

Colorado Dairy News

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GI Puzzler Plagues High Producing Cows

Drs Dave Van Metre and Frank Garry, CSU-ILM

A gastrointestinal problem known as 'bloody gut' has been recognized with increasing frequency in dairy cows over the last decade. The disease is also called jejunal hemorrhage syndrome or hemorrhagic bowel syndrome (HBS). These different names are quite descriptive of the way the problem appears in affected cows. Animals may be affected individually, or in a cluster of several affected on the same dairy.

HBS was first identified many years ago, characterized as a rare, sporadic disease. Recently dairies across the nation have experienced outbreaks of this problem for unknown reasons. The cause of HBS is also unknown, and no consistent predisposing factors have been identified. However, increased intensity of milk production, related to increased dietary energy and protein and decreased fiber in dairy rations have been proposed as risk factors. The purpose of this article is to familiarize you with the problem as we know about it at present.

Disease signs - Many affected cows are found dead, without premonitory signs having been observed. Disease signs include severe depression, weakness leading to recumbency, hypothermia (low body temperature) and death following several hours later. Cows with a longer clinical course of disease show sudden decline in milk production, associated with depression, loss of appetite, diarrhea, plus abdominal pain (colic) and abdominal distention in many cases. These signs may be followed within 12 hours by dark tarry feces. More frequently the diarrhea includes blood clots. In almost all cases death occurs within 24 hours of the onset of recognizable disease.

Some cows may be considered for surgery, since colic can be a prominent sign. Additionally some cows will have recognizable pings in the right abdomen, and displaced abomasums can occur in conjunction with HBS. When the abdomen is explored at surgery or necropsy, the small bowel is distended and reddened. Some sections will be filled with fresh, usually clotted, blood. Bowel is usually affected diffusely in a manner that makes surgical removal impossible. In some cases the blood will extend into the lower intestine. Occasionally, a discrete section of bowel is affected and surgical removal is possible.

Similar diseases - Diseases that cause similar signs should be excluded from this syndrome. Abomasal ulcers can bleed profusely, and in severe cases the blood will progress into the small intestine. This problem will closely mimic HBS. Other problems that can produce severe intestinal bleeding include BVD, salmonella

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Biosecurity: Infectious Disease Management

Frank Garry, CSU-ILM

As recently as five years ago few dairy producers were familiar with the term "biosecurity" or considered implementing biosecurity measures on their operation. Events since then have made it increasingly apparent that infectious disease management is extremely important. Simply stated, biosecurity is our most important tool for preventing the importation, and minimizing the spread of infectious problems on livestock operations. Pork and poultry producers have employed these practices for years as the mainstay of their animal health programs. While dairies are not, and may never be, at that same level of intensive production, many of the same principles will serve dairy producers well.

Livestock infectious disease problems present three different levels of concern to producers. First are ongoing losses from animal disease, the costs of treatment and the costs of reduced animal production due to agents that are common on many farms, such as contagious

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Important Dates:
Mark Your Calendar

June 27-30, 2001:

National Holstein Convention. For more information contact WR Wailes, Extension Dairy Specialist, CSU 970/491-5390.

July 6, 2001: Colorado Livestock Association Board Meeting. For more information contact WR Wailes, Extension Dairy Specialist, CSU 970/491-5390.

July 22-27, 2001: American Dairy Science Association Meeting, Indianapolis, IN. For more information contact WR Wailes, Extension Dairy Specialist, CSU 970/491-5390.



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A Message From Your Extension Dairy Specialist.....

Rising cheese prices.....We have seen higher and higher cheese prices through the months of April and May. For instance, the block cheese price closed at \$1.60 per lb. on May 10, 2001. I believe that it is important for dairy producers to follow the cheese market on a daily basis and this can be done by subscribing to the Daily Dairy Report (847/680-9693). The ability to lock prices in on future months has the potential to become an important management tool available to all of us.

Somatic cell count limit unchanged.....Delegates to the National Conference on Interstate Milk shipments held in Wichita, KS in early May decided not to lower US somatic cell count limits. The National Mastitis Council had submitted a proposal, publicly supported by the Food and Drug Administration, to reduce permissible somatic cell counts (SCC) from the current level of 750,000 cells per ml to 400,000 cells per ml by 2005. Dr Michael Talley testified that the agency is concerned about public health risks when raw milk contains SCC more than 400,000 cells/ml. Colorado dairy producers are on the cutting edge of this debate because most have kept SCC below 500,000 cell/ml. Despite the decision this year not to reduce the limit, the likelihood is high that this regulation will change in the near future.

Johne's Indemnification Program....A bovine Johne's Disease Indemnification Program is in the making. The Dairy industry in this state has promoted the idea and encouraged beef producers to join the program. At the Colorado Livestock Association meeting this month, there were very encouraging signs that the beef industry is listening. Hopefully, recommendations to National Cattleman's Beef Association will be forthcoming. When visiting with your neighbors in the beef industry, please encourage them to support this program.

