Creating a BLV Herd Profile for Your Herd

If you are just getting interested in BLV, the first step is to get an estimate of your overall herd prevalence and determine if most of your transmission is occurring in your young stock or milking herd. We have found that a BLV herd profile is an excellent way to start. The BLV herd profile is a useful management tool for monitoring the BLV status of your herd because it doesn't require testing the entire herd.

We've provided an Excel spreadsheet here that will calculate your BLV herd profile and provide you with a graph of your profile. You simply input the lactation number and test result for each of the 40 cows tested. For comparison, the graph also shows the lactation-specific prevalence and average rates for herds that were sampled in our National BLV study from 2014-2016.

What is a BLV Herd Profile?

The herd profile is based on testing the 10 most recently fresh cows in each of the 1st, 2nd, 3rd, and ≥4th lactation groups. You would simply request that your DHIA run a BLV ELISA test on the milk samples for those cows. If you don't participate in DHIA, milk or serum samples can be submitted for BLV ELISA to most veterinary diagnostic labs. With the results of those tests you can calculate (or just use our spreadsheet) the lactation-specific prevalence for each group of cows by dividing the number of positive cows in each group by the number that were tested. The simple average of these lactation-specific numbers (BLV herd profile average) is a good "single number" estimate of your overall herd prevalence (Figure 1).

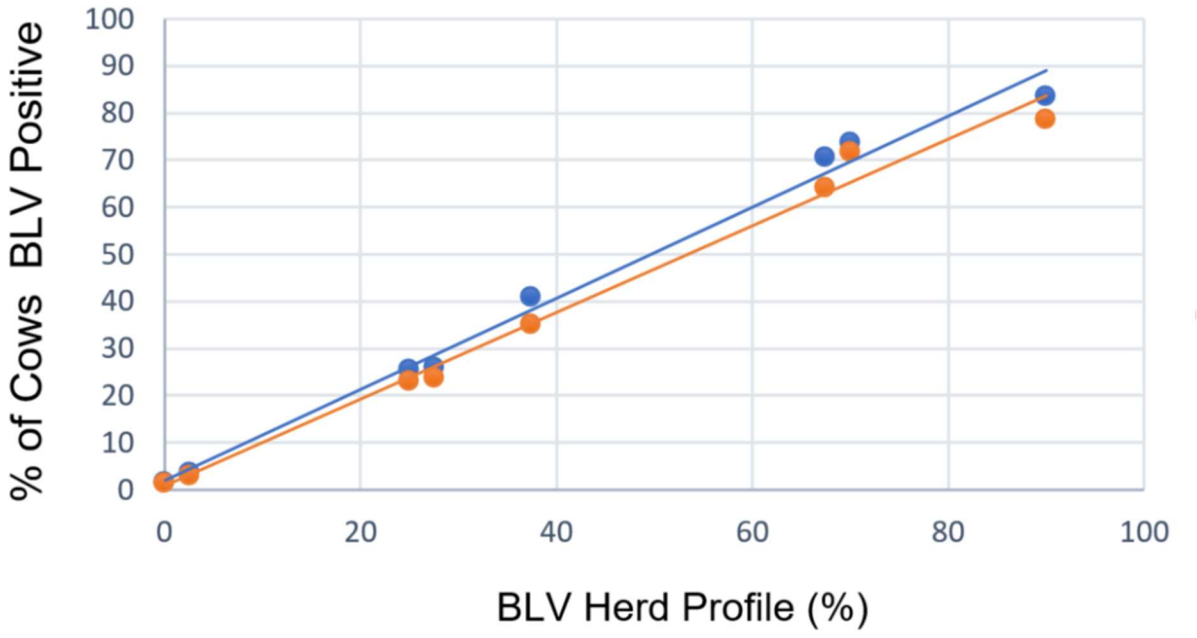

Figure 1. Correlation of BHP with actual herd prevalence. There is almost a perfect correlation between the BLV herd profile average and the result you get by testing all the animals in the herd. By testing all the cattle in eight herds, we determined the correlation between the BLV herd profile average and true herd prevalence ($r = 0.988$, $P < 0.0001$).

The procedure for selecting the 40 cows to test is rigid. You always select the 10 most recently calved cows in each lactation group – with the exception that cows less than 3 days in milk should be skipped because the test may not be accurate this early in lactation. Since there is no question as to which 40 cows should be sampled, you should not be tempted to purposefully select certain cows that you would like to test. This sort of "cherry picking" would lead to the sample results not being a good representation of your herd's true BLV status, which of course would defeat the purpose of running a herd profile.

How Can the BLV Herd Profile be Used?

Your herd's BLV profile can be used to monitor the BLV status of your herd. The average can be used as an estimate of the overall herd prevalence of BLV without having to test your entire herd. Since younger cows tend to make up a larger part of most herds and older cows are more likely to be BLV positive, the profile average tends to run slightly higher than your actual prevalence. However, the big advantage of the profile is that it's independent of the percentage of cows in each lactation. Since the number of cows in each lactation group will vary from herd to herd and within the same herd over time, the BLV herd profile average can be easily used for comparisons without the need for additional calculations to account for differences in age distributions.

You can use a BLV herd profile to compare your herd to other herds. With our herd profile spreadsheet, you can compare your herd to the herds in our 2014-2016 national study of BLV. You can also use a BLV herd profile to monitor changes in your herd's BLV status over time. For example, if you made a management change to decrease BLV in your herd, you could use annual profiles to monitor your progress.

