

A black and white cow is standing over a newborn calf lying in straw. The calf is dark-colored with some lighter patches and appears to be wet or freshly born. The cow is looking down at the calf. The scene is set in a barn or stable with straw bedding.

# Managing the High Risk Calf

Sheila M. McGuirk, DVM, PhD  
School of Veterinary Medicine  
University of WI

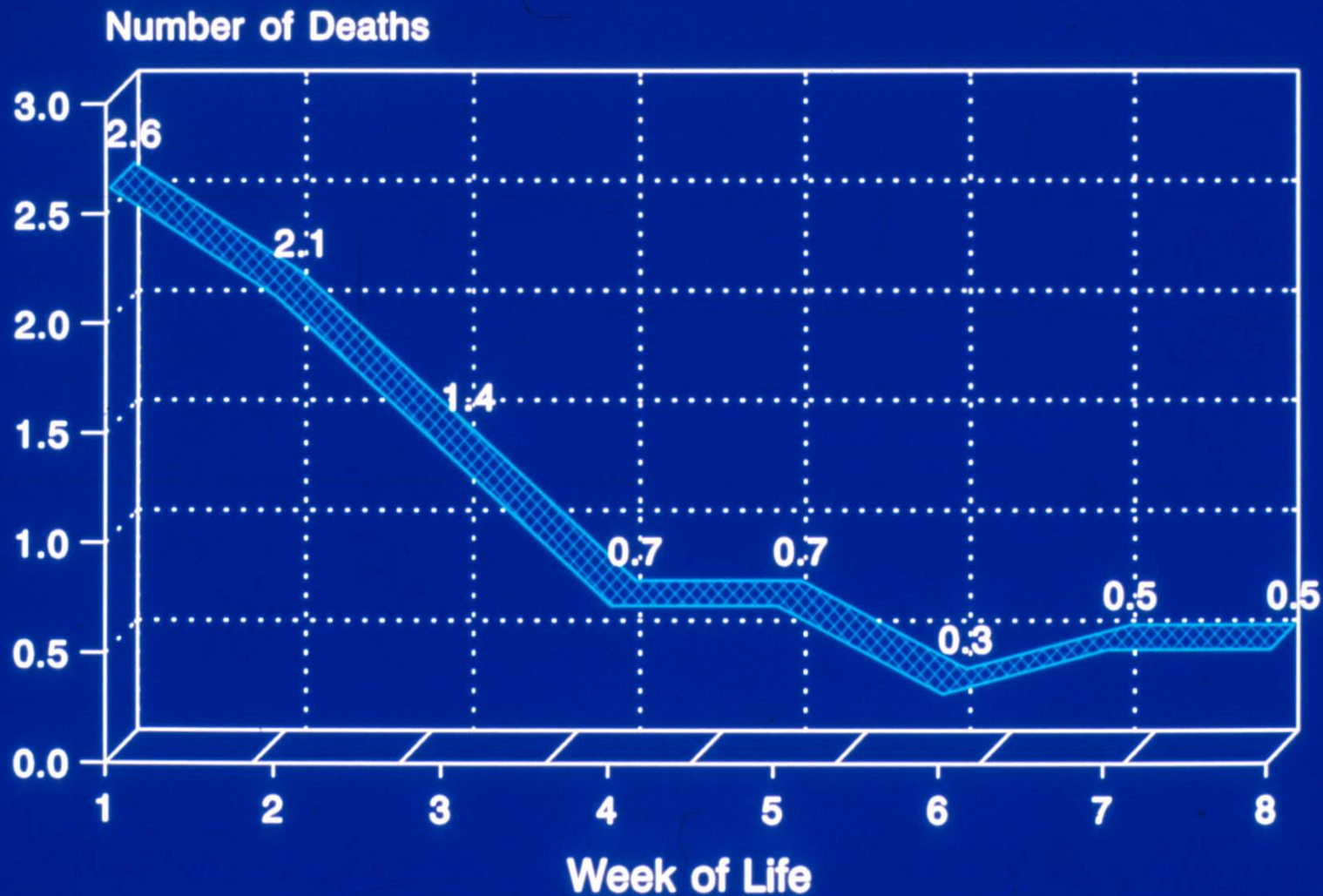
# Early Observations and Care





# National Dairy Heifer Evaluation Project

## Deaths per 1000 Calf-Days at Risk by Week



# Average Dairy



- Given herd turnover rate, calving interval, stillbirths, deaths and culling -  
**3-4% surplus heifers**



