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What is the role of veterinarians on the dairy farms of the future?

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About twenty years after graduating from veterinary school, and after a career in clinical practice, teaching, dairy management, and consulting work, I became managing partner of a dairy farm in Michigan in December of 1998. There have been many challenges, but it has on the whole been an interesting and rewarding experience. The experience has intensified some insights into the role of veterinarians on large dairy farms that had slowly been emerging from my previous work as a consultant and dairy manager for the family enterprises of my partners.

1. The cows are the most important creatures on the dairy, but there is a lot more to running a large dairy than managing cows.

Only the cows produce income on a dairy farm. Everything and everyone else is an expense or a part of the overhead. As a practitioner, I felt that part of my role was to call the owner and manager's attention back to the cows' needs. Some dairy producers seemed to be more concerned with tractors and equipment than they were with the management and well-being of their animals. In the Midwest, it is proverbial that the cows get neglected when there is cropping work to be done. When colostrum delivery to newborn calves was omitted, or when fresh cows were overcrowded because of a calving cycle, it was up to me to point out the peril of the situation to the owner, who sometimes barely appeared to be listening.

A dairy farm milking 1000 cows is a business with a gross income, at current prices, of over \$4 million per year. It is far more complex and difficult to operate successfully than the average veterinary practice. It will probably have at least 10 employees. It may include a large farming enterprise. It includes several large, vital, complex and expensive pieces of equipment (loaders, feeder mixers, tractors, milking machines) that need to be maintained and repaired. Large amounts of feed need to be purchased at the right price, mixed and delivered to the cows in the correct proportions and amounts, and stored and handled efficiently. There is a constant flow of trucks on to the facility to deliver feed and supplies or remove milk, manure, and livestock. Invoices must be matched to deliveries and paid promptly. Manure must be stored and disposed of. Credit needs to be arranged and loans need to be managed, and the reporting requirements of lenders have to be met. A steady flow of sales and service people needs to be managed. Inspectors and regulators need to be satisfied, and the accountant supplied with the information needed to complete tax returns. Employees need to be hired, trained, managed, and encouraged to do their jobs well. In the rush of daily activity, it is no wonder that your latest insight on BVD vaccination may fall on deaf ears. The truth is that many successful producers delegate cow care completely to employees, and occupy themselves fully with running their business, not caring for their cows.

The reproductive herd health exam, the defining ritual of dairy practice for most veterinarians (including me), is only a small blip in a very busy week or month. On a large dairy, the task of carrying the list and recording the veterinarian's findings may be delegated to a herdsman, a lower-level employee, a wife, or a child. It is one of those extra jobs for which it is hard to find a body at the critical moment. The owner himself has more important and urgent things to do. The veterinarian, who has looked forward all week to his or her chance to impart valuable insight and advice to management, is disappointed that the owner is not there. As dairies get bigger and bigger the person holding the vet list and talking to you as you do the repro check is less and less likely to be the owner.

The very complexity that distracts the owner from listening to our valuable advice also creates an opportunity. There is always some essential part of the operation that is being neglected because more urgent problems have pushed to the top of the to-do list. Often the neglected areas are calf raising, replacement heifers, dry cows, transition cows, and the care and management of sick animals. All of these are areas where the veterinarian can get involved and make meaningful contributions, and face virtually no competition from other professionals.

In my experience, many owners of large dairy farms do not have systematic hiring and training procedures for employees. They hire milkers and other employees based on brief encounters and possibly one recommendation. They expect the people they hire to know how to do their jobs or rely on their other employees to train the new person. Lines of authority may be blurred, and employees may be confused because they get conflicting instructions from different supervisors. When mistakes occur, the emphasis may be on finding the person to blame (usually the night shift, who aren't there to defend themselves), rather than on defining procedures and training so that the mistake won't happen again. Veterinarians understand the whole dairy system, from milking equipment to the physiology and behavior of the cow to the needs of the baby calf, better than anyone else who works on the farm, and have a tremendous opportunity to help their clients define what needs to be done, establish the procedures to get it done, and train employees in how to do it. On most dairy farms I have seen, no one else is performing this function, because nutritionists, salesmen, and even consultants tend to focus only on their narrow area of expertise. And because dairy producers tend to have lean organizations in which everyone is working hard and not much time is spent sitting in meetings, there is a need for a facilitator to help communicate the needs of management to employees and the concerns of employees back to the owner.

