surveillance but there is no compensation for animals destroyed.

In the DR, more veterinarians, large producer groups and processors exist. In nearly 800,000 to 1 million swine, 24 suspected outbreaks occurred with no compensation available.

There is a need to strengthen both national programs. Leaders should take advantage of the current positive relations between the two governments. APHIS-IS is considering a new business model involving a check-off type program.

Passenger Pre-departure Inspection Program (PPIP): In 1996 there was 100 percent inspection of all Haiti and DR travelers at the port of entry. In 2001, PPIP inspection of all outgoing passengers from the DR but Haiti refused to participate.

Seven U.S. states with direct flights from Hispaniola allow garbage feeding. Approximately 70,000 passengers are found yearly with meat products (3.5 percent of passengers). DR passengers are twice as likely to travel with meat products than travelers from other countries.

The risk of introduction of foot-and-mouth disease (FMD) is a great concern particularly due to the high number of United Nations forces in the country – a number of which come from countries positive for FMD.

Dr. Patrick Webb, National Pork Board (NPB) gave a presentation on Waste Feeding. In the U.S. there are an total of 67,280 premises with more than 70 percent having a premises identification. In 2008, 113 million market hogs were harvested, including 7 million feeder pigs from Canada. Webb summarized waste feeding statistics in the U.S.:

- 160,000 head of market swine are currently fed waste products
- 600 pounds of feed to a 40-pound pig to 240 pounds.

Dr. Harry Snelson, American Association of Swine Veterinarians (AASV), presented the CSF 3D Video entitled *Classical Swine Fever: The Differential We Can't Afford to Forget*. The video was developed by NPB, AASV, the Center for Food Security and Public Health at Iowa State University and USDA as an educational tool for producers and veterinarians to promote early recognition of CSF.

Updates on Program Standards for Swine PRV/Bruceellosis and Implementation of the Revised PRV Surveillance Plan was presented by Dr. Troy Bigelow, Veterinary Services.

Summary of presentation:

Regarding PRV and swine brucellosis (SB) in FY 2008, which included eight PRV herds (Arkansas, Texas, Michigan and Florida) and four SB herds identified (South Carolina, Florida and Hawaii). Accelerated Pseudorabies Eradication Program (APEP) funds are no longer available.

PRV surveillance plan implementation includes reduction of sow and boar sampling from the five percent sampling goal in all states. Samples will be transferred to Kansas and Kentucky labs for analysis.

New surveillance streams, including serological analysis stream, are anticipated early summer 2009. This will include National Animal Health Laboratory Network (NAHLN) laboratories.

For the U.S. trichina program, the federal rule has been finalized. It includes a voluntary certification program, which certifies producers with good management practices.

VS is currently addressing swine brucellosis and PRV programs, including the following key issues:

- transitional definition not well understood or misused;
- inconsistent;
- diseases eradicated in the commercial herd;
- definition of the commercial herd; and
- Code of Federal Regulations (CFR) is outdated

VS is pursuing the hazard analysis critical control points (HACCP) concept, and is working towards getting this into the regulatory structure. Important points include:

- hazard analysis – identify at the state level;
- determine critical control points – where can disease risks be mitigated;
- critical limits – max. allowable incidence of disease we are controlling or eradicating;
- monitoring – surveillance;
- corrective actions – same as program standards we currently have, which allows some flexibility at the state level;
- recordkeeping system – used to verify HACCP is working as intended;
- validation – insures HACCP is working as planned, in which VS will review the state plans annually;
- provides oversight.

HACCP relies heavily on surveillance. Targeted surveillance can be determined by the state. HACCP would include a national surveillance program.

In summary, HACCP will define commercial compartment, prescribe the result—not the method, allow different plans depending on state-level risks; and state status may be lost by failing to comply. The current status of the concept is as follows:

- concept approved at USAHA in 2007;
- completed the regulatory work plan – first step in the regulatory process; and
- continue to gather input from stakeholders.

Putting Lipstick on the Scientific Pig was presented by Dr. Jennifer Greiner, National Pork Producers Council.

Focusing on fatigued hogs, there is a goal to carve fatigued pigs out of the non-ambulatory category. School lunch program standards would ban use of non-ambulatory animals. For swine, suspects must be segregated for recovery. Meat from non-ambulatory animals in California would be considered adulterated.

Animal well-being issues have risen to heightened levels. A House Agriculture committee inquiry has investigated animal handling, transport and antibiotic guidelines, as well as non-compliance penalties. Industry has taken a stance to condemn willful abuse of any animal. It is important that the industry review baby pig care guidelines going forward.

Food safety legislation has held the Food and Drug Administration at the target of key issues, which include facility registration and user fees; import restrictions and mandatory recalls.

The Committee reviewed a Resolution, entitled Prevention of Introduction of CSF and Other Foreign Animal Diseases into the United States, which was approved and forwarded to the Committee on Nominations and Resolutions.