

Next generation links—maternal and daughter health in dairy cows

In this research heifers whose dams experienced disease were less likely to have disease themselves, yet were more likely to be culled

By Dianne Priamo

Clinical disease has negative effects on dairy cow health and performance—but a new study shows the offspring of cows who have experienced disease are actually less likely to become ill themselves.

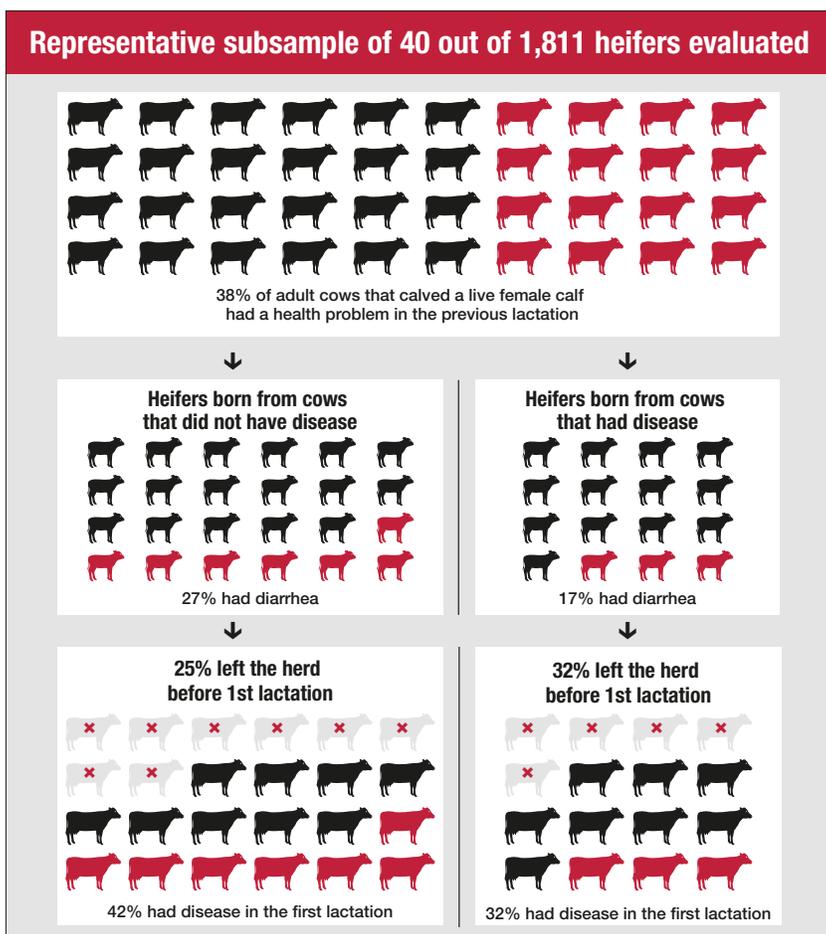
Researchers at the University of Guelph hope to use this information to improve disease resistance in offspring without the occurrence of disease in the previous generation.

After studying the negative outcomes of clinical disease in dairy cows, Animal Biosciences graduate student Murilo Carvalho and Prof. Eduardo Ribeiro were inspired to investigate whether cow health status and parity affected the health, survival and performance of their heifers.

“Considering that clinical disease weakened dairy cow performance, including fertility, our question was whether heifers would be affected by diseases their mother may have had even before they were pregnant,” says Ribeiro.

The researchers used data collected in a large commercial herd in Florida due to its size and comprehensive health records. They observed three different groups of cows born there over a 16-month period: daughters of primiparous dams (meaning that this was their first pregnancy), and daughters of multiparous dams—those that had previously been pregnant—that either had or didn’t have one or more clinical diseases during their previous lactation.

More than 1,800 heifers were part of the study. Their genetic makeup and physical characteristics were



recorded, along with their disease events, reproductive performance, and culling from birth until first lactation.

Interestingly, the heifers born from dams who previously had disease were more likely to be culled—or removed—from the herd, despite the fact that they were less likely to develop disease compared to the heifers of the disease-free dams. The two groups were otherwise very similar in calving size, gestation period and genetic milk production potential.

Why is this? The researchers want to discover the mechanisms

behind this unexpected association. Such improved disease resistance would benefit commercial producers economically, improve animal welfare and could potentially reduce antibiotic use on farms.

“If we can understand how this disease resistance is modulated by genetic and nongenetic factors, including those occurring in utero, perhaps we can propose novel management strategies that would improve disease resistance in heifers without their dams experiencing disease in the first place,” says Ribeiro.

Further information on the study can be accessed at doi.org/10.3168/jds.2019-17083

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