Type of mastitis affects your loss

In a previous article (August 10, 2009, issue, page 492), we examined the impact of whether the first versus subsequent cases of clinical mastitis (without pathogen identification) had the same consequences, in terms of milk yield, conception, and mortality and culling. We had data from seven New York Holstein herds.

First, a few words about classification. Pathogens can be classified as gram-positive or gram-negative by using an on-farm culture system which is more convenient and often faster than sending a sample to an outside lab. Symptoms, severity, and treatment protocols differ for gram-positive and gram-negative mastitis. In our studies, we isolated more gram-negative pathogens, including Escherichia coli, Klebsiella spp., Clostridium, Enterobacter, and Proteus spp., than gram-positive Pathogens such as Staphylococcus spp., Streptococcus spp., Staphylococcus aureus, and Staphylococcus saprophyticus organisms.

Gram-negatives hit harder . . .

To find out if pathogens of different gram-classifications have differing effects on milk yield, we studied 7,721 first lactations and 13,566 second or later lactations. Before diagnosis, cows that would go on to contract mastitis were higher producers. Heifers with mastitis out produced their non-mastitic herdmates by 1.1 pounds per day. Among older cows, those whose first case was gram-negative had a 3.7 pounds per day greater milk yield. In fact, we looked at the first case. In the second, third, and fourth A.I., respectively. Mastitis occurring anytime between 14 days before until 35 days after an A.I. reduced the probability of conception.

Gram-negative mastitis generally was more detrimental than gram-positive mastitis. (See figure.) The most severe impact was mastitis right around breeding time. A case of either gram-positive or gram-negative mastitis in the week before an A.I. reduced probability of conception by 50 percent. In the week after a breeding, a gram-negative case reduced probability of conception by a whopping 80 percent. The corresponding reduction for a gram-positive case was 49 percent.

What can you do with such information? For one thing, if your cow has any kind of mastitis short of a first case, then you may want to go more closely during her next cycle for signs of heat. For culling and death loss information, we looked at 30,233 lactations over a four-year period. Gram-positive mastitis cows were much more likely to die than were gram-negative cows, after their first two cases. After the third case, gram-positive mastitis was more deadly. Each successive case, regardless of type, led to a higher probability of being sold. But gram-negative mastitis was more likely to result in sale than was gram-positive mastitis. So gram-negative organisms seem to be more pathogenic and less tolerant than gram-positive ones.

Our findings imply that you should view gram-negative mastitis more unfavorably, probably because it is associated with greater milk loss and more severe systemic signs in the cow. Understandably, it seems that people are not very tolerant of repeated cases of (gram-negative) mastitis. Our findings should be useful.

HOFALPUR, N.Y.

by Julia Hertl

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- Precautions:
  - For acutely ill or debilitated animals, do not remove from drug until.net.
  - For acute bovine respiratory disease, severe mastitis, or acute bovine metritis, administer by intrauterine or intramammary injection.
  - For chronic bovine respiratory disease, reduced probability of conception the most when it occurred.
  - Second case -360 -533 -123 -330
  - Third case -330 -203 -73 -320

**Total (eight-week) milk losses (pounds)***

<table>
<thead>
<tr>
<th>Total (eight-week milk losses (pounds))</th>
<th>First-clip heifers</th>
<th>Second case</th>
<th>Third case</th>
<th>Old cows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gram-positive</td>
<td>-179</td>
<td>-360</td>
<td>-397</td>
<td>-226</td>
</tr>
<tr>
<td>Gram-negative</td>
<td>-336</td>
<td>-533</td>
<td>-385</td>
<td>-123</td>
</tr>
<tr>
<td>Gram-positive</td>
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<td>-139</td>
<td>-394</td>
<td>-411</td>
</tr>
<tr>
<td>Gram-negative</td>
<td>0</td>
<td>-230</td>
<td>-436</td>
<td>-226</td>
</tr>
</tbody>
</table>

*Based on seven New York Holstein herds.