

Managing Calf Diseases An HACCP Application

A. Potential Problems

1. Excessive exposure to pathogens
2. Inadequate specific and non-specific resistance in the calf

B. Critical Control Points for Problems

1. Excessive exposure to pathogens
 - i. Coliform contamination of colostrum
 - ii. Umbilical cord treatment
 - iii. Calving yard or box management
 - iv. Feeding equipment and personnel
 - v. Calf environment (including other bovines)
2. Inadequate resistance in the calf
 - i. Colostrum: volume fed
 - ii. Colostrum: quality fed
 - iii. Colostrum: timing of feeding
 - iv. Environmental stress
 - v. Calf nutrition including feeding practices

C. Monitoring Requirements for Critical Control Points

1. Prevent excessive exposure to pathogens
 - i. Quarterly sample colostrum as fed for at least five calves for total and faecal coliform counts.
 - ii. Quarterly summarize the number of navel infections treated.
 - iii. Quarterly summarize the length of time calves remain in the calving yard or box.
Estimate frequency that calving areas are cleaned or bedding added to calving area.
 - iv. Quarterly sample milk or milk replacer as fed for at least five feedings for total and coliform bacteria counts.
 - v. Determine proportion of calves that can touch nose-to-nose
Estimate proportion of calf pens or hutches that have wet bedding.
2. Inadequate resistance in the calf
 - i. Quarterly sample blood in heifer calves 1 to 7 days old to determine blood serum total protein (BSTP) levels.
Quarterly summarize amount of colostrum actually fed to newborn heifer calves.
 - ii. Quarterly sample blood in heifer calves 1 to 7 days old to determine BSTP levels.

- Quarterly estimate IgG level in 10 or more samples of colostrum fed to newborn heifer calves.
- iii. Quarterly sample blood in heifer calves 1 to 7 days old to determine BSTP levels.
Quarterly summarize the time interval between birth and first colostrum feeding.
 - iv. Quarterly estimate length of time heifer calves remain in adult cow environment.
Seasonally estimate adequacy of ventilation so that infectious agents are reduced in both quantity and duration
Seasonally review degree of heat/cold stress.
 - v. Seasonally review maintenance and growth needs and compare to feeding schedule.
Seasonally estimate average daily gain from birth to weaning.

D. Critical Limits for Critical Control Points & Action when Critical Limits are Exceeded

1. Preventing excessive exposure to pathogens
 - i. Any colostrum sample greater than 10,000 cfu/ml coliform bacteria, or more than one sample greater than 5,000 cfu/ml coliform bacteria, or any sample greater than 500,000 total bacteria.

Action: Review protocol compliance for (a) premilking routine in parlor, (b) sterilising parlor colostrum collection equipment, (c) handling post-collection colostrum, (d) sterilising colostrum feeding equipment.
 - ii. Greater than 5% treatable navel infections
Action: Review protocol compliance for navel dipping.
 - iii. Greater than 10% of the calves remain in calving yard or box for more than 2 hours.

Action: Review protocol compliance for monitoring calving and removing newborn calves from calving yard.

Calving yard or box is not cleaned between each calving or fresh bedding is not added to calving area daily.

Action: Review protocol compliance for maintaining a clean calving area.

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- iv. Any milk or milk replacer sample greater than 10,000 cfu/ml coliform bacteria, or more than one sample greater than 5,000 cfu/ml coliform bacteria, or any sample greater than 500,000 total bacteria.

Action: Review protocol compliance for (a) sterilising milk replacer mixing equipment, (b) sterilising milk replacer feeding equipment, (c) handling milk or milk replacer at feeding time.

- v. Greater than 5 percent of the calves can touch nose-to-nose (individual housing only).

Action: Review housing options for reducing nose-to-nose contact.

Greater than 5 percent of the individual pens/hutches have wet bedding.

Action: Review compliance for maintaining dry hutch / pen bedding.

2. Poor resistance in the calf

- i. BSTP values: less than 90% at least 5.2, less than 80% at least 5.5

Action: Review compliance for volume of colostrum fed to newborn heifer calves.

Less than 90% of calves receive at least 3.5L of colostrum?

- ii. BSTP values: less than 90 percent 5.2, less than 80 percent 5.5

Colostrum IgG levels are below 50 gm/liter for more than 10% of newborn heifer calves fed.

Action: Review colostrum IgG quality control protocol compliance:

- (a) Are 80% or more of fresh animals milked in less than 6 hours post-calving?
- (b) Is cow colostrum rather than that from heifers fed or saved for heifer calves?
- (c) Is a Colostrometer or Brix refractometer used regularly to divert low IgG colostrum to bull calves?

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- iii. BSTP values: less than 90 percent 5.2, less than 80 percent 5.5

Time interval between calving and first milking

- (a) less than 90% of cows milked by 4 hours after calving.
- (b) less than 70% of cows milked by 2 hours after calving.

Action: Review protocol compliance for monitoring calving;
Review compliance for minimizing time interval between calving and first milking.

- iv. Time spent in adult cow environment:

- (a) less than 90% of calves moved out of adult cow environment in less than 4 hours.
- (b) Less than 70% of calves moved out of adult cow environment in less than 2 hours.

Action: Review compliance for monitoring calving and removing calves from adult cow environment.

Air exchange is less than 4cmm/450kg animal load (winter) or 14cmm/450kg animal load (summer)

Action: Modify barn to comply with minimum standards

Number of days hutch/pen environmental temperature is:

- (a) Above 32°C is greater than 20.
- (b) Below -10°C is greater than 20.

Action:

Heat: modify housing to increase air movement

Cold: consider blankets for calves less than 4 weeks old

- v. Calves on all milk ration do not receive enough energy to cover seasonal maintenance needs and allow 700g DLWG.

Calves on mixed ration (milk and concentrates) do not receive enough energy to cover seasonal maintenance needs and allow 900 DLWG.

Calves do not meet growth goal of 800 DLWG.

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Action: Modify ration (quality and/or quantity) to adequately meet both seasonal maintenance needs and growth requirements.

Example developed by Sam Leadley based on paper by Shelia McGurik entitled, "Managing Calf Diseases" presented at Professional Dairy Heifer Growers Association Annual Meeting, 1998. Comments welcome 585-591-2660, fax 585-591-2898 email smleadley@yahoo.com Attica Vet. Assoc., 116 Prospect St., Attica NY 14011