BVD: A story of adult learning and farmer engagement

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Introduction

I have been involved in rural mixed practice in New Zealand for over 30 years. As with most practitioners I deal with the usual array of clinical cases and disease investigation one would expect in predominantly sheep, beef and dairy practice. In 2001 I was challenged by a complex Bovine Viral Diarrhoea (BVD) case which, over time lead to a completely different way of developing disease management plans for farmers.

Our basic Veterinary BVSc. degree equips us well to understand disease diagnosis, treatment and prevention, however, if I may be so bold, it is my opinion that technically trained professionals such as veterinarians are generally not well versed in the “soft skills” required to consistently engage farmers with high levels of uptake of animal health programmes. This is fair to say I think, because of the level of frustration I hear about when veterinarians get together and talk about this issue.

In this presentation I would like to share my experience of providing BVD management plans to over 60 farmers in the Wairarapa, as an example of why and how understanding the basic principles of adult learning can significantly improve the levels of engagement and uptake by farmers. I have no formal training in adult learning but have listened to a few well trained speakers on this subject and applied some very simple concepts in “everyday” practice to increase farmer engagement and uptake of animal health programmes.

In 2013 I was part of a team that spoke at the MSD Milking Success meeting in Wellington. The BVD Steering Committee was given the opportunity to “pilot” a programme with 20 invited rural veterinarians. The main focus of this meeting was adult learning as it applies to BVD control and management programmes. The highly successful outcome of that meeting has given us the confidence to expand our programme to the wider rural veterinary profession in NZ.

In this paper I explore adult learning using BVD as an example; however, these principles can be applied to a range of other animal health programmes with equal success.

Adult Learning.

About 12 years ago I attended a conference where a speaker by the name of Nels Botha, a psychologist working for AgResearch, addressed us about some of the fundamental things one needed to understand about adult learning if you expected to get improved farmer uptake of animal health programmes. The two most powerful statements he made in his address were:

• You have to tell adults the same piece of information between 5 and 14 times before it is embedded in their brain (the explanation he gave was that you needed to reinforce the neural pathways)

• Adults are problem focused learners. They will respond to a perceived problem by pursuing all the answers they can find to solve it. Understanding this second point highlights that there is highly likely to be a significant emotional component to how the farmer’s decision making process plays out. Put another way; if they don’t believe they have a problem it is unlikely they will pursue a topic with a great deal of passion.
The disease control and animal production advice given by rural veterinarians in NZ is largely in the main a voluntary process, in which the farmer decides to accept our “recommendations” or reject them. Given the wide range of farmer personalities we see each day, it seems logical that individual farmers will respond to our advice in a range of ways. This can range from being highly compliant right through to completely non-compliant, with the majority sitting somewhere in the middle area. Given this reality, it would seem fair to conclude that an approach that assumes “one size fits all” is most likely destined to failure. A sales strategy that assumes “one size fits all” would have us all happy to drive one brand of vehicle, drink chateau cardboard and live in three bedroom homes in suburbia – life would be boring!

We all like to consider ourselves as “professionals” and the idea of being a “professional with a sales strategy” seems a bit foreign, dare I say downright “unprofessional”. We live in a competitive world where there is an array of non-veterinarians circulating in rural communities more than willing to offer their brand of professionalism to animal health problems. The truth is that they are often successful where we are not simply because they have a sales strategy that seems very professional to the farmer.

In summary, for adult learning to be successful we need to understand
- Adults need to hear the same piece of information 5-14 times before they will act.
- Adults need to be motivated to learn.
- Adults need to understand and trust the information before they will take affirmative action.
- Adults like “real stories”. This helps build trust.
- Adults will not respond well to “pressure”.

Real stories are very important. They help us share our experiences of what worked and what failed. If you like, they are a “warts and all” disclosure of our experience. The person listening to the story usually relates well to this style as it adds a level of trust and honesty to what they are hearing. It also starts the process of personalising the experience so that the listener thinks, “well if they can do it, I think I can too”. How often have you explained a veterinary topic to a farmer and had them ask you what other farmers are doing about it? This is the “opening” where they are asking you to tell them a story. You will all be aware of the role of “practitioner papers” at our seminars. They are always very popular because they are our stories. We identify with the storyteller as we know the story will have little gems that help us do a better job.