A dairyman's tolerance for risk and that of veterinarians are different. Dairy producers are used to making decisions based on incomplete information in a risky environment. Veterinarians are trained to be cautious, not to commit themselves until they are sure, and to err on the side of absolute safety. We are taught that making a definitive diagnosis is very important, but that we should not make it until all the evidence has been considered. So we are good at considering alternatives, but poor at making quick decisions. The dairyman realizes that stuff happens, that we may never figure out the full reason for a

problem, and that we better do something now to prevent a problem from getting worse. The veterinarian may want to do an extensive workup in a herd that is suffering poor reproductive performance, or chase a virus or ureaplasma. The dairyman's rational choice may be to simply put some bulls in the corral and see how they do. If the reproductive problem is due to human failure, the bulls will solve it. The veterinarian, worried about the risk of venereal disease and the loss of genetic progress, may see this as a mistake. But to the dairyman, the imperative to get the cows bred and pregnant is far stronger than the imperative to genetic progress far in the future or even than the need to arrive at a diagnosis.

Many dairy veterinarians feel bored and frustrated because rectal palpation is most of what they do, and because their clients see them mainly as a palpator. This should come as no surprise, if the only time they see us we have our arm in a cow's rectum, and the first thing we do on arriving at the farm is put on a sleeve. If it is a client we only see for emergency calls, why should he be glad to see us if he associates us only with a big bill and a risky outcome? If veterinarians want to have a significant impact on what happens on large dairy farms, they must find other reasons to be on the farm than reproductive programs and emergencies. These might be balancing rations, programs to monitor health or performance, employee training, a quality control program, or just wandering around watching what goes on and suggesting improvements as part of a retainer program. Enlightened managers recognize the need for the input of an observant professional and are willing to pay for it. It is up to us to figure out how to package and deliver those services to our clients.

2. Veterinary emergencies are not really emergencies.

As a rookie veterinarian I was sometimes incensed by what I perceived to be the indifference of some clients to the welfare of their cows. As we toil away in the hot sun on a difficult fetotomy, the owner may drive up in his clean pickup truck while talking on his cell phone, ask us how we are and how it's going, and then drive off while he takes another call. In the meantime the herdsman who was helping us has had to leave because the hospital pen is coming in to be milked and he absolutely has to be there. We feel neglected and unappreciated as we perform a difficult and unpleasant task. The least the owner could have done was offer to help. It's his cow, after all, and if he were a better manager we wouldn't be stinking up our coveralls. But the fact is that the owner may have things on his to-do list that affect the welfare of his business far more than the fate of one cow. Calvings, prolapses, sick cow exams, and displaced abomasum surgery, those staples of routine practice, affect only one cow at a time. On a large dairy farm, cows die and are culled every week. The loss of another cow is not fun for the owner, but it is not something to lose sleep over.

True emergencies on a dairy farm are things that affect the two most important daily tasks, feeding and milking. A power failure during which the standby generator does not start, or the transmission going out on the loader that is used to mix feed, or a broken chain on the only feeder mixer are true, anxiety-producing emergencies. A tank of hot

milk because of a cooling system failure or human error, high bacteria counts that can lead to loss of grade A status, a drug residue in the bulk tank, or the antibiotic-treated hospital group getting mixed into a milking string threaten the ability of the dairy to sell its principal product. In truth, a good mechanic and a reliable, responsible team of milkers are far more important to the owner's peace of mind than a good emergency veterinarian.

3. Veterinarians need to stop thinking about per cow averages.

Most veterinary training is based on the individual animal. We are trained to think about animals one by one. But large livestock enterprises must manage them in groups. The trick is to design systems that allow efficient management of large groups while still giving every cow the individual attention she must have if we are going to be able to detect heats, breed successfully, dry off on time, and find sick animals promptly. Even on a large dairy, a cow must be bred when she is in heat, and she needs to go dry on her appointed day. One of the main roles of veterinarians on large dairies of the future will be to help devise those systems.

