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Preventive health programs for dairy cattle

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Preventive health programs for dairy cattle

Abstract
Always consult your veterinarian when making vaccination decisions. The most common errors are failing to give booster immunizations and doing so at the incorrect time. Animal comfort is a greater determinant of production than vaccinations, and to receive the full benefits of nutrition, genetic, and management programs, cow comfort must be maximized. This does not lessen the need for balanced rations that allow the immune system to respond efficiently to vaccines. More is not necessarily better. The best vaccination program for a dairy includes vaccines for the most probable infectious pathogens possibly found in the herd. This combination is different for each production unit based on disease problems and management practices that can be identified by your herd practitioner.; Dairy Day, 1996, Kansas State University, Manhattan, KS, 1996;

Keywords
Dairy Day, 1996; Kansas Agricultural Experiment Station contribution; no. 97-115-S; Report of progress (Kansas Agricultural Experiment Station and Cooperative Extension Service); 771; Health; Vaccination

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PREVENTIVE HEALTH PROGRAMS
FOR DAIRY CATTLE

G. L. Stokka, J. F. Smith,
J. R. Dunham, and T. Van Anne

Summary
Always consult your veterinarian when making vaccination decisions. The most common errors are failing to give booster immunizations and doing so at the incorrect time. Animal comfort is a greater determinant of production than vaccinations, and to receive the full benefits of nutrition, genetic, and management programs, cow comfort must be maximized. This does not lessen the need for balanced rations that allow the immune system to respond efficiently to vaccines. More is not necessarily better. The best vaccination program for a dairy includes vaccines for the most probable infectious pathogens possibly found in the herd. This combination is different for each production unit based on disease problems and management practices that can be identified by your herd practitioner.

(Key Words: Health, Vaccination.)

Introduction
Each producer is urged to establish a herd-specific preventive health program in conjunction with a veterinarian who may provide a risk/benefit ratio and give realistic expectations for each vaccine. It is imperative that animals be healthy and unstressed at the time of immunization in order to maximize immunity obtained after vaccination. This review was designed to be used in consultation with a veterinarian in developing a herd-specific program.

Newborn Calves
Outlined in Table 1 is a suggested vaccination schedule and colostrum therapy for newborn calves. Four to 6 quarts of colostrum should be fed to all newborn calves within 24 hr of birth, with maximum colostral antibody absorption occurring in the first 6 hr. Ingestion of colostrum at birth provides antibodies from the dam. Neglecting colostrum feeding may lead to disease-stricken animals later in life.

Passive immunity is given to calves after intake of colostrum immediately following birth. The quality of the immunity can be improved when cows are vaccinated against various disease-causing organisms through the use of maternal vaccination procedures during the dry period. Colostral antibody protection decreases as the calf ages.

Other recommendations for care of newborn calves follow:

✓ Apply iodine to the navel as soon as possible after birth.
✓ In herds experiencing IBR-PI3 problems, giving intranasal IBR-PI3 at 2 to 3 days of age may be beneficial.
✓ Dehorning and castration should be performed by 2 to 3 wk of age.
✓ Tag or tattoo calves early to provide accurate identification of dam. Remember that brucellosis (bangs)-vaccinated heifers must be ear-tattoooed.
✓ Calves should be housed in individual pens within a properly ventilated building or in calf hutchtes to prevent physical contact.
✓ Feed milk or milk replacer at 8 to 10% of body weight.
✓ Feed waste milk (excess colostrum, noncoliform mastitic milk, and unsaleable milk) when possible.
High quality milk replacer can be fed when more economical than milk.

Milk replacer should contain at least 15% fat and 22% protein and should be fed at or near body temperature.

Maintain sanitary mixing and feeding containers for milk or milk replacer.

Feed starter/grower rations to appetite, with 20% crude protein and a coccidiostat, starting at 3 days of age.

Wean calves between 4 and 8 wk, if they are eating at least 1.5 lb of a starter ration.

