THE FUTURE OF VETERINARIANS IN DAIRY HERD HEALTH MANAGEMENT

O FUTURO DO MÉDICO VETERINÁRIO NO MANEIO CLÍNICO DE EXPLORAÇÕES DE VACAS LEITEIRAS

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Abstract: *The future of the Veterinary Practice in Dairy Health Management has changed and will change more drastically from our point of view in the next years. The consumer's pressure and the Media are more and more concerned about animal welfare, traceability of animal products and safety of products of animal origin.*
On the other hand the Farmers in Europe have to produce under strong rules (competing with other countries outside Europe), which are normally very expensive to put in practice, and the veterinarians should adapt their knowledge to the new challenges, because without their work and cooperation, dairy farming will have no future.
In that sense, the old veterinary practice has to go in other ways, otherwise the Veterinarians will loose clients and the animal population in Europe will be reduced. The Dairy farmers will ask for support in other areas besides clinical: efficacy, management, welfare, profitability, nutrition, prophylaxis, economics, reproduction, environmental protection, grassland management, etc.
Cattle practitioners should be able to give answers in several subjects and this sets the challenge to our profession - Veterinary preparation has to be very strong in single animal species, particularly in Dairy or beef cows.
The cattle practitioner has to look beyond, but he should never forget that "the single animal" has to be looked at as one unit of the herd, which means that without a very good knowledge of the single animal he will be insufficiently prepared to solve herd problems, and the Herd is the sum of several animals. We all know that very often one single animal allows us to implement herd strategies and develop prophylactic programs.
We are convinced that the veterinary profession, and in our case the Cattle Medicine should have the ability to evolve, otherwise the Veterinarian as we know him will miss the train in the next years.

INTRODUCTION

The increasing concentration of dairy cows per farming unit requires new considerations by bovine practitioners. More recently the individual animal played an important role in respect to veterinary activities, but in the future, priorities have to be established on farm basis (Baumgartner, 2002).

Veterinarians have to handle, in the present as in the past, several subjects in dairy farms (DF) as clinics, reproduction, surgery and obstetrics, among others (Baumgartner, 2005). The "old" veterinary approach has passed away and the profession should make a SWOT analysis to find the right way to go. So the 4 points: Strengths, Weaknesses, Opportunities and Trends, must be part of the objectives to find solutions for the veterinary profession, in particular on "Dairy Farm Veterinary Assistance". There are a lot of fields where veterinarians should have more input and some of these new working fields could be the real future for dairy practitioners. Because of the "typical old fashion mentality" of veterinarians, we already lost some of those fields to other professionals, like nutritionists, animal production engineers, biologists, pharmacists, etc. (Goodger & Ruppaner, 1982; Heuwieser *et al*., 1993). We have to react and make efforts in the sense of achieving our real

importance on dairy farming (Pflug & James, 1989). We should be the most important factor of success on farm level, directly and indirectly, teaching the farmers and their personnel, finding solutions and helping them on the most relevant decisions. Therefore the veterinary approach on farm level has to change very deeply and quickly (Noordhuizen, 2004) and veterinarians should be able to handle all kinds of topics concerning dairy farming as listed below. Some of them are already considered, but others need increased importance, knowledge and efficacy:

1. The Animal
2. Clinical approach
3. Diagnostic
4. Treatment
5. Prophylaxis
6. Reproduction
7. Housing
8. Nutrition
9. Milk production
10. Disease incidence
11. Economics
12. Consumers' Demand

HERD HEALTH MANAGEMENT

Management is one of the most relevant issues on DF. Without a correct and DF adapted management, we cannot expect good results on production, disease reduction and improvement of DF profitability. Monitoring the management implies controlling all the procedures during farming. How many people work on the farm? Which working methods are used on the farm? Do they milk twice a day or three times? Do they use footbaths and if so what is the frequency and products they use? Does the farm resort to computer programs for reproduction, milk production and management records? Are the farmers using software for monitoring the herd? What are the strategies for culling (Esslemont, 1993; Monti *et al.,* 1999; Gröhn, 2000)?

The Veterinarian should understand the farm, the problems it has and look for solutions, not only medical, but also for improving management and communication with the farmer. This means that the professional has to identify the problems and solve them, striving for the goal to avoid them in future. At each visit we should normally take enough time to observe and talk with the farmer and co-workers, noticing the housing, looking for points that can be critical. We should try to understand the farmer and how the work is planned and done on the farm (Webster *et al*., 1997a, b). Herd Health Management does not imply that the individual animal no longer plays any role. The opposite is in fact true. The clinical examination of the single animal, its behavior and capabilities are useful and valuable parameters for analyzing the status of the herd.

