Management of Bacterial Diseases on Dairy Farms

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Dairy Farms are Unique in Animal Agriculture

- **Cows have high value**
  - Only milking cows produce income
    - Must grow for 2 years before producing milk
  - Milk of most treated adult cows must be discarded and has no value
    - Strong disincentive against use of most antibiotics
  - Strong emphasis on prevention

- **Population of dairy farm with 200 animals**
  - 100 adult cows
    - 85 milking cows
    - 15 dry cows
  - 100 growing heifers
    - 50 bred or pregnant and waiting to deliver
    - 50 too young to breed
      - 10 fed milk or replacer
Risk of Disease in Dairy Animals is Greatest in Distinct Periods

- Baby Calves (60 d)
- Low Risk Heifers Growing (670 days)
- Milking Cows (305 Days)
- Dry cows (60 d)
- 2nd & Later Lactations

In 2 years of growth, risk of disease is high only about 8% of time.

In each 1 year lactation cycle, greatest risk is focused at Calving & Dry off.

- Diarrhea
- Pneumonia
- Naval Infections of udder, uterus & feet
- Infections of udder
Diarrhea & Pneumonia are the Primary Bacterial Diseases of Calves

% of Preweaned & Weaned Heifers Treated with Antibiotics or Died
NAHMS 2007 Dairy Heifer Survey

- Respiratory Disease: 11.4% (On Milk) vs. 5.5% (Weaned)
- Diarrhea: 17.9% (On Milk) vs. 1.6% (Weaned)
- Other Disease: 2.1% (On Milk) vs. 1.4% (Weaned)
- Overall Death Rate: 7.8% (On Milk) vs. 1.8% (Weaned)
Disease Control in Calves

- Emphasis is on prevention
  - Ensuring adequate immunity by consumption of enough colostrum
    - 1st mothers milk
  - Good housing that minimizes transfer of bacteria among calves
  - Good nutrition
  - Good husbandry
  - Vaccination
New Regulations Have Impacted Calf Management on Some Farms

Use of Medicated Milk Replacer Before Implementation of VFD

- Percent of Farms
- Percent of Calves

Use of Medications in Weaned Heifer Diets

- No heifers on farm, 3%
- Antibiotics, 18%
- No Antibiotics, 44%
- Ionophores only, 33%
- Unknown, 2%

NAHMS Dairy 2007 & 2014
Mastitis is the Most Common Reason for Antibiotic Use in Adult Cows

- Rate of mastitis is much greater than other bacterial diseases
  - Most cases are mild
- 65-85% of antibiotics are used to treat or prevent mastitis
  - Pol & Ruegg, J Dairy Sci 2005
 Prevention of Mastitis is a Daily Part of All Dairy Farms

- **Milking management**
  - Teat disinfection
  - Milking hygiene
  - Well trained workers
  - Well Functioning machines

- **Housing management**
  - Providing clean, dry bedding
  - Adequate space

- **Reducing exposure to infected cows**
  - Segregation
  - Treatment
Treatment of Mastitis

- Most infections are subclinical
  - Milk appears normal but contains too many white blood cells
  - Not usually treated until dry off
- Some infections cause clinical signs
  - Abnormal milk is the only sign in 50% of cases
  - Swollen udder occurs in 35% of cases
  - Cow is ill in 5 – 15% of cases

- Treatment of clinical mastitis
  - Usually using antibiotics infused into the udder for 3 to 5 days
  - 7 FDA approved antibiotic products on market
  - Milk is discarded during treatment & for 3 – 4 days afterwards
  - Each day about 1-2% of herd has milk discarded due to RX
Antibiotic Treatments of Adult Dairy Cows

- **Dry Cow Treatment**
  - Intramammary antibiotics given at dry off on 90% of farms
  - Purpose is to:
    - Treat subclinical cases
    - Reduce risk & treatments in next lactation
    - Prevent spread
    - Prevent new infections in high risk, dry off period

- **Other Treatments**
  - <5% of cows are:
    - treated for lung or digestive problems
  - <10% of cows are:
    - treated for uterine problems or lameness
  - Changes to regulations will decrease use of antibiotics for lameness
    - Less access to OTC drugs
Overview – Dairy Herds

• Emphasis of dairy farmers is to prevent disease
• Well known risk periods and well known preventive strategies
• Growing calves are at risk during first 2 months of life
  – Diarrhea, pneumonia and naval infections

• Mastitis is the primary reason antibiotics are given to adult cows
• Reducing antibiotic treatments is a goal of dairy farmers
  – Need improved methods to identify which mastitis cases will benefit from antibiotic therapy