


Protection



- Dry period is logical time to administer vaccines
 - Protect cow during period of immune suppression
 - Boost antibody levels in colostrum to protect calf
- Each herd should consult with local veterinarian for specific herd vaccine program

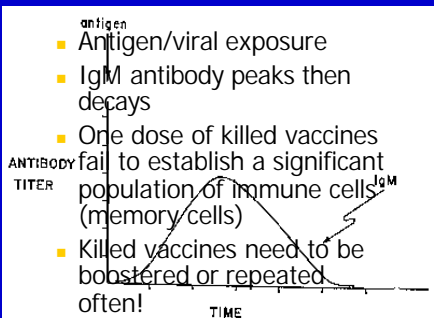
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Vaccines to Consider

- Primarily Calf Protection
 - E. coli
 - Rotavirus
 - Coronavirus
- Must have adequate colostrum management
 - High quality colostrum
 - Feed correct volume
- Primarily Cow Protection
 - BVD
 - IBR & PI3
- Gram Negative Core vaccines (J-5)
 - Always cost effective
 - Must follow vaccine label to be effective

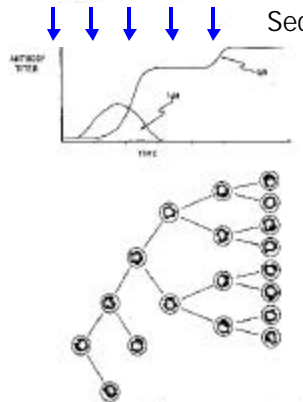
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Primary Antibody Response Natural Exposure to Disease



- Antigen/viral exposure
- IgM antibody peaks then decays
- One dose of killed vaccines fail to establish a significant population of immune cells (memory cells)
- Killed vaccines need to be boosted or repeated often!

Secondary Antibody Response



- Multiple antigen exposure
- IgM replaced by IgG
- Antibody titer increase
- IgG levels and persists
- Memory cells produced
- Permits instant disease recognition at a later date when the animal is re-exposed to the same disease antigen.

Killed vaccines

- Many virus particles but inactivated (killed)
- Antigen mass triggers immune system
- **MUST** be repeated in 3 - 4 weeks
- Short term protection
- May need boosters every 3 - 4 months
- One dose is **NOT** protective!

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Modified-live vaccines

- **Fewer** virus particles; **alive** but **altered**
- Altered live virus replicates or multiplies within the animal's body
- Immune response when viral mass sufficient
- If antibodies produced, no booster required
- Longer term protection
- As close to natural infection as possible without causing the disease

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Why Do Vaccines Appear to Fail?

- Injecting a vaccine does NOT guarantee *immunization will occur*
- Extremely virulent field strain
- Immuno-suppressed cattle
- One dose of a killed vaccine, no booster
- Too long between boosters (killed vaccines)
- Antibodies that prevent vaccine replication
 - residual maternal or previous exposure



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Strategic and Effective Vaccinations

- Calf hood vaccination protocols
- Dry cow vaccination protocols
- Early postpartum vaccination protocols
- Seasonal vaccination protocols
- Other protocols?
- Vaccination programs are herd specific
- Need to be established with the veterinarian

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Intranasal IBR-PI3 (TSV-2)

- Temperature sensitive mutant virus
- Safe for pregnant cattle and nursing calves
- Protection in 3 days = *interferon*
- Can overcome colostral antibodies
- More difficult to administer - IN
- Shorter duration of immunity compared to IM vaccines



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Bovine Virus Diarrhea Virus

- Antibodies from colostrum are protective
 - Persist for 2-13 months (average 6-8 mo.)
 - Prevent immunization by BVD vaccines
- Booster vaccinations are required if initial vaccination occurred in the presence of colostral antibodies



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Bovine Virus Diarrhea Virus

- Cytopathic vs Non-cytopathic
- Type 1 vs Type 2 (65% homology)
- Homologous vs Heterologous
- Killed vs Modified Live
- Pregnant vs Open



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Dry Cow Vaccination Schedule

- On Dry-off Date: (50 - 60 days before due date)
 - Dry treat all four quarters
 - Booster BVD, IBR, PI3, BRSV, Lepto 5 (**Killed**)
 - Include heifers due to calve in this vaccination group
 - Check udder for mastitis and teat dip once a day
 - Reduce feed and water intake if producing heavy

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Dry Cow Vaccination Schedule

- Seven Days After Dry-off Date:
 - E. coli/Rota/Corona/Clostridium (calf diarrhea vaccine)
 - J5 core antigen bacterin for mastitis
 - Move to dry cow field or pen
 - Continue to observe daily
 - First calf heifers due to calve should receive the same vaccinations

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Immunizations to Assist with Mastitis Control - J5

- Gram negative bacteria have distinct outer lipopolysaccharide (LPS) cell envelope
- The core polysaccharide regions of the cell envelope possess structural and antigenic homology among gram negative bacteria
- Core polysaccharides produce endotoxins
- Toxicity of endotoxins limits use as vaccines
- *Escherichia coli* J5 mutant was detoxified
- J5 has 2500-fold reduction in endotoxin

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Dry Cow Vaccination Schedule

- Three Weeks Prior to Due Date:
- Move back to box stall or pre-fresh pen
 - Begin dry-fresh transition diet
 - Check udder and teat dip once a day
 - E. coli/Rota/Corona/Clostridium (calf diarrhea vaccine)
 - J5 core antigen bacterin for mastitis
 - Vitamin E and Selenium - as required

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Dry Cow Vaccination Schedule

- At Calving:
 - Give 15-20 gallons of warm water immediately after calving
 - Oxytocin - 5 cc, IM immediately after calving
 - Milk cow to obtain colostrum for calf
 - J5 core antigen bacterin for mastitis
 - Vitamin E and Selenium - as required

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Fresh cow vaccination program

- Within the first three weeks of calving
 - BVD, IBR, PI3, BRSV, Lepto5 (MLV)
- Places BVD and Lepto closer to rebreeding
- Early lactation cows are highly stressed
- Immune system may not be 100%
- Presence of antibodies from previous vaccine or disease exposure may negate vaccine

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Final Thoughts on Vaccines

- In any herd health program, other good management control procedures **must** be in place **before** vaccinations against infectious diseases are considered.
- Vaccines are only part of the solution.
- **Vaccines are no substitute for good management practices!**

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Summary

The dry period is time to prepare the cow for the next lactation

- **S** - Stop Milking
- **E** - Environment
- **T** - Treatment and Testing
- **U** - Udder Health
- **P** - Protection from Disease