

The National Western Stock Show is requiring BVD – PI testing. The following is a reprint from the premium book. <http://www.nationalwestern.com/nwss/home/index.asp>

ATTENTION - VERY IMPORTANT!!
BOVINE VIRUS DIARRHEA - persistent infections

The National Western Stock Show, as a responsible leader of the livestock industry, beginning with the 2008 show, will be requiring that all beef cattle, bison, yak and camelids shown and sold during its event, show proof of a negative PI test for BVD. The National Western is in support of the AABP, NCBA Cattle Health and Well-being Committee and the Academy of Veterinary Consultant's position stating responsible disposition of BVD persistently infected animals is an important component of BVD control.

BVD is a disease that is damaging to the industry. Cattle owners have a moral and ethical obligation to the beef industry not to sell known diseased or damaged animals without full disclosure.

Background:

* Persistently infected (PI) cattle are the major source for BVD infection and disease in cattle that come in contact with them. PI cattle become infected before they are born (about 45 - 125 days of gestation) and shed huge amounts of BVD virus throughout their lives.

* The common ways BVD is introduced into herds are through herd additions that are PI or contact with other PI cattle - including PI calves, yearlings, bulls, females and fetuses carried by pregnant females.

* Any calf, replacement heifer, bull or cow can become temporarily infected with BVD virus for a few days to weeks until their immune system can clear the virus. The disease is usually not fatal by itself, but BVD virus suppresses the immune system and makes infected cattle more susceptible to diseases such as pneumonia, scours, foot rot and others. The virus may also cause infertility and/or abortion in susceptible cows, heifers and bulls.

* Testing for PI cattle is different than testing for many other animal diseases in that PI status stays the same throughout the animal's life. In other words, a non-PI animal will be negative its entire life and a PI animal will remain so it's entire life. Because of this fact, PI testing is usually done once. A test for PI status only needs to be repeated to confirm a positive, or if evidence indicates, a faulty test. As with all tests, a few false-positive and false-negative results can occur.

PI animals are defective. Their status should be disclosed and the marketing or movement of these animals in any manner that causes exposure to non-infected cattle is an act that ignores a cattleman's ethical obligation to the industry.

Meet with your veterinarian to determine or review your BVD goals and current exposure risk. The dilemma of how to deal with known PI cattle becomes more critical as BVD testing becomes more widespread. Appropriate disposition of known PI cattle must take into account the adverse impact these cattle have on health, welfare and the economic return of other cattle and cattle operations they may expose.

We appreciate your support on this matter! If you have questions, please call 303-239-4161 or 303-299-5557.

Commercial Colostrum Replacer

Following is an abstract by Swan et al. from the University of Minnesota of an article that appeared in the Journal of Dairy Science, cited below. The question of commercial supplements or replacements for colostrum to dairy calves has been around for a long time.

The results showed that maternal colostrum fed calves had significantly higher IgG and Total Protein than colostrum replacer fed calves. Also, when numbers were used to define failure of passive transfer, 28% and 93% of the calves, respectively were “failures”. However, this study also looked at the important outcomes of % calves treated for disease, mean number of treatment days per calf, treatment costs per calf, and % mortality. These parameters were not different between the 2 groups. Nevertheless, they appear financially and biologically important to me, but they certainly are not as striking as the numerical differences and the failure of passive transfer categorization. Also note that calf mortality overall was approximately 11%, exactly what it has averaged for years in the US. A goal is often cited of less than 5% dairy calf mortality if born alive, and some farms achieve 3% or less; many farms substantially exceed 10% calf death loss. The authors state that long-term follow-up of these calves is an ongoing process, which will be of interest.

