

Programs for Maintaining Healthy Dairy Herds in the United States

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Introduction

Healthy dairy cows produce more milk, have better reproductive rates and are more profitable than unhealthy herd mates. The majority of health problems in dairy herds in the United States can be prevented by proper management. Those that cannot be prevented can be reduced in severity by good herd health programs.

Maintaining healthy herds starts with providing a good environment for all cattle in the herd including replacement heifers and dry cows. The health status is also dependent on the feeding program, because poor nutrition leads to poor health. The herd health program should include a vaccination policy specifically designed for each herd. It should also include a regular examination or inspection of all animals and facilities of the herd as well as an evaluation of management practices in the herd.

Effective herd health programs in the United States are characterized by careful monitoring of several aspects of herd performance including level of production, milk quality, incidence of mastitis and other common infections, performances and thriftiness of replacement stock, heat detection and conception rates, function of milking equipment, formulation of the rations, care of housing and free stalls, etc. The effective herd veterinarian is concerned with all aspects of health management that contribute to a profitable dairy herd.

Vaccination Programs

Vaccination programs vary considerably within the United States and tend to be designed for a specific herd or for a specific locale. Generally, calves are vaccinated for Brucellosis and Blackleg at about 4 months of age. Heifers are vaccinated for BVD, IBR and PI₃ at about 8 to 12 months of age, and with BVD, IBR, PI₃, and Lepto (5 strain) before breeding. In herds where natural service is used, heifers may be vaccinated against Vibriosis. Milking cows are usually vaccinated against these same diseases, usually at

the postpartum examination. Other vaccines are used as needed, especially if the disease is prevalent within the area.

Management of the Dry Cow

The most critical periods in a cow's life, in terms of her health, are the dry period and the periparturient period. The following procedures lead to healthy dry cows that have fewer problems at calving and during lactation.

1. Treat all four quarters of each cow with an approved dry cow antibiotic at drying off. Cows that have had high somatic cell counts (>1 million) during lactation may need a second treatment 7 to 10 days later.

2. Trim the feet of all cows at drying off. This is especially important for cows housed on concrete.

3. Separate dry cows from the milking herd, and if possible, house them on pasture or a well-drained paddock during the dry period. In larger herds, the dry cows may be separated into two or more groups based on stage of the dry period.

4. During the early dry period, reduce dry matter intake by feeding the cow a high fibre ration such as a long stem hay without concentrate. If possible, avoid feeding excess amounts of high moisture feeds during the dry period. Calcium and phosphorus intake should be reduced for dry cows.

5. Dry cows will not require much shelter from cold or rainy weather, but they should be provided with shade when it is hot and sunny.

6. During the middle and latter part of the dry period, cows should receive some supplementation to provide the correct vitamins and minerals, but excess intake of concentrate should be avoided. Shift dry cows to the lactation ration about 2 weeks before calving, but monitor dry matter intake so that it does not exceed about 2 to 2.5% of the cow's body weight.

7. Calve cows at the cleanest location on the farm! We prefer to calve cows in a small pasture if weather permits. Otherwise, provide a well-bedded stall or bedding-pack for calving. We prefer to use straw as the bedding material in the calving area because it has a larger particle size and is less

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likely to be carried into the uterus than smaller particles such as sawdust or wood shavings.

8. Provide assistance for the cow in labor only if necessary. Herd personnel should be taught how to provide assistance, but they also need to be told that patience is a real virtue at calving time.

9. Make sure the newborn calf gets adequate amounts of colostrum. The best way to do this is to milk the cow and hand feed the calf so that amount of colostrum consumed is known.

Handling the Fresh Cow

Fresh cows should be provided with an environment that includes dry bedding, clean alleys and high quality feed. We prefer to separate fresh cows from pregnant cows, and in larger herds, the milking herd is divided into several strings. It is important to provide fresh cows with dry bedding and clean alleys to reduce the incidence of post-partum uterine infections and mastitis. We feed dry cows to maximize feed intake without forcing them to go off feed. This is achieved through a completely mixed ration and we use it whenever possible.

Cows that have retained fetal membranes are monitored closely by watching for a drop in milk production, loss of appetite and an increase in temperature. If any of these conditions occur, the cow receives antibiotics systemically and penicillin is the antibiotic of first choice. We usually do not remove membranes manually, but we cut them off at the lips of the vulva. Uterine infusions are given if the cow appears toxic and the aim here is primarily to flush the accumulated fluid from the uterus. Many practitioners use prostaglandins in cows with retained membranes, but there is not good evidence that this is beneficial. A good dry cow program and a clean environment will reduce incidence of retained membranes.

Fresh cows are examined at the first visit after the cow has been fresh for one week. The uterus, cervix and ovaries are examined at this visit. Diameter of the cervix is a good way to monitor involution of the uterus. Metritis is usually treated with systemic penicillin during the early postpartum period and later the penicillin might be infused into the uterus. We have generally decreased the use of uterine infusions. Other antibiotics used for uterine infusion in cows with metritis include oxytetracycline during the early period when mixed bacterial infections are common. If the cow has an active corpus luteum, the prostaglandins are used for both metritis and pyometra.

Postpartum cows are frequently treated with GnRH during the second or third week after calving to induce ovulation and oestrous cycles. If the incidence of metritis or pyometra is high in the herd, these cows should receive prostaglandin about 10 to 12 days later to empty the uterus.

