

## Commonly Used Antibiotics on Dairies

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A recent survey<sup>1</sup> of dairymen in Minnesota, Michigan, Wisconsin and New York studied the antibiotic use strategies used on nearly 100 conventional and 30 organic dairies. They found that 71% of the dairies kept antibiotic treatment records for lactating dairy cows. Slightly over half of the dairies kept records of treatment of dry-cows and only a third kept records of antibiotic treatment in replacement heifers. The dairymen with organic dairy herds kept even fewer records, perhaps due to significantly fewer treatments, than the conventional dairymen. Within the previous 60 days, 85% of the dairymen reported treating up to 25% of their milking cows at least once with antibiotics. Over 90% of the organic dairymen reported they had treated no milking cows with antibiotics and the remainder of the organic dairymen treated less than 10% of their cows.

The primary sources of information about antibiotic use, dosage and withdrawal times were veterinarians for the conventional dairymen. Other prominent sources of information were personal experiences and product labels. Organic dairymen relied mostly on their own experiences for antibiotic information.

The most commonly used antibiotics on conventional dairies were penicillin (86%), cephalosporin (78%), and tetracyclines (41%). Almost all dairymen treated calves with respiratory conditions and the most often used antibiotics were tilmicosin, ceftiofur, penicillin and florfenicol. Nearly 80% of the dairymen used antibiotics to treat calves with diarrhea and they commonly used trimethoprim-sulfa or tetracyclines. Nearly all dairymen also used antibiotics to treat adult cows with respiratory conditions (97%) and to a lesser extent mastitis (80%), metritis (80%) and foot problems (83%). Ceftiofur (80%) was by far the common antibiotic used to treat respiratory disease followed by tetracyclines (31%) and penicillin (32%). For mastitis, penicillin (42%), ampicillin (26%) and tetracyclines (18%) were commonly used. Penicillin (43%) and ceftiofur (41%) were the antibiotics of choice for metritis or retained placentas as well as foot problems.

Ninety-eight percent of the conventional dairy herds used intramammary dry cow antibiotic treatment while only 6.3% of the organic herds used intramammary dry cow therapy. The organic herds used non-antibiotics products for dry cow therapy.

A recent California survey of antibiotic use practices on dairies was conducted on dairies specifically having repeated isolations of environmental streptococci from their bulk tank milk. Nearly 80% of the dairies reported having written protocols for treatment of mastitis, calf diseases and other diseases. Veterinarians were involved in the development of treatment protocols on 70% of the dairies.

The most commonly used antibiotics in calves on these dairies were ceftiofur, tetracyclines, penicillin and florfenicol. Often ceftiofur and florfenicol were reported to be used in combination. Most dairies used more than two antibiotics for treatment of calves. For conditions other than mastitis in milking cows, ceftiofur, penicillin and tetracyclines were commonly used antibiotics. Many dairies used at least three different antibiotics to treat adult cows. Over half of the antibiotics were prescribed by the herd veterinarian.

Specifically for mild cases of mastitis, cephalosporin and pirlimycin were the most commonly used antibiotics. The highest percentage of dairies used only one intramammary antibiotic for treatment of mild cases of mastitis. Over 70% of the dairies reported using the label dose for intramammary treatment of mild mastitis. Few of the dairies in this particular study used no intramammary antibiotics for mild mastitis treatment. A few dairies reported using injectable antibiotics and most often they were dosed at extra-label dosages.

For severe cases of mastitis, only about half of the dairies reported using intramammary antibiotics. The most commonly used intramammary antibiotics were cephalosporin and pirlimycin at extra-label dosages. About half of the dairies used injectable antibiotics and the most commonly used drug was tetracyclines. Extra-label dosages were commonly reported when treating severe cases of mastitis. Supplementary treatments were often given including corticosteroids, hypertonic saline solution, and anti-inflammatory drugs.

Most all of the dairies in the California study used intramammary dry cow antibiotic therapy. The most commonly used antibiotics were cloxacillin, penicillin/streptomycin, and cephalosporin. Most dairies used only a single antibiotic and had been using the same antibiotic for an extended period of time.

Due to differences in the referenced study and the California study, it is not appropriate to strictly compare the strategies for antibiotic usage between the studies. However some differences seem to be present. For instance, the reference study reports the use of tilmicosin for treating calves whereas the California study did not identify tilmicosin but did report tetracyclines. For the treatment of mastitis, the reference study found penicillin, ampicillin and tetracyclines to be commonly used while the California study reported cephalosporin and pirlimycin as being the common antibiotics. Other treatment conditions seemed to be similar between the two studies. Both studies also suggested that veterinarians were actively involved in antibiotic usage on dairies.

From these studies it is clear that most dairymen use antibiotics to treat disease conditions in their livestock. Veterinarians play a prominent role in the development of antibiotic use strategies and are required to prescribe extra-label uses. It is very important that antibiotics be used prudently<sup>2</sup> in order to prevent development of bacteria that are resistance to therapy.

<sup>1</sup>Zwald AG, Ruegg PL, Kaneene JB et al. Management practices and reported antimicrobial usage on conventional and organic dairy farms. *J Dairy Sci* 87:191-201, 2004.

<sup>2</sup>Moore DA, Kirk JH, Klingborg DJ et al. DairyBeef: Maximizing quality and profits. *J Dairy Sci* 87:183-190, 2004.