Each DF is unique and the veterinarian should also be a good people manager, which means that he should have a good background on psychology and communication skills. If he has this background it will be much easier to understand the farmer and find the best way to *sell* the ideas for improving quality and profitability of the dairy farm.

THE ANIMAL

A herd is an accumulation of animals. This means that we have a certain amount of several animals in the same stable and under the same conditions. According to their specific needs, groups at different stages of production, determine different diagnostics and management monitorization. A typical dairy herd is divided in five main groups:

- Calves
- Heifers
- Dry cows
- Fresh cows
- Lactating cows

CLINICAL APPROACH

The clinical approach will start at single animal level but has to be also on herd level (Baumgartner, 2005). Deep knowledge at the single animal level means that Vets have to know how to perform a clinical examination.

A very good knowledge on propedeutics and physiology allows the professionals to perform correct diagnostics and identify diseases at an early stage. The clinical examination is the basis of a good diagnostic to detect any diseased animal showing signs of pathological disturbance, which in some cases could compromise the herd health status. For that reason we should put much pressure on the individual examination, otherwise the vet is not in conditions to introduce prophylactic measures and the problem will be out of control.

In case of typical emergencies like acute mastitis, pneumonia, diarrhea and enteritis, metabolic diseases, nervous disturbances, calving with dystocia, prolapsed uterus and other problems, the clinical examination of the diseased animal is the main and first task. But some of these diseases are the tip of the iceberg and should lead our focus to the herd level.

On herd level two different approaches are possible. In the first approach, the acute illness of one or of a few animals might imply that the majority of the animals will suffer from subclinical disease. In those animals there will be a lack of clinical signs but production level will be decreased. In the second approach, continuous monitoring of the herd is performed to control the production level of the herd, the disease incidence and other factors that will impair the dairy production. Continuous monitoring gives the opportunity for early detection of increased risk for disturbances. Several parameters are developed to control the herd as lameness score, body condition scoring, hygiene scoring, mastitis prevalence, etc.

There are a lot of opinions about this interaction beween the single animal and the herd. Each author puts more importance on one of these subjects, depending on his point of view. It is clear that the herd can influence the single animal, but the contrary is also possible. It is also understandable that if we implement herd measures they should be in targeted to achieve increased efficacy, less problems and at the end, more profitability and biosecurity.

Diagnostic

In some cases clinical examination might not be sufficient to differentiate clearly between all the possible diagnosis. In these cases samples of blood, urine or other fluids of the diseased animal have to been taken for analysis of specific parameters to find out the cause of disease. In any case laboratory analyses only complete the clinical examination (Baumgartner and Gattinger, 1982).

On the level of the single animal, laboratory analysis help to differentiate between the possible diagnosis and may help us decide about starting a treatment or otherwise send the animal for slaughter by economical or humane reasons. Changes in laboratory parameters inform us whether the treatment is being successful.

On herd level, laboratory analysis will be useful in detecting subclinical diseases and risk factors (Gelfert & Staufenbiel, 2004), which might increase the disease incidence. For monitoring the herd status, data of the monthly milk control (Dirksen *et al*., 1997; Gelfert & Staufenbiel, 2004) as well as fertility parameters (Kinsel & Etherington, 1998) can be used for evaluating the herd production level.

Treatment

The treatment is the consequence of the clinical examination and any diagnostic analysis. For that purpose we should develop and introduce:

- General Protocols – For all kinds of common diseases on the farm and also introduce the 1st choice antibiotics that we will use.
- Treatments adapted to the problem both for the single animal and for the herd. In the latter case we think of footbaths, dry cow therapy, nutritional correction, etc.
- Objectives to achieve platforms of success on treatment.

- Economical analysis, to evaluate if treatment will be economic for the DF. We should always think about the relationship between costs and benefits and discuss this with the farmer who should decide if the treatment is sensible.
- Decision. The veterinarians should be able to make decisions and help the farmer to decide what to do. Our professional responsibility is also on this item. Never leave the farmer the whole responsibility for this. We are a partner of the Dairy farmer.

Prophylaxis

After the diagnostic and the treatment the veterinarians should implement the prophylaxis that can be medical, management improvement, hygiene improvement, or starting a vaccination program. Prophylaxis' main goal is lowering the risk for single animals and the herd becoming ill or production impaired. We have to estimate these risks i.e. bringing in new animals from other farms.

All prophylactic measures have to consider the following points:

- Adaptation to the individual herd. Each herd is unique and the particularity of one farm could influence the different programs to put in practice.
- Based on correct diagnostic, otherwise we can't expect good results.
- Consideration of management involvement in the problem.
- Consideration of any feeding correlation.
- Should be the best both for the animals and also for food safety.