PASSIVE TRANSFER OF IMMUNOGLOBULIN G AND PREWEANING HEALTH IN HOLSTEIN CALVES FED A COMMERCIAL COLOSTRUM REPLACER

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The objective of this study was to describe passive transfer of IgG and preweaning health in newborn calves fed a commercially available plasma-derived colostrum replacement (CR) product or maternal colostrum (MC). Twelve commercial Holstein dairy farms enrolled singleton newborn heifer calves to be fed fresh MC (n = 239 calves) or one dose of CR containing 125 g of Ig (n = 218 calves) as the first colostrum feeding. For 7 of these farms that routinely provided a second feeding of 1.9 L of MC to their calves 8 to 12 h after the first colostrum feeding, calves assigned to the CR treatment group were offered a second feeding consisting of 1.9 L of commercial milk replacer supplemented with one dose of a commercially available plasma-derived colostrum supplement, containing 45 g of Ig per dose, 8 to 12 h after the first colostrum feeding. A blood sample was collected from all calves between 1 to 8 d of age for serum IgG and total protein (TP) determination, and records of all treatment and mortality events were collected until weaning. Serum IgG and TP concentrations were significantly higher in calves fed MC (IgG = 14.8 ± 7.0 mg/mL; TP = 5.5 ± 0.7 g/dL) compared with calves fed CR (IgG = 5.8 ± 3.2 mg/mL; TP = 4.6 ± 0.5 g/dL). The proportion of calves with failure of passive transfer (serum IgG <10.0 mg/mL) was 28.0 and 93.1% in the MC and CR treatment groups, respectively. Though a trend was present, the proportion of calves treated for illness was not statistically different for calves fed MC (51.9%) vs. CR (59.6%). Total number of days treated per calf (MC = 1.7; CR = 2.0), treatment costs per calf (MC = \$10.84; CR = \$11.88), and proportion of calves dying (MC = 10.0%; CR = 12.4%) was not different between the 2 colostrum treatment groups. The mean serum total protein concentration predictive of successful passive transfer (serum IgG = 10 mg/mL) was 5.0 g/dL in calves fed MC or CR. Long-term follow-up of these calves (to maturity) is ongoing to describe the effects of feeding CR on longevity, productivity, risk for Johne’s disease, and economics.

Journal of Dairy Science, August 2007, Vol. 90, No. 9, Pages 3857-3866

Cow Behavior Study

The following abstract is from a paper by Endres et al. from the University of Minnesota, and appeared in the Journal of Dairy Science, cited below. I think the most common type of similar housing in Utah is open corrals. However, any bedded pack open housing type system could reasonably be expected to result in similar cow behavior.

The article shows that cows laid down an average of 11 times per day for 50 minutes each time, with considerable variation between 15 and almost 90 minutes per lying episode. Cows laid down more hours per day with increasing days in milk.

I thought it was interesting that during each hour cows averaged approximately: 1 chasing another cow away, 1 push of another cow, 1.5 head butts, and 2.5 social licking of another cow. I have known some dairy producers, particularly herd owners, to sometimes spend time looking out at the herd and watching social behavior. This is sometimes in the context of observing whether employees “yell at or chase cows too much”, or looking for lameness or cows in heat. However, it may be possible to note whether particular cows, or many cows in a group, substantially exceed the above behaviors per hour. Whether this affects milk production, SCC, reproduction, etc. may be an area of further research. Projects that film cattle and observe them in other ways for behavior and attempt to monitor social stress in cows have been increasing in recent years. Much of the dairy industry accepts 10-15% more cows than stalls in freestall housing, and milking cows 3 or 4 (or as many as 6) times per day. Will we someday discover that reduced lying time, increased walking and holding pen time and increased social stress has important financial impact on milk production and quality? Approximately how costly might it be? I don't think we know that yet, but future projects will probably investigate it.