Monitoring average statistics on dairy farms rarely leads to useful management interventions. Most averages have too much momentum, that is, they change too slowly, to provide timely information to management. Far better results are obtained if we focus on detecting the cows that are not performing and correcting their problem. Monitor things that you can change quickly and that will avert a problem. Find the fresh cows that are not giving much milk and treat them for what ails them before they get their DA, rather than monitoring average DA rate or average peak milk for all fresh cows. . Rather than monitoring average days open, concentrate on finding the cows that are getting out into the later days of lactation without a breeding and getting them bred. Rather than monitoring average age at first calving for heifers, concentrate on finding and correcting the reasons why all heifers are not pregnant by the time they are 15 months old. Rather than monitoring calf death rate, bleed calves weekly to measure total protein and intervene when the colostrum program appears to be failing.

It is all the milk in the bulk tank, not the per cow average that pays the bills. Veterinarians often get frustrated that their clients overcrowd their cows, because of the detrimental effects of crowding on individual cows. However for the enterprise as a whole, overcrowding may be a rational policy, because it only slightly increases fixed cost but can greatly increase revenue. A saying I heard from several California dairy producers was, "It's the last cows you add that make you the money." The fixed costs are already covered. Perhaps we should be measuring milk per stanchion, or milk per milking parlor hour, or other measures of efficiency based on the factors that might limit revenue by limiting throughput, rather than milk per cow.

4. On large dairy farms most traditional veterinary tasks are not being performed by veterinarians.

One of the many ironies of my present role of owner/herdsman on my own place is that I am doing more traditional veterinary work—pulling calves, treating mastitis, monitoring fresh cows, treating metritis, LDA surgery—than I ever did in veterinary practice. On large dairies those traditional tasks of the veterinarian are performed by skilled employees. Some of these employees have learned to do roll and toggle LDA correction and pregnancy diagnosis.

One day I was enthusiastically describing production medicine to a skeptical German visitor. On the farms where we work, I said, we veterinarians are involved in employee training, nutritional advising, and consulting on how animals should be managed for optimal performance. We have trained the herdsman to diagnose pregnancies, to roll and tack DAs, and monitor fresh cow health. We have designed protocols for treating common fresh cow problems that the herdsman implement. “Oh, I get it!” said my visitor. “In production medicine the vet does what the dairyman is supposed to do, and the dairyman does what the vet is supposed to do.” There is more than a grain of truth to this.

Almost all of the jobs traditionally done by veterinarians on small farms—easier obstetrical cases, treating milk fever, and the treatment of routine diseases—are done by dairy employees on large dairies. The job of the veterinarian must therefore change, from doing the work to designing the programs to get the work done, training the employees, monitoring performance, and bringing in innovations. This must necessarily include designing protocols for employees to follow—flow charts that tell a person how to examine and treat an ailing fresh cow, for example.

I have found that the idea of such protocols meets with tremendous resistance from many veterinarians. A protocol in lay hands, the reasoning goes, is no substitute for the judgment of a trained professional. The practice of veterinary medicine is cheapened by reducing it to formulas. The veterinarian-client-patient relationship is threatened if an outside consultant brings protocols to “our” herds.

Veterinarians simply have to stop mourning the loss of this traditional work. On large dairies it is no longer theirs to do, because lay employees can do it fairly well, do it in a timely fashion when it needs to be done, and do it more cheaply than the vet can. Scarcely any dairyman in the United States is going to call a veterinarian to treat a routine case of clinical mastitis. Of course it would be better for the cow if a skilled professional performed LDA surgery, rather than having the herdsman and his assistant roll and toggle. But the success rate of the herdsman is good enough, and he can do it in less time than it takes to get through to the veterinarian’s office to ask him or her to come. Therefore the veterinarian must take on a new role, that of teacher and coach to the people who will actually be doing the work. In that training role, the veterinarian must develop procedures or protocols for others to follow. That is the reality. The horse has left the stable, and no amount of wishing will bring him back. We must close the door on

traditional tasks, except to the extent that we must be skilful in order to train others. Unfortunately, we leave to others the thrill of giving calcium to a comatose cow and watching a miraculous recovery, or the wonder of delivering a live calf after correcting an easy dystocia.

5. The cases we brag about generally have bad outcomes.

My obstetrics instructor drilled into our heads the idea that a veterinarian should never leave a calving call with the calf inside the cow. One way or the other, the calf must be delivered. I absorbed this imperative and made it my own, and although I rarely enjoyed difficult obstetrical cases, I completed many successful fetotomies, where success was defined as the whole calf outside a cow with an intact uterus. A good rotten fetomy was the rite of passage in our practice—it made you a REAL dairy vet.