# Normal newborn calves

- ◆ Uncomplicated vaginal delivery
- ◆ Time to stand < 1 hour
- ◆ Good mothering
- ◆ Body temperature maintenance
- ◆ Active suckling < 2 hours
- ◆ Attentive, responsive, active

# Initial Examination



- Clean mouth and nose
- Make sure it is breathing
  - If not, check heart beat
  - Look at eye
- Check navel
  - Bleeding
  - Hernia
  - Dip
- Check mouth
- Extra teats



# Newborn calf adaptation

## Organ system changes

- Respiratory
- Cardiovascular
- Metabolic
- Fluid balance
- Thermoregulation
- Musculo-skeletal
- Neurologic

# First Stages of Adapting: Warming Up

- Blood circulates through brown fat to increase body temperature
- Shiver to increase body temperature
  - Low oxygen
  - Low blood sugar calves don't shiver
- Attempt to stand



# Abnormal Calf Adaptation

Dystocia

Premature birth

Illness in dam

Other causes

# Difficult births = 1/3 to 1/2 of calf losses

Calf is 4 - 5 X more likely to die

(Azzam, 1993)

60 % of total calf loss

(Bellows, 1987)

3.8 X more likely to develop  
other disease

(Wittum, 1991)



# A Basic Care Package



- Colostrum
- Comfort
- Consistency
- Cleanliness
- Calories

# Colostrum

- Tasks

- Remove the calf from the cow within 30 min
- Have 4 quarts of good colostrum from one cow
- Warm colostrum
- Give it to the calf as soon as it wants to suck but not longer than 4 hours

- Training

- Importance of removing the calf is to avoid manure meals
- How to use an esophageal feeder
  - Calf position
  - Holding the head
  - Giving the right amount

# What is GOOD colostrum?

- From a cow or first calf heifer is healthy
- Donor is vaccinated
- Cow or first calf heifer has been in prefresh group 2 - 3 weeks
- Udder is prepared just like milk was going to the saleable milk tank
- Cow is milked within 4 hours of calving
- If colostrum isn't fed right away, it is in refrigerator
- If colostrum is older than 5-days, it is thrown out



**If there isn't enough colostrum, we need frozen colostrum or 2 packs of colostrum replacement product.**



**ACQUIRE**  
COLOSTRUM REPLACEMENT

### Administration



**LAND O LAKES®**

# COLOSTRUM REPLACEMENT

**≥100 GRAMS  
BOVINE IgG**

**A one dose replacement for maternal colostrum**  
**Made from bovine colostrum**

U.S. Veterinary Permit No. 612A  
Contains 1 dose (16.6 oz/470 g)  
Veterinary Use Only

