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What We’re Going to Discuss

• A little vaccine principals – how they work
• Types of Vaccines
• Vaccine Handling and Storage
• Administration and Doses
• Sow Herd Programs
• How to determine which one’s to Use
  – No endorsements but discussion on merits

We Want to Prevent This!

Vaccines

• One of the Ten Greatest Public Health Achievements in the 20th Century
• Interventions
  – Primary – Prevent Disease
  – Secondary – Treat asymptomatic – reduce
  – Tertiary – Minimize consequences

Vaccination - Livestock

• Focus is the population not an individual
  – Maximize overall protection
  – Interest of the herd over individual
  – Very different than today’s human medicine
• Herd immunity – most important
• Swine vaccines generally only reduce the risk of disease
  – They do not prevent infection
  – They only rarely treat the disease
Ideal Vaccine

• Good humoral, cell-mediated and local immune response
• Protects against clinical disease and re-infection
• Marker vaccine (DIVA)
• Lifelong immunity
• Safe/No side effects
• Protects against all strains
• Easy to administer
• Cheap

Vaccine Promoted Passive Immunity

• Colostrum
  — Gut wall closes 24 hours
  — Prefer Suckling within 6 hrs for better absorption
  — Best when from the mother

Types of Swine Vaccines

• USDA-CVB Licensed Vaccines
  — Standard License
    • All Master Seed Commercial vaccines
  — Contingency – Emergency Licensed
    • PCV-2 and Swine Influenza (pandemic virus)
• Autogenous

Types of Swine vaccines

• Modified Live Vaccines
  — Virus – e.g. PRRS, ROTA, TGE
  — Bacteria – e.g. Erysipelas, Salmonella, Ileitis
• Killed
  — Virus – Parvovirus, Influenza, PRRS
  — Bacteria – Erysipelas, E. coli, Clostridium
• Toxoid
  — Tetanus
  — Clostridium type A, C, & D
• Anti-toxin
  — Erysipelas
  — Tetanus
• Autogenous – all are killed by USDA definition

Modified Live (MLV)

Advantages
• One dose
• Quicker Response
• Stronger & Longer
• Cheaper (Less Antigen)
• Life long immunity

Disadvantages
• Reversion to Virulence
• Organism Shedding
• Handling is Critical

Killed

Advantages
• Generally Safe
• Okay for Pregnant
• Stable storage
• Easier to Make

Disadvantages
• Multiple Doses
• Need Adjuvant
• Weaker Response
• Expensive (More Antigen & adjuvant)
• More Injection Reactions
Adjuvants

- Definition: A substance added to a vaccine to improve the immune response
- Less vaccine needed
- Helps direct proper immune response
- Many are proprietary
  - Oil and water – generic
- Expensive

Vaccine Handling & Storage

- Always Cold/Cool Until Used
  - Keep MLV viable
  - Keep possible contamination under control
    - Molds and bacteria
- Washing syringes
  - Simply use hot water
  - No detergents
  - No disinfectants (no alcohol)
  - No residues

Disease vs. Infection Prevention

- Swine Vaccines are designed to minimize consequences of infection
  - Prevent death
  - Shorten recovery time
  - Reduce disease severity
- Generally do not prevent infection
- Usually minimize shedding of the agent
  - Minimize pathogen spread

Route of administration

- Often Determines the type Antibody Response
  - Systemic → IM, Sub-Q, IP
    - IgG
    - Leptospirosis (kidneys)
  - Surface → Intranasal or oral
    - IgA
    - Fieilis, Erysipelas, ROTA virus, Salmonella, E.coli
    - Protection at gut (or lung) surface
    - Quick (3–5 days)
Dose

• Dose has been evaluated as part of the vaccine approval process
• Dose is usually the same regardless of animal’s size
• Consequences of lower dose
  – Will lower cost but
  – Less effective or possibly not effective at all
  • Don’t know the threshold
  – Shorter duration of immunity
  – No backing by the manufacturer

One or two doses

• Anamnestic response with the second dose
• Missed animals get a second chance
• Longer duration
  – Booster effect
  – Later date of administration
• Cost
  – Vaccine
  – Labor
• Compliance
• Timing

Swine Breeding Herds

• Three general uses of Vaccine
  1. Gilt and young boar Acclimatization
  2. Breeding and Gestation Protection/Booster
  3. Those given to the Sow to protect the piglets.

Acclimatization

• All the things done to prepare new breeding stock for entry into the herd
  – Feedback
  – Exposure to cull sows
  – Vaccinations

Acclimatization

• Vaccines for new breeding stock should meet Farm Specific needs
  – Based on farm disease history
  – Attending Veterinarian farm experience
  – Diagnostics from the Lab
  – New Disease introduction – health emergencies

Protecting the Breeding Herd

• Vaccination program should be customized based on Need
  – There are certain diseases that are in nearly all swine herds
    • Erysipelas
    • Parvovirus
    • Leptospirosis
    • Influenza
    • PRRS
Sow Vaccines to Protect Piglets
• The purpose of these is to promote specific colostrum and post colostrum antibodies
  – E. coli
  – TGE
  – ROTA Virus
  – Influenza
  – Clostridium
  – Streptococcus suis