Housing

The housing analysis is another component of management. We have to evaluate and if possible score the housing on: type, quality, hygiene, welfare, building facilities, walking surface, boxes, bedding, ventilation, heat stress, cleaning systems, milking parlour, collecting yard, simplicity of work (Ferry, 1998).

Nutrition

Feeding has to be checked routinely (Gaines, 1989; Meyer, 1991; Pfisterer *et al*., 1991) and we have to analyze the quality, the storage, the analysis of the feed ration and the feeding management, water supply, feeding method (TMR, Manual, Computerized). We have to control the feed ration calculated and speak our mind if the calculated ration does not correspond to the one in the manger. We should notice the localization and storage of the feeding (concentrate, hay, and silage), milk replacers, etc.

Milk production

Milking techniques and procedure assessment is one of our tasks (Hoedemaker 1993, Obritzhauser, 1995). They should be checked before, during and after milking because of the influence they have on milk quality and safety.

Data of monthly milk records can be used to monitor milk yield and quality, and to look for weak points in milk production of the herd. After calculating the lactation curves for different age groups of lactating cows, interpretation of milk yield at start and peak lactation and persistence of lactation curve, give information of the existence of possible risk factors as metabolic diseases (Gelfert & Staufenbiel, 2004).

Reproduction

Reproduction is normally the most common task for veterinarians on DF. This kind of work is widespread and it gives the opportunity for the veterinarian to be close to the farmer. In this particular we have to evaluate the reproduction indexes as well as the performance (Metzner & Mansfeld, 1992, Hässig *et al*., 2000). We should be able not only to make pregnancy diagnosis, but also find solutions together with other professionals like nutritionists, artificial insemination (AI)

technicians and the farmer himself (Webster *et al*., 1997a, b). The veterinarian should take the opportunity to open is eyes and look to the whole cows, controlling the faeces, body condition, lameness, rumen fill and so on. During the reproduction work we have further the excellent opportunity to evaluate the stall hygiene, as well as the feeding and the general condition of the facilities. This means that during this routine work we can check a lot of things. In our opinion management of reproduction is one portal of entry to other fields of DF management and the veterinarians would be well advised to use this opportunity.

There are several programs (Busch 1991) for controlling the reproduction; in our opinion the following one is well proven and tested:

At each visit the following groups of cows have to be examined:

- Cows 15-20 days after calving
- Control of all cows that have been classified before as having puerperal problems
- Cystic cows
- Cows that didn't show any oestrus signs 60 days after calving Cows already inseminated but known not to be pregnant
- Pregnancy diagnosis 35 days after AI or natural matting .Reconfirmation of pregnant cows between 80-120 days after AI and primary positive test.
- Pre dry-off check.

Disease incidence

For an analysis of the incidence of any disease, it is necessary that the farmers record these data continuously (Noordhuizen *et al*., 1983). The data recording procedure must be as easy as possible to avoid false entries in the data pool (Krebs *et al*., 1999). Before starting this work, diseases have to be defined clearly (Kelton *et al*., 1998). Otherwise the analysis of the data could lead to false conclusions. Data of parturition of cows and heifers are also important information and have to be recorded continuously. A high incidence of stillbirth or dystocia can be both a sign for faults in the transition period, like an incorrect body condition score (Staufenbiel *et al*., 2003), and a risk factor for other diseases like retained foetal membranes (Correa *et al*., 1993) or depression of milk yield (Chassagne *et al*., 1999).

ECONOMICS

Herd health management programs lead to a better and differentiated work, together with the farmer. But this approach is not enough to achieve one of our final goals that should be the economics of the farm. The majority of veterinarians avoid this issue and by doing so, loose importance and relevance to the farmer (Lotthammer, 1992; Baumgartner *et al*., 2002). If we diagnose a high incidence rate of metabolic diseases on one side and a high milk production on the other side (Jones *et al*., 1994; Fleischer *et al* 2001), what are we to do? The answer is not easy and we should find the balance between production level and disease incidence (Grunert, 1993; Lotthammer, 1999).

Dairy production profitability depends on factors beyond animals and enterprises' productive capabilities. Producers and veterinarians must look at farms as enterprises and at animals as production units. Beside our profound knowledge of DF we need knowledge about economical processes and how to use them in herd health management.

In DF milk is the most important income for the farmer (Fig 1).