Sincerely,

Commodity Price Quotes

By-Product Feeds	Price/Ton Spot Loads	Price/Ton June-Sept
Bakery Waste	\$82.00	\$82.00
Blood Meal	\$395.00	NQ
Corn Gluten Feed	\$79.00	\$79.00
Corn Gluten Meal	\$258.00	\$258.00
Corn Hominy	\$75.00	\$75.00
Flaked Corn	\$95.00	\$96.00
Cotton Seed Meal	\$160.00	\$160.00
Whole Cotton Seed	\$160.00	\$160.00
Distillers Grains	\$105.00	\$100.00
Pork - Meat & Bone Meal	\$180.00	NQ
Tallow	\$0.115/ lb	\$0.115/lb
SBM - 48%	\$180.00	\$180.00
Wheat Middlings	\$68.00	\$68.00
Soybean Hulls	\$79.00	\$79.00
Canola Meal	\$145.00	\$145.00

These price quotes are delivery, Greeley, Co

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infection, and coronavirus infection. Intestinal obstructions can provide almost identical signs as HBS.

Abomasal ulceration and HBS appear to be separate problems, but may be related. Some cases of abomasal ulceration appear to be caused by overgrowth and toxin release by *Clostridium perfringens*. In calves, *C. perfringens* type A has been identified as a cause of severe abomasitis, leading to perforation and often death. Similarly, the pathogen has been identified in adult cattle with similar problems.

Possible causes - It is possible that HBS is another manifestation of clostridial enteritis. Although a specific causal factor has not been clearly identified, several reports have indicated a close association of the problem with *Clostridium perfringens* type A. This association has been based on the following observations: (1) affected cows have positive fecal cultures for this bacteria, (2) *C. perfringens* type A is isolated from blood clots in the intestine, and (3) there is microscopic evidence of intestinal necrosis associated with heavy growth of large, Gram-positive, rod-shaped bacteria presumed to be *Clostridium*.

C. perfringens exists almost everywhere in the environment and in the gastrointestinal tract of most mammals. There are five defined types of *C. perfringens* (A, B, C, D and E), which are identified based on the lethal toxins that they produce: alpha, beta, iota, epsilon and/or enterotoxin. Type A usually produces alpha toxin, although isolates differ significantly in the amount of alpha toxin produced. Additionally, the recently discovered beta2 toxin may be produced by type A. *Clostridium perfringens* type A has been isolated in moderate or heavy growth from feces and/or intestinal blood clots in 93% of HBS cases seen at the VTH-CSU.

Veterinary laboratory diagnosticians in the United States have traditionally been reluctant to consider *Clostridium perfringens* type A as an important agent of intestinal disease because this organism has been proven to be a part of the normal flora of the intestine of livestock. Furthermore, this organism proliferates rapidly in the intestine after death, often making isolation from necropsy specimens of questionable diagnostic significance. Efforts to experimentally reproduce this disease have produced varied results. It has been proposed that the presence of the bacteria alone is not sufficient to produce disease, and other animal and environmental factors are needed for disease development.

Factors in disease development - It is unclear at present whether overgrowth of *C. perfringens* type A occurs as part of the primary disease process or if this growth takes place secondary to some other disease process. There are several potential mechanisms that could promote bacterial overgrowth: 1.) Intestinal motility change or stasis of the bowel, caused by some other disease process or a feeding problem. 2.) Change in outflow of material from the rumen, especially if it includes high concentrations of soluble protein or sugar. 3.) Overabundant bacterial growth in the feed due to contamination. These first two conditions could be influenced by feed energy density and by fiber content and structure in the feed. These conditions could initiate explosive, secondary growth of *C. perfringens* that is already present in the intestine. There is evidence to support each of these mechanisms based on findings from herds with disease outbreaks. For some herds, changing the feeding program has been followed by sudden reduction in disease occurrence.

Approach to disease outbreaks - Based on these findings, herds that develop
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mastitis, hairy heel warts, Johne's disease, IBR, and Pasteurella pneumonia. Even more troublesome than ongoing losses can be the development of explosive new infectious problems. Pathogens such as Mycoplasma, salmonella, anaplasmosis, and viruses such as BVD and BRSV can cause dramatic disease outbreaks. Another threat from infectious disease agents such as salmonella, brucellosis, and tuberculosis is the potential for some of them to transfer via food products, animal contact, or environment to present as human health problems. Infectious agents are still as important as ever and perhaps even more problematic as animal density and herd size increase. Recent awareness of the potential impact of Foot and Mouth disease has heightened some producers' level of concern.

