

Calving Management Practices for Dairy Herds

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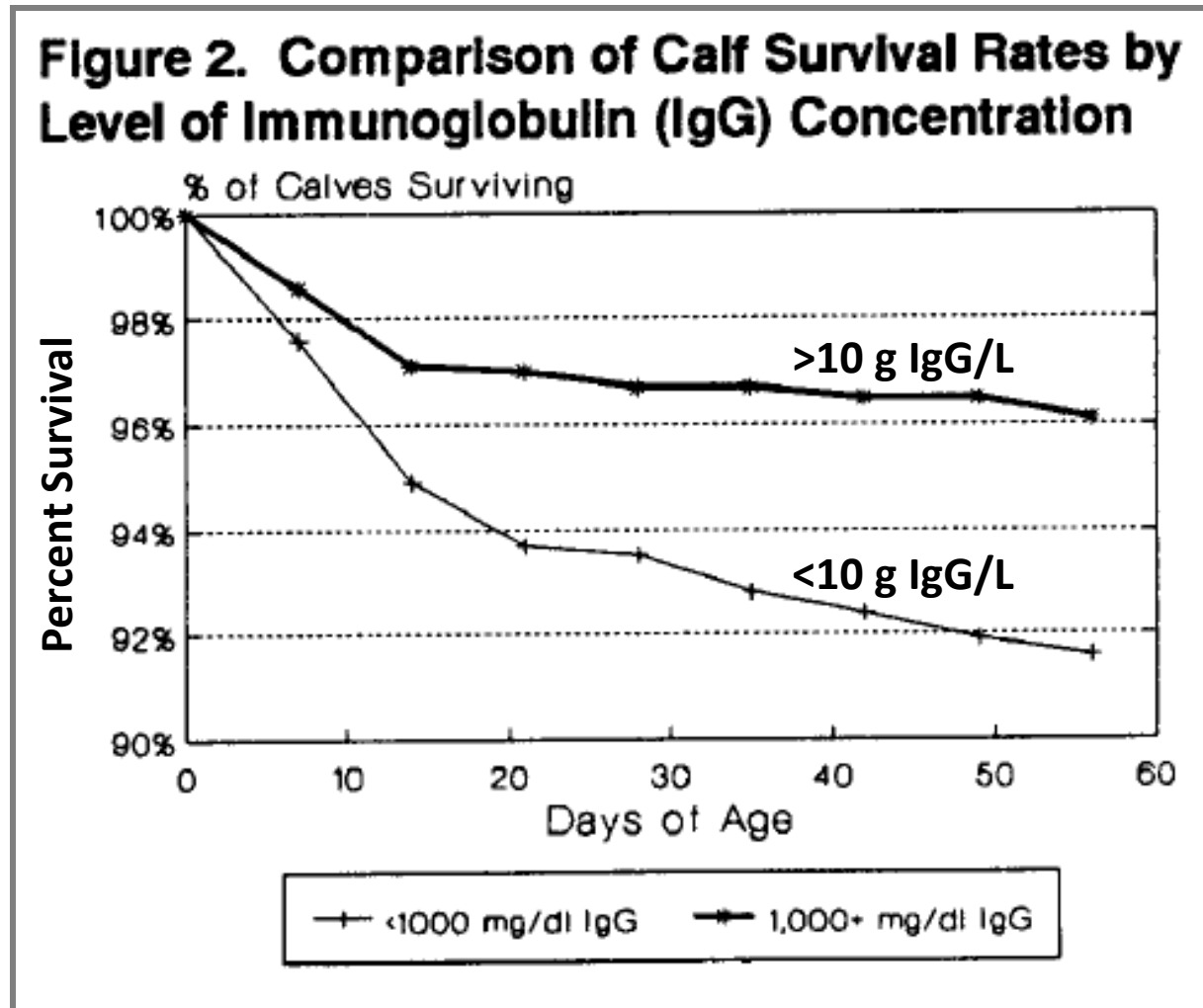
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My Job During the Day:

- **Monitoring cows for signs of parturition**
- **Newborn ID and care**
- **Colostrum harvesting (monitoring quality)**
- **Feeding colostrum/milk to calves**
- **Monitoring FPT (total serum proteins)**
- **Cleaning and sanitation**
- **Record-keeping**
- **...**



Effect of Colostrum Management on Calf Survival



(National Dairy Heifer Evaluation Project, NAHMS, 1992)

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Motivators for Best Colostrum Management?

- **Failure of Transfer of Passive Immunity:**
 - Increased sickness risk
 - Increased death loss
 - Decreased weight gain
 - Decreased long-term performance (milk)
 - ...