# Using the Esophageal Feeder

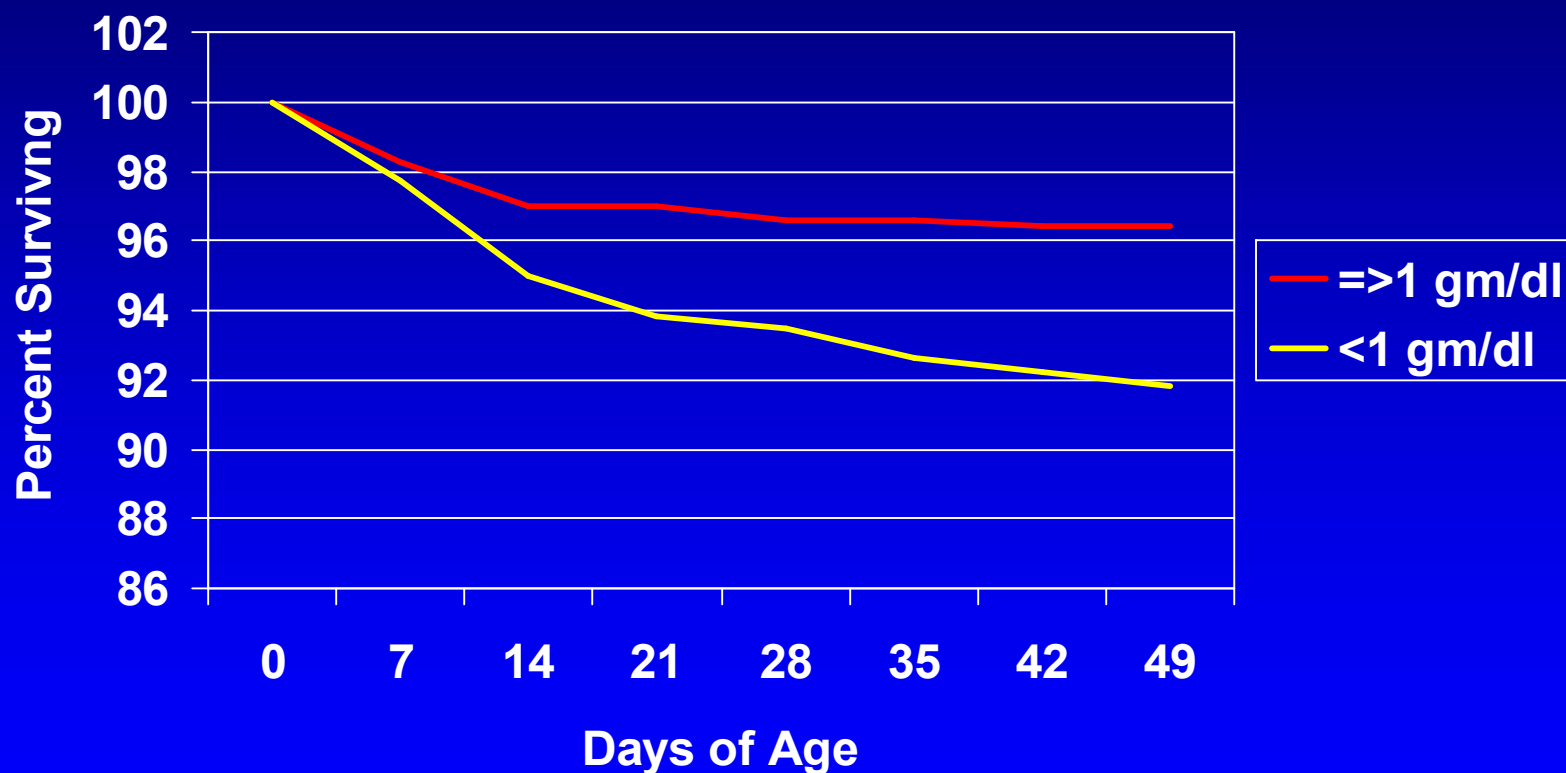


Calf standing



Nose below ears

# Comparison of Calf Survival Rates by IgG Concentrations





# Comfort



- Straw for newborns
  - Critical temperature range is 55-75 F
  - Use less energy to stay warm and have more to grow and fight disease
- Deep, dry bedding 3" deep

# Comfort



# Consistency

- Same feed
  - What's in it
  - How it's mixed
  - Temperature
  - Way it's fed
- Same time each day
- Same pattern
- Water given within 20-30 minutes of milk or before sleeping
- Same pen





# Cleanliness





# Cleanliness

- Maternity pen
- Cows in maternity pen
- Transport cart
- People moving and handling calves
- Warming, holding or drying area
- Calf housing
- Feeding equipment
- Feeds