After 1 wk of isolation postweaning, sort calves into groups of six according to size, weight, and age.

Monitor fly numbers, eliminate breeding areas, and control adult fly problems.

Reduce heat stress with shade and cool, clean water.

Scours cannot be corrected by vaccination alone. Suboptimal management practices also need to be corrected. Vaccination programs also are not successful when calves are raised on milk replacer rather than colostral milk from the dam.

Replacement Heifers

Suggested vaccination schedules for breeding-age heifers are outlined in Table 2. Consult your veterinarian when developing similar procedures.

Adult Cows

Recommended vaccination schedules for adult dry cows are outlined in Table 3. These vaccinations serve as boosters to initial immunizations that cows should have received during previous dry periods or before their first calving. Several of the recommended immunizations are designed to generate antibodies against scour-causing organisms. Because these antibodies are conferred to newborn calves via the colostrum, calves must be fed colostrum immediately after birth.

Other preventive health measures for cows are outlined in Table 4.

Bulls

Artificial insemination is ALWAYS preferred. If you choose to use clean-up bulls, purchase only virgin bulls, isolate and test them for disease, and follow a rigorous vaccination program such as that in Table 5. After isolation and a negative test for disease, evaluate semen before exposing bulls to breeding females.

<table>
<thead>
<tr>
<th>Age or time of administration</th>
<th>Disease/organism</th>
<th>Type of vaccine or therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 6 hr</td>
<td>Passive protection</td>
<td>Colostrum</td>
</tr>
<tr>
<td>6 weeks</td>
<td>IBR-P3-BVD-BRSV Clostridium spp.</td>
<td>Modified live virus Bacterin/toxoid-7-way</td>
</tr>
<tr>
<td>4 to 6 months*</td>
<td>Brucellosis</td>
<td>Strain 19 or RB51</td>
</tr>
<tr>
<td>6 months</td>
<td>IBR-P3-BVD-BRSV Clostridium spp.</td>
<td>Modified live virus Bacterin/toxoid-7-way 5-way bacterin</td>
</tr>
</tbody>
</table>

*Follow state and federal regulations. Replacement heifers should be immunized between 4 and 12 mo of age. Annual booster vaccinations are not needed. The RB51 vaccine is approved for use in Kansas.
### Table 2. Vaccination Schedule for Replacement Heifers (Prebreeding to Calving)

<table>
<thead>
<tr>
<th>Age or time of administration</th>
<th>Disease/organism</th>
<th>Type of vaccine</th>
</tr>
</thead>
</table>
| Pre-breeding: 10 to 12 months of age | IBR-PI3-BVD-BRSV  
*Clostridium* spp.  
Leptospirosis  
Vibriosis (optional)*a | Modified live virus  
Bacterin/toxoid-7-way  
5-way bacterin  
Bacterin |
| 40 to 60 days before calving  | IBR-PI3-BVD-BRSV*  
Leptospirosis*  
Calf scours:  
Rota and Corona viruses*  
*E. coli + Clostridium perfringens*, type C and D* | Killed virus  
5-way bacterin  
Killed  
Bacterin/toxoid |
| 3 weeks before calving  | Calf scours:  
Rota and Corona viruses*  
*E. coli + Clostridium perfringens*, type C and D* | Killed  
Bacterin/toxoid |
| Follow label directions  | Coliform mastitis*  
*E. coli + Clostridium perfringens*, type C and D* | Bacterins |

*a*Use Vibriosis vaccinations when using a herd bull.  
*b*Annual booster is necessary.  
*c)Vaccination is recommended every 6 mo if a problem exists.  
*d*)If scours exists, an annual vaccination is recommended.  
*c)Cattle must not receive any other gram negative vaccines including: *Pasteurella, Salmonella, Brucella, Campylobacter, Haemophilus somnus, E. coli, or Moraxella bovis* bacterins within 5 days of mastitis vaccines.