What are some of the barriers that make adult learning difficult?
- We sit on “Expert Island” making decrees distant from our customer.
- We over-use highly technical language without explanation.
- We may not listen to our customers very well.
- We can lack humility and patience.
- We fail to recognise the context of the customer.
- We can try and impart so much information that the customer goes into information overload and just feels like a spectator. I call this spectator syndrome.
- We try and “own” the decision rather than respect the customer’s right to own it.
The two cattle on the left are yearlings from cows that were infected with BVDv (Bovine Viral Diarrhoea virus) late in pregnancy. Obviously they are significantly smaller than their two cohorts on the right. This photo is a story telling opportunity as it helps reinforce the point that the BVDv localises in the growth plates of calves “in utero” and affects their growth potential. This observation is one of the most frequent “signals” I observe in beef herds when BVDv has been present.

The success of our problem solving is totally dependent on how well we navigate the interface of the farmer and veterinarian relationship. The Dreyfus Scale (Table 1) is a tool that models to us the difference in learning styles from the novice to the expert. Understanding this scale and how each stage of the scale affects our learning style holds the key to a more fulfilling professional career.

If we consider the learning needs of the novice and beginner it can be seen that high on the list of priorities are having recipes, best practice and a safe environment to make mistakes. The decision making process is rational. In contrast the expert has learning needs where they can argue philosophies with other experts. They have seen many situations develop over the years so their decision making process tends to be more intuitive than rational.

Experts that are capable of stepping back and placing themselves in the position of the novice or beginner will be more sensitive to the learning style required to advance the knowledge base of novice or beginner. This approach makes collaborative learning much more successful, mainly because the novice/beginner feels safe and listened to. They feel their contribution to the decision is valued and significant.

To understand what I mean, reflect on the times you have been at a conference listening to a small group of “experts” in their field vigorously debate the finer points of a topic completely unconcerned that the vast majority of the audience have no idea what they are talking about. In a case like this, the experts are either insensitive to the context, or completely unaware a context exists. Debating their philosophies in front of the beginner/novice audience is inappropriate and actually stifles the learning experience of others.
Table 1. The Dreyfus Scale – reprinted with permission of Lab Wilson, Customers as Learners, 2011.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Learning needs</th>
<th>How Knowledge is treated</th>
<th>Recognition of relevance</th>
<th>How context is assessed</th>
<th>Decision making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>The novice wants recipes, best practices, quick wins</td>
<td>No reference to context</td>
<td>None</td>
<td>Analytically Rational</td>
<td>Rational</td>
</tr>
<tr>
<td>Beginner</td>
<td>The beginner wants guidelines, a safe environment to</td>
<td>In context</td>
<td>None</td>
<td>Analytically Rational</td>
<td>Rational</td>
</tr>
<tr>
<td>(Guidelines)</td>
<td>make mistakes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competent</td>
<td>The competent learner wants goals, freedom to execute</td>
<td>In context</td>
<td>Present</td>
<td>Analytically Rational</td>
<td>Rational</td>
</tr>
<tr>
<td>(Guidelines)</td>
<td></td>
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<tr>
<td>Proficient</td>
<td>The proficient learner wants maxims, war stories,</td>
<td>In context</td>
<td>Present</td>
<td>Holistically Rational</td>
<td>Rational</td>
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<td></td>
<td>metaphors</td>
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<tr>
<td>Expert</td>
<td>The expert wants philosophies, discussions and</td>
<td>In Context</td>
<td>Present</td>
<td>Holistically Intuitive</td>
<td>Intuitive</td>
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<td></td>
<td>arguments with other experts</td>
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Unilateral control or mutual learning

Experts unaware of the learning style of the novice/beginner will often approach the “teaching” interface from a position of unilateral control. In other words they will express “I’m right, you’re wrong, I don’t need to share my reasoning, I’m not interested in your reasons and I could not admit I’m wrong.