**Communal warming/drying areas:  
only for calves taken out of  
calving area immediately!**





# First Manure Meal







**Second Manure Meal**





**Third manure meal!**



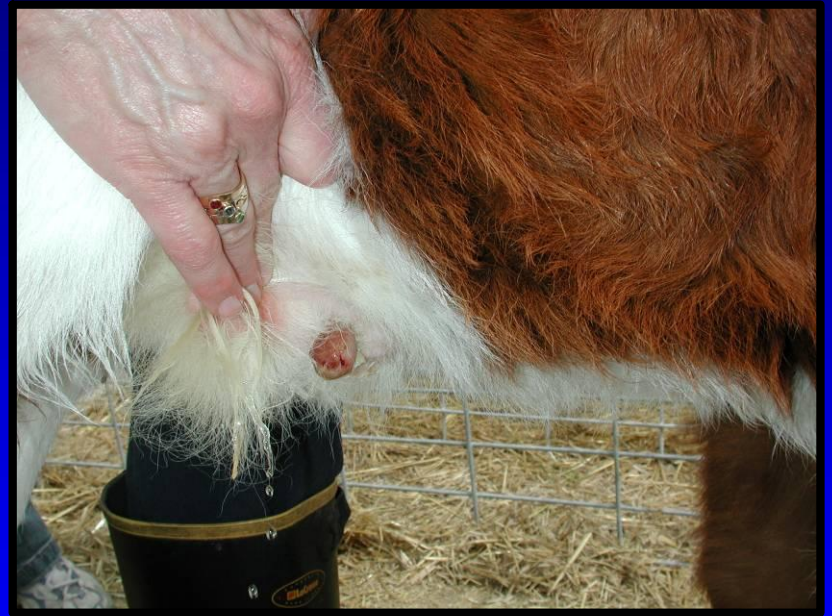
**Fourth Manure Meal?**





# Navel Care

- Clean is the primary goal
- If you dip, it must be clean when you dip
- Dip the navel, not the skin



# Navel Dipping



- Life after iodine
- Dilute betadine may not be as effective
- Nolvasan
  - 1 part Nolvasan to 4 parts water



# Calories



# Liquid Feed for Calves

	Protein	Fat
Whole Milk	26-27%	30%
Conventional Milk Replacers	20-22%	10-22%
Intensive Milk Replacers	26-30%	15-20%

Feed to the genetic potential.

# Cold Weather Feeding



- Add another meal of the same mix
  - Don't concentrate powder
  - Added ingredients are not as good as a third meal
  - Calves still need water
- Always have starter in front of the calf



# Blankets Help





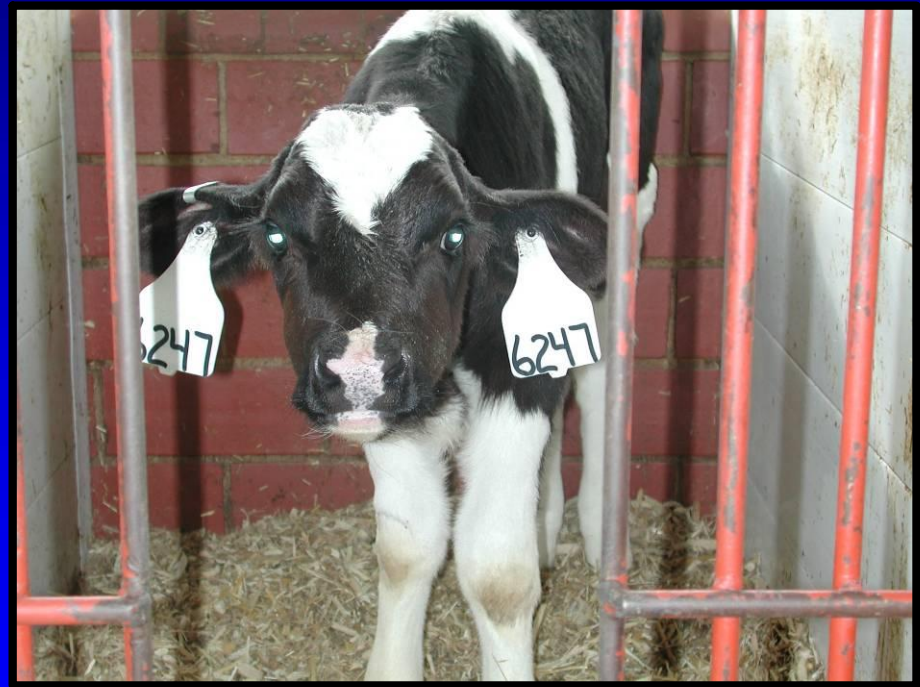
# Feed the sick calves in cold weather

- Don't hold milk from a calf with diarrhea
- Offer warm water 20-30 minutes after milk
- Small amounts of fresh starter
  - Dehydration
  - Malnutrition
  - Low blood sugar
  - Salt toxicity



