

A Preventive Medicine Program for Dairy Cattle in Southern Ontario

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The purpose of this paper is to describe how a dairy herd health program evolved at the Ontario Veterinary College, Guelph, Ontario, and in retrospect to comment on improvements which could have been made.

The preventative medicine program was first offered to farmers in 1960 by the farm service clinic, which had been conducting a teaching practice in the Guelph area since 1953. The herds which are enrolled in the program are primarily concerned with the efficient and economical production of whole milk; in addition, most of the farmers earn a significant part of their income from the sale of purebred heifers, cows and bulls.

Preventative medicine programs are needed for herds of modern high-producing dairy cattle if optimum production and health are to be maintained. The traditional emergency service is still required, but it is no longer adequate to wait until an animal is in a diseased condition before employing the services of a veterinarian. The only person qualified to provide a comprehensive health service is the veterinary practitioner. If the dairyman is not employing his veterinarian's talents to the fullest, then production and profit will be lost (1).

Principles of a Herd Health Program

1. All possible procedures, examinations and tests which can be directed toward monitoring the health of each animal and each herd is *organized* and performed on a strict routine at *regular* intervals. The veterinarian, in cooperation with the dairyman, must *detect*, *diagnose* and *treat* all subclinical diseases and conditions which interfere with maximum production and health of the herd. Physical examinations, particularly of the reproductive tract and udder, along with laboratory tests, are necessary to seek out and eliminate disease.

2. Individual *records* of calving, heats, breedings, post-partum examinations, pregnancy diagnosis, health problems, mastitis status and production are maintained for each cow in each herd on the program. When a cow leaves the herd, the date and

the reason are recorded, and the card is retained in the owner's file.

3. A positive effort is made to *educate* the dairyman regarding disease processes and preventative measures which must be performed if the program is to be successful. Periodic illustrated lectures and workshops have been held since 1962, and our herd health owners have become familiar with the cause, signs, treatment and prevention of infectious, nutritional and metabolic diseases. Demonstrations of foot trimming, proper milking-machine operation, normal reproductive tracts and post-mortem procedures have also been given.

Particular problems are discussed with each owner as they arise on his farm, and every effort is made to improve his knowledge of the situation. As veterinarians, we also have improved our knowledge of good management practices because of our close association and exchange of information with competent dairymen.

4. Many factors can influence the health of dairy cows, and it is the veterinarian's role to recognize when some factor such as housing, ventilation, equipment or nutrition is involved. He must also act as a *liaison* with the particular specialist or expert who may be needed to correct the situation.

Selection of herds

In August 1960, the author enrolled two herds on a trial basis. Both owners were and are progressive dairymen, active in breed associations, milk producer associations and community affairs. By December 1960, six herds were participating and each year additional herds have been enrolled. At present (1973) we are conducting preventive medicine programs in 35 herds, ranging in size from 20 cows to 150 cows. With the exception of the two original herds, all owners have requested enrollment in the program. As with most new services to agriculture, it was the more progressive owners who asked to be enrolled first. We feel that the herd health program works best if the initiative for joining comes voluntarily. No attempt was made to assess the level of reproductive perfor-

mance or other health indices in the herds prior to joining the herd health program. This was a serious omission and has severely hampered the cost-benefit analysis of our preventative medicine program. The importance of measuring the average open interval (days between calving and conception), services per conception, quarter infection rate for mastitis, calf mortality, cow mortality, culling rate for health reasons, milk production, and other health indices has been emphasized (2,3,4). Herds which enroll in our program in the future will have the above mentioned indices calculated for a one year period prior to entrance to the program.

Procedures and Contract

Most lawsuits occur because of misunderstanding. Because of this, we feel that it is necessary to have a written agreement which outlines the services which the veterinarian agrees to perform and the fee which the dairyman agrees to pay. The standard contract form used in our practice is shown below. It is dated, signed by the dairyman and the veterinarian, and we feel that it helps to avoid misunderstandings about the program.

**Ontario Veterinary College
Dairy Herd Health Contract**
Agreement No. _____

**O.V.C. Dairy Herd Health Agreement Between
University of Guelph and _____**

Responsibilities of Farm Service Veterinarian:

1. Regular herd examinations (at 4 to 6 week intervals), with special reference to general herd health, breeding efficiency and mastitis control.
2. Maintain individual Herd Health Record on all animals in the herd.
3. Check all bred animals for pregnancy.
4. Check reproductive organs of recently calved animals for early detection of infection or abnormal condition.
5. Calls to retained placenta cases are included in the plan. A charge will be made for drugs used.
6. Routine calls for problem breeders will be carried out at no extra charge. However, a charge will be made for all drugs and hormone injections.
7. Mastitis Control. Periodic C.M.T. samples and culturing of reactors, plus culture of milk from cows going dry, and treatment during the dry period. The cost of laboratory services will be charged to the owner.
8. Vaccinations, calf dehorning, removal of extra teats will be carried out as required.
9. Post mortem examinations will be carried out at no extra charge.
10. Nutrition of the herd and prevention of metabolic diseases will be discussed periodically.
11. Magnets will be put in mature animals to prevent hardware disease, at owner's request.
12. Parasite control will be carried out as required.

Responsibilities of Owner:

13. The fee is \$8.00 per cow per year, or \$20.00 per hour for those herds on an hourly basis. The owner will be billed in advance \$4.00 per cow semi-annually during the time the agreement is in effect. The plan will include all mature animals, milking and dry. All heifers bred during this period will be checked for pregnancy at no charge to the owner. This fee does not cover emergency or

extra calls, nor does it cover the cost of drugs or materials used. Terms of payment: net 30 days.

