First Defense®

RESEARCH REPORT

*Nasdaq: ICCC*

# Protocol Drift in Dam-Level Scour Vaccine Programs Putting Calves at Risk for Scours & Draining the Pocketbook

## QUICK READ

A significant portion of dairy operations relying on dam-level scour vaccination programs may be at risk for scours breaks in the calf herd due to protocol drift.

A study conducted in 2016 indicates that 79% of operations administering primary-vaccinations to first-calf heifers and 78% of operations administering booster vaccines to cows are not following minimum label requirements that drive effectiveness.

**Factors resulting in non-compliance:**

- Not providing primary vaccination to the entire herd of first-calf heifers or the annual booster to all pregnant L1+ cows.
- Not administering the second dose required for primary vaccination or the annual booster within the essential time period pre-calving.

## Break Tradition?

Vaccinating cows prior to calving with products such as ScourGuard®, Guardian®, or Scour Bos® has traditionally been a tool to prevent newborn calf scours. Unfortunately, implementation may be falling short as neonatal calf scours have had little improvement over the years. Within the dairy industry scours incidence has been hovering at 25% of pre-weaned heifers, of which 18.2% of cases are severe enough to require antibiotic treatment[1]. Scours is responsible for more than half (56.5%) of pre-weaned dairy heifer deaths[2] and remains a significant contributor to the 3.6% of beef-calves that die prior to weaning[3].

## Dam-Level Scour Vaccines 101

Pre-partum cows develop antibodies against scour causing pathogens contained in dam-level scour vaccines. This specific antibody development requires a 2-shot primary vaccination regimen for the first year and an annual booster each subsequent year. Meaningful antibody generation takes approximately 7-14 days post-vaccination. These antibodies circulate the bloodstream waiting for receptors within the mammary gland to concentrate them in colostrum. The 2-3 weeks prior to calving is the only time these receptors are able to funnel sufficient amounts of antibody into colostrum[4]. Following vaccine dosage requirements, the cow's ability to mount an immune response, and the timing of antibody generation are significant variables that go into this protection equation. No protection is transferred in utero. Therefore colostrum must be consumed by the calf in an aseptic manner to provide protection.

## Real-World Insights

In 2016, Strategies for Growth, in collaboration with Ipsos Agriculture and Animal Health, now Kynetec a leading animal health marketing research firm, conducted a study with 100 dairies across the United States. This study included owners or managers of dairies with 200 or more lactating/dry cows that have implemented scour vaccination programs. On average, operations interviewed had 772 cows with the study representing 77,154 lactating cows nationwide.

Quantifying protocol-drift when implementing dam-level calf scour vaccine protocols was an important part of this study, since it's been documented that deviation outside label requirements for dam-level vaccines results in limited, if any, scour protection for the calf herd.

## The Detail

A majority of operations administering dam-level calf scour vaccines, are experiencing substantial protocol-drift in multiple ways. Since scour vaccine effectiveness hinges on meeting label requirements, a significant portion of their calf herd is unprotected and at risk for scours.

### First - Administration

Approximately 40% of producers using a dam-level calf scour vaccine do not vaccinate all first-calf heifers. Further, even if this group receives 1 dose of vaccine, more than one-third of replacement heifers don't receive the second shot required for primary vaccination. The necessary annual booster for previously vaccinated lactating cows is also missed in nearly 25% of cows. These label-required shots may be missed for any number of reasons; fear of adverse reactions during hot temperatures, heifer/cow number is overlooked on the vaccination list, heifer/cow is not in the correct pen or can't be easily found, cows too heavy in calf to comfortably go through working chute or decision to discard first-calf heifer colostrum. These situations can falsely justify skipping needed vaccinations.