# Find the sick calves!

- Early detection of disease is a challenge, especially respiratory disease
  - Appetite change may be very subtle
  - Fever isn't reliable
- Watch the calves that don't lie down after eating



# Monitoring Rectal Temperature

- Calves regulate at different levels so learn their normal
  - Increase of 1.5 deg is important if it lasts
  - Decrease in 1 deg is important
- Frequently the temperature change precedes the disease by 12-24 hours



Calf Health Scoring Criteria			
0	1	2	3
<b>Rectal temperature</b>			
100-100.9	101-101.9	102-102.9	≥103
<b>Cough</b>			
None	Induce single cough	Induced repeated coughs or occasional spontaneous cough	Repeated spontaneous coughs
<b>Nasal discharge</b>			
Normal serous discharge	Small amount of unilateral cloudy discharge	Bilateral, cloudy or excessive mucous discharge	Copious bilateral mucopurulent discharge
			
<b>Eye scores</b>			
Normal	Small amount of ocular discharge	Moderate amount of bilateral discharge	Heavy ocular discharge
			
<b>Ear scores</b>			
Normal	Ear flick or head shake	Slight unilateral droop	Head tilt or bilateral droop
			
<b>Fecal scores</b>			
Normal	Semi-Formed, pasty	Loose, but stays on top of bedding	Watery, sifts through bedding
			





### Calf Health Scoring Chart

**Farm Name:** \_\_\_\_\_

Date: \_\_\_\_\_

[illegible]

# Know who is most susceptible



- Septicemia
  - Birth to 10 days
- Diarrhea
  - From birth to 14 days
- Respiratory
  - From 3 weeks through weaning
- Navels
  - 5 days to 14 days

# Find the fecal scores 2, 3 or with blood



Extra  
feeding of  
electrolytes

Two extra  
feedings of  
electrolytes

Antibiotics if  
bloody or  
sick



# Fluid Therapy is the Pivotal Component

- Fluid imbalance
  - Diarrhea
  - Decreased intake
  - Increased metabolic rate
- Calves have higher percent total body water but more susceptible to dehydration



# Fluid Homeostasis

- What goes out must be replaced
- Fluid balance for metabolism, transport of nutrients, digestion, absorption and elimination of wastes



# Daily Water Requirement

- 10% of body weight
- Not met solely by milk intake
- Supplemental water is needed
- 40 kg (88 lb) calf needs 4 L water
- 4 L water  $\neq$  4 L MR





# Sick Calf Fluid Needs















- Reduced intake
- Enhanced metabolic needs
- Increased losses
  - Diarrhea
  - Fever
  - Respiratory losses
- Not uncommon to have 10-15% dehydration with diarrhea

# Dehydration in Calves

- Acidosis
- Electrolyte abnormalities
- Hypoglycemia
  - » Depression
  - » Weakness
  - » Hypothermia
  - » Shock
  - » Organ dysfunction
  - » Coma
  - » Death



# Respiratory Scoring System To Find the Calves

Calf Health Scoring Criteria			
0	1	2	3
<b>Rectal temperature</b>			
100-100.9	101-101.9	102-102.9	≥103
<b>Cough</b>			
None	Induce single cough	Induced repeated coughs or occasional spontaneous cough	Repeated spontaneous coughs
<b>Nasal discharge</b>			
Normal serous discharge	Small amount of unilateral cloudy discharge	Bilateral, cloudy or excessive mucus discharge	Copious bilateral mucopurulent discharge
			
<b>Eye scores</b>			
Normal	Small amount of ocular discharge	Moderate amount of bilateral discharge	Heavy ocular discharge
			
<b>Ear scores</b>			
Normal	Ear flick or head shake	Slight unilateral droop	Head tilt or bilateral droop
			

[http://www.vetmed.wisc.edu/dms/fapm/fapmtools/8calf/calf\\_respiratory\\_scoring\\_chart.pdf](http://www.vetmed.wisc.edu/dms/fapm/fapmtools/8calf/calf_respiratory_scoring_chart.pdf)

