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Antech signals 'new era of innovation' with first AI-powered veterinary diagnostic

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by Joseph Harvey | @JHJournalist | joseph.harvey@informa.com

Antech Diagnostics is launching a test that can predict whether a cat will develop chronic kidney disease (CKD) within two years. Animal Pharm editor Joseph Harvey spoke to two leading executives from the firm about how this technology fits into the future of companion animal reference laboratory diagnostics.

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Antech Diagnostics will soon be offering its RenalTech test across the VCA North American network of veterinary clinics and hospitals.

The product – set to launch at the end of September – will be the veterinary industry's first artificial intelligence-driven predictive diagnostic tool for companion animals, according to David Eaton – Antech's director of product development. It allows users to predict CKD in a cat around two years before signs of the disease are actually visible.

"In the past, you could only diagnose the disease when it is already starting to do damage to the pet," Mr Eaton said. "RenalTech actually allows practitioners to predict, with 95% certainty, that a cat is going to develop CKD – one of the most prevalent diseases among cats – a whole two years before it is present in the cat."

The Waltham Center for Pet Nutrition worked on the development of the technology and enlisted Antech to head the commercialization efforts.

Mr Eaton said this is "arguably one of the most heavily research-driven and data-driven tools ever to be brought to veterinary medicine".

Just math

The basis for RenalTech involved historical pet visit data from Banfield's clinics, which are also part of the Mars Petcare organization. This data features information on 150,000 cats collected over the course of 700,000 veterinary visits across 20 years. The information was compiled, analyzed and put into an algorithm that is the core feature of RenalTech. The algorithm performs billions of calculations to ascertain whether or not a cat will get CKD.

"It's not complicated," Dr Aucoin explained. "It's just math. It's deep machine learning. This process happens over and over again. It gets incrementally smarter because it learns every time it fails."

He said this process has only just become viable in the animal health space due to recent technological advances and a reduction in cost. However, while this requires next-generation technology, the vets are only required to perform standard hematology and urine analysis testing to gain results.

"There is no special test," Mr Eaton told *Animal Pharm*. "A vet just has to carry out those core tests and do them again after a few months. These are just regular tests. RenalTech is offered at no additional cost to the veterinarian."

RenalTech relies on