In contrast, experts who are sensitive to mutual learning will recognise they have information, others have information, others may see things I do not and differences are opportunities for learning. They will also be prepared to test assumptions, share all relevant information, explain reasoning and intent and jointly design an approach to the problem.

The key difference in the two teaching styles is that the pathway to mutual learning is sensitive to the position of the novice/beginner. Teaching from a position of mutual learning may be significantly more time consuming, however, this is rewarded by a much higher level of compliance from the novice/beginner. When done well, the novice/beginner will become the expert’s strongest advocate, which further empowers the process.

I would like to share with you how I have used the principles and information already discussed, to significantly lift the level of farmer uptake of BVD management plans in cattle breeding herds. The real benefit of understanding and being prepared to use this learning style is that it can be applied to a wide range of animal health programmes. It is not exclusive to BVD.

This is my story

I had been aware for many years that BVD was a significant animal health problem in cattle herds owned by my farming customers. They seemed interested in this disease but engaging them to participate in BVD control and management plans was a challenge and at times quite disheartening. About four years ago I realised the way I was approaching this problem was just not working so I undertook a reflective exercise that Lab Wilson would call “Moments of Truth”. This exercise helped me deconstruct my approach and formulate questions that would change my approach and ultimately improve farmer engagement.
The “big” questions I came up with were

- Who owns BVD?
- What do you think the drivers of farmer action are?
- How can you best “engage” farmers?
- How inclusive is your language when talking with farmers?
- Do you believe BVD is a significant problem in NZ?

The secondary questions were

- How important is offering the perfect scheme versus a scheme a farmer will undertake?
- How detailed is the detail you give to farmers?
- Are you prepared to do a farmer tutorial with a colleague/vet nurse present to critique you?
- Would you use BVD biosecurity sheets when talking to farmers?

The answers to these questions helped me completely transform my approach. Central to this was the recognition that BVD control in NZ is voluntary. There are no statutes to govern the process of control.

If we are completely honest with ourselves most veterinarians will acknowledge that it can be a big struggle to engage farmers to talk about BVD. One of the reasons we may struggle is that we don’t have lots of “stories” to tell farmers. Farmers like “local” stories as this gives a more relevant context as it means it could be affecting them. Using your stories of local cases and how the farmer responded to the problem, particularly being able to say that the disease was eradicated starts to build a story of success. This gives credibility and confidence to the process.

Mission statement

I had to be very clear about my objectives. Put in very simple terms my mission statement could be described in three points.

- To identify high BVD exposure herds.
- Find and cull PI cattle.
- Maintain herd BVD free status.

This is similar to and consistent with the three common principles of BVD eradication reported by Lindberg et al. (2006).

The challenge and the interest

I had to get farmers to understand how significant the problem is and get them to make a decision to control BVD in their herds. Part of this process was to recognise that BVD consistently rates as one of the top five topics of interest in Beef and Lamb surveys. Veterinary meetings where BVD is discussed are generally well attended and in excess of 40% of NZ dairy farmers have signed up for BVD bulk milk antibody and BVD PCR testing.

BVD is one of those diseases that will draw out very passionate and diverse philosophical views amongst veterinarians. I believe that too often we let these views stand in the way of what our customers want because we remain on “Expert Island”. Unless we can put a workable programme in front of farmers their interest will dissipate quickly. I had to also recognise that it was highly likely that my objectives would be different from the farmer. To overcome this problem I needed to recognise the individual farmer’s circumstances and not treat the BVD problem as “one size fits all”.

Orpin and Sibley commented in an editorial of the Veterinary Record (Orpin and Sibley 2014) that key components of the “Healthy Livestock Initiative” on the South-West of England were:

- Recognition that the participating farmers “own” the problem.
- Participating veterinarians be up-skilled so they are able to deliver flexible programmes.
One size does not fit all, and flexibility is needed if all farmers are to be engaged in infectious disease control.