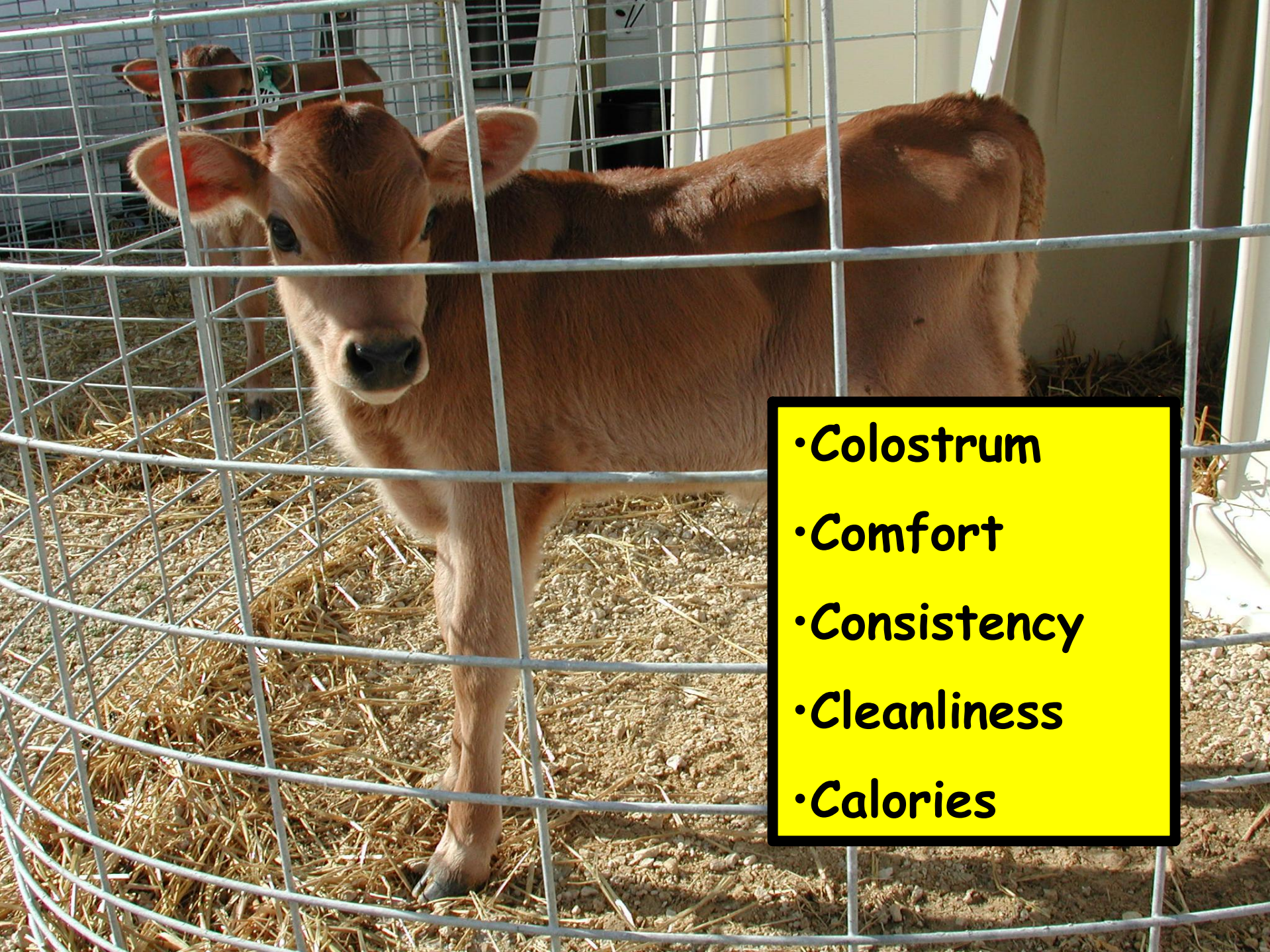


# Best Scoring Results

- Twice weekly from 3 weeks to weaning
- After treating the calf for 5 to 6 days
- Before they go to a group pen







- Colostrum
- Comfort
- Consistency
- Cleanliness
- Calories