Having been able to watch the progress of the cows that are the victims of drastic obstetrical procedures, I have decided that my instructor gave terrible advice. In my experience, the best that can be hoped for in these very difficult cases is that the cow lives long enough to go to slaughter. The beef check may or may not cover the cost of the veterinary services. Very few of these cows become productive members of the herd. The producer would have been better off to send the cow to slaughter right away, rather than calling the veterinarian and running up a big bill, since he would not have tied up an employee in assisting the vet.

Surgery of right displacement and torsion of the abomasum is a similar situation. It is fun to know how to correct these successfully, and about half the cows may live, but few become productive herd members. Again, the beef check for these skinny sick cows rarely covers the cost of surgery, and many die despite surgery. If the owner sells the cow when the torsion is detected, he has a sure return of the cull cow price, although there is surely an ethical question if such a cow should be sold for food. If he opts for surgery, there is considerable risk that the cow will die on the farm, entailing the loss of the vet bill and the cull cow value. The hard fact is that on the average, shooting the cow when the RDA is detected (assuming she can not be sold that day) and having surgery done have about an equal predicted return.

In any event, all of these procedures can only benefit one cow at a time. If the cow breaks a leg or gets a catastrophic case of mastitis the week after the procedure, all of the benefit is lost. Interventions that benefit many cows will always be more profitable. On the 1000 cow dairy at present prices, a one pound increase in milk per cow per day would increase revenue by about \$150 per day, far into the future. Using all of your knowledge of blood chemistry and fluid therapy to save a dehydrated calf has only saved one calf. Monitoring and improving the colostrum program will benefit all the calves, immediately. We have to do what our clients ask us to do, and difficult emergency calls come with the territory, but we have to remember their economic benefit to the herd is extremely limited or nonexistent. They are salvage operations, and often the only thing

salvaged is the conscience of the veterinarian and herdsman, who can tell themselves and the owner that they did all they could for the patient. It feels a lot better to do something for the animal than to say, "Send her to beef!" and drive away, but in fact your time would probably be better spent doing something else for the owner than working on one hopeless case.

6. It's a lot easier to give advice than to take it.

As every parent and spouse knows, it is very difficult to change human behavior. Yet in the role that I envision for the veterinarian as teacher and coach to clients, this is exactly what we are asked to do. Since dairy employees are actually performing the daily tasks that affect the welfare and performance of animals, we need to help them perform those tasks better.

A common theme in the hallway talk at veterinary conventions is frustration that clients do not appreciate our expertise and do not follow our advice. At times this frustration is tinged with satisfaction, when the client gets into a serious problem because he ignored his vet's advice. I am sure that my dental hygienist commiserates with her colleagues at dental conventions about patients like me who never improve their flossing habits.

There are many reasons why advice may fall on deaf ears. Only one of them is that the client does not think it is valuable or that it may not work. It may be that the advice is offered at the wrong time, when the problem addressed by the advice is not uppermost in the client's mind, or more urgent and pressing problems are at the top of his list. It may be that the client judges the upheaval caused by the recommendation to be more stressful or injurious than the projected benefit. Or that he is actually afraid to confront employees with the need to change their behavior. Or that he is ashamed to admit that he does not really know what his key employees are doing in the area you are talking about. Many dairy employees, like breeders, night milkers and feeders, operate independently of direct supervision, and the owner may not know exactly how they do their jobs. Most dairy producers, I believe, find managing people to be the biggest challenge they face, and they may feel that they would rather leave well enough alone rather than stir everybody up to adopt an innovation that they are not completely sure will work.

Another reason why a client may ignore advice is that he disagrees with it but either does not want to confront you with the disagreement or is simply too polite to do so. Or he may say he agrees with you as a way to please you and end the conversation, when he really has no intention of making the changes you suggest. Or he may agree with your recommendation, but not be able clearly to see how he can implement it. We all have things we ought to be doing that we aren't getting around to.

It helps when we choose what Gordon Jones calls the teachable moment to offer advice. That is, choose a time when the problem that the advice is designed to solve is uppermost in the client's mind.