The engagement process

As BVD control in NZ is voluntary I had to recognise that the “skill set” I required had to understand that each farmer would have “their own way” of dealing with this. The language used by me had to be “inclusive” and had to avoid elements of compulsion. I learnt not to use words such as “mandatory”, “you must” and “it is essential” as these tend to imply a degree of compulsion and would have a negative impact.

I found the easiest way to engage interest with farmers was to offer to do a BVD pooled antibody test on 15 cows when I was on farm doing other tasks such as pregnancy scanning or blood testing for trace elements. This is a relatively low cost way of asking the question “Has this herd been exposed to the BVD virus in recent years?” This gives me an S/P ratio to work with and an opportunity to show them the validation curve developed by Hill et al. (2014). As I have now conducted in excess of 60 of these tests at a herd level and eradicated BVD from numerous herds, I feel quite confident to say to farmers that if their S/P ratio is over 1.5 it is highly likely there is a PI somewhere on their farm. In almost all of the herds with S/P ratios above 1.5, where we have done a search for PI cattle we have found them on the farm.

Once I have the S/P ratio result I make ‘phone contact with the farmer and make an appointment to sit down with them to discuss their result and explain BVD using the power-point tutorial developed by the BVD Steering Committee. This process usually takes about 60–90 minutes. I emphasise that I am keen to do this well so they are in a position to make good decisions about BVD management on their farm. This is an important statement as it starts the process of including them in the decision. I will not try to explain BVD over the ‘phone. It is just too complex and is only likely to cause confusion and dis-engagement. Old fashioned face to face communication helps us see all the farmer’s responses to our comments. Recognising and responding to non-verbal cues play an important role in communication. If they are not sure I go back and explain again until they “get it”.

The tutorial

I start the tutorial by reminding the farmer of their S/P ratio and then ask them what they know about BVD. This focuses the discussion and immediately includes them as they get an opportunity to tell me about their knowledge of BVD. The consistent “knowledge” I hear is that “it is a complicated disease”, “you just vaccinate and that will sort it out” and “one of my mates reckons it’s a waste of time trying to do something about it”. It’s important to acknowledge these comments but also ask if it’s okay to “park” them to the side so that we can progress our discussion about their farm and herd. I also make sure they understand that it is fine to ask questions or make comments at any time during the tutorial and reinforce the message that there are no “dumb questions” about BVD. This is an example of understanding the “gap” between the novice/beginner and the expert on the Dreyfus Scale.

The power-point starts by explaining the disease. During the development of this resource I had colleagues and vet nurses sit in on the tutorials. Their criticism was essential to the way we improved this material and influenced us to take time to explain the difference between antibody and virus tests (note we don’t talk about antigen tests). It also showed me where I needed to slow down and take time to define a TI, PI and Trojan. It is also really important to take time to explain how a PI is formed and reinforce why vaccination as a sole BVD management tool may fail.

At the halfway point of the power-point there is a slide of a man with his head buried in the sand. This is the point of the tutorial I hand ownership of BVD to the farmer and make it clear that there is an option to “do nothing”. This may appear to be counter-intuitive, however, I can honestly say not a single farmer has chosen that option when I have explained the disease to them. They usually make a comment along the lines of “well that won’t be happening”.

There are three tools we can use in a BVD management plan. These are testing and culling PI cattle, vaccination and biosecurity management. In reality most programmes will include components of all three. The testing and cull option is obvious as by doing this the farmer is finding and removing the most likely source of BVD virus – the PI animal. Explaining the role of vaccination is important. In breeding cow herds the primary reason to use a
vaccine that provides foetal protection is to prevent further PI production. I found I also needed to explain the role of vaccination of bulls to protect their fertility before and during mating. Biosecurity completes the picture and makes the farmer aware that a small lapse such as purchasing untested stock or allowing the neighbours cattle to contact theirs through a fence slip etc. could negate the good work they have done.

Figure 2. This photo is used as a focus point to “hand ownership” of BVD to the farmer during the power-point tutorial. Humour can be a very powerful tool with adult learning. The subliminal message here is “Bury your head in the sand if you like, but the problem won’t go away”.

