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The Use of Selective Dry Cow Therapy

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Mastitis is one of the costliest diseases in the US dairy industry, with an estimated annual loss ranging from $326 to $444 per cow. The concept of dry cow therapy started in the late 1960's with the objective of reducing the risks for intramammary infections during the dry period and in the early stages of the subsequent lactation. Dry cow therapy (DCT) is still a common practice in the US, as shown by the 2014 USDA National Animal Health Monitoring System report, which indicated that over 90% of all cows in the US were treated with intramammary antimicrobial infusions at dry-off.

Unnecessary use of antibiotics in food producing animals for disease treatment and control can potentially lead to the emergence and spread of antimicrobial resistance, which is of great concern for both animal and human health. European countries, such as the Netherlands, have prohibited the use of blanket dry cow therapy (BDCT) since 2012. In California, similar concerns led to the approval of Senate Bill No. 27, which requires a licensed veterinarian to prescribe antimicrobial drugs (of importance to human health) to treat, control and prevent disease.

Selective dry cow therapy (SDCT) has been proposed as an alternative to the use of BDCT. When antibiotics are not used at dry off, or used only in selected cows, there are potential savings from the costs of antibiotics and labor. Despite opportunities for reduced costs, one concern includes risk of increased cases of clinical mastitis in the next lactation. Presented below is a simulated research study conducted in Europe, demonstrating the economic feasibility of selective dry cow therapy. It is important to note that the European system of dairying is different than that of California, and these results are presented for informational purposes. Future research should simulate the economics of SDCT using California data.

A group of researchers simulated 3 example herds (using European herd data; 75 cows/herd), at three different bulk tank somatic cell count (BTSCC) levels: low BTSCC (<150,000 cells/mL), average BTSCC (≥150,000 cells/mL and <250,000 cells/mL), and high BTSCC (≥250,000 cells/mL but <400,000 cells/mL). The objective of the study was to find what would be the lowest cost of mastitis associated with the dry period, while restricting the percentage of cows treated with antibiotics at dry-off. The cost of mastitis in the herd with low BTSCC was $51.30/cow/year, and this cost would be the same if 30% of the cows were not treated at dry-off. For high BTSCC herds, the cost of mastitis was $58.96/cow/year and did not change when 15% of the cows were not treated at dry-off. Although these estimates were based on simulated small European herds, the results demonstrate that there are opportunities for maintaining the costs of preventing mastitis in the dairy industry, while reducing the use of antibiotics at dry-off, even in herds with high BTSCC, or high incidence of clinical mastitis.

Do these results apply to California? Maybe. We believe that there is potential to reduce the use of antibiotics at dry-off here, too. University of California researchers, led by Dr. Sharif Aly, are exploring the best approach to choosing cows that should be treated, or not, at dry off, considering the California dairy system. Low risk cows, for instance those with low last test-day somatic cell count, and first lactation heifers or cows with no more than one case of mastitis during the previous lactation, may not need treatment at dry off. We expect to have the results of this study soon, and will be able to better understand the economic impacts of this practice for the California dairy industry. Selective dry cow therapy is a potential strategy to reduce the use of antibiotics in the dairy industry. Be on the lookout for more information regarding the research and data coming out of California.

Keeping Up with Navel Infections

Emre Gürdal, VMTRC and Noelia Silva del Rio, UCCE Dairy Herd Health Specialist

Approximately 5 to 20% of the calves in the US develop navel infections, and 1.6% of the calf mortality is attributed to this condition. The navel cord is a flexible cord-like structure that contains the blood vessels that connect the dam with the fetus during gestation. At birth the navel cord stretches and breaks leaving the calf with a navel stump that is a potential site for pathogen entry with direct access to the bloodstream. Under normal conditions the navel stump will dry up and fall off at around two weeks of age. However, if the navel stump is not properly cared for, the calf may end up developing a navel infection and even form an abscess or hernia. In some calves, especially those with weak immunity from inadequate colostrum, this infection will spread to the bloodstream and reach the liver, joints, lungs, kidneys and other organs, compromising calf survival.

Calves with navel infections will present wet or pus ridden navel cords and their navel areas will be swollen, hard, and painful to the touch. Young calves (less than 20 days old) with fever and no appetite must be evaluated for navel infection. Sometimes affected calves may have a normal looking navel appearance. If the visual inspection of the navel cord is inconclusive, pinch the navel stump and look for a pain reaction.

Affected calves should be treated with antimicrobial and supportive therapies to prevent abscess formation and control the spread of the disease through the blood. The antimicrobial therapy might fail if it is started too late or if it is discontinued earlier than recommended. Calves with a navel infection may become chronic and perform poorly throughout their productive life. It is important to prevent navel infections; the keys are to reduce the navel exposure to pathogens and increase calf defenses.

