

The National Mastitis Awareness Campaign in England and Wales

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Introduction

Proposals for a system of mastitis control were published in 1966 (1). Subsequent field experiments carried out at the National Institute for Research in Dairying and the Central Veterinary Laboratory between 1966 and 1970, and investigations in Australia and the USA, led to wide but not universal acceptance of the system as a basis for recommendations on practical mastitis control.

In England and Wales at this time milk found to contain antibiotics was subjected to a price deduction, with 0.05 i.u. penicillin (or the equivalent of other antibiotics) being the failure threshold. In addition the Milk Marketing Board informed any farmer paying the appropriate fee of the cell count in his bulk milk (BMCC) once each month. No coordinated effort was being made to increase the adoption of the five-point mastitis control plan based on teat disinfection and dry cow therapy together with specific hygiene measures.

A need for more effort to be put into mastitis control in the UK was identified and the National Mastitis Awareness Campaign was launched in July 1972. A number of organizations actively participated in the Campaign including:

- The Agricultural Development and Advisory Service (ADAS)
- The Agricultural Training Board (ATB)
- The Association of British Pharmaceutical Industries (ABPI)
- The British Veterinary Association (BVA)
- The Milk Marketing Board (MMB)
- The National Farmers Union (NFU)

Methods

A central steering group was set up, composed of representatives from all the organisations mentioned above. One veterinary surgeon from each of the Ministry of Agriculture's 24 Veterinary Investigation Centres assumed responsibility for coordinating and maintaining the impetus of the campaign in his/her area. These officers received initial training and periodic updating in all aspects of mastitis control.

It was recognised that increased dairy farmer awareness

could be achieved directly by promotional and educational activities, and also by increasing the practicing veterinarian's interest in the ability to contribute towards mastitis control on clients' farms. The words "National" and "Awareness" in the scheme title emphasize that the effort was to be directed towards all dairy farmers and would have three basic objectives:

- a) to increase knowledge,
- b) to change attitudes,
- c) to change behaviour.

Those involved directly with educational and promotional events were aiming to:

- 1) explain the dynamics of the disease,
- 2) emphasize the practicability of the control measures,
- 3) convince farmers that *all* the advised measures are necessary.
- 4) detail the cost/benefit advantages of mastitis control.

The individual approach to farmers was made by Dairy Husbandry Advisory Officers during statutory visits in connection with milk and milking hygiene matters and to farmers and practicing veterinary surgeons by veterinary officers from Veterinary Investigation Centres when visits were made in a consultative capacity to herds with mastitis problems. The Group approach was implemented through demonstrations, discussion groups, talks at public meetings and on radio and television, and periodic articles in the farming press and in Ministry monthly bulletins. Meetings were held in winter when housed animals, mainly autumn calved, were likely to show most clinical mastitis and interest was therefore greatest.

Pharmaceutical companies organised and sponsored many meetings to which the farmer clients of individual veterinary practices were invited, in which a question and answer session followed a presentation or a film. Five films on mastitis control were made by pharmaceutical companies during the first 10 years of the campaign.

The ATB organized courses specifically for herdsmen, and machine milking and mastitis control featured during these. The disease control aspect was taught by veterinary surgeons who themselves had attended ATB courses to learn specific training skills.

Several small localized control schemes were intercalated in the campaign. Two of these (2.3) involved between 30 and 35 farms and one other (4) and 250 enrolled farms. A common finding was that 90% of milking machine installations were faulty. In spite of regular free milking machine tests as part of the control scheme, many installations were still not functioning correctly 3 years later, and many of the observed faults, eg. blocked air-bleeds and dirty vacuum controllers, could have been corrected by farm staff. The BMCC's of these scheme herds fell by more than counts of non-scheme herds, and milk yields in the 250 herd control scheme rose by 181 litres/cow/year compared with similar non-scheme herds. All advisers encountered difficulty in maintaining the enthusiasm of farmers until they could appreciate that progress was being made. Several herds in these schemes experienced temporary problems which highlighted the adverse effects of not carrying out all facets of mastitis control thoroughly.

Monitoring

Surveys indicated that the adoption of control measures progressed as shown in Table 1. The annual geometric mean cell counts of monthly bulk milk samples (BMCC) from 10,000 herds from 1971 to 1977 and from all herds thereafter (5) are detailed in Table 2.

TABLE 1. Percent of Herds Adopting Control Measures.

Control Measure	1972/73	1976/77	1983
Teat Disinfection	17.4	63.0	68.0
Dry Cow Therapy	N/A	70.0	74.0
Milking Machine Tests	29	64.2	66

TABLE 2. Annual Geometric Mean Bulk Milk Cell Counts.

Year	BMCC
1972	545,000
1973	546,000
1974	576,000
1975	508,000
1976	469,000
1977	468,000
1978	503,000
1979	485,000
1980	469,000
1981	465,000
1982	456,000
1983	390,000

A random sample of 27,526 cows comprising 1% of the national herd was quarter sampled in 1976/77 (6). This survey showed that 33.1% of cows and 15.0% of all quarters contained a major pathogen. A comparison of the results of this survey with a previous smaller survey of 4,929 cows in England and Wales in 1974 (7) is given in Table 3.