I introduce the biosecurity work sheets at this point. As I have known many of these farmers for many years I generally know their biosecurity risk before I even go to the farm but that is not the point. This is done as a step to demonstrate to the farmer that this is an inclusive process. By doing this you are endorsing “ownership”.

Often at this stage the farmer will ask “what are other farmers doing?” This gives me the opportunity to tell them my “stories”. For instance I can them tell them of a case where the farmer decided to start by screening and vaccinating the heifers as well as vaccinating his bulls that were purchased as virus free. Once he had confidence with this part he decided to step this into the herd over time. This is what I call the “Step Up” programme. Others have decided to screen their whole herd and vaccinate right from the start. The point here is that the customer is being given flexible options. Patience is required because some farmers will take 12–18 months to engage. I just “let them be” as I have found that trying to force the issue usually results in dis-engagement.

The practical stuff

It is inevitable, particularly with beef cow herds to find that the “perfect time” will not match day to day farming realities. To give you a few examples:

- Ideally if you are screening beef cow herds to find PI cattle you would test them when they are not pregnant, i.e. about the time they have calves aged between one day and 60 days of age “at foot”. On rare occasions you may find a farmer prepared to do this but in almost all cases they just won’t do it then. Most of the farmers I have done this with have wanted to screen their cows when they don’t have calves “at foot”. In my practice this is during the winter, after weaning when they are pregnant. This is fine as long as they “own” that decision and understand the Trojan risk and are prepared to virus screen their replacement heifers from these calves.
- The first BVD vaccination in mixed age beef cows would ideally be given two months prior to mating. Once again the farmer is generally reluctant to do this then due to the cows having calves “at foot”. An alternative I offer is to do the first vaccination prior to calving and then follow up with the booster at calf marking time (often about one month prior to mating). In some cases calf marking might be the same day as the bull gets put out with the cows. I hold the view that on balance it is better to vaccinate “late” than “not at all” as long as the farmer understands the risks and once again “owns” the decision. I do point out the importance of screening replacements into the herd as we are departing from the usual vaccination protocols and we do need to know the programme has actually worked.
• The farmer may want to purchase “in calf cows”. My response is to say yes that’s fine but then ask how they plan to mitigate the risk of the Trojan cow.

This is by no means a complete list of all the practical challenges you may be asked about, however, the point I am making is that the farmer is being given “doable” options. If I lifted the bar too high, it is highly likely the farmers would walk away from a programme. It is not my responsibility to impose the “perfect” scheme and it is also important to understand it may take several years to get to the “perfect” end point. In most cases the farmer will take the programme in bite sized pieces and develop it further as they become more confident. This is an example of them moving from the novice/beginner stage to the competent/proficient stage of the Dreyfus Scale.

Costs and value judgements

During the tutorial it is inevitable that the farmer will ask how much it costs to virus test each animal and how much the vaccine costs per dose. I try to pre-empt these questions by discussing these points at the relevant stages of the power-point. I operate on the basis of full disclosure, nothing hidden. It’s obvious, they need to work out their budgets if they are going to commit to a control programme. I take particular care at this point though not to make any value judgements – I’m not paying the bill so my view of costs is of absolutely no relevance to the farmer’s decision. I am not the “gate-keeper” of the farmer’s wallet. As an aside I have discussed this issue with farmers I know well and the resounding response I have had is “Why would the vet think they need to “protect” our wallet?”

Each farmer has their own risk profile and it is really important to let them express this as part of the “ownership” process.

Case studies from the Wairarapa

Case 1: Too many wet dry cows

9 February 2012. I visited the farm to look for reasons as to why this herd had so many wet/dry cows. There was 30/180. As part of the investigation I carried out a BVD pooled antibody test on 15 of the cows. The S/P ratio was 0.74. There was also a sickly looking 18 month heifer in the yards, which turned out to be BVD virus positive and confirmed as a PI. This was evidence that a BVD virus incursion had occurred at least two years prior to this date.