Reduce pathogen exposure

1. Keep it clean. It is extremely important to keep everything clean around the calf, especially before any disinfectant is applied. A clean maternity area is a must, but don't forget the pen or hutch where the calf is moving next.
2. Disinfect it. Immediately after birth, provide full coverage of the navel with a fresh disinfectant solution. If this task is delayed, its effectiveness will be reduced. When applying a disinfectant remember:
    - Keep the disinfectant solution clean (i.e. cover cups, change disinfectant solution frequently). Contaminated cups can become the source of the problem rather than the solution.
    - Farm personnel should only dip navels if they are wearing clean gloves. Manipulating calves with dirty hands may increase the chances for pathogen exposure.
    - Make sure that full coverage of the navel cord is achieved. This is easier to attain with a dip than a spray, but the spray might be a cleaner alternative.
    - Follow the label indications for storage. To maintain its effectiveness, most disinfectants should be kept in closed containers at room temperature, away from heat, moisture, and direct sunlight. Keeping disinfectants at room temperature is a real challenge, especially in summer and winter.
3. Repeat disinfection. Re-apply the disinfectant solution when the calf is moved to its individual hutch. If you have concerns with navel infections, apply the disinfectant solution once a day until the cord dries up.
4. Manage flies. Flies can be an infection source. Implement good management practices to reduce the fly population in maternity and calf hutches.

Increase calf defenses

Feed good quality colostrum as soon as possible. The acquired immunity provided by a good colostrum will help the calf to fight a navel infection.

Disinfectant solutions – which one should I choose?

The two most common disinfectant solutions are iodine (7%) and chlorhexidine (2 or 4%). However, after the US Government restricted the access to 7% iodine almost a decade ago, this disinfectant can only be acquired through a vendor registered to handle controlled products. This limitation has driven the marketing of multiple alternative products. To select a navel disinfectant, focus on two things: 1) there is research proving the product of choice is as effective at preventing naval infections as iodine or chlorhexidine, and 2) your product of choice is not an irritant.

Note that 70% ethanol (alcohol) should not be used to dip navels, as it delays navel cord separation, and it can be irritating. Some dairy producers have chosen to use teat dips for navel dipping. If this is your choice, make sure that the ingredients do not delay the drying up of the cord and that the product has been proven effective for navel dipping.

New Dairy Advisor in Fresno and Madera Counties

Please welcome the new UCCE Dairy Advisor for Fresno and Madera Counties, Dr. Daniela Bruno. Daniela was born and raised in Brazil and is a veterinarian with extensive dairy industry experience. Her interest in dairy began with spending weekends at her grandfather's farm, a small operation in Brazil; her passion for dairy motivated her to attend veterinary school to become a "cow doctor".

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Once in vet school, her interests shifted (somewhat) from clinics to research and extension. After graduating from veterinary school, she pursued an internship at the University of Florida, working at a large dairy farm. Daniela then moved to California where she earned her PhD at UC Davis. The main focus of her PhD research was the physiology and immunology of mammary glands of healthy and infected cows. Since then, Daniela has worked in both academic and private sectors.

Prior to her Dairy Advisor appointment, she served as a Technical Services Specialist for DeLaval and was responsible for performing field trials and working closely with veterinarians and other consultants, to troubleshoot problems on dairies, train employees and produce technical materials, including newsletters, webinars, and videos. During her professional and academic career, Daniela carried out work related to animal health and welfare, food safety, milk quality and mastitis, wastewater management, and dairy systems management.

Daniela's research interests include animal health and dairy production's impact on the environment. "I am thrilled to be working in this exciting research and extension position, and look forward to working with producers, consultants, and allied industry representatives. My goal as a Dairy Advisor is to use my knowledge and experience to develop a program dedicated to improving the sustainability of dairy operations. I am interested in conducting research to enhance animal health and animal welfare in dairy cattle, and also to address environmental issues and regulations. I would also like to explore developing training programs for multi-cultural dairy employees."

"I am based out of the University of California Cooperative Extension office in Fresno, and once a week, will be at the UCCE Madera office. Please feel free to contact me with questions, suggestions, and program input. I look forward to speaking with you!"

Funding available to reduce manure methane emissions

Deanne Meyer, Ph.D. - UCCE Livestock Waste Management Specialist

Dairy producers are well on the way to achieving the State's goal of 40% greenhouse gas reduction from manure by 2030. Greenhouse gas reduction funds have been used successfully to reduce manure methane emissions. More than $110,000,000 have been awarded for dairy digesters. The intent of these digesters is to capture biogas. The gas will be used for vehicle fuel or to replace natural gas. Many dairies "cluster" together. The clusters are designed to make it more efficient to use a common biogas pipeline. Additional sources of funds are being used for dairy digesters as well. Dairy digester developers continue to work to connect facilities together into pipelines. Contact a digester developer now if you're interested in applying for state funds. In 2019, $61-$75 million are available for digester projects. Application information will be available in early January. Applications will be due in February. These applications take considerable time and input. Collecting some of the information now prepares you for the actual process in January. More information is available about the application process at https://www.cdfa.ca.gov/oefi/ddrdp/ . If you're interested in seeing where digesters are located, see the Dairy Cares map available at https://www.dairycares.com/dairy-digesters .

If a digester isn't for your facility, consider installation of an alternative manure management practice (AMMP). More than $30,000,000 have been awarded for AMMP in the last few years. These practices prevent methane from forming by keeping manure from getting into liquid storage. Applications for funding are usually done by dairy producers. Technical service may be available from your local Cooperative Extension Office in addition to trade associations or consultants. Cooperative Extension Advisor, Betsy Karle (bmkarle@ucanr or 530-865-1156) can help direct you to resources. Many pieces of detailed information are needed for the application. Did you apply before and not receive funding? If so, review comments on your proposal and improve your application. If you're new to the process, take time to go through all the required documents and spreadsheets first. This will give you a feel for how much time the process will take and whom you'll need to contact for information. In 2019, $19-$33 million will be available for non-digester practices. More information about AMMP is available https://www.cdfa.ca.gov/oefi/AMMP/.