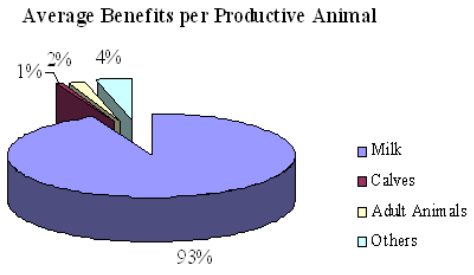
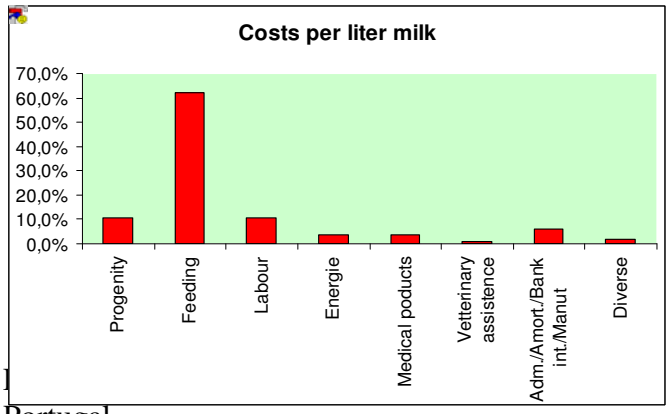


Fig. 1: Average profits per cow in production.

Therefore the main objective of the DF is to produce milk of good quality with respect for consumer safety and in high quantities. To produce milk the farmer has costs, the most relevant of which are shown in figures 2 and 3. Comparing both figures shows that there may

be different cost factors, which makes it difficult both to compare farms among each other and to calculate easily the costs and profits of one farm. Feeding costs are the biggest cost factor in the analysis shown in figure 2.



Portugal

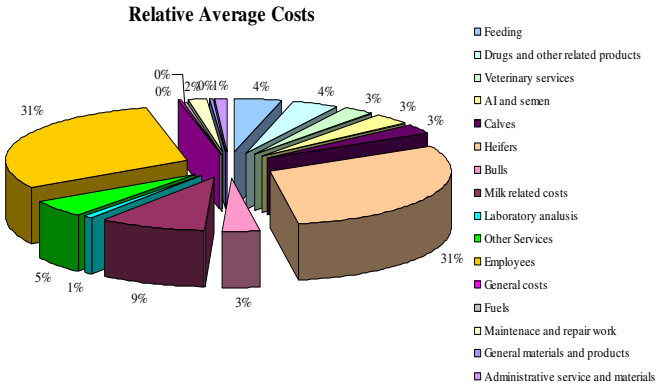


Fig. 3: Relative average costs in one typical farm in Spain (Adapted from Baucels 2004)

In figure 3 the factor feeding accounts for 4% only, but probably more feeding costs are hidden in the factors calves, heifers and bulls. In this analysis the employees accounted for the largest cost factor. This will be the picture on big farms with several employees. On the other hand, on small farms ran by the farmer's family, costs for labour are often underestimated. In both figures the costs for veterinarians are very low and do not exceed 5% of the total costs (Jacob & Distl, 1997). Analysing only the variable costs, the proportion for veterinarian's work would still be low, being between 6 and 10 % (Jacob & Distl, 1997).

Another important topic is the loss of profit due to disease or low fertility. A cow with frequent mastitis or a long calving to conception interval creates less profit because her milk production is lower than one of her healthy herd mates. When milk records of the herd are analyzed there is a certain risk to overlook this problem by focusing the attention on average production. Therefore the veterinarians have to put more attention on profitability of the DF otherwise they will be replaced by other professionals as happened in other fields of DF management i.e. nutrition. All the activities should have as a result an increased profitability for the farmer. The farmer should see tangible results after all our interventions. We have to know all the steps of the production otherwise we are not in conditions of helping farmers to earn money. Economic decisions should have our input.

To make an economical analysis of the DF, software for exhaustive recording of costs and benefits are needed, adaptable to DF and allowing correct analysis for decision-making processes (Martin *et al.*, 1982; Lucey *et al.*, 1983). Most programs available allow analysis of milk production data and other productive parameters of cows, but there is a lack of modules to analyse economic data (Lissemore *et al.*, 1992). Veterinarians should be involved in the developing and evaluating of such management programs. Such software has to organize all DF's costs in the following groups: feeding, drugs and other related products, veterinary services, AI and semen, embryo transfer, milk related costs, laboratory analysis, employees, general costs, fuels, maintenance and repair work, general materials and products, administrative services and materials. These costs factors and the benefits would be organized in the following groups: dairy cows, calves, heifers, other animals, other products. Both costs and benefits can be calculated on herd and individual level. Feeding costs have to be calculated individually, because animals are lodged in different areas and fed different amounts of food, according to their productive status. If we know how long did one cow

spend in each lodging area, it is possible to know exactly how much money was spent feeding that cow during a productive cycle. This needed organization is also useful for permanently monitoring ingestion, production and body condition. Finally, it allows knowing how much food was spent for each kg of milk produced by any of the cows. This kind of calculation can be made for many other costs and benefits, allowing a very detailed knowledge of every animal's profitability.

