Antibiotic Use on Dairy Farms: Behaviors and Attitudes

RJ Erskine, DVM, PhD
Dept of Large Animal Clinical Science
Michigan State University
erskine@cvm.msu.edu
Mastitis......
biggest infectious disease loss in North American dairy cattle = $2 billion

- Lost production
- Premature culling
- Death
- Drugs
- Farm labor
- Vet care
- Discarded milk
- Lost quality incentives
Somatic Cell Counts

• Primarily Leukocytes

• Uninfected cows
  – <100,000 cells/mL

• Infected 100,000 – 10 million

• Legal bulk tank (herd) limit
  – U.S. 750,000 cells/mL
  – E.U. 400,000 cells/mL
  – Kroger supermarkets 250,000 cells/mL
400,000 → 100,000 cells/mL = 2 weeks
Percent of Milk Lost

SCC

100,000

200,000

400,000

800,000

1,600,000

3

5

8

10

200,000

400,000

800,000

1,600,000
Mastitis

• Largest cause of antimicrobial drug use in dairy cows

• The lower the SCC the lower the drug use!
Mastitis Prevention

- Milking Protocols
- Clean, dry, comfortable cows
Tanker Loads of Milk Antibiotic Residues- 2012

- 542 positive / 3.2 million loads = 99.98% pass rate
The long-anticipated drug-residue-sampling survey by the U.S. Food and Drug Administration has begun.

900 milk samples from dairy farms had a cull dairy cow residue violation

900 milk samples from dairies at large.

26 different drugs

Dairy Herd Network, Jan 10, 2012
An Integrated Extension and Education Program to Reduce Mastitis and Antimicrobial Use

R.J. Erskine¹, G.A. Contreras¹, R.O. Martinez¹, R.L. Schewe³, J. Kayitsinga¹, P Durst¹, S. Moore¹, R. Mobley⁴, C. Wolfe¹
E.P. Hovingh², L.M. Sordillo¹

Michigan State University¹
The Pennsylvania State University²
Mississippi State University³
Florida Agricultural and Mechanical University⁴

Agriculture and Food Research Initiative
Competitive Grant no. 2013-68004-20439
USDA National Institute of Food and Agriculture
Gathering Herd Information

- Mail Survey: Wolfgang Freese Survey Research Laboratory (Mississippi State University)
- Mail Survey: Herds
  - 1700 Grade A certified dairy herds
  - 752 Michigan (281)
  - 820 Pennsylvania (324)
  - 128 Florida (23)
  - 628 Returned (41% response)
  - Avg 3 month BTSCC = 191,000 cells/mL
# Reported Mastitis Management Practices

<table>
<thead>
<tr>
<th>Practice</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-milking teat disinfection</td>
<td>86</td>
<td>14</td>
<td>---</td>
<td>---</td>
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<td>---</td>
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<tr>
<td>Post-milking disinfection</td>
<td>93</td>
<td>7</td>
<td>---</td>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>Water use in preparation</td>
<td>22</td>
<td>78</td>
<td>---</td>
<td>---</td>
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<td>---</td>
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<tr>
<td>Dried with separate towels</td>
<td>89</td>
<td>11</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Infuse antibiotics at dry off</td>
<td>---</td>
<td>---</td>
<td>75</td>
<td>5</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Clean alleys/gutters</td>
<td>---</td>
<td>---</td>
<td>71</td>
<td>13</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Compliance of milking protocols</td>
<td>50</td>
<td>23</td>
<td>13</td>
<td>13</td>
<td>7</td>
<td>7</td>
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</tbody>
</table>
## Reported Therapy Practices

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Always (%)</th>
<th>Often (%)</th>
<th>Sometimes (%)</th>
<th>Never (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use alcohol pads before infusion</td>
<td>---</td>
<td>---</td>
<td>79%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Records for all treatments</td>
<td>36%</td>
<td>11%</td>
<td>13%</td>
<td>36%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review treatment records before decision to treat</td>
<td>27%</td>
<td>15%</td>
<td>35%</td>
<td>19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture milk samples from clinical cases</td>
<td>6%</td>
<td>9%</td>
<td>51%</td>
<td>32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use oxytocin for clinical mastitis</td>
<td>---</td>
<td>---</td>
<td>6%</td>
<td>8%</td>
<td>35%</td>
<td>49%</td>
</tr>
</tbody>
</table>
Survey Summary

• High compliance for “standard” milking protocols

• Employee training inconsistent

• Significant barriers- Therapeutic decisions
  – Record Keeping and Review
  – Bacterial culture of milk
  – Perceptions of Oxytocin and “Natural Remedies”
Lower Bulk Tank SCC

- Gender - Female managers/owners
- Age - 40 years or younger
- Internet use
- Higher number of people who milk cows
- Recruiting good employees
- Retaining good employees
- Motivating employees with positive feedback
- Providing training opportunities for employees
Gathering Employee/Manager Perspectives

- Focus Groups
  - Perspective of dairy farm employees
  - Barriers of communication
  - MI, PA, and FL

- Owners/managers (4 groups)
- English-speaking employees (3 groups)
- Spanish-speaking employees (5 groups).

- Julian Samora Research Institute, MSU
Focus Groups 2013

1. Communication Gaps

– Employees want more communication
  • Lack of scheduled opportunities
  • With managers and other shifts of workers
  • Spanish-English barriers
  • Spanish speaking reluctant to voice concerns

– Regular team meetings = 10,000 in BTSCC
Focus Groups 2013

2. Training
   - Most common “on the job” from co-workers
   - More training and education

3. Sources of Information for Mastitis Therapy
   - Drug Company Rep (Employees and Managers)
     • Important for drug selection, administration, use
   - English speaking- used instruction labels
   - Spanish speaking-
     • Knew cows with mastitis needed a “treatment” or “the liquid”
     • Were unsure what the drug was or why they were using it
Quality Milk Alliance Farm Evaluation

- Testing in 12 pilot herds
- Jan-April, 2014
- Practicality and logistics
Who is the Science Teacher for the “on-farm” class room?
• Engage All Farm Personnel into Quality Milk Program
  – Management Practices
  – Drug Therapy
  – Communication and Education
• Help dairy producers become “better coaches” for employees
• Help veterinarians become on-farm science teachers

http://qualitymilkalliance.com/
Think Spring