BEHAVIOR OF DAIRY COWS IN AN ALTERNATIVE BEDDED-PACK HOUSING SYSTEM

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The objectives of this study were to measure lying behavior and social interactions of lactating cows housed in an alternative bedded-pack system, commonly referred to as a compost dairy barn, and to investigate the association between the temperature-humidity index and lying behavior of these cows. The study was conducted in 12 compost dairy barns in Minnesota between late June 2005 and September 2005. Lying, standing, and walking behavior of 147 focal cows was measured by automatic activity monitors. The daily lying time was 9.34 ± 1.94 h. The number of daily lying bouts was 11.0 ± 3.2 and the lying bout length was 50.8 ± 35.6 min. As days in milk increased, the total number of lying bouts increased, corresponding to an increase in total daily lying time. Cows in the compost barns lay down for less time, took more steps, and reduced the length of lying bouts as the temperature-humidity index increased. Social interactions and lying positions of all cows in the bedded-pack area (total of 886 cows in the 12 dairies) were recorded using visual observations during two 4-h periods on 2 separate days. A total of 43.3% of the cows were lying down at any time. All 4 natural lying positions (head back, head up, flat on the side, and head on the ground) were observed in 9 of the bedded packs during the direct visual observation periods. The majority (84.6%) of the cows observed lying down assumed the head-up position. Of all observed lying events, the head-back lying position was assumed 8.8% of the time, the head on the ground 5.4% of the time, and flat on the side 0.8% of the time. Observations of social interactions on the bedded-pack area showed that 0.94 ± 1.5 incidents of chasing away, 0.94 ± 1.8 of pushing, 1.4 ± 1.6 of head butting, and 2.3 ± 2.9 of allogrooming (social licking) occurred per hour. Observations of lying behavior, social interactions, and natural lying positions indicated that compost dairy barns can be an adequate housing system for dairy cows.

Journal of Dairy Science, September 2007, Vol. 90, No. 9, Pages 4192-4200

Johne's Disease Organisms in Recycled Sand

The following abstract is from a Research Summary presentation by Gehrke et al. of Michigan State University at AABP, 2007.

It provides evidence that recycled sand bedding should be expected to contain MAP, the agent of Johne's Disease, in infected herds. The significance of this as far as infecting animals older than baby calves has not been demonstrated. It suggests that recycled sand bedding should not be used under young calves in order to avoid transmission of Johne's Disease, however.

ISOLATION OF MYCOBACTERIUM AVIUM SUBSP. PARATUBERCULOSIS FROM RECYCLED SAND

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Introduction

Johne's disease (JD), caused by the bacterium *Mycobacterium avium* subsp. Paratuberculosis (MAP), is a chronic untreatable disease of ruminants. It primarily affects the intestinal tract resulting in chronic diarrhea and weight loss. JD is transmitted to young stock through the ingestion of colostrum, milk or feedstuffs contaminated with MAP or through exposure to MAP contaminated environments. Many dairy farms use sand as a bedding material and new technology has been developed to recycle sand and reuse it. In some instances, recycled sand may be used for bedding of replacement heifers that are most susceptible to infection with MAP. This study was conducted to determine if MAP could be found in recycled sand, thus serving as a source of environmental exposure to susceptible animals.

Materials and Methods

Two dairy farms known to be infected with MAP were used in this study. One farm was visited weekly for 4 weeks during the summer and for 3 weeks during the winter 2006/2007 (n=7 visits). The other farm was visited once every 6 months from 2004-2006 (n=6 visits). On each farm, a 4 oz sample was collected from the pre sand separation holding area; the post separation recycled sand pile and the post separation organic material holding area (lagoon). Samples were submitted to the Michigan State University Diagnostic Center for Population and Animal Health where they were cultured for MAP using a liquid culture system (TREK ESP II, TREK Diagnostic Systems, Cleveland OH). Positive samples, as determined by the TREK liquid culture system was confirmed by both acid-fast staining and IS900 PCR.

Results

MAP was cultured from 12/13 samples collected from the pre-separation holding tanks. Post separation, MAP was cultured from 11/13 and 13/13 of the post separation sand pile and post separation organic material respectively. There was no difference in the frequency of MAP recovery based on farm or season of the year.