Developing such software is one side of the medal; the other side is that we as veterinarians have to be well trained in analysing economic and production data (Cook *et al* 2004), otherwise we will not be in conditions to make a correct evaluation of the whole process.

The competition in the world open market must make EU Dairy farmers much better than the others. Economical analyses can be divided into 3 periods: short, medium and long-term analysis. Short-term objectives deal with acute problems of the herd i.e. high somatic cell counts, high incidence of lameness or reduced milk yield. Long-term objectives are to design the future of the farm, which includes genetics, embryo transfer techniques and heifers rearing. After an analysis of all strengths and weaknesses of the farm, the veterinarians should be able to help the farmer to project the future of his DF. In these analyses the veterinarian must have in mind that future developments (oil price, bank interests) could interfere with the projected plan. The farmer should be aware of all kinds of changes that might occur, such as a higher price for feeding or energy, as well as lower price for milk.

CONSUMER'S DEMANDS

The more intense consumer's pressure goes directly and indirectly to the Vet. The use of veterinary drugs is more and more under strong regulations and the consumers, sometimes because of lack of information, do not understand why we should treat sick animals. We should not avoid the discussion and should explain that treatment of animals will imply a reduction of pain and an improvement of welfare. Strong safety rules are already in place. Sometimes they are too close to the eyes of the consumers and as a result they are not applicable. The respect for treatment protocols and withdrawal period has to be checked by the veterinarians and be part of their duties. Welfare regulations being already implemented oblige the veterinarians to take care of the DF animals.

Traceability is another current hot topic. The consumers as well as the media and the European Union are progressively more concerned about it. This means that for assurance of dairy products we have to implement security procedures for all products used on the farm (Webster, 2001). With concern to the veterinary products as well as disinfectant drugs we have to develop files adapted to different farms. This can be done by:

- Recording all treatments, withdrawal periods, destination of the animal after treatment, etc.
- Keeping all records which will document that the whole process is under control. When in doubt those records could be presented to someone who is in charge of traceability and quality assurance.

The promotion of the welfare of farm animals lays in the responsibility of both the farmer and the consulting veterinarian. Animal welfare is another demand of the consumers. To improve welfare special rules for housing are legislated. Consumers' need for good animal welfare and their reluctance to spend more money on animal products deriving from those animals, confront the dairy farmer with the task of producing milk from cows under good welfare conditions and at low costs. We as veterinarians can help the dairy farmers improving the welfare of their animals by analyzing production data, solving problems in management and housing, making a good case for the farmer's ability in discussing animal welfare on dairy farming.

DISCUSSION AND CONCLUSION

Developing specific software will allow a real profound analysis of dairy activity. Dairy producers need guidance and incentive by veterinarians, so they can understand the need to apply and use this kind of software. Prior to this the farmers have to be educated for data collection and analysis. (Viegas, 2004).

While working in herd health management, we should have in our mind that:

- Each farm is unique;
- One farmer represents one particular management;
- Each analysis is an individual study and it takes time and must be understandable and achievable.

With the help of such software but not without our knowledge and our clinical and diagnostic work, we have the ability to help the dairy farmer in three points:

- What to produce?
- How much?
- How to produce?

While doing this we should have the following topics in mind:

- Drug control and its influence in public health!
- Quality control during the whole process
- Animal feed control
- Milk quality
- Animal welfare

After all these considerations we have the ability to help the farmer respecting new European regulations, as well as implementing HACCP or similar systems, while respecting also the good veterinary practice code.

If we want to be really important players in the future of dairy practice, that is expected to have big changes in the near future in Europe, we veterinary practitioners or teachers have to react and start immediately to:

- Use more prophylaxis and less therapy;
- Intervene much more in housing conception/correction;
- Make complete reproduction control and define reproductive strategies;
- Achieve nutrition expertise level;
- Control milk quality (SCC, yield, butterfat, protein);
- Do consultancy (Farm progress and development);
- Be more concerned with management issues;
- Gain more knowledge of Economics (advice, decision making).

After doing all this brainstorming, the Key Point on Dairy Farms will be the Veterinarians. We should think about that and take the train right now.

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