This survey showed marked differences in infection levels

according to herd size. Herds of less than 45 cows had 16.5% of cows infected with a major pathogen while herds with more than 45 cows had 13.7% of cows infected. Regional differences in infection prevalence supported with this herd size relationship as a higher prevalence was found in areas with small herd sizes.

The association of various control measures with infection levels revealed in the survey gave further evidence for advisors to use during the Awareness Campaign. The benefits of teat disinfection (TD), this (Tables 4 and 5).

TABLE 3. Infection Levels Shown by Two Surveys.

Date	% Cows	Strep-tococcus agalactiae	Strep-tococcus dysgalactiae	Strep-tococcus uberis	Strep-tococcus aureus
1977	32.0	7.8	3.9	4.9	21.1
1964	46.0	11.6	6.5	10.4	23.4

TABLE 4. Percent Quarters Infected, Related to the Use of TD and DCT

Neither	24.9
TD alone	17.2
DCT alone	17.1
Both	11.8

TABLE 5. Percent Quarters Infected, Related to Milking Machine Testing.

Testing frequency	
Intermittent	16.7
Not Tested	16.5
Annually	13.2
Six Monthly	9.9

Herd size and farm type differences meant that advisers' efforts needed to be tailored in specific regions according to farm size and character. For example—straw bedding was expensive in the extreme south west of England and yard and parlour systems were commoner in the eastern area, so emphasis in educational and promotional material had to be varied according to the area.

A phase during the campaign caused concern among farmers and veterinary surgeons, when the idea that lowered cell counts resulting from the application of control measures predisposed in some way to mastitis due to environmental organisms became widely accepted. Advisory material attempted to counter this belief and in the event very few farmers gave up mastitis control measures. Subsequent field investigations and surveillance have shown that no more coliform mastitis cases occurred in herds with low BMCC's, and were not more serious, than in other herds.

The stimulus for this concern was probably a marked increase in the use of cubicle systems (free stalls) for housing

cows in winter and the over elaboration of their labour saving attributes and lower bedding requirements compared with the systems they replaced. The mastitis epidemics caused by environmental bacteria under these conditions enabled advisers in the Mastitis Awareness Campaign to get sound husbandry standards accepted as the norm.

Farm trial results (8) suggested improved management methods, cubicle dimensions and cubicle base profiles. The recommended design became a cubicle 2.2 m long and 1.2 m wide, with a concrete base, sloping 100mm over its length, and with no lip or upstand at its near end. Straw is the commonest litter material used and daily replenishment is now advised, with 15 Kg straw/cow/week being necessary to produce a dry lying area.

Lessons of the Campaign

1. As mentioned above, it was important to tailor advice to suit local conditions.
2. It was important to provide material at an appropriate time of the year and so for example cubicle management was promoted during October and November and any highly technical subject was delayed until after harvest time.
3. The credibility of the sender of direct mail appeared to be important. In England and Wales the credibility of ADAS was and is quite high, and farmers felt that if an ADAS leaflet or publication arrived in the post it was worth the recipient's while to read it. Direct mail had to be of the calibre which would induce the farmer not only to read the material but also to read all of it.
An investigation was carried out into the levels of presentation and the readability index of some direct mail material (9). It was found that the readability index needed to be fairly low in order to achieve acceptance. Low quality appearance did not appear to be a disadvantage, in that the cheapness of low appearance material could be utilized to achieve a greater coverage. However, if advisers could accurately gauge the audience need and present the material in time for action to be taken, then the appearance and readability index were of secondary importance.
4. The first change noticed in farmers' attitudes was that after 2 years of the campaign they were not ashamed to admit that mastitis was present in their herds. It had become a "respectable disease."
5. During promotional events 10-13% of invitees attended, and postal invitations produced more response than other advertising and publicity methods. It was found

that the technical level of exhibits needed to be higher for special events to which farmers came by invitation than when exhibits and promotional events were put on at agricultural shows or markets. During these latter events casual visitors were common and such farmers did not generally attend educational/promotional meetings.

6. The significant drops in BMCC in 1982 and 1983 were helped by regulatory changes brought in by the MMB in October 1982. Stiffer financial penalties for antibiotics in milk were introduced, and in October 1982 account was taken of the Total Bacterial Count in bulk milk and a price bonus paid for bulk milk containing less than 20,000 bacteria/ml while price deductions were imposed on milk containing more than 100,000 ml. This made farmers more aware of the importance of husbandry factors. Thus advice is more readily adopted if financial returns are immediately affected. With hindsight, the publicity concerning losses associated with mastitis might have been more effective if it had been expressed as increased profits resulting from controlling the disease.

All advisers involved in the campaign are now more aware of the ways and means of putting over a message. Many now set targets (10) at which farmers can aim and indicate thresholds at which action should be taken.

During the campaign, and to a significant extent because of it, practising veterinary surgeons have become involved to a greater extent in advisory work on a herd basis. The farmer is bombarded with technical information and advice from governmental agencies, from manufacturers and from merchants with goods to sell. Farming publications have increased in number during the last decade and changed from contributing comment and market trends to a more educational role. Farmers are thus more technically aware in many fields and have a higher expectation of their practicing veterinarians. Most members of the veterinary profession have adapted or will adapt to this change and will survive.

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Paper presented at the XIIIth World Congress on Cattle Diseases, Durban, S. Africa, Sept. 17-21, 1984.