14. The owner is expected to record calving, heat and breeding dates, plus all disease incidents and home treatment used.
15. The owner is expected to be present to assist with records and restraint of animals at each herd visit.
16. This agreement may be terminated on 30 days written notice by the owner, or the University of Guelph.

Univ. of Guelph _____

Date: _____ Owner _____

Records

The individual record card (Figure 1) identifies the animal and provides space for recording calving dates, heat periods not bred, breeding dates, pregnancy diagnosis, condition of the cervix, uterus and ovaries and treatment if any, at the post-partum examination, general health record, mastitis status at drying off and milk production including Breed Class Average (B.C.A.). Each card has space for recording four lactations. Each cow's record card is kept up-to-date at each herd health visit.

Figure 1

Name: _____		Ear Tag: _____	Birth Date: _____
Calving Date: _____		Calf: _____	
Heats: _____			
Breeding Dates: _____			
Pregnancy Diagnosis _____		Due: _____	
Date	Post-Partum: C	U.	
	O.	Treat: _____	
	Mastitis: R.F.	R.H.	
	Culture: L.F.	L.H.	
lbs. milk	lbs. fat	B.C.A.	
Calving Date: _____		Calf: _____	
Heats: _____			
Breeding Dates: _____			
Pregnancy Diagnosis _____		Due: _____	
Date	Post-Partum: C	U.	
	O.	Treat: _____	
	Mastitis: R.F.	R.H.	
	Culture: L.F.	L.H.	
lbs. milk	lbs. fat	B.C.A.	

In addition, a summary of each herd health visit is recorded in duplicate (Figure 2) and a copy is kept by the herd owner and veterinarian for reference during the following month. The expected heat date column is of particular value to the herd owner. The veterinarian, by his examination of the reproductive tract, is often able to predict the approximate time of an ensuing heat period in cows which the owner has had difficulty detecting as in heat. Because of weather conditions and the high average milk production in Ontario

Figure 2
University of Guelph
Department of Clinical Studies
Summary of Herd Health Visit

Owner	Clinician				Date
Preg.	Non-Preg.	Normal Post Part.	Expected Heat	Abnormal Post Partum & Treatment	Milk Sampled
Female No.	Misc. Conditions & Treatment				
Milk Gel Index	Ventilation	Sanitation	Drugs Dispensed	Nutrition	

dairy cattle, a 120-day average open interval is a desirable goal (1). Since July 1971, we have been calculating on the summary sheet, the average open interval, percentage of cows pregnant and the quarter infection rate for mastitis, based on the results of laboratory culture.

Cost Benefit Analysis

In January 1971, L. W. Barfoot, J. F. Cote, J. B. Stone, and P. A. Wright published an "Economic Appraisal of a Preventative Medicine Program for Dairy Herd Health Management" (1). Their study compared 27 Holstein-Friesian dairy herds which had been on the O.V.C. herd health plan for at least two years between 1960 and 1968 with a control group of 87 dairy herds which used an emergency veterinary service only. The data collected from the control group related to the 1966-1968 time period.

Barfoot observed that although the same program was available to all 27 participating herds, there were four distinct levels of participation (by the dairymen) in health management. This fact was reflected in expenditures on veterinary service and supplies (Table 1).

In the study there was a direct improvement in each of five specific variables as the response to the preventative medicine program increased. The five specific variables, relating to herd health were: 1. Milk production; 2. Average open interval; 3. Calf mortality; 4. Cow mortality; and 5. Culling rate for health reasons (not including type or production.)

In Table 2, the percentage return on the extra investment in health care services is compared with the control group. Various combinations of cow

Table 1
Veterinary Expenditures (Including Medication) for Five Response Levels of Dairy Herd Health Management

Health Plan	Description	Expenditures on veterinary services and supplies
A	Control group (emergency veterinary care only)	\$ 8.00/cow
B	Minimum response level to preventative medicine program	\$20.00/cow
C	Average response level to preventative medicine program	\$25.00/cow
D	Above average response level to preventative medicine program	\$30.00/cow
E	Maximum response level to preventative medicine program	\$35.00/cow

Table 2
Average Estimated Return on Investment for Four Levels of a Comprehensive Dairy Herd Health Management Program

Health management level	Potential Milk Production				
	10000	12000	14000	16000	18000
	Percent return on investment				
B	32.9	40.5	102.9	140.4	112.3
C	150.4	180.4	252.5	321.2	370.9
D	195.6	220.0	300.0	400.8	501.1
E	200.3	224.2	302.6	408.9	502.2

dollar values, based on average milk production and range of milk prices, were considered under the conditions of each of the five health management levels. The minimum manager response level B did not have a significant increase in net income for all combinations of cow value and milk price. However, the analysis of data provided conclusive evidence that return on investment improved significantly (95% to 502%) when the dairyman participated in the program which his veterinarian at an average, above average or maximum response level.

Barfoot, et al., state that in addition to the above considerations, a number of other benefits accrue to dairy herds on a comprehensive herd health program. These include: 1. Improved reliability in the breeding program; 2. Establishment and extension of existing cow families; and 3. Improved possibility of upgrading the herd and the quality of breeding stock for sale.

All of these result from lowering mortality rates, improving conception rates and open intervals, and reducing the culling probability in the herd.

References

1. Barfoot, L. W., J. F. Cote, J. B. Stone, and P. A. Wright. An Economic Appraisal of a Preventative Medicine Program for Dairy Herd Health Management. *Can. Vet. J.* 12:2-10. 1971. - 2. Morris, R. S. *Vict. Vet. Proc.* p. 50. 1967-1968. - 3. Morris, R. S. *Vict. Vet. Proc.* p. 56. 1968-1969. - 4. Morris, R. S., and D. C. Blood. *Aust. Vet. J.* 45:337. 1969.