A BLV herd profile can also help you decide where to target your efforts for controlling BLV in your herd. If your herd profile shows that your herd has a low prevalence or does not detect any positive cows, you may want to consider doing whole herd BLV testing and segregating or culling the positive cows to completely eliminate BLV from your herd. This was the method used to eradicate the disease from all the cattle in at least 21 nations, so we know that it works.

If your herd has a higher prevalence (or if culling and/or segregation are not practical for your herd), you may want to attempt to decrease your prevalence with management changes. The lactation-specific prevalence within BLV herd profile can be used to help identify where in the production cycle cows are becoming infected. If you know where and when cows are becoming infected, this can help you decide which management changes might be most useful for reducing the prevalence in your herd.

For example, if your BLV herd profile shows low prevalence in first lactation cows with a jump in prevalence in later lactations, you know that the majority of ongoing transmission is happening in the milking herd. Consider altering management practices that affect the milking cows such as single use of needles and palpation sleeves, fly control, and exclusive use of artificial insemination15. The BLV profile shown in figure 2 is quite typical, and is consistent with transmission occurring mostly after joining the milking herd.

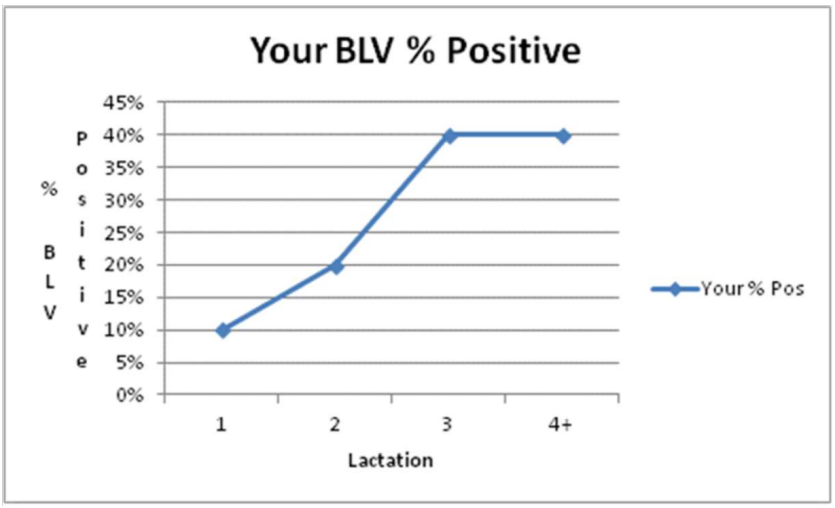

Figure 2. Sample BHP with low starting prevalence. This pattern suggests that cattle are obtaining new infections after they enter the milking herd. Focus control on stopping transmission in the milking herd.

On the other hand, if your BLV herd profile shows 30% or more of the heifers entering the milking herd are already BLV positive, you know that there is a significant amount of transmission occurring in calves and growing heifers. It usually takes at least 2-3 weeks for the ELISA test to become positive after a new infection12, so the results of the 1st lactation cows should detect mainly positive cows that where infected before entering the milking herd. The BLV herd profile in figure 3 suggests transmission in the young stock, without much transmission in the milking herd. If this is the case in your herd, you may want to focus on management practices that affect calves and growing heifers such as colostrum management, fly control, and breeding protocols for heifers15. It is also worth noting that this pattern is often seen in herds that send heifers to a heifer raiser before bringing them back into the milking herd. Be sure to review biosecurity protocols with your heifer raiser.

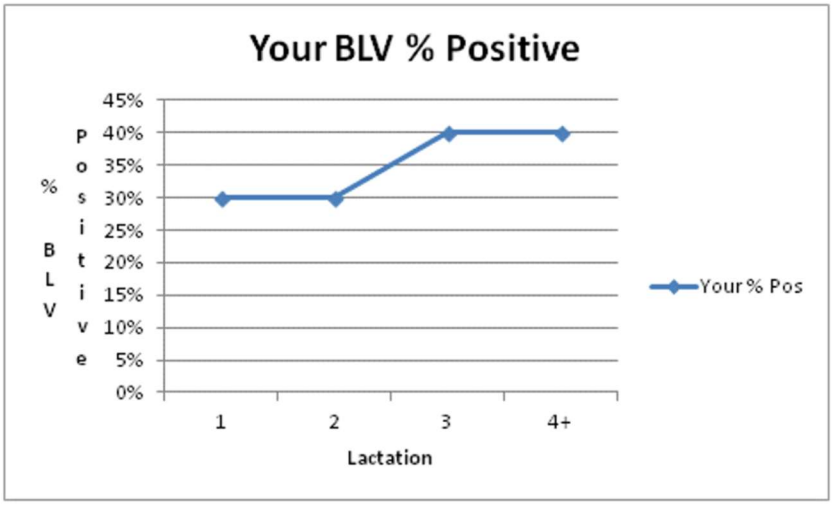

Figure 3. Sample BHP with high starting prevalence. This BLV herd profile suggests that cattle enter the milking herd already infected. Focus control on preventing infection of calves, e.g. freezing or pasteurizing colostrum.

In summary, consider conducting a BLV herd profile as a first step to determine the extent of your BLV problem. Use this to help you select the most appropriate approach to control BLV transmission in your herd, and to monitor your progress.