

# PULMONARY HYPOPLASIA WITH ANASARCA (PHA)

There has recently been a suspected case of PHA in a Dexter calf that was aborted at 5 months (approximately four months premature). The same mating produced the same result in two successive years. Upon investigation, it would appear that this problem may be more prevalent than previously thought.

Pulmonary Hypoplasia with Anasarca (PHA) looks to be one of the oldest genetic mutations found in cattle. It is a lethal genetic condition caused by a recessive mutation that usually causes calves to be born dead or aborted early. The calves have undeveloped or poorly formed lungs (Pulmonary Hypoplasia) and they have lots of excess retained fluid (Anasarca) that can cause the calf to be more than twice its normal birth weight. If the calf goes full term, this of course creates problems at calving, and if it is not delivered by Caesarean section, permanent damage can be done to the cow.

The origin of PHA would seem to be from a few sires in the Maine-Anjou and Shorthorn breeds of cattle but it has now shown up in the Dexter breed and is found in other breeds as well. PHA seems to have been introduced to the NZ Dexter herd via Woodmagic Wheatear (a Dexter cow in the UK), and Trillium Chabotte and Aldebaran Priapus (two bulls from Canada).



“Waterbaby” calf caused by PHA. Notice normal leg length, and an extremely swollen head that makes it difficult to see the eyes and nose. The animal also has swelling in the torso, although in this case, the head swelling is the most pronounced.

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This red-coloured PHA "waterbaby" was not carried to term but still created a difficult calving for the mother due to swelling.

PHA can only show up where two carriers are mated to each other, and in this case there is a 25% chance of having a PHA calf every time this mating is repeated. The sire and the dam remember are carriers; they appear in all respects normal but for every four calves born when two carriers are mated, one will have PHA and is most likely to be born dead or aborted early; the other three calves will look normal but two of them will be PHA Carriers. Mating a carrier bull or cow to a non-carrier bull or cow will result in 50% of the calves being PHA carriers.

Unlike the Dexter bulldog gene (Chondrodysplasia) there is no visual way of even guessing whether an animal is a PHA carrier or not. Any animal could be a carrier and the only way to know for sure is to test for it. In no way is PHA connected to Chondrodysplasia, so having done one test and being clear of it will not mean an animal is automatically clear of the other gene.

It would seem a good idea therefore, that Dexter Society members consider testing for PHA to help determine which bulls are carriers. If any are, then they should only be mated with non-carriers. This is especially important for collected bulls, whose semen will likely be widely distributed throughout the breeding herd in both North and South Islands.

*Tests are available for PHA using hair follicles, blood or semen and our nearest testing provider is the University of Queensland. Current price per test is AU\$50 (approx. \$63 at the current exchange rate), plus postage to Australia. This is a different test from that used for Chondrodysplasia, although both tests can be performed using the same sample if required. Contact the herd registrar for more information.*

*Alternatively, PHA tests may be ordered from UC Davis in California, USA at the price of US\$25 (approx. \$31 at the current exchange rate), plus postage to the USA. Visit their [website](#) for further information. An Import Permit and Signed Letter must accompany any Tail Hair samples sent to UC Davis. The necessary documents may be downloaded from the DCSNZ website [here](#).*