25 May 2012. The farmer wanted to screen his heifer replacements for BVD virus. Fifty nine eight-month-old heifer calves were pooled BVDPCR tested and three were virus positive and subsequently confirmed as PI. On the same day two scouring finishing heifers were also virus tested and were virus positive. Both died before I could retest them, suffice to say they most likely died of mucosal disease. At this point we knew we had PI cattle in two age groups.

5 July 2012. Another BVD pooled antibody test done on the MA cows. The S/P ratio was 1.43. My interpretation of this was that we were observing the start of a BVD infection in this herd.

August 2012. The farmer decided he wanted to be able to claim he had a BVD virus free herd so decided to do a pooled BVDPCR test all his cows and in calf heifers. These all tested virus negative, however, I did remind him of the “Trojan” risk and that we would need to check the replacement heifers from these cows in the next 6–12 months.

September 2012. The farmer decided to vaccinate his whole herd just before calving and booster them about one month prior to mating, at calf marking. The bulls, which had all been purchased as virus negative were also booster vaccinated in September 2012.

December 2012. The farmer decided to virus test the 60 remaining finishing cattle as they were moving to another property and he didn’t want his problem to become someone else’s. Seven more PI yearlings were found.

March 2013. Pregnancy scanning. 198 MA cows scanned – two were empty and three were very late. Thirty eight heifers scanned – three were empty.
**August 2013.** Replacement heifers screened for BVD virus. One PI found and culled.

**Case 2: Too many good dry cows going to the works, poor growth rates in young cattle and three cases of mucosal disease**

**Spring 2006.** Two calves born with spinal and limb deformities.

**Spring 2007.** Started to purchase virus free and vaccinated breeding bulls.

**2007–2010.** Too many dry cows at scanning time. Varied between 15–25%.

**2008.** 5/11 heifers antibody positive to BVDv.

**2008.** Three cases of mucosal disease in R2 steers – cohorts of 2006 calves.

**2008.** Started screening all replacement heifers for BVDv. Step Up Programme.

**2010.** Started vaccinating all heifers, younger cows and booster vaccinating bulls.

**2011.** 8/72 MA cows empty, 5/41 light cows empty, 14/43 heifers empty. Was there still a PI cow or two still present in the herd?

**2012.** 4/106 cows empty, 1/43 heifers empty

**2013.** 2/105 cows empty, 2/42 heifers empty

**2014.** 3/74 cows empty, 3/35 R3 heifers empty, 5/41 R2 heifers empty

There are now fewer than 15 cows in this herd of unknown BVD virus status.

In 2013 after scanning the farmer made the following comment – “We don’t have any problem getting our 15 month heifers to 350kg for mating now. That’s why we get such good “in calf” rates. We used to grow winter crops to try and reach this target but for the last couple of years we have managed to do this on rye/clover pasture”. This is an example of cost being removed from his budget, in part, due to BVD eradication from his herd.

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**Figure 3. Two year old steer with Mucosal Disease.** Note the ocular and nasal discharge. This animal also had scabs around the coronet of all four hooves. Two PI cattle were found on this farm in a total herd size of 180 cattle. The cow herd BVD pooled antibody S/P ratio was 1.79.

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Several farmers have commented to me that one of the things they noticed first is that their weaner cattle were more of an even line than prior to eradication. This is anecdotal, however, a powerful customer observation which helps
endorse their decision to control BVD.

**Conclusion**

Understanding adult learning principles has been essential to the success of the BVD control and management programmes I have been providing to our clients in recent years. This approach is equally applicable to a range of animal health and production programmes veterinarians can provide for farmers. Initially I started by trying these ideas on a small number of farmers, however; the success I experienced gave me confidence to expand these ideas to a larger group of farmers. These principles are now applied to other disease management programmes such as Leptospirosis control in young sheep, trace element testing and supplementation of livestock, etc.

*Figure 4. A BVD Tutorial session in a farmers lounge. Old Fashioned face to face communication works a treat on most occasions.*

**References**


