Use of Risk Factors to Alter Management for Reduction of Neonatal Calf Diarrhea Incidence

A. S. Leaflet R1649

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Summary
Risk factors associated with calf diarrhea were identified and management strategies were developed to reduce the impact of these risk factors on the incidence of disease.
Five hundred forty-one females were bred to calve between March 3 and May 15, 1998. Risk factors identified included: parity, the different origin of the groups of cattle, weather, poor body condition score, and intensity of calving. These cattle were forty-six percent first calf heifers, the remainder of the cattle were mature cows. The heifers were from five different sources, and the mature cows were from the ISU Rhodes farm. The groups had never been commingled. The body condition scores of the cattle averaged below five, and there was a high maintenance requirement because of muddy conditions and frequent wet hair coats due to the continuing rains. Two hundred of the heifers were bred to calve in twenty-six days, and the first one hundred ninety-five cows were due to calve in a total of thirty days. Procedures were developed to allow a one-way flow of the cow/calf pairs through calving areas to reduce the 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. The choice of disease control measures ultimately depends on the attitude of the manager and the facilities. By assisting management in identifying risk factors and potential consequences of how those risk factors are managed, a reasonable level of acceptable risk can be achieved.

Materials and Methods
In February of 1998 the ISU Rhodes research farm had two hundred ninety bred mature cows that were used as potential embryo recipients, and two hundred fifty-one virgin heifers were artificially inseminated to develop a cowherd of four hundred foundation cows. This was about one hundred more cows than were normally calved at the Rhodes farm. The heifers were from five different sources. To reduce the likelihood of neonatal diarrhea the heifers were divided into two groups and not commingled with the cows until all of the calves were at least three weeks old. Calves from heifers have a higher risk of experiencing neonatal diarrhea. The mature cowherd was calved at the north place and the heifers were kept in two groups. The heifers were calved at the middle place and did not have contact with heifers from 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 five hundred forty-one to a group of two hundred ninety and two groups of one hundred twenty five the potential for neonatal diarrhea was reduced. Groups of fifty or less cows would have been better, but the facilities for feeding and handling the cattle in the 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 three weeks old. Cows were to be placed in a pre-calving area and moved into the calving pasture approximately two weeks prior to calving. This was done to reduce contamination of the calving area with pathogens from adult carriers. 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 three 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 given access to feed only from 4:00PM to 6:00AM. This reduced the number of calves born at night. These recommendations were followed except the isolation area for both groups of heifers was a single area and the calves were kept for three 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. A total of twelve calves were treated for a variety of diseases. Only two calves died of diarrhea related causes.

Implications
The results of risk identification and assessment of management factors can be used to reduce the incidence of neonatal diarrhea. Risk factors vary between farms and individualized assessments need to be made.

Figure 1. Proposed <u>one-way</u> calf flow

Summer pasture   Post-calving area   Obstetrical area   Pre-calving area

(Calves leave isolation area only after
er 3 weeks old)

Hospital/isolation area