ters when they become clinical. With such poor cure rates in this group there are clearly two options for managing clinical mastitis in these cows:

1. Do not treat with antibiotics.

2. Treat more aggressively with antibiotic than new infections.

Extended duration therapy should be considered for all positive quarters for the first case of mastitis during a lactation. For relapse cases in this group, particularly in cows with more than one quarter positive to CMT or beyond first lactation, greater than 100 days in milk (DIM) and not yet pregnant, a no-antibiotic treatment approach may be considered.

Treatment of Persistent *Escherichia coli* Mastitis on a Large Dairy

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Introduction

In our previous clinical mastitis study (Ackerman, AABP 2003), 39% of *Escherichia coli* intamammary infections persisted more than 21 days. Since *E. coli* is isolated from less than 20% of clinical cases, persistent *E. coli* infections make up less than 10% of clinical mastitis cases. A protocol that includes treatment of all cows to address these persistent infections is neither practical nor cost-effective. Currently, many larger farms are not treating *E. coli* mastitis with antibiotic therapy. However, these infections can be serious and painful with a persistent high milk somatic cell count. In herds where milk from clinical mastitis cases is cultured and pathogens identified before treatment, use of antibiotics for *E. coli* infections may be both practical and cost-effective. These *E. coli* cases meet the AMDUCA criteria for extra-label treatment of an infection that threatens the animal's well-being and does not respond to approved intramammary antibiotics. In this study, we evaluated two antibiotic treatments for their effect on persistent *E. coli* infections.

Materials and Methods

Milk from clinical mastitis cases was cultured at the farm and antibiotic treatment was withheld for 18-24 hours until the pathogen was identified (Hess, AABP 2003). Gram-positive pathogens were treated with the routine intramammary antibiotic protocol, and *E. coli* cases (n=30) were assigned to a treatment group by randomized block table. Treatment groups included: 1) no antibiotic treatment; 2) 30 ml of intramuscular tetracycline once daily for three days; or 3) intramammary infusion of 200 mg ceftiofur once daily for three days. Milk was observed at each milking for clinical response, and milk was cultured between days 7-14 and 21-28, if the quarter remained in production. Culture data was analyzed for *E. coli*, lost quarters and number of cows removed from herd for mastitis presence.

Results

Mean time to re-culture was 14 days for tetracycline-treated cases, and nine days for ceftiofur- and non-treated cases. When both treatments were combined there was no difference in recovery of persistent *E. coli* for both treated and non-treated cases. In the 30 cases of *E. coli*, the combined antibiotic treatments had 33% (7/21) persistent *E. coli,* which was the same as the non-treated cases, 33% (3/9). Persistence was lower for ceftiofur (20%) than tetracycline (45%), but the number of quarters and cows lost to production was 38% for treatment cases and 33% in the non-treated cases. However, cows with persistent infections made up the majority of cows and quarters lost to production for the treated cases. Cows were re-cultured between six and 14 days before re-entering the milking herd for salable milk. In treated cows, isolation of *E. coli* on third culture at 21-28 days was the same as second culture (7-14 days post-treatment). Infection that cleared early after treatment remained clear, while *E. coli* presence at seven days persisted past 21 days.

Significance

Treating *E. coli* cases with systemic tetracycline or intramammary ceftiofur did not significantly lower

the persistence of *E. coli* infections. Finding 33% of non-treated *E. coli* cases to be persistently infected is consistent with our earlier study where 39%(114 cases) persistent *E. coli* (Ackerman, AABP 2003). Treatment had no effect on reducing the number of cows or quarters lost to production. Isolation of *E. coli* early after treatment was correlated with the *E. coli* isolation at 21 days post-treatment. Therefore, it appears that a single sample following treatment accurately identifies persistent *E. coli* infections. Because of the low incidence of persistent *E. coli* infections in clinical mastitis, treatment of these cases with antibiotic will not produce an economic benefit by either reducing their persistence in the herd or reducing the number of cows and quarters lost to the infection.

Efficacy of an Internal Teat Sealant, Orbeseal[a], for Reduction of Clinical Mastitis during the First 60 Days Post-partum

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Introduction

Clinical mastitis (CM) events often occur during the post-partum period and are important economically. Many CM cases result from infections that have been established during the dry period. In one study, 38.1% of clinical cases had the same bacteria isolated at some point during the dry period.[4] Risk factors for development of new intramammary infections (IMI) in the dry period have been reviewed.[2] Among the risk factors identified was failure to develop a natural keratin seal in 23.4% of teats.[2] These open quarters were 1.8 times more likely to develop a new intramammary infection (IMI). Efficacy of the internal teat sealant, OrbeSeal* (OS) for prevention of new IMIs during the dry period has been well established.[1,3,5-7] The objective of this study was to evaluate the efficacy of OS infused at dry-off for the reduction of new cases of CM during the first 60 days of lactation, as compared to routine intramammary dry cow antibiotic therapy (DCT).

Materials and Methods

The trial was part of a larger project conducted on 945 cows from 16 farms to determine the effect of OS on new IMI during the dry period. For the CM component, data were available from 328 cows, from seven commercial dairy herds. For the study, quarter milk samples were collected aseptically at three points in time: two weeks prior to the dry-off date (S1), the day of dry-off (S2), and between 1-8 days in milk (S3). The S1 was performed to identify cows with quarters harboring an existing IMI. At the time of dry off, S2 samples were taken and cows that were free of IMI at the S1 culture were placed in study part A. These animals were randomly assigned to receive either the internal teat sealant, OrbeSeal[a] or DryClox® (DC; Ayerst Laboratories, Montreal, Canada) in ipsilateral quarters. Cows with one or more quarters found to be culture positive at S1 were placed in study part B, and were randomly assigned to receive OrbeSeal[a] in ipsilateral quarters following infusion of all quarters with DC. All treatments were given after the final milking. Cows then entered the dry period (average 56.5 days, range 30-90 days). Within one week after calving, S3 samples were collected. Additionally, producers were asked to identify and sample any quarter showing signs of clinical infection for the first 60 days of lactation.

Results

Of the 328 cows included in this part of the study, 218 were culture negative (study part A) and 110 were culture positive in at least one quarter (study part B) at S1 sampling. In total, CM was reported in 31 quarters in 27 cows during the 60 days post-calving, an incidence rate of 1.2% per quarter-month and 4.8% per cow-month at risk. Two cases were excluded because the dry period exceeded 90 days. Quarters treated with DCT only had an incidence rate of 1.6% per quarter-month at risk, whereas quarters treated with OS only and both OS and DCT had incidence rates of 0.95% and 0.65% per quar-