TRENDS IN NORWEGIAN UDDER HEALTH DATA DURING 1975 THROUGH 2000

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The recording of health parameters is an essential part of breeding programs, surveys and health services, as well as quality assurance systems in dairy production. The Norwegian Cattle Health Recording System has been available in all herds included in the dairy herd recordings system since September 1975. Solbu (1983) presented results from these records in 1982. The objective of this paper is to describe and present results from 25 years of dairy cattle health recordings in Norway from 1975 til 2000 concerning udder health.

The Norwegian Disease Recording System

After a test period from 1971 a full-scale recording system for diseases in dairy production (the Norwegian Cow Health Card System) was introduced in the whole country in 1975/76. The cow health card system was a joint venture between the Norwegian Breeding Association (now Geno) and the Norwegian Veterinary Association. This system is from 1995 incorporated as the basic part of the Norwegian Cattle Health Services which is a joint venture between the National Veterinary Authorities, the dairy producers, meat producers, breeding associations and the veterinary association.

The recording of dairy cattle health is based on the principles that each veterinarian and dairy herdsman should record each diagnosis and treatment on the cow health card. Each dairy cow has a separate card within a health folder available at each farm. The card follows the cow throughout its life. At each milk recording, the farmer notes the cow's identity, treatment date, health code, type of therapy and the identity of the therapist (mostly veterinarian). These notes together with other animal records are sent periodically to the dairy industry. Data are then reported to the mainframe by the dairy extension service.

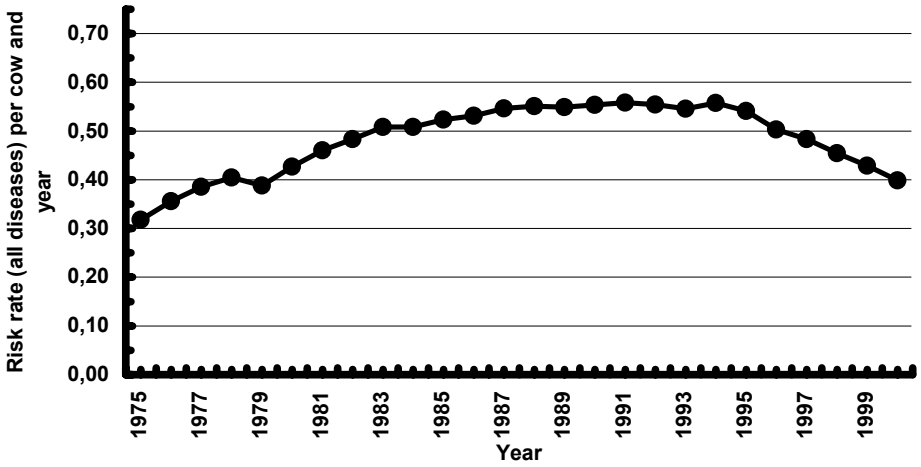

Figure 1. Risk per cow and year for all diseases 1975 till 2000.

Each second month a rolling twelve-month report with specific statistics on health-related data is sent back to all dairy farmers. The farmers also get an annual report. Regional statistics is also available for veterinarians and advisors each year as well as from computer systems. This compulsory disease recording system is run by TINE Norwegian Dairies BA, and supervised by the board of the Norwegian Cattle Health Services. A copy data base from 1989 is made available for research purposes from 1998. The recorded disease risk over time can easily be followed in this system as presented in Fig. 1.

Mastitis Therapy

The discussions about relevant mastitis therapy have over time been very active and intense in the veterinary society. Test trials for the use of different antibiotic drugs have been made as well as other investigations as to the bacteriological panorama in the dairy herds. The current bacteriological panorama and resistance pattern is presented in another paper at this conference (Sølverød and Østerås, 2001). The predominant bacteria identified from subclinical mastitis are *Staph. aureus*, *Str. dysgalactiae* and CNS.

Many farmers use Californian Mastitis Test (CMT) at farm level to check the inflammatory status and then judge if a call for veterinary assisted treatment is needed. The veterinarian then initiates the treatment with an intramuscular injection of penicillin-G, which is the "drug of choice". The farmer fulfils the treatment with intra mammary tubes for another three to four days. No specific dry cow treatment drugs are available. General dry cow therapy is very seldom used, selective dry cow therapy is the preferred method in this situation. Cows are intended to be selected for dry cow therapy according to the results indicated from the paper reviewed by (Schukken et al., 2001).

The dairy cows are sampled for laboratory bacteriological analysis according to their cow milk somatic cell count (CMSCC). Post milking teat dipping is used in approximately 12 % of the Norwegian farms. Pre milking teat dipping is forbidden according to the EU-regulatives (92/46).