A common area of frustration is in record keeping. Veterinarians, especially those with training in production medicine and epidemiology, love records and computers. Most dairy producers, who are entrepreneurial, fast-moving, practical people, don't, and they often do not make use even of the record systems they already have. Often the best we can hope for is to point out to our client the limitations in his data and help keep him from making wrong decisions based on biased or woefully incomplete information. However it is also a fact that most good managers know whether or not they have a problem long before records tell them. One does not need a monitoring system to know that too many cows are being detected with clinical mastitis, or that too many calves are dying. Dairy producers do not need us to create more work; records should be easy to keep and only be kept if they provide information that allows timely intervention or meaningful comparisons of performance over time.

Veterinarians and other professionals who advise dairy producers tend to believe that a mystical skill called "management ability" is at the root of producers' success or failure. Some people are good managers and others aren't. Good managers take our advice and follow it, and have fewer problems than poor managers. We then assume that all dairy problems are the fault of the manager, and that if they took all of our advice they would have virtually no problems. The fact is that the variation intrinsic to a complex biological system like a dairy farm ensures that some animals will fail. Weather, the vagaries of commodities markets affecting feed availability, calving cycles caused by summer heat that result in temporary overcrowding of dry cow facilities, and other factors that are beyond the dairy producer's control, can cause excessive displaced abomasums, for example. Of course, better managers anticipate these problems and can avoid many of them. But as advisers to producers we need to get past blaming them for their problems and to start training them and their employees in ways to minimize them.

One day when I was getting irritated with a recalcitrant cow that I was trying to lock up for an exam, a wise dairyman told me, "Don't ever get mad at a cow for being a cow." Similarly, I think that veterinarians should stop blaming dairy producers for being dairy producers. We need to learn to think like them; they do not need to learn to think like us.

7. We aren't the only smart people out there.

Veterinarians are not the only potential advisers that dairy producers have, although most surveys show that they are ranked at or near the top of the list. Many producers depend on their colleagues, fellow dairy producers, for a lot of their advice. Several large companies are including consultation on dairy management in the portfolio of services they offer their customers. We do not own our clients' farms. We can not presume to be their only advisers, and we have to be prepared for the fact that some advice they receive may conflict with our own. We need to drop the mantle of infallibility that the title of doctor tempts us to assume, and try to learn from the other experts who come to the farm.

Veterinarians who wish to serve the large dairy farms of the future can continue to do the technical jobs (rectal palpation and emergency work) many of them do today, but they will have to accept less money and drive further to do it, because dairy farms will become fewer and farther between and the competition will be lower-paid dairy employees. The more rewarding role for the veterinarian is that of coach and teacher to the management team. A coach neither owns the team or plays the game, but he or she organizes and trains the players, helps them decide what they need to do, brings in new ideas, and leads them to victory. Veterinarians are by nature quick learners (that's how they got through school), with a broad understanding of the biology of the animals and the epidemiology of disease, and they are trained to be logical problem solvers. The technical skills we learned in school will always be an important part of our tool kit, and are part of the reason we are so valuable to our clients, but it is our knowledge and our ability to think that really set us apart. If we integrate ourselves with management so that our ideas are translated into practical programs and procedures, our value to the client is far greater than if we stay within the bounds of our traditional activities.

It is commonly assumed that the model dairy veterinarian of the future will be a consultant. I do not believe this is true. I believe that the future belongs to the local practitioner who is willing to grow with the clients in the area and provide the services they need. The local practitioner knows local conditions, intimately knows the people on the farm, can drop in unannounced as needed to monitor a program, is available when needed urgently, and has routine programs in place that get him or her out to the farm regularly. These programs could focus on reproduction, nutrition, or milk quality, but they provide a framework to which other programs and projects can be added. The local vet will also see from the sick cow and emergency work on the farm where the system is failing, if it is. The main job will be monitoring performance, training employees to do their jobs better, and helping the owner decide on what the priorities are, and all of these can be done better with frequent, short interventions than in the context of infrequent visits by an expensive out-of-towner.

Smart producers will make use of services that help them and their employees improve performance and profit. The question is not whether the services are needed. There are already people providing them. It is whether veterinarians will keep driving past these opportunities to rectal palpation appointments and emergency calls.