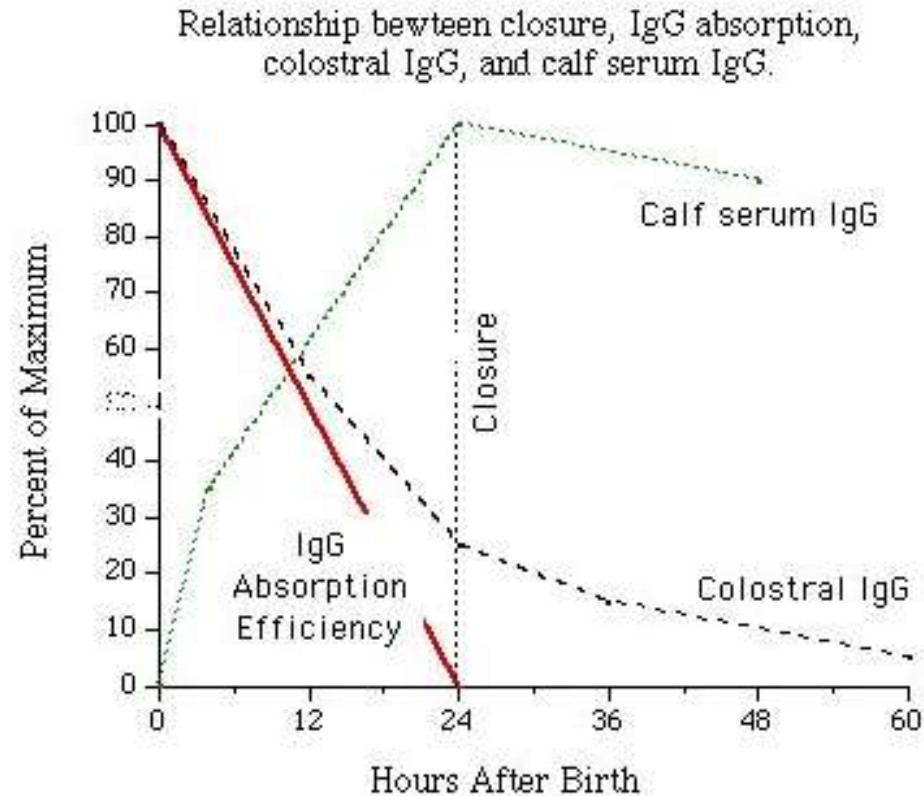


Key Factors Influencing Passive Transfer

- **Quality**
 - >50 mg/mL IgG (50 g/L)
- **Quantity**
 - At least 4 L (1 gallon or 4 qts)
- **Timing**
 - 4 L within 3 hours
- **Clean and sanitation**
 - Minimal bacterial load



Colostrum IgG Absorption in Calves



See Staley and Bush, 1985, J. Dairy Sci. 68:184; Bush and Staley, 1980, J. Dairy Sci. 63:672; Larson et al., 1980 J. Dairy Sci. 63:665.

Timing of Harvest - Colostrum

- **IgG concentration decreased 3.7% each hour after calving**
- **Hygiene practices affect bacterial load**

Feeding Colostrum

- Method: Bottle and esophageal tube
- Type: Fresh, refrigerated, frozen



Monitoring Quality



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Evaluation of a Brix refractometer to estimate serum immunoglobulin G concentration in neonatal dairy calves

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ABSTRACT

The objective of this study was to evaluate the use of a digital Brix refractometer for the assessment of immunoglobulin G concentration in neonatal dairy calves. The refractometer was used to measure the Brix of colostrum and serum. The refractometer was found to be a reliable method for measuring Brix and IgG concentration. The refractometer was used to measure the Brix of colostrum and serum. The refractometer was found to be a reliable method for measuring Brix and IgG concentration.



Parameter	Brix (%)	IgG	Reading at
Colostrum	≥22	≥50 g/L	68 °F/20 °C (Sample & Instrument)
STP	≥8.4	≥5.5 g/dL	