Cows that have cystic follicles are usually not treated during the first 30 to 40 days after calving. These cows are examined again at the next visit and are treated with GnRH

if the cyst is still present. Chorionic gonadotropin (hCG) is also used on cystic cows, especially those that don't respond to GnRH. If the cystic follicle is heavily luteinized, then the cow may be treated with prostaglandin.

We normally begin breeding at first heat beyond 50 days postpartum. Repeat breeder cows are frequently given GnRH at the third and any subsequent service to improve conception rates. If the number of open cycling cows in the fresh cow group is low, it is advisable to use prostaglandin to synchronize the cycles on several cows to improve efficiency of heat detection.

Pregnancy examinations are scheduled at first visit beyond 30 days after breeding. Cows that have slow uterine involution, metritis, or that have not been detected in heat by 40 to 50 days after calving are examined at each herd visit.

Mastitis Control Programs

An effective teat dip is used on all milking cows after each milking. We like to have fresh feed available for cows when they leave the parlour so they will not lie in free stalls or alleys just after milking. We prefer clay based free stalls bedded with wood shavings or screened manure solids that have been stockpiled and allowed to "heat." Sawdust is not used in free stalls if other bedding material is available. The free stalls should be cleaned regularly and any holes should be filled.

It has not been economical to treat clinical cases, during lactation unless the case is severe and the cows life is threatened. Systemic antibiotics are used on these cows along with frequent milking.

Milking equipment should be monitored regularly and properly sized lines and vacuum systems should be used. Backflush systems are now used frequently in many herds and these seem to reduce clinical infections in some herds. Premilking teat dips are being used in some herds, but there is concern about iodine residues in milk.

Foot Care

Foot problems are common in herds housed on concrete and fed high energy rations. We recommend that a foot bath with a 5% copper sulfate solution be used in the exit alley from the parlour. It is also important to maintain an adequate level of fibre in the ration to avoid acidosis. Sulfur levels in the forages are monitored and supplementation is provided as needed. The feet of all cows are trimmed when the cows are turned dry, and dry cows are run on pasture or in a dirt paddock.

Calf and Heifer Management

We prefer to hand feed colostrum and to separate the calf from the cow after one day. We have had excellent results from raising calves in calf hutches and death losses are less than 5%. Calves are fed whole milk and are weaned at 6 to 8 weeks of age. We provide very little housing for heifers

beyond 6 to 8 months of age. Parasites are controlled by appropriate insecticides or drugs. Heifers are fed forage-based rations and we frequently feed blended rations refused by the cows to the heifers. Heifers are bred at 14 to 16 months of age to calve at about 2 years of age.

Health Records

We use individual herd health folders for each cow and computerized records available on-line from our central dairy records processing systems. These systems are designed so we can compile custom-made lists of cows to be examined, etc.

Abstracts

Incidence of clinical mastitis in a cohort of British dairy herds

J. W. Wilesmith, P. G. Francis,
C. D. Wilson

Veterinary Record (1986) **118**, 199-204

A three-year survey to determine the incidence of clinical mastitis and the associated bacteria in dairy herds in England and Wales is described. *Escherichia coli* was the predominant organism in each year. *Streptococcus uberis* and *Staphylococcus aureus* were important for part for each year. The annual incidence of mastitis declined from 54.6 cases per 100 cows in 1980 to 41.2 in 1982. The incidence increased with age and declined with increasing herd size. The culling rate due solely to mastitis was 3 per cent. *Strep uberis* was the pathogen most frequently isolated from clinical cases which occurred in the dry period. Thirty per cent of all cases recurred at least once and staphylococcal cases exhibited the highest frequency of recurrence.

The association between lameness and fertility in dairy cows

S. Lucey, G. J. Rowlands,
A. M. Russell

Veterinary Record (1986) **118**, 628-631

One thousand, four hundred and ninety-one lactations in 770 Friesian, Holstein and Ayrshire crossbred cows have been used to study the associations between lameness and fertility. Lameness was associated with a longer interval between calving and first service and a longer interval between calving and conception. The largest increases in these intervals, of 17 and 30 days, respectively, occurred in cows with either sole or white line lesions occurring between 36 and 70 days after calving. The conception rate during the 63 days before a diagnosis of lameness was made was lower (31 per cent) than at other times (40 per cent).

A review of teat factors in bovine *E coli* mastitis

T. O. Jones

Veterinary Record (1986) **118**, 507-509

Escherichia coli mastitis was first reproduced in 1903 by sticking the organism to teat orifices. *E coli* is very common in the environment of housed dairy cows and mastitis can easily be reproduced experimentally by the introduction of as few as 20 organisms into the teat cistern via the teat duct. It is generally accepted that this is the route of natural infection but the processes by which the organisms traverse the teat duct remain unclear. The literature is reviewed and the facts and hypotheses are considered.

Pharmacokinetics of cefoperazone in the cow by the intramammary route and its effect on mastitis pathogens in vitro

C. D. Wilson, G. A. Gilbert

Veterinary Record (1986) **118**, 607-609

The pharmacokinetic and microbiological properties of a new third generation cephalosporin, cefoperazone, when given by the intramammary route to the cow are described. Cefoperazone is excreted from the udder over a three- to five-day period following a single infusion of 250 mg in an oil base into each of all four quarters. By the fifth milking after treatment the mean bucket (composite) concentration of cefoperazone was below 0.01 µg/ml. The minimal inhibitory concentrations for 470 pathogens isolated from cases of mastitis were determined. A few exotic species were resistant but all the usual isolates were sensitive. No signs of transferable drug resistance from known multiple drug-resistant strains were detected.



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