### Table 3. Vaccination Schedule for Adult Cows

<table>
<thead>
<tr>
<th>Age or time of administration</th>
<th>Disease/organism</th>
<th>Type of vaccine</th>
</tr>
</thead>
</table>
| 40 to 60 days before calving  | IBR-PI3-BVD-BRSV  
Leptospirosis  
Calf scours:  
Rota and Corona viruses  
*E. coli + Clostridium perfringens*, type C and D | Killed virus  
5-way bacterin  
Killed  
Bacterin/toxoid |
| 3 weeks prior to calving  | Calf scours:  
Rota and Corona viruses  
*E. coli + Clostridium perfringens*, type C and D | Killed  
Bacterin/toxoid |
| Follow label directions  | Coliform mastitis  | Bacterins |

*a*)Annual booster is necessary.  
*b)Vaccination is recommended every 6 mo if a problem exists.  
*c*)If scours exists, an annual vaccination is recommended.  
*d)Cattle must not receive any other gram negative vaccines including: *Pasteurella, Salmonella, Brucella, Campylobacter, Haemophilus somnus, E. coli, or Moraxella bovis* bacterins within 5 days of mastitis vaccines.
### Table 4. Other Preventive Health Measures for Cows

<table>
<thead>
<tr>
<th>Condition</th>
<th>Prophylaxis</th>
<th>Class of cattle</th>
<th>Time or circumstance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidosis</td>
<td>Sodium bicarbonate</td>
<td>High producers</td>
<td>High grain feeding: 1.5% of grain mix</td>
</tr>
<tr>
<td>Internal parasites</td>
<td>Morantel tartrate</td>
<td>Fresh cows</td>
<td>No withdrawal time</td>
</tr>
<tr>
<td></td>
<td>Fenbendazole (5 mg/kg)</td>
<td>Fresh cows</td>
<td>No withdrawal time</td>
</tr>
<tr>
<td>Mastitis control</td>
<td>Monthly SCC</td>
<td>All milking cows</td>
<td>DHIA test day</td>
</tr>
<tr>
<td></td>
<td>Check foremilk</td>
<td>All milking cows</td>
<td>Before each milking</td>
</tr>
<tr>
<td></td>
<td>Teat dip</td>
<td>All milking cows</td>
<td>After each milking</td>
</tr>
<tr>
<td></td>
<td>Dry treat</td>
<td>All cows</td>
<td>At dry-off</td>
</tr>
<tr>
<td></td>
<td>Periodic milk cultures</td>
<td>Problem cows</td>
<td>Antibiotic selection</td>
</tr>
<tr>
<td></td>
<td>Review milking procedures</td>
<td>All milking cows</td>
<td>Identify causative organisms</td>
</tr>
<tr>
<td>Foot problems</td>
<td>Foot trim</td>
<td>All milking cows</td>
<td>When a problem exists</td>
</tr>
<tr>
<td></td>
<td>Foot bath</td>
<td>All milking cows</td>
<td>Consult veterinarian</td>
</tr>
<tr>
<td>Reproduction</td>
<td>Uterus-ovary exam</td>
<td>Only problem cows</td>
<td>When observed</td>
</tr>
<tr>
<td></td>
<td>Pregnancy check</td>
<td>All bred cows</td>
<td>35 to 40+ days postbreeding</td>
</tr>
</tbody>
</table>

### Table 5. Vaccination Schedule for Herd Bulls

<table>
<thead>
<tr>
<th>Age or time of administration</th>
<th>Disease/organism</th>
<th>Type of vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>At breeding soundness</td>
<td>IBR-PI3-BVD^a</td>
<td>Killed virus</td>
</tr>
<tr>
<td>examination</td>
<td>Vibriosis (campylobacteriosis)^a</td>
<td>Bacterin</td>
</tr>
<tr>
<td></td>
<td>Leptospirosis^a</td>
<td>5-way bacterin</td>
</tr>
</tbody>
</table>

^aAnnual booster is necessary.