Colostrum Contamination

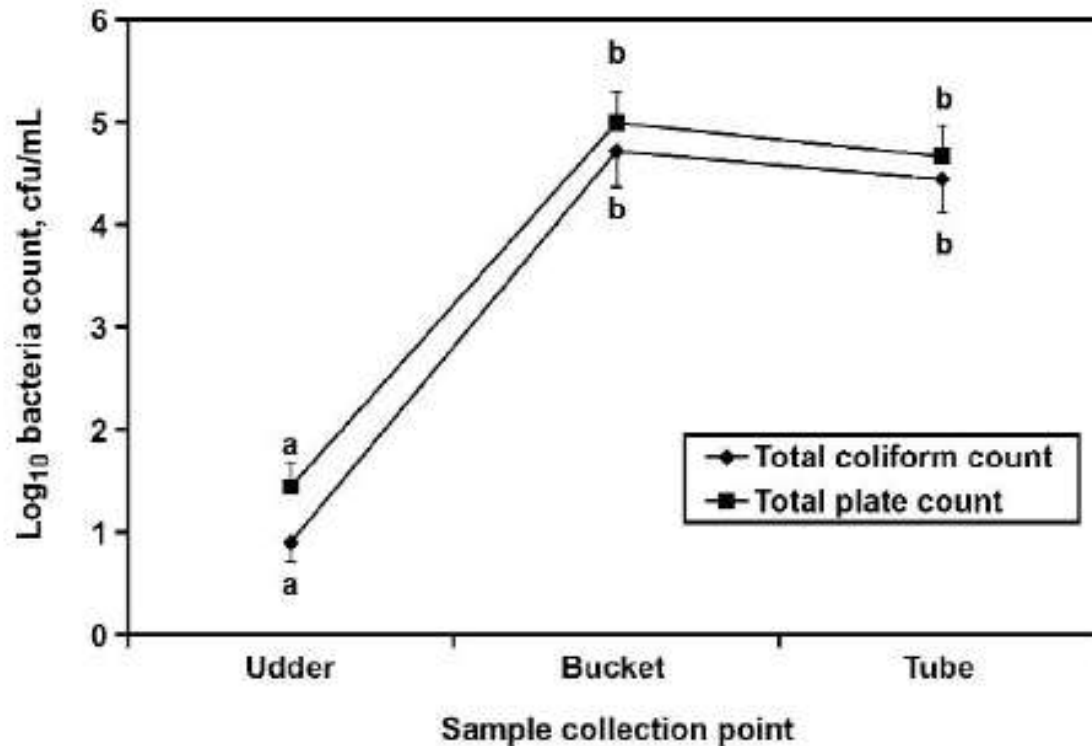


Figure 1. Mean log₁₀ total plate count and mean log₁₀ total coliform count for colostrum samples collected from the udder, the milking bucket, and the esophageal feeder tube. ^{a,b}Different subscripts differ within bacteria type group, $P < 0.05$.

(Stewart et al., 2005)

Fresh or Refrigerated



Potassium sorbate as preservative
Feed refrigerated colostrum within 48 hours

...

(Stewart et al., 2005)

Frozen in 4 L Bags



May be frozen for up to 6 months
Better to store in 2 gallon zip-lock bags
Kills WBCs (lymphocytes)

...

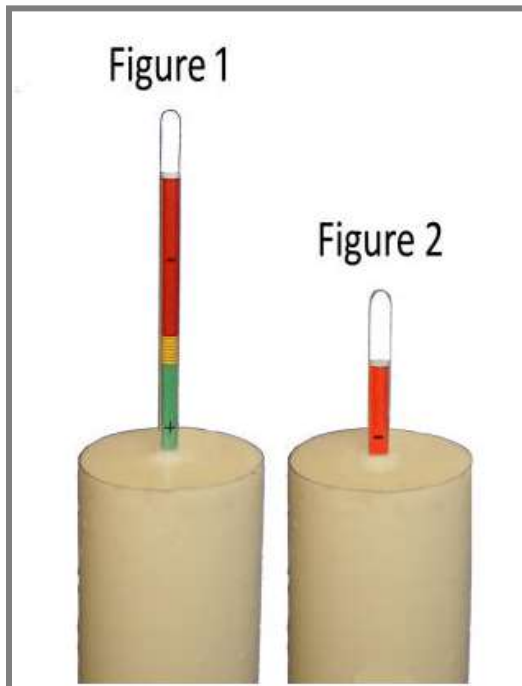
Pasteurization

- 140 °F (60 °C) for 30 min:
 - Reduces count of bacteria without affecting IgG levels
 - No viable *Mycoplasma bovis*, *Listeria monocytogenes*, *Escherichia coli* O157:H7, or *Salmonella enteritidis* could be detected
- 140 °F (60 °C) for 60 min:
 - IgG concentrations not significantly lowered (2-10%)
 - Good IgG absorption
 - Reduction in leukocytes

Measuring Colostrum Quality

Colostrometer:

- Highly dependent on T° of colostrum. should be tested at room T° (20-25 C°)
- Semi-quantitative (colors)



Red: poor quality, Ig < 22 mg/mL

Yellow: moderate quality, Ig 22-50 mg/mL

Green: excellent quality, Ig > 50 mg/mL

Measuring Colostrum Quality



Brix (%)	IgG Conc. (g/L)	Colostrum Quality
< 15	0 - 28	Poor
15 - 20	28 - 50	Fair
20 - 30	50 - 80	Good
> 30	> 80	Very Good



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THANK YOU!



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