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Agriculture and Natural Resources
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Navel Disease: The Silent Killer

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INTRODUCTION



The screenshot shows the USDA Animal and Plant Health Inspection Service website. The header includes the USDA logo and the text "Animal and Plant Health Inspection Service U.S. DEPARTMENT OF AGRICULTURE". A green navigation bar contains links for Home, Our Focus, Resources, Newsroom, Pet Travel, and Blog. Below the navigation bar, there is a green banner with a warning icon and the text "USDA FAQ's and resources about coronavirus (COVID-19). LEARN MORE". The main content area is titled "Animal Health / Monitoring and Surveillance / National Animal Health Monitoring System (NAHMS)". On the left, there is a sidebar menu with the following items: Animal Health, Contact Us, Program Overview, News and Announcements, Animal Disease Information, Emergency Management, Export from the U.S., Import into the U.S., Epidemiology, Laboratory Information and Services, and Monitoring and Surveillance. The main content area is titled "NAHMS Dairy Studies" and includes a sub-header "Last Modified: Sep 28, 2022". Below the sub-header is a photograph of a black and white cow in a field. The text below the photograph reads: "The National Animal Health Monitoring System (NAHMS) Unit conducts the management of United States domestic livestock, equine, aquaculture".

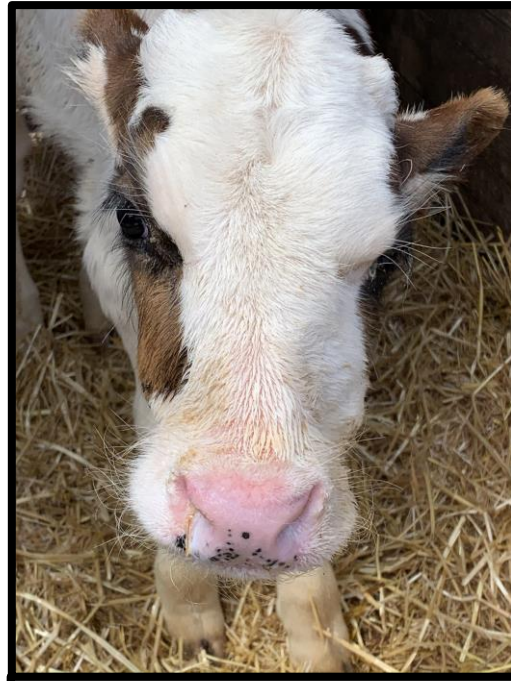
Based on nationwide statistics, raising healthy calves is challenging:

- Morbidity ~ 33.8%
- Mortality ~ 5.0%

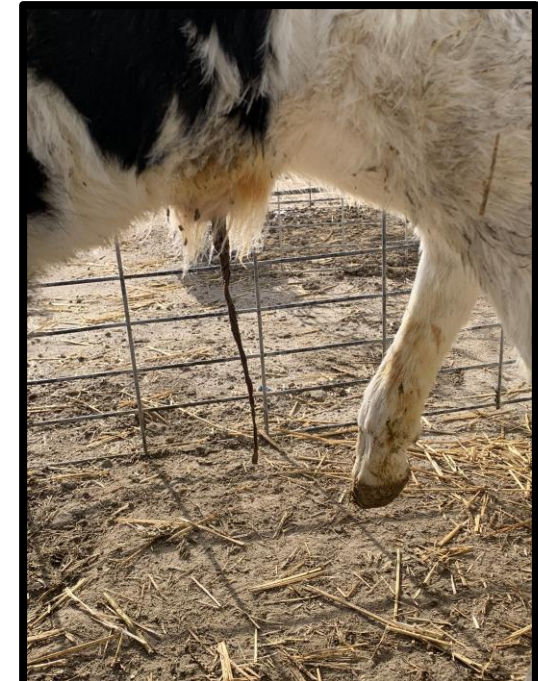
Primary clinical sign of sick calves



21%

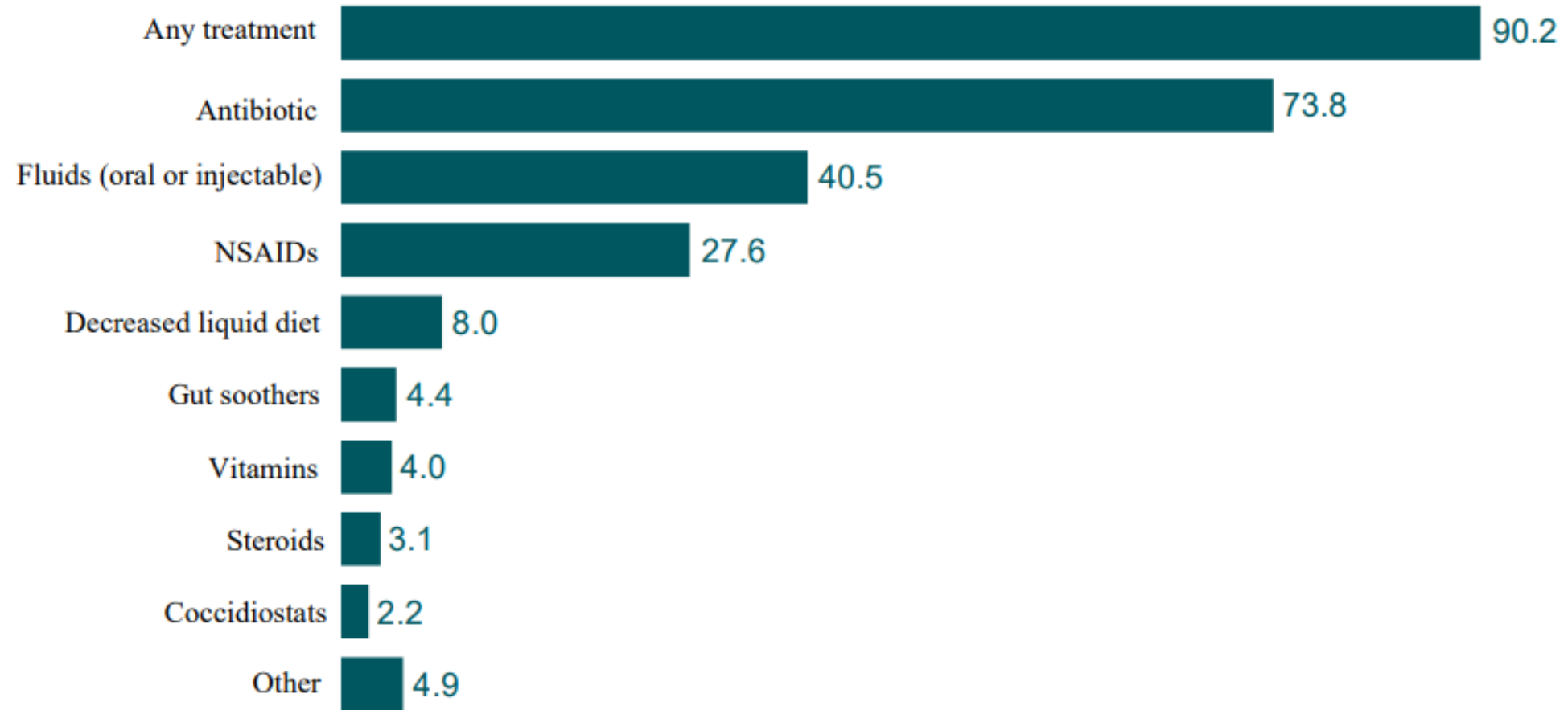


12%



2%

Treatment of sick calves



Percent

Prevalence of Navel Disorders

Prevalence of navel disease based on **dairy producers**:

- US: 2% (USDA, 2016)
- Sweden: 1% (Svensson et al., 2003)

Prevalence of Navel Disorders

Prevalence of navel disease in **research studies**:

- New York: 27% (Wieland et al., 2017)
- Germany: 21% (Dachrodt et al., 2021)
- England: 29% (Johnson et al., 2021)
- Brazil: 42% (Reis et al., 2009)

Prevalence of Navel Disorders



Navel Disease in California

The navel size of a total of 749 female and 156 male calves from 3 to 10 d of age were evaluated. Calves came from 23 different source dairies.

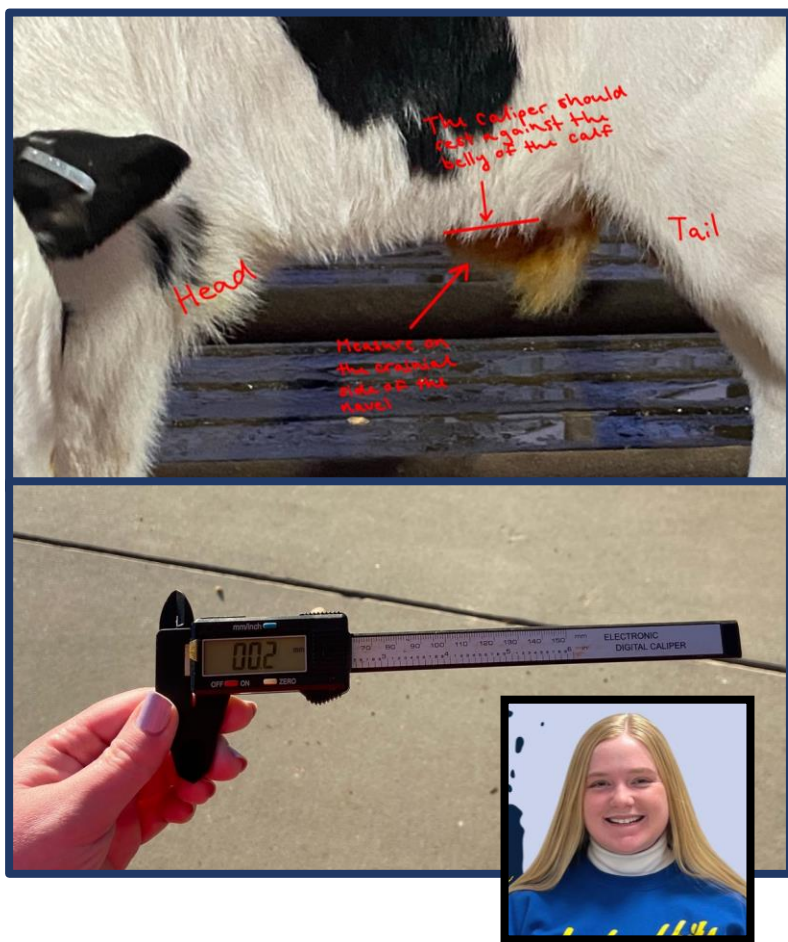
The number of calves enrolled per source dairy was < 20 ($n = 3$), 20 to <40 ($n = 9$), and ≥ 40 ($n = 14$) calves

Navel Disease in California

Calves were raised at:

- 8 sites raised only calves from their farm,
- 2 sites raised calves from their farm plus one, and two farms.
- 1 calf ranch raised calves from 10 source dairies.