National Regulations of the Use of Antimicrobials

The use of antibiotic drugs in veterinary medicine is strictly regulated and antibiotic feed additives has never been used in cattle production. When choosing type and dosage of a medicinal product the risk of residues in food of animal origin is taken into account and the prescribing and handing out medicinal products is done restrictively and only when the need is apparent. Medicinal products is prescribed and handed out only after careful veterinary examination of the diseased animal or herd and only through the pharmacies.

The policy on use of antimicrobial drugs in dairy cattle herds has since 1995 been strengthened as well by the Norwegian Cattle Health Services as the National Drug Regulation Authorities, with specific guidelines for how to use antibiotics and how to act in case of no cure respond and occurrence of resistance problems. Pressure is made on performing correct preventive measures, and thus there should be very little need for new types of antibiotic formulas. In fact, penicillin G is still the "drug of choice" in mastitis therapy.

Antibiotic Policy in Dairy Production

During the last decade there has been a general growing concern about the risks connected to the use of antibiotics associated with increasing resistance of the microbial strains in animal production. Thus, a national strategy was formulated in 1996 to reduce the use of antibiotics in animal production with 25% in five years, i.e. in 2001. In order to reach the goal, the Animal Health Services for cattle, pigs, sheep/goat and poultry organised the following actions: 1. Increased actions in the farmers-, veterinary and producers organisations to reinforce preventive veterinary medicine and health programs. 2. Focus on the use of antibiotics to food producing animals in the Quality Assurance System ("KSL"). 3. General concern about antimicrobial resistance in the breeding programs. 4. General support from the different organisations as to relevant research and development projects in the area of interest. 5. Introduction of action plans for the different species in order to reach the goal.

The results of the actions could be registered almost directly, and the goal was reached after three years only. This was confirmed as decreased incidence rate of treated cases of mastitis with 28 % in three years and 40 % in 5 years, but also with the corresponding reduction of risk of cows being treated (Figure 2.).

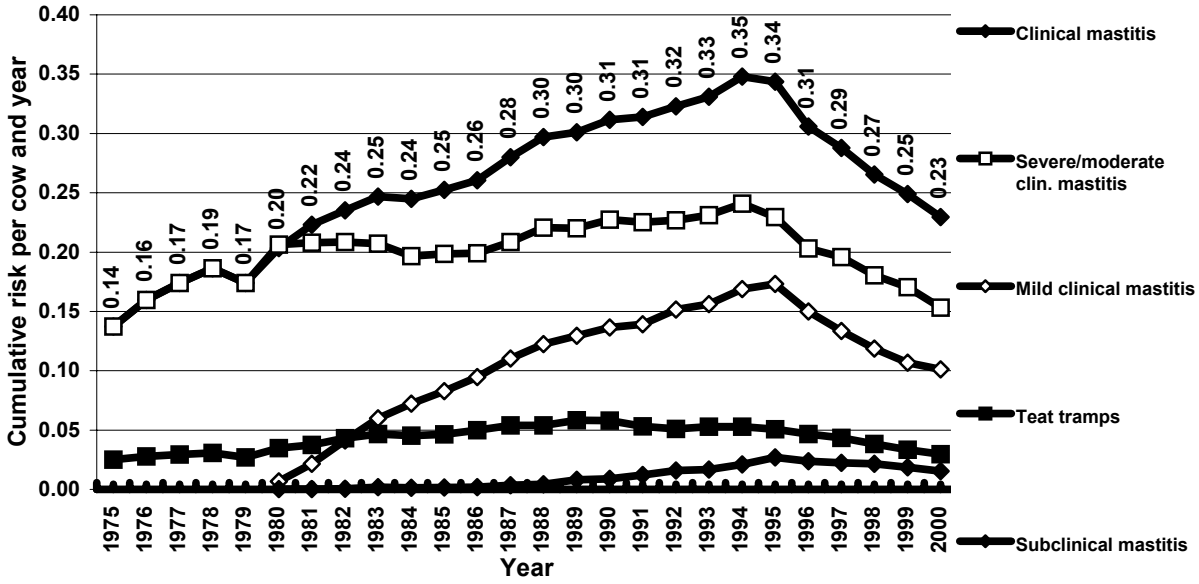

Figure 2. Estimated risk of different mastitis treatments per cow during one year.

During the winter 1998/1999, a questionnaire was sent out to and answered by 65,9 % of 2400 producers, advisors and veterinarians in order to identify the reasons as to why the antibiotic reduction campaign went so successful. The changed attitude among farmers, consultants and veterinarians about the use of antibiotics in milk production was explained by a greater focus on preventive health care, increased extension work and increased educational level among the farmers. The study (Andersen, 1999) also revealed that most of the participants also believe in

the possibilities of further reduction of the antibiotic use. For example the new goal of a continuous reduction of mastitis incidence at 5 % per year in five years was placed in action by the Norwegian Cattle Health Services. According to the Breeding Association also the genetic potential on better mastitis health is still improving. The farmers ambitious statement is also fulfilled, as the annual reduction has continued down to the current level of 25 treated cows per cow-year in 2000 or a total of 33 % reduction during the time period from 1995 till 2000 (Østerås, 2001).

