

Risk Assessment and Strategic Management for the Reduced Incidence of Neonatal Calf Diarrhea

Mel Pence, DVM, Adjunct Instructor, Iowa State University, College of Veterinary Medicine

John U. Thomson, DVM MS, Professor, Iowa State University, College of Veterinary Medicine

Summary

Risk factors associated with calf diarrhea were identified and management strategies were developed to reduce their impact on the incidence of disease. 541 cows were bred to calve. Between March 3 and May 15, 1998. A field investigation checklist was utilized to assess the risk factors in the herd for this year. Risk factors identified were: parity, different origin of the groups of cattle, weather, poor body condition score and intensity of calving. These cattle were 46% first calf heifers, and the remainder were mature cows. The first calf heifers were from 5 different sources, and the mature cows were from the Iowa State University (ISU) Rhodes farm. The groups had never been commingled.

Body condition scores of the cattle averaged below 5, and there was a high maintenance requirement because of muddy conditions and frequent wet hair coats due to continuing cold rains. The first 195 cows were due to calve in a total of 30 days, and 200 of the heifers were bred to calve in 26 days. Procedures were developed to allow a one-way flow of the cow/calf pairs through calving areas to reduce contact of the calves with possible large numbers of pathogens and separate first-parity heifers from the mature cows.

Introduction

Control of contagious diseases in neonatal calves is a major concern to the beef industry. Levels of management and quality of facilities vary throughout the beef industry. Conditions and parity distribution vary from year to year. The choice of disease-control measures ultimately depends on the attitude of the managers and the facilities. By assisting managers in identifying risk factors and potential consequences of how they are handled, a reasonable level of acceptable risk can be achieved.

Materials and Methods

A field investigation checklist, developed by the bovine section of the Veterinary Diagnostic and Produc-

tion Animal Medicine Department at ISU, was utilized to identify risk factors that could contribute to neonatal diarrhea. The checklist was designed to be used retrospectively during an outbreak or pro-actively to identify and manage risk prior to a neonatal diarrhea outbreak. The checklist is on line, is updated as needed, and can be accessed on the web at <http://www.vdpam.iastate.edu/PAM/outbreak.htm>.

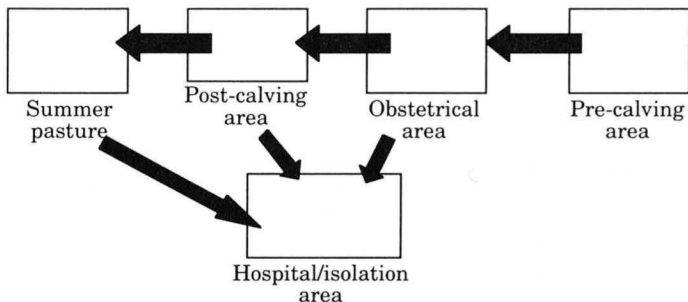
In February 1998 the ISU Rhodes research farm had 290 bred, mature cows that were used as potential embryo recipients, and 251 virgin heifers were artificially inseminated to develop a herd of 400 foundation cows. That is 100 more cows than normally were calved at the Rhodes farm. The heifers were from 5 different sources. To reduce the likelihood of neonatal diarrhea, the heifers were divided into 2 groups and not commingled with the cows until all the calves were at least 3 weeks old. Calves from heifers have a higher risk of experiencing neonatal diarrhea.¹

The mature cow herd was calved at the north place and the heifers were kept in 2 groups. One heifer group was calved at the middle place and did not have contact with the other heifer group or the cow group. Movement of all cattle was to be one-directional. Once they were moved from a location, they were not to return to that location. Reducing the number of cows in a single group from 541 to 290 and 2 groups of 125, the potential for neonatal diarrhea was reduced. Groups of 50 or fewer cows would have been better, but the facilities for feeding and handling the cattle in muddy conditions would not allow that cow density. An isolation area was developed at each calving area to treat sick calves and house at-risk calves that had a difficult birth. Once calves entered the isolation area they were not to be commingled with the herd until all calves were at least 3 weeks old. Cows were to be placed in a pre-calving area and moved into the calving pasture approximately 2 weeks prior to calving. This was done to reduce contamination of the calving area with pathogens from adult carriers.²

Calving dates were known on the embryo-transfer cows and AI heifers. Once the cows or heifers had calved, they were to be moved into the post-calving areas. (Figure 1). Each of the 3 groups needed a pre-calving area,

an obstetrical area, an isolation area and a post-calving area. To reduce the labor required at night, all pre-calving cows and heifers were only given access to feed from 4 pm to 6 am. This reduced the number of calves born at night. These

Figure 1. Proposed one-way calf flow



(Calves leave isolation area only after all calves are over 3 weeks old)

recommendations were followed except the isolation area for both groups of heifers was a single area, and the calves were kept for 3 weeks and then placed back into their original group.

Results and Discussion

As a result of risk assessment, management decisions were made that reduced a possibly devastating neonatal diarrhea problem. Twelve calves were treated for a variety of diseases. Only 2 calves died of diarrhea-related causes.

Conclusion

Risk identification and assessment of management factors can be used to reduce the incidence of neonatal diarrhea. Risk factors vary between farms and years, so individualized assessments need to be made yearly.

References

1. Schumann, FJ, Townsend, HG, and Naylor, JM. 1990. Risk Factors for Mortality from Diarrhea in Beef Calves in Alberta. *Can J Vet Res.* 54:366-372.
2. Clement JC, King ME, Salman MD, Wittum TE, Casper HH, and Odde KG. 1995. Use of Epidemiologic Principles to Identify Risk Factors Associated with the Development of Diarrhea in Calves in Five Beef Herds. *JAVMA.* Vol 207, No. 10:1334-1338.