

DAIRY VETERINARY NEWSLETTER

January 2017

Medication Darts Are Gaining in Popularity - Do They Affect Meat Quality? Are There Risks?

Many veterinarians, whether in dairy practice or other types of practice, have experienced a phenomenon when attempting to treat or otherwise handle beef cattle or post-weaned dairy cattle that are not yet milking, such as yearlings. The client is somewhat used to being around the animals and states that, "You can walk right up to them". And indeed, approaching the animals to a distance of approximately three feet is often not difficult. However, without adequate facilities including at least a corner to run them into and swing a gate on them, etc. treating the animals is quite difficult and can become a frustrating and dangerous - to people and animals - rodeo. A solution to this problem, which is being rapidly and increasingly adopted, is the use of medication darts.

Some colleagues of mine, both in practice and academia really like using medication darts and medication pellets. They make administration of anthelmintics, vaccines, and treatments such as antibiotics a lot easier on everyone. When I was in my residency at Michigan State, we did a fair amount of ambulatory work for auto industry workers around the Lansing, Michigan area who were originally from all regions of the country, and many of them had about three backyard Angus or Charolais. I would have loved to have had medication darts for a lot of those "farm" visits.

However, many in the cattle industry are raising some concerns. What are some of the characteristics, and what is the usage data for medication darts? Is there any reason for concern about meat and carcass quality associated with their use?

An interesting article in the September 2015 issue of Drovers magazine by J. Maday covers many aspects of medication darts. Sometimes referred to as pneumatic darts or remote drug delivery (RDD), they are often fired from a rifle or pistol with pressurized gas, or a blank .22 caliber cartridge. When impacting the animal, the rear of the dart has a charge which fires to inject the contents of the medication chamber into the tissue. The dart gun is often referred to as a projector.

I looked up what appears to be a major brand of RDD darts and equipment. The package including the projector and some darts can cost between \$500.00 and \$2,000.00. 5-packs of darts that hold between 1 and 10 cc's (ml of course, but they describe the volume in cc's) cost between \$12.00 and \$30.00, often between \$20.00 and \$25.00. I also found some pistol or rifle projectors that propel darts using CO₂, priced without any darts, between \$270.00 and \$425.00.

The Drovers article states that Dee Griffin, veterinarian at Texas A&M, notes that "RDD use has grown exponentially in recent years, with dart sales numbering in the millions" (quote from Maday, referring to D. Griffin). Griffin states however, "darts for delivery of medication or vaccines to animals intended for food are not under any circumstances or in any way recommended, approved or condoned by any veterinary organization".

The article also mentions that Mike Apley, Kansas State University veterinarian, has stated that the beef industry has adopted the RDD technology too rapidly and too widely before all of the impacts on food quality were studied.

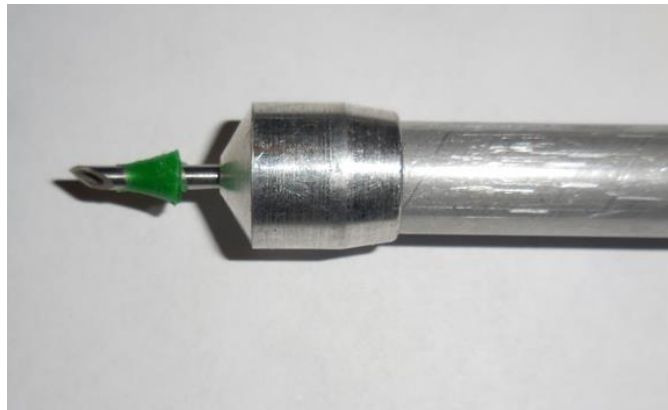


Image of some RDD medication darts and a close up view of another type of needle for animal drug delivery.

Maday points out that Beef Quality Assurance (BQA) experts have concerns about the medication darts:

- Was the drug delivered to the correct tissue as labeled (e.g. SQ or IM)? Is it possible that some drug could have inadvertently been administered IV? (Presumably, one would not attempt IV administration with a dart)
- Was the injection site that recommended by BQA, Viborg's triangle?
- Avoiding the neck region above is a logical idea for animal safety, but "targeting other areas, such as the hindquarters - - is not acceptable from a BQA standpoint". (I would still prefer not to be shooting darts at the Viborg's triangle target as a regular practice.)
- How sure can the producer or veterinarian be that foreign objects such as broken needles do not embed in the tissues?
- There should be a plan for "actions required should a needle break and leave metal in the animal" (I am not sure what these actions would be, except possibly excluding the animal from sale into the food chain? I could find no guidelines, and trying to somehow remove the metal would be difficult and quite possibly unsuccessful in my opinion.)
- "Tests have shown [that one] dart can deliver antibiotics [via both SQ and IM routes]. Most antibiotic labels require either SQ or IM use, not both, so delivery of those products with a dart could constitute illegal, extra-label use."
- Oxytetracycline, a commonly used drug, can indeed be administered SQ and IM, but no darts are manufactured with sufficient volume to deliver the dosage required.
- The above point made me start thinking about how much tetracycline a 10 ml syringe could deliver, and what size calf could indeed be treated. However, this raises another issue that I have not found guidelines regarding. What is the minimum body weight of cattle or other livestock species recommended for treatment with an RDD dart? Does it vary by injection volume and size of dart?
- Some packing plants have found carcasses with darts or portions of darts embedded. Adulteration of food with metal can be prosecuted.
- Darts have been found in injection site abscesses in meat. There is speculation that unsterile darts were the cause. This may include contamination of medications while darts are being filled.