Significance

This study demonstrates that on infected dairy farms, MAP can be found in recycled sand and can potentially serve as a source of disease exposure if used as bedding for susceptible animals. Veterinarians should recognize this risk when conducting Johne's disease risk assessments and advise their clients on how best to manage recycled sand to reduce risk of MAP transmission. Future studies will attempt to determine how long MAP may remain viable in recycled sand and to identify management strategies to reduce survivability.

Reducing Stillbirths on Dairy Farms

The following abstract is from a Research Summary presentation by Vernooy et al. of the University of Guelph at AABP, 2007.

Stillbirths on 162 dairy farms ranged between 0% and 17% of calvings. There is always potential inaccuracy when questionnaires are completed by producers without visiting farms. The main conclusions reinforce something that has been observed probably for as long as cattle have been domesticated, but it is worth reemphasizing. Stillbirths were most significantly reduced when cows close to calving were observed more frequently, and/or a video camera system was used to monitor close-up cows. Early attendance to dystocias was presumably the reason.

MANAGEMENT RISK FACTORS ASSOCIATED WITH STILLBIRTH

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Introduction

The success of parturition depends on a variety of cow and herd factors. It has been previously documented that the rate of stillbirth in Holstein cattle is approximately 10-15% in first parity animals and 5-7% in multiparous animals. Stillbirth is defined as a delivery of a dead calf or a calf that is born alive but dies within the first 24 hours of life. Stillbirth can have both direct and indirect impacts on cow and calf health. Therefore, identification of key risk factors and implementation of changes to routine protocols aimed at reducing the occurrence of these calving disorders will benefit the dairy operation.

Materials and Methods

A large observational trial was conducted to investigate the farm level risk factors associated with stillbirth. The main data collection tool was a questionnaire. Milk production, reproduction and culling data for the years 2002-2005 was collected from 162 dairy producers. All data was stored in a spreadsheet or database program. The farm level management risk factors were studied for their association with stillbirth using a multi-level logistic model, using MLwiN. To construct this regression model, it was determined that a multi-stage model building approach would be suitable to evaluate the large number of variables. A multi-level linear regression model was used to evaluate the effect of stillbirth on milk production. The variable "herd" was introduced into both the logistic and linear regression models as a random effect to account for the effects of clustering within herd. Survival analyses were used to model the effects of stillbirth on risk of pregnancy and risk of culling. Both the linear regression and survival analysis models were calculated using STATA 9.2.

Results

The herd-level incidence of stillbirth for cows calving in 2004 and 2005, ranged from 0% to 17.3%. The mean herd-level incidence was 7.6%. The frequency of observation of the calving cow/heifer (both in late gestation and more specifically in the early stages of labor) had a very significant association with the delivery of a live calf. In this study, the use of a video camera system was associated with an increased rate of live calves being born (OR=1.44). Excessive body condition in pregnant heifers was associated with an increased risk of stillbirth. However, grouping of first-calf animals with mature cows, as well as having individual versus group calving pens did not have a significant association with the occurrence of stillbirth. Summer pasture access was associated with an increased risk of stillbirth. As expected, there was a significant production decrease in the first DHI test day production for both cows and heifers that delivered a dead calf. At the first test day, first lactation animals that had a stillborn calf produced 0.9 kg/d less than first lactation animals that had delivered a live calf. Mature cows that delivered a dead calf produced 2.4 kg/d less than mature cows that had delivered a live calf. This difference between first lactation animals and mature cows remained consistent in the 305D milk production records. The occurrence of a stillbirth at calving was associated with an increased

number of days open (OR = 1.17), which has both biological and economical significance to the producer. Interestingly, there was no significant association between the occurrence of stillbirth and the risk of being culled, during or at the end of lactation.

Significance

The rate of stillbirth in Canadian dairy cattle is substantial, with a herd average of 7.6%. Frequency of observation and the use of video surveillance are associated with a reduction in stillbirth. Excessive heifer body condition was associated with increased stillbirth. There were significant production decreases for both first lactation and multiparous cows that had stillbirth versus cows that delivered a live calf. In addition, stillbirth at calving was associated with an increased number of days open, but not with an increased risk of culling.

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