Cell Count Levels

The maximum accepted bulk milk somatic cell count (BMSCC) limit is 400,000 cells per ml, counted as a geometric mean over three months period of time. There are economic penalties at 300,000 and 350,000 per ml (2% and 4% withdrawal in milk price respectively). A quality payment system was introduced in 1980 with 250,000 cells/ml as the highest accepted level to get the premium payment of 4% of the milk price to the dairy plant. The level was reduced to 230,000 cells/ml (3 m geometric mean) in the middle of the 90'ies. About 96 % of the milk deliveries stay below this level which means that the farmer gets 4,5 % extra per kg milk.
The level of BMSCC is illustrated in figure 3.

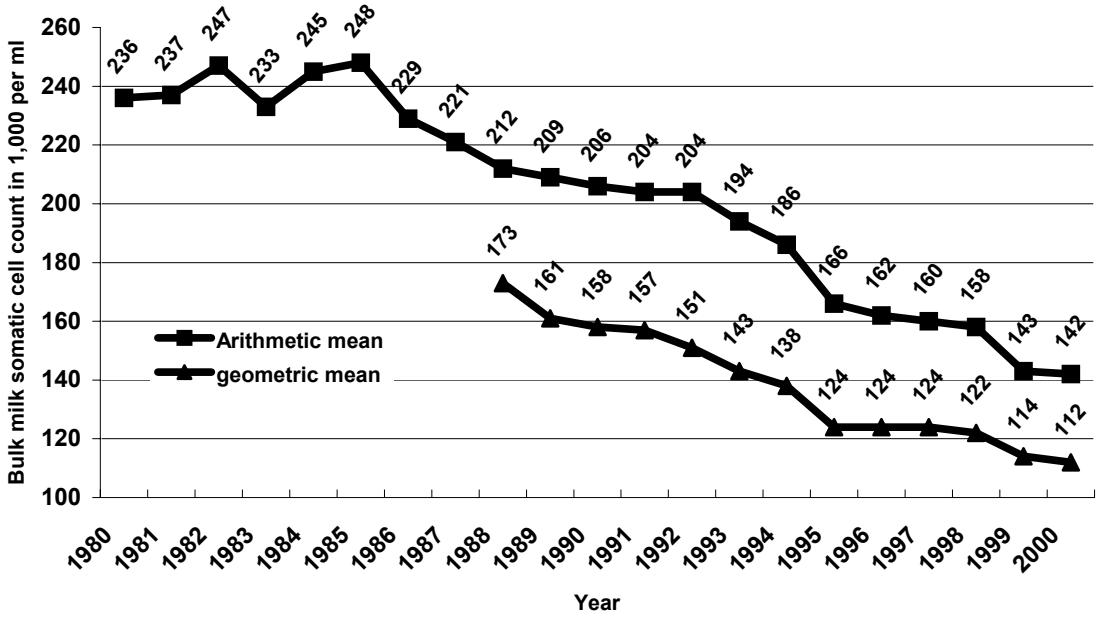

Figure 3. Bulk milk somatic cell counts during the period 1980 to 2000

The national BMSCC has continuously been reduced since the peak level of 248,000 cells/ml in 1985 down to the current level of 112,000 cells/ml. The reduction in cell count levels are consistent as is the reduction of the mastitis treatment rate as is already shown in fig 2. However, the culling and replacement rate over the same period is fairly stable with an incidence rate of 0.40 per cow-year, which supports our hypothesis that the reduction of the cell count level is real and not a result of a changed culling policy with culling of more cows with high CMSCCs. The

information system to the farmer could help them to cull the "correct" cow according to CMSCC as that is presented on periodicals regularly. Another explanation would be that the farmers consequently remove milk from high cell count cows using it for other purposes (ie feeding calves) instead of delivering it to the dairy. This could be one part of the explanation but it is not enough to explain the total reduction. A third explanation would be that this is one of the consequences of the national breeding policy which takes into account health traits like risk of disease treatments in daughter groups.

Conclusion

The health card information system from 1975/76 has made it possible to use udder health information both at farm level (production management), regional level (advisory systems) and national level (breeding system). The data demonstrate a general and continuous increase of incidence of clinical mastitis up till 1994 together with a decrease in BMSCC from 1985. After 1994/95 there has been a continuous decrease both in BMSCC and incidence of clinical mastitis at the same time as the culling rate has been constant. Thus, there is no conflict in having both low rate of clinical mastitis as well as low level of BMSCC. The improvement the last years are supposed to be due to better advisory service, change of attitude of the use of antibiotics and last but not least the effect of the Norwegian Breeding Program for several years. The progress is continuing with the same rate in 2001.

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