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Preventive health programs for dairy cattle

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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;

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PREVENTIVE HEALTH PROGRAMS FOR DAIRY CATTLE

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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-tattooed.

✓ Calves should be housed in individual pens within a properly ventilated building or in calf hutches 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 that 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 1. Vaccination Schedule for Newborn Calves (Birth to 6 Months of Age)

Age or time of administration	Disease/organism	Type of vaccine or therapy
0 to 6 hr	Passive protection	Colostrum
6 weeks	IBR-PI3-BVD-BRSV *Clostridium* spp.	Modified live virus Bacterin/toxoid-7-way
4 to 6 months[a]	Brucellosis	Strain 19 or RB51
6 months	IBR-PI3-BVD-BRSV *Clostridium* spp. Leptospirosis	Modified live virus Bacterin/toxoid-7-way 5-way bacterin

[a]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)

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

Age or time of administration	Disease/organism	Type of vaccine
40 to 60 days before calving	IBR-PI3-BVD-BRSV[a]	Killed virus
	Leptospirosis[b]	5-way bacterin
	Calf scours:	
	Rota and Corona viruses[c]	Killed
	E. coli + *Clostridium perfringens*, type C and D[c]	Bacterin/toxoid
3 weeks prior to calving	Calf scours:	
	Rota and Corona viruses[c]	Killed
	E. coli + *Clostridium perfringens*, type C and D[c]	Bacterin/toxoid
Follow label directions	Coliform mastitis[d]	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

Condition	Prophylaxis	Class of cattle	Time or circumstance
Acidosis	Sodium bicarbonate	High producers	High grain feeding: 1.5% of grain mix
Internal parasites	Morantel tartrate	Fresh cows	No withdrawal time
	Fenbendazole (5 mg/kg)	Fresh cows	No withdrawal time
Mastitis control	Monthly SCC	All milking cows	DHIA test day
	Check foremilk	All milking cows	Before each milking
	Teat dip	All milking cows	After each milking
	Dry treat	All cows	At dry-off
	Periodic milk cultures	Problem cows	Antibiotic selection Identify causative organisms
	Review milking procedures	All milking cows	When a problem exists
Foot problems	Foot trim	All milking cows	1 to 2 times annually
	Foot bath	All milking cows	Consult veterinarian
Reproduction	Uterus-ovary exam	Only problem cows	When observed
	Pregnancy check	All bred cows	35 to 40+ days postbreeding

Table 5. Vaccination Schedule for Herd Bulls

Age or time of administration	Disease/organism	Type of vaccine
At breeding soundness examination	IBR-PI3-BVD[a]	Killed virus
	Vibriosis (campylobacteriosis)[a]	Bacterin
	Leptospirosis[a]	5-way bacterin

[a]Annual booster is necessary.