What methods do we have to prevent and control the occurrence and spread of infectious agents? Many have come to rely on vaccination as the primary means of infectious disease control, but this is only one of the management practices at our disposal. To many involved in the cattle industries, however, biosecurity concepts remain somewhat vague and appear impractical. Biosecurity is the most powerful means available to minimize the spread and the impact of many infectious diseases. We use the term biosecurity to refer to management and hygiene practices that reduce the risk of introducing or spreading infectious disease agents.

The list of considerations may seem daunting. Our goal for this and future Colorado Dairy News issues is to provide you with ideas for Standard Operating Procedures that you can employ to help limit infectious disease introduction or spread. We will distinguish between "Importation Biosecurity Measures" that limit introduction of problems onto the operation, and "Internal Biosecurity Measures" that limit spread of disease between resident animals. This issue will begin with risks associated with incoming traffic to the dairy.

Regional VS in the Year of Foot and Mouth Disease

Brian McCluskey,
USDA:APHIS:VS, NAHMS

Recent outbreaks of Foot and Mouth Disease (FMD) in the United Kingdom and other countries (France, Colombia, Argentina, Saudi Arabia, Netherlands, Ireland) have focused attention on the importance of biosecurity measures at all levels of animal agriculture in the United States. International entry points, including airports and seaports, are the control points that continue to receive the greatest attention. Prevention of disease entry whether via people, livestock, or products at these locations is very important. However, points of entry are not where the first case of FMD will be seen. That first case will occur on a dairy, ranch, feedlot or swine operation far removed from that entry point in both time and distance. It cannot be over emphasized that the early diagnosis of a case of FMD is the key to controlling its spread and ultimately its eradication. Producers have the highest probability of observing that first case and are on the frontlines of the battle to keep foreign animal diseases from spreading if it were to arrive in the U.S.

Maintaining vigilance for Foot and Mouth Disease by dairy producers in Colorado and other southwestern states is more important than just about anywhere else in the U.S. and particularly right now as the late spring and summer approaches. Why? Foot and Mouth Disease and Vesicular Stomatitis (VS) look exactly the same and both are reportable diseases requiring immediate action of state or federal animal health officials. The most experienced producer, veterinarian or pathologist cannot distinguish between these two diseases by observing an affected animal. Blood and other types of tests are required to differentiate the two diseases. In 1995, 1997 and 1998 Colorado and other western states experienced outbreaks of VS. Hundreds of farms were placed under quarantine, livestock markets were temporarily closed and fairs and shows were affected. Many dairies chose to use an unproven vaccine to provide some level of protection. Most of the animals affected in these outbreaks were horses. No dairies were affected in Colorado during the outbreaks of the 1990's and only 1 dairy (in New Mexico) was affected in the U.S. in any of the outbreaks.

If you observe cows salivating or hanging their tongues out of their mouths or notice ulcers in their mouths, on their coronary bands or on their teats contact your veterinarian immediately. In the event that another outbreak of Vesicular Stomatitis occurs this year, don't believe that what you might be seeing in your animals is "just VS". It might be VS, it might be FMD, either way it can cause devastation to your herd and to the entire dairy industry.

For the latest information on Foot and Mouth Disease, visit the following websites:
<http://www.aphis.usda.gov/>
<http://www.maff.gov.uk/>

Are you having trouble explaining the difference between BSE and FMD to people not associated with animal agriculture? A fact sheet outlining the differences prepared by the Colorado Department of Agriculture is included with this newsletter.

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HBS cases should consider several steps to investigate the problem. First, document by careful post mortem exam and sampling that the disease is really HBS, and not some other condition. Second, evaluate carefully the feeding program with special attention to energy density and fiber composition of the ration. Third, sample feed components for bacteriological culturing to determine if there are specific feedstuffs with overgrowth of Clostridium.

As mentioned above, there is insufficient knowledge about this problem to allow conclusive statements about cause. Further, we do not yet have effective treatments or preventive measures, although some general comments can be made. First, it is very important to not contaminate feed with dirt or manure, to help avoid this problem and others. Second, treatment success will be very unlikely unless it is implemented very early in the disease process. Such treatment should include high dose antibiotics, anti-inflammatory drugs, and Clostridium antitoxin. Currently, there is no vaccine approved for use in cattle in the United States that contains *C. perfringens* type A. Bacterin-toxoid vaccines for types C and D are currently available for use but appear to induce little cross-protection against HBS.

Research at CSU – At CSU-ILM we have been monitoring cases, working with producers and veterinarians to accumulate herd information, and have been developing improved methods to identify Clostridium and its toxins.

Several other groups are also working to more clearly define the characteristics of affected cows and herds. These efforts will help determine whether HBS is one disease with a specific etiology, or rather a collection of several entities that are closely related. There are several groups working to improve vaccine efficacy, but this will depend both on vaccine characteristics as well as whether the disease is a primary clostridial problem. As further information is developed we will keep you informed.