### Second - Timing

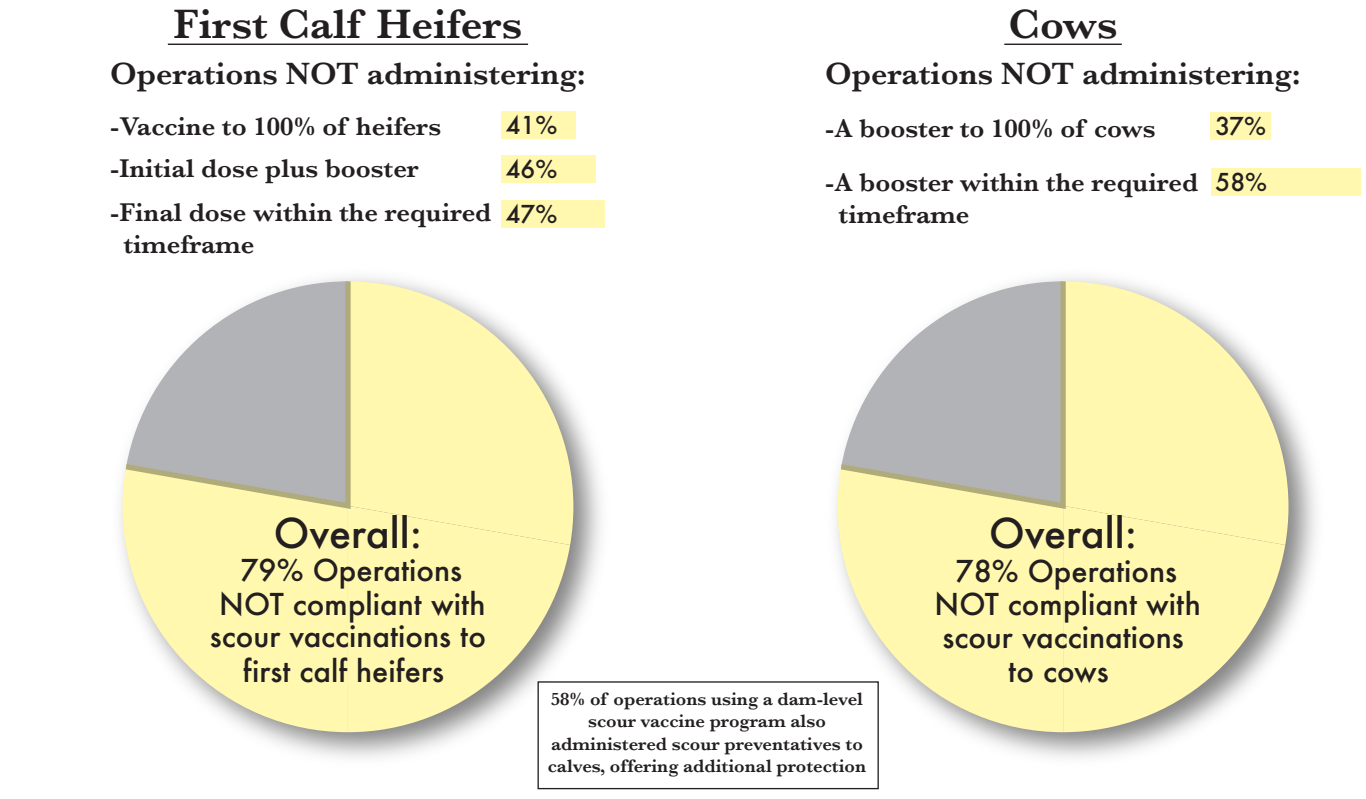
Producers vaccinating first-calf heifers estimate that more than one-third of heifers receive the second dose, required for primary vaccination, outside the label-required time period pre-calving. In addition, close to two-thirds of producers administering the annual booster to lactating cows give it earlier or later than required. Further, there are times Mother Nature doesn't adhere to the calculated calving schedule. Producers reported that 20% of cows or heifers calve either two or more weeks early, or 2 or more weeks later, then the projected due date. This is likely to put them outside the critical window of opportunity to maximize scour preventing antibody concentrations in the colostrum.

### Third - The Drift Accumulates

Finally, based on the questioning sequence in the survey, we analyzed compliance across all operations utilizing dam-level scour vaccine programs. Protocol drift was happening at equal rates for both first-calf heifers and pregnant cows leading to nearly 80% of operations being noncompliant with label requirements that are directly related to effectiveness of the product.

**This is due to a significant portion of operations:**

1) not vaccinating all first-calf heifers,
2) not administering an initial dose plus booster to provide primary vaccination, and
3) not administering the final vaccine dose to first-calf heifers, or the booster to cows within the appropriate time period.



## Bottom Line

Small deviations in dam-level scour vaccination protocols lead to large consequences: at-risk calves and wasted expenditures. Providing newborns immediate immunity through antibodies that bind and neutralize scour pathogens is now possible without the complexities and variability of vaccine programs. The First Defense ® line of USDA approved veterinary biologics provide a guaranteed dose of *E. coli*, coronavirus, and rotavirus antibodies in a single-dose administered to the calf at birth, without requiring a colostrum delay.

### SOURCES



1. USDA. Dairy Heifer Raiser. USDA-APHIS-NAHMS; 2011.
2. USDA. Dairy 2014: Health and Management Practices on U.S. Dairy Operations. USDA-APHIS-NAHMS; 2014.
3. USDA. Beef 2007-2008 Part IV: Reference of Beef Cow-calf Management Practices in the United States. USDA-APHIS-NAHMS; 2007-08.
4. Chris Chase DVM, PhD, Professor, Department of Veterinary and Biomedical Sciences, South Dakota State University quoted in Beef Magazine: Pre-Calving Vaccination Isn't a Silver Bullet. Written by Heather Smith Thomas for Farm Progress Publishing; Jan 1, 2012.

**ImmuCell Corporation**
56 Evergreen Drive, Portland, ME 04103
mail@immucell.com
800-466-8235