Preliminary research on medication darts; failure to consistently inject the drug

Iowa State University studied RDD use in 15 Holstein calves with body weight 750-900 pounds. Bovine Veterinarian, August 23, 2016, in another article by Maday, reported on it. Pneumatic darts with 3/4" 14 gauge needles delivered 10 ml of tulathromycin to the cattle in a mobile chute from 9.1 meters, just under 30 feet away. They used several measures of pain and inflammation at the injection sites. 3 calves were euthanized at 24 hours post-treatment and injection sites were evaluated. A major finding was that 4 of the 15 darts (27%) did not properly inject the medication. Because they weighed just over 10 grams (average) more than the injected darts, this suggests that none of the 10 ml

was delivered by just over one-fourth of the darts.

Medication RDD darts will probably continue to grow in usage, and they offer convenience and in many cases, probably less stress for the cattle treated. However, there are some important problems as mentioned above to consider, and further research and possible modification of the darts appears to be needed.

Calf Enteric Panel for 5 Calf Diarrhea Pathogens Available at UVDL

The Utah Veterinary Diagnostic Laboratory has added a new molecular diagnostic test during the past year, the Calf Enteric Panel. Virtually all dairy producers and veterinarians do not routinely test calf feces for the etiologic pathogen(s), but in outbreak situations it can be very useful to know which particular pathogen is causing most of the diarrhea cases. The test uses PCR to detect bovine rotavirus, coronavirus, *Cryptosporidium* spp., *Salmonella* spp., and *E. coli* F5 (K99). The cost is \$55.00 and results are available in 5 to 7 days. The diagnostic sample is feces, minimum of 2 grams.

I agree with the main reason that PCR has been slowly adopted in every area of veterinary medicine, and to some degree in human medicine, over the nearly 30 years since it was discovered, the cost. PCR is a relatively expensive method of diagnosing pathogens. However, as mentioned earlier, for outbreaks or for QA monitoring on some of our farms that raise hundreds to thousands of calves per year, this is a good diagnostic test. Requests for the test are growing at UVDL, but I think it may be underutilized.

If you have any questions about the test, you can contact the UVDL at (435) 797-1895. Dr. Arnaud VanWettere is the section head of Molecular Diagnostics at UVDL.

Lawsuit Against Cooperatives Working Together (CWT) - Is Supply Management Dead?

Dairy veterinarians, like all members of the dairy industry, are keenly interested in and affected by the price that producers receive for their milk. What is profitable, and also what producers perceive about affordability of herd health and other expenditures with veterinarians depends in no small part on the milk price and whether it is headed up or down. However, in my experience, many veterinarians and other members of the U.S. dairy industry have little to no experience with “supply management”, also sometimes called “buying base” or a “quota system”. These are terms for the attempt in some parts of the country and the world by dairy producers to control the volume of milk production in a region, state, province or country, and thus ensure that the milk price does not go low enough that profitability is virtually impossible. Since the end of the Minnesota-Wisconsin (MW) milk pricing system that lasted from 1961 to 1993, a return to increased volatility in the price of U.S. milk resulted, as was widely predicted. Milk price is often described as going through either 3.3 or 6.5 year cycles since that time. During every 6.5 years, the milk price is relatively high and described as “good” for dairy farms for about 1.5 years.

When I was in private practice approximately 30 years ago, I had some experience with a “base” or quota system in the region, designed to regulate the milk price. Regardless of one’s opinions about capitalism, etc. it was the most effective way to control the milk price and keep it from going too low I ever saw. However, supply management has never been widely adopted or consistently applied in the U.S. dairy industry.

There is neither reason nor space in this newsletter to attempt to describe the details, but veterinarians too young to remember can read about the Milk Diversion Program and then the Dairy Termination Program begun in the mid 1980’s. Basically, producers could bid on how low a price they wanted to be paid for the milk their herd had produced in recent years, in exchange for selling their cows to slaughter. The first program’s lowest bid was \$3.00/cwt and the highest bid was \$100.00/cwt. Starting from the lowest, the program accepted ever higher bids until the allocated money was spent. Producers who committed to sell their cows were paid for the milk they “would have sold” for the next 3 years, and after that time they could begin milking again if they desired. Many dairy farms that really struggled did not even bid; some very good producers took this as an opportunity to sell the herd.

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Every dairy vet I knew had a story of good clients who unexpectedly sold out and some struggling clients who probably should have. These programs did help increase the farm milk price, however. Then from 2003 to 2010 came the Cooperatives Working Together (CWT) program. A part of CWT included 10 different Herd Retirement Programs. 2,802 dairy herds, nearly 507,000 cows, and 9.7 billion pounds of milk were removed from the dairy industry. 35 milk cooperatives and the National Milk Producers Federation participated in CWT.

In October 2016, a lawsuit filed against CWT by the group Compassion Over Killing, objecting to the CWT programs sending cows to slaughter, was settled for \$52 million. How much of the money goes to attorneys is not finalized, but commonly one-third of the settlement goes to attorneys in these types of cases. There is no admission of guilt by any parties in the lawsuit, but based on the comments of those involved, it seems quite likely that this may be the death of supply management, at least in terms of herd retirement programs. Some of the language of the lawsuit and the commentary also suggests that any measures to regulate the right of producers to sell milk by some kind of quota system would probably come under legal attack as well. This is clearly in keeping with a free market economy and certainly does benefit consumers, including dairy veterinarians. However, it probably means that too many periods of a poorly profitable milk price during every 6.5 year cycle will continue into the foreseeable future. This will indeed affect dairy veterinary practice, at least to some degree.

I hope you all had a good holiday season and wish you a happy 2017.

Please let us know your comments and also suggestions for future topics. I can be reached at (435) 760-3731 (Cell), (435) 797-1899 M-Tues, (435) 797-7120 W-F or David.Wilson@usu.edu.



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