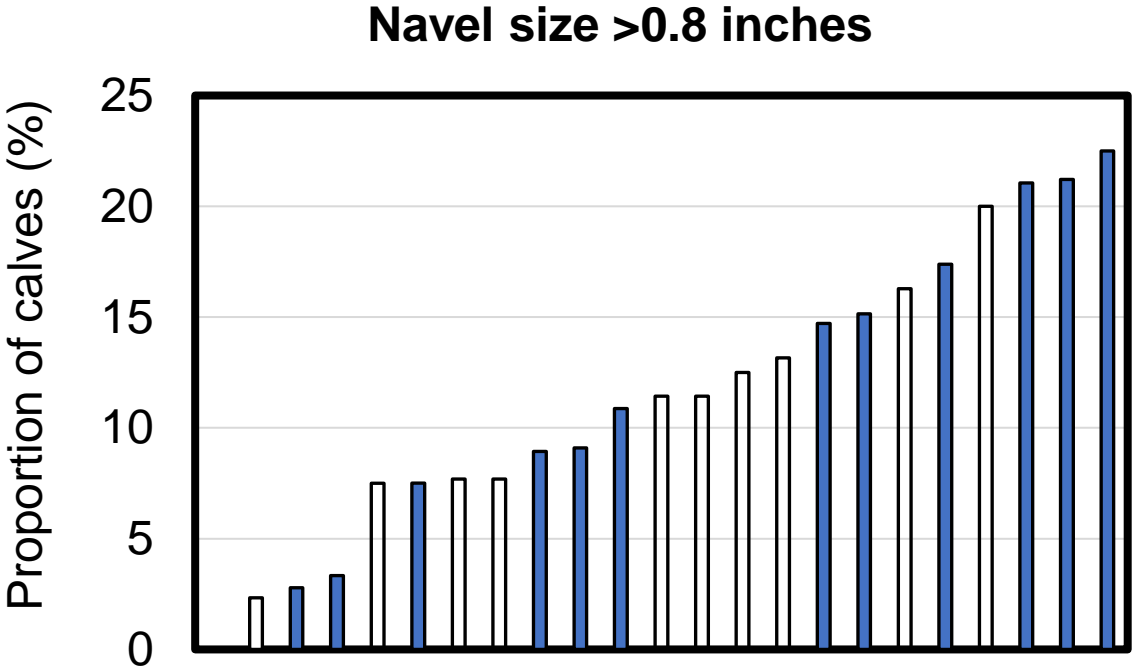
Navel Disease in California



The caliper:

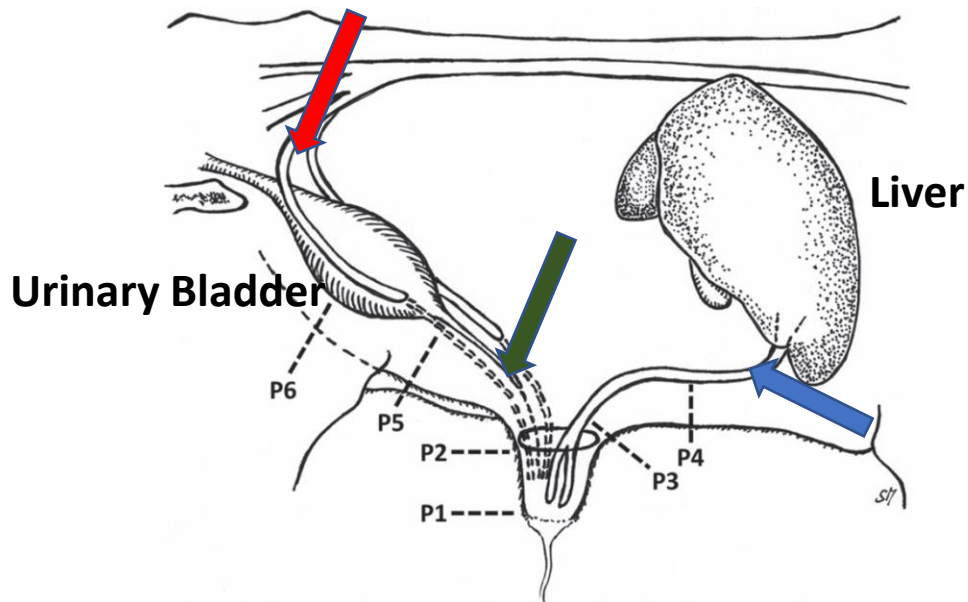
- It was placed on the cranial side of the navel.
- It snugged the navel without compressing it.
- It was carefully removed to read the lateral width.

Enlarged Navels (California)



Each bar represents a source dairy. Blue bars represent source dairies that sent calves to the same calf ranch. The proportion of enlarged navels ranged from 0 to 22%.

What is the Navel?



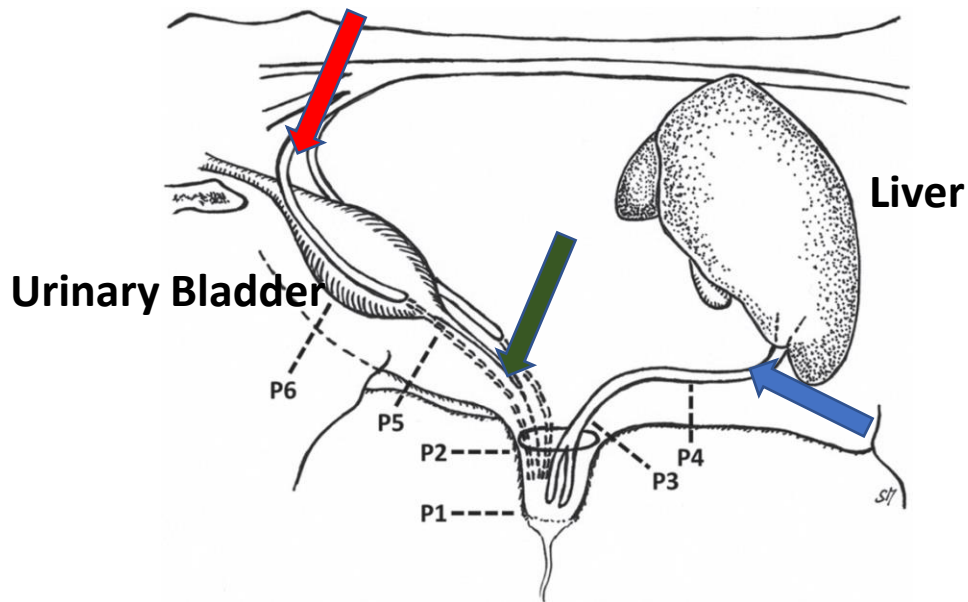
Adapted from Wieland et al., 2017 JDS

Navel stump:

- **Urachus** – communicates the urinary bladder with the placenta.
- **One vein** – blood from the calf to the placenta
- **Two arteries** – takes blood from placenta to the calf

The navel stump should dry and shrink by 3 d of age.
The body wall will close within days to weeks.

What is the Navel?



Adapted from Wieland et al., 2017 JDS

Calves: Pathogens use the **urachus** or the **liver vein** as the entry way structures in the navel stump.

Foals: A common problem is **patent urachus**, observed commonly when the umbilicus is clamped, tied or cut vs allowing it to break and retract spontaneously.

Implications of Navel Disorders



Calf care Canada

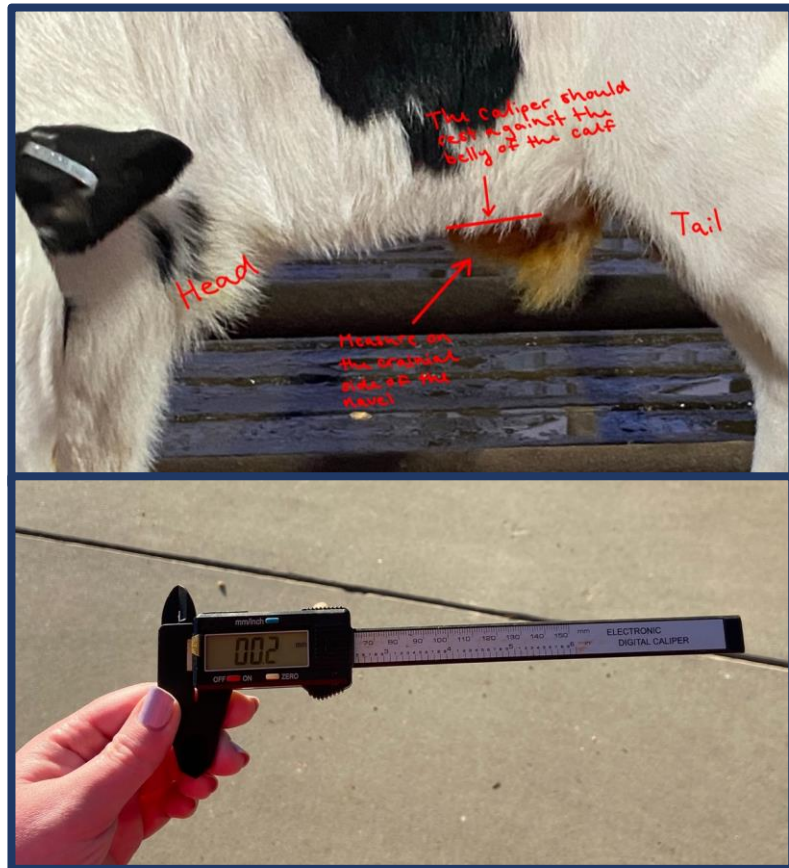


nadis.org.uk

Disease-causing pathogens from the environment enter through the navel into the abdomen.

- Localized navel infection
- Liver abscess
- Peritonitis
- Septicemia
- Arthritis
- Hernias

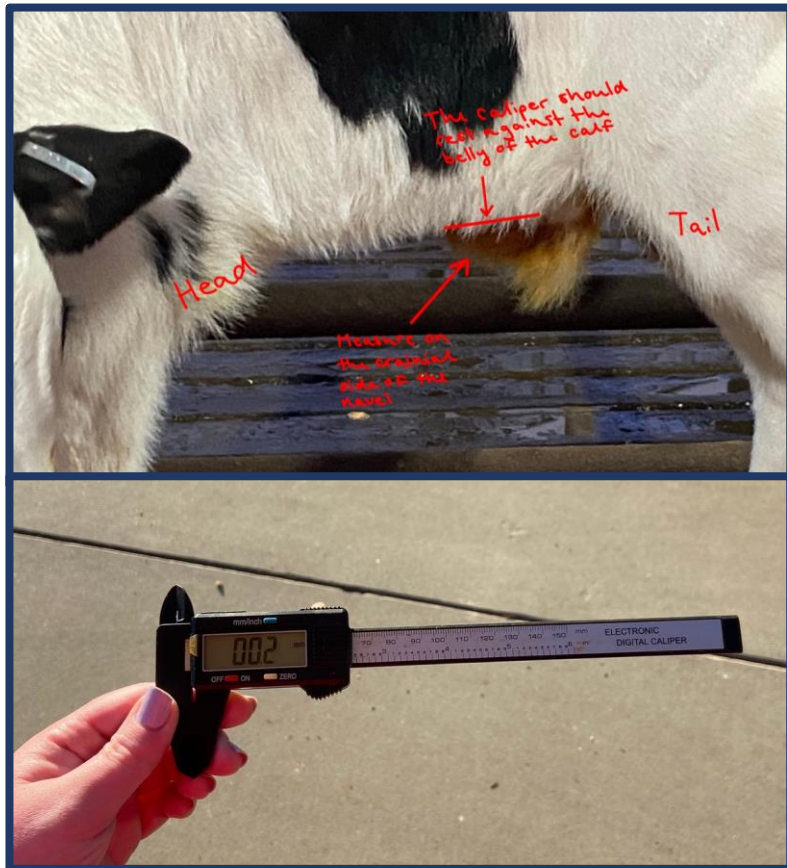
Detection of Navel Disorders



Palpation:

- Enlarged navel
- Heat
- Pain
- Purulent secretion

Detection of Navel Disorders



Palpation:

- Enlarged navel
- Heat
- Pain
- Purulent secretion

25% of the umbilical infections may involve only the intraabdominal part of the umbilical vein.

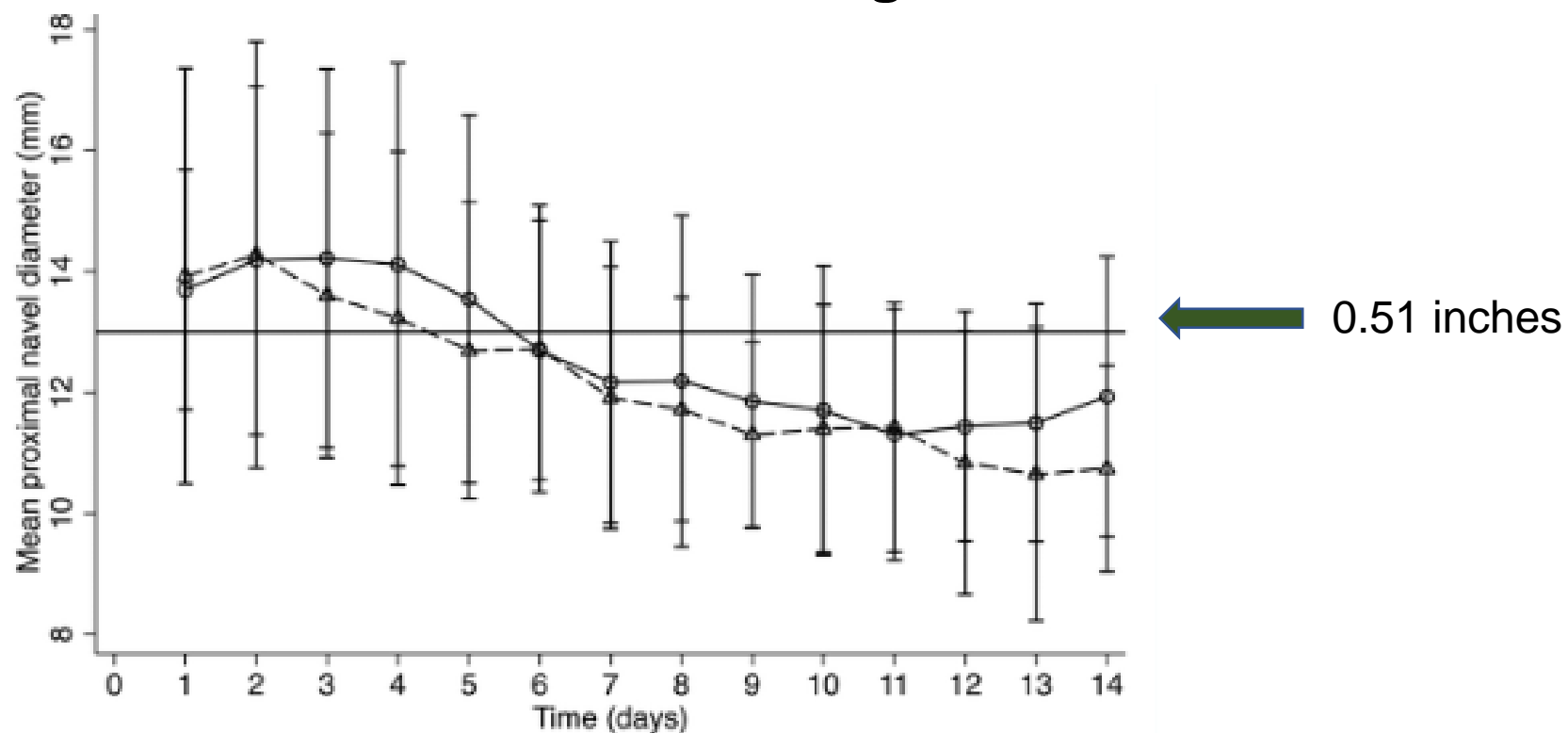
Deep palpation or ultrasound is needed to detect these cases (Wieland et al., 2017).

What is the size of an enlarged navel?

- Thicker than a thumb. Practice palpating navels.
- Some studies have showed quickly reductions of navel size from 0.95 inches to 0.3 inches in 24 h (Robinson et al., 2015 JDS).
- One study found that 7 to 15 d old calves had a higher odds (OR: 1.75) of abdominal lesions when navel size was > 0.5 inches (Steerforth and Van Widen, 2018).

Definition of Navel Disease

How does navel size change overtime?

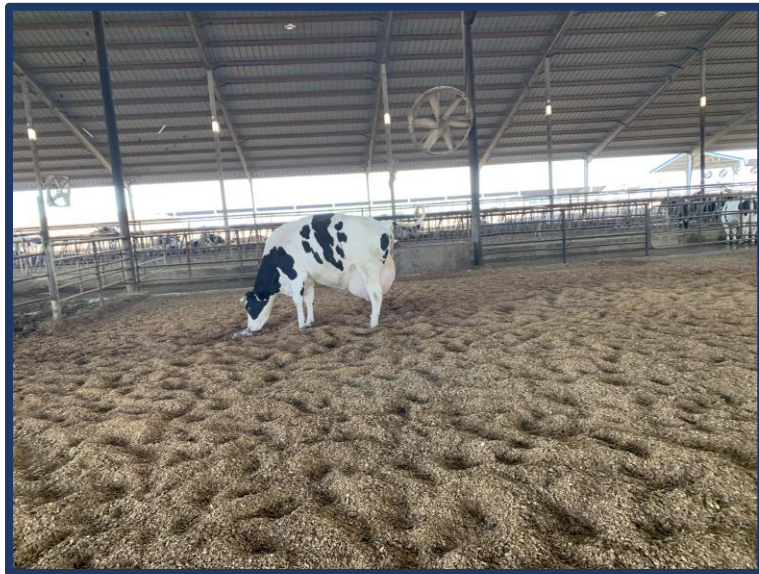


LESSONS FROM FIELD VISITS

MATERNITY AUDITS



Navel Disease – Risk Factors



- Clean and dry maternity pen
- Clean 1 d pen
- Navel care practices
- Good colostrum management

Clean and Dry Maternity



9:00 am

Clean and Dry Maternity

2:00 pm



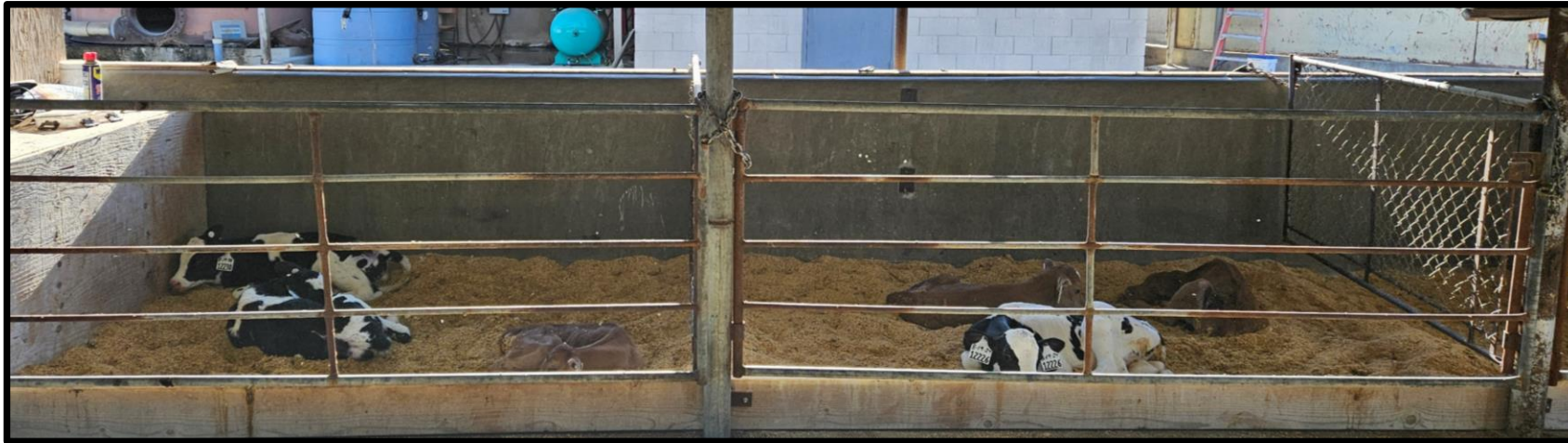
Clean and Dry Maternity



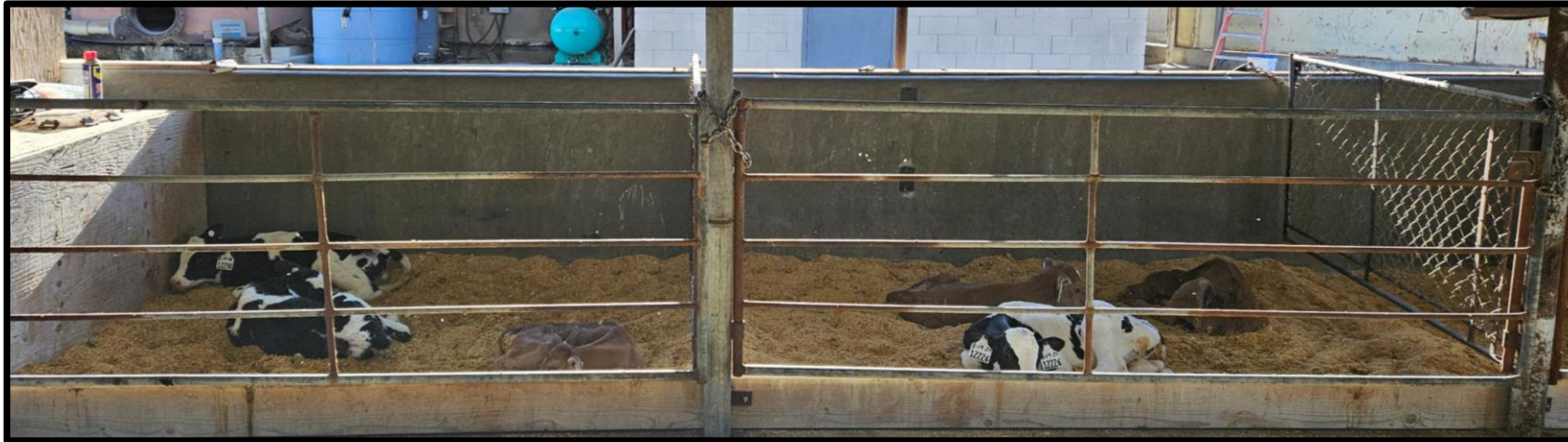
Calf transportation



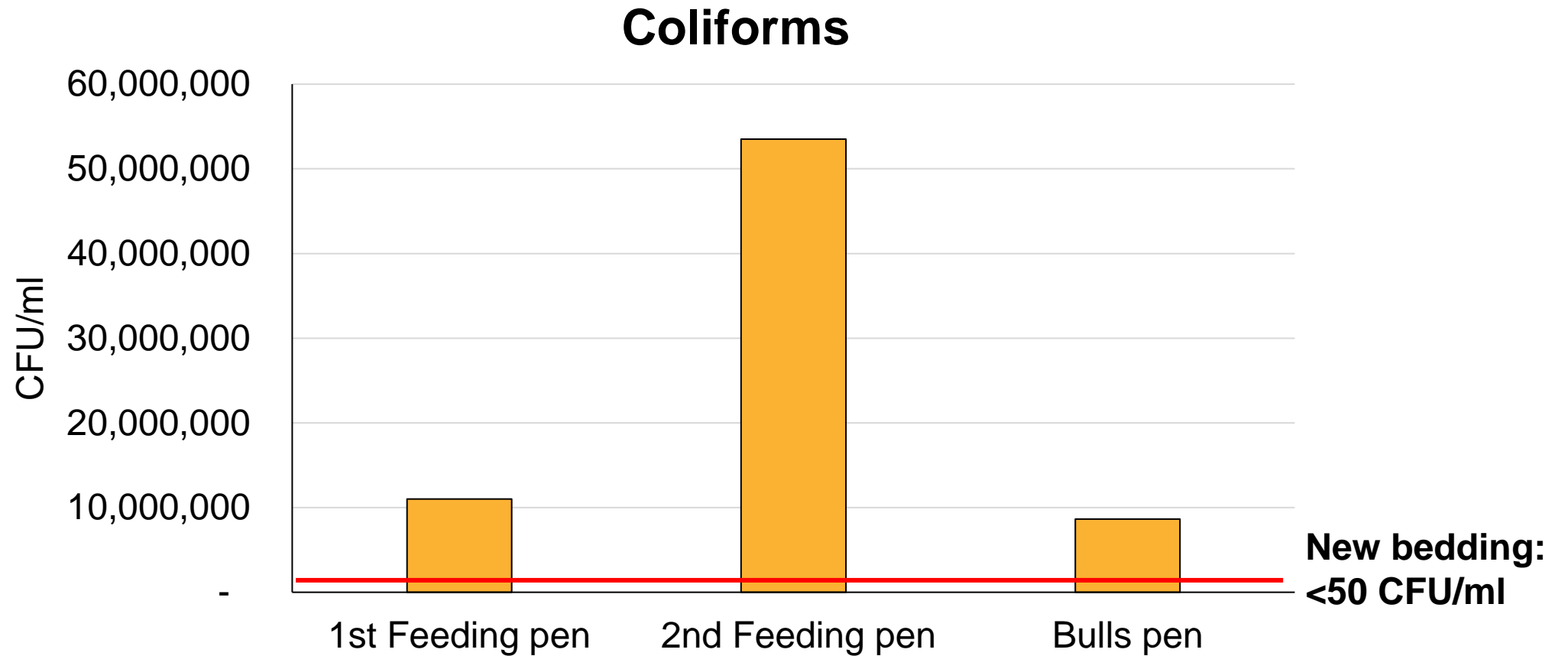
Clean and Dry Transition Calf Pen



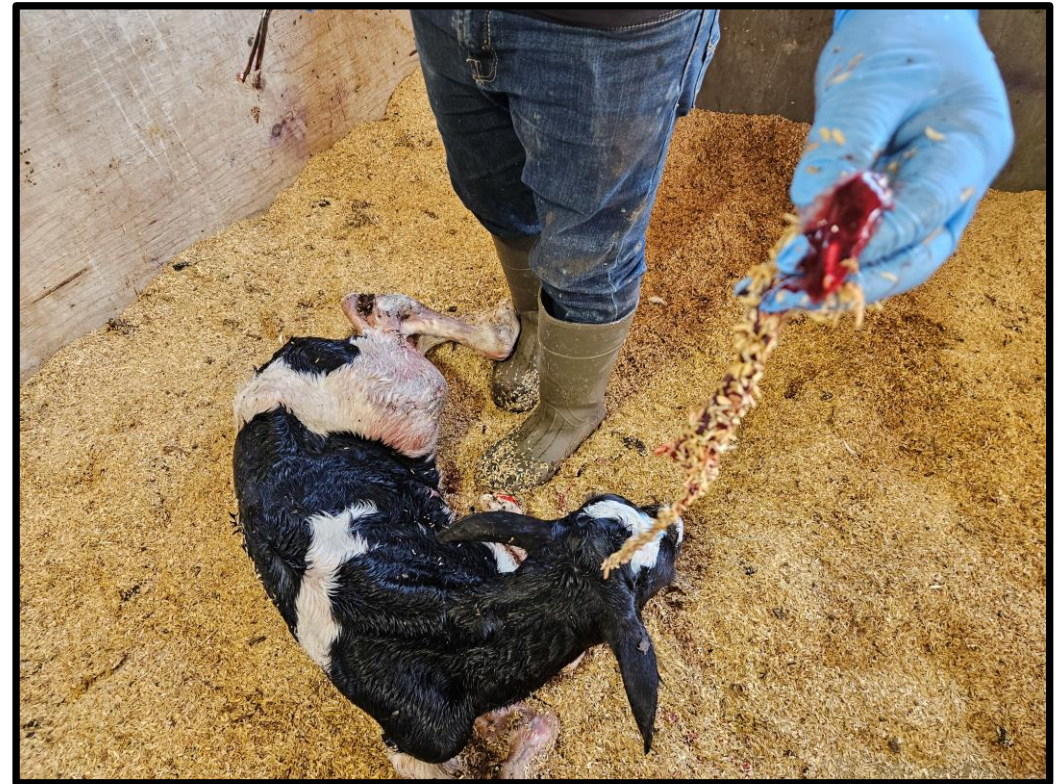
Clean and Dry Transition Calf Pen



Newborn Calf Pen 5 d Bedding



Cutting the Navel



Recommendation: < 1.25 inch increases the risk of navel disease (Perrot et al., 2024)

Cutting the Navel



No Cutting the Navel



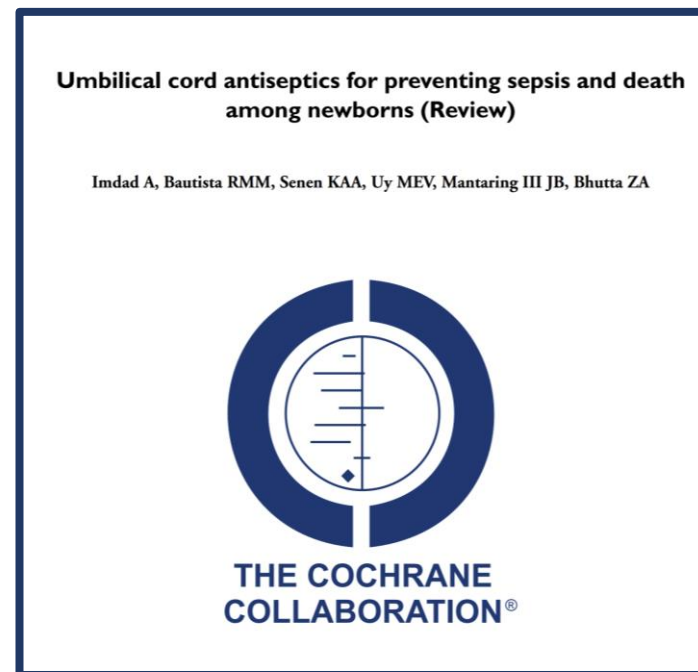
Disinfectant Application



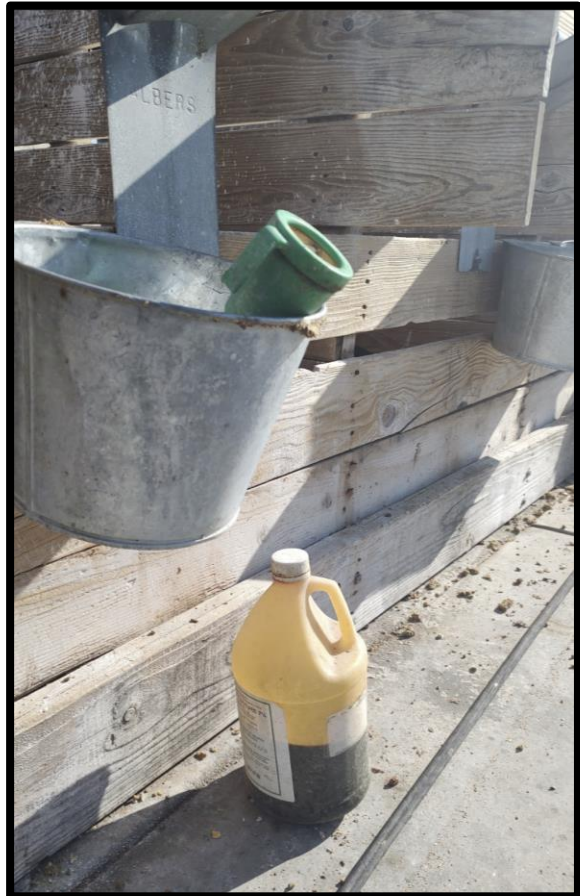
- What type of disinfectant should I use?
- How often should I apply it?

Disinfectant Application

- Three community trials: 54,624 participants, 1325 deaths - **reduction of 23%** in the chlorhexidine group compared with control.
- Cord separation time was increased by **1.7 days** in the chlorhexidine group compared with dry cord care.



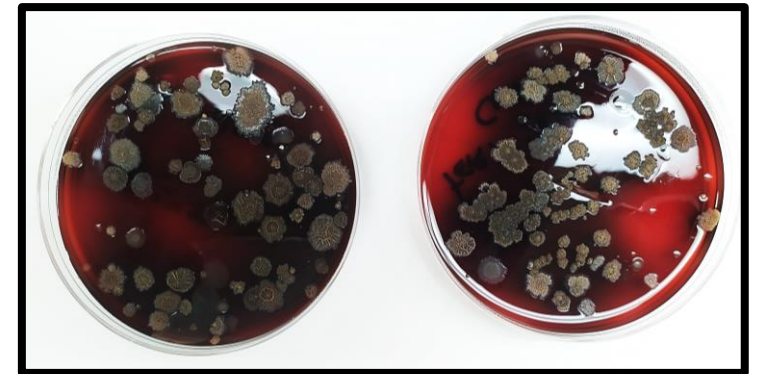
Disinfectant Application



- Expiration date
- Storage conditions:
 - Temp (59° to 86° F)
 - Light exposure

Disinfectant Application

- Organic matter will decrease the efficacy of disinfectants
- Avoid leaving the disinfectant cup exposed to elements



Disinfectant Application

- Disposable cups 2,500 units - \$50



Disinfectant Application

	Positive	Negative
Dipping	Full coverage	Cross-contamination
Spraying	Difficult to reach full coverage	Low cross-contamination risk

Both work if done properly



Colostrum Management Practices

- Bacteriological Quality
- Quantity
- Quickly
- Quality
- Right Temperature

THANKS



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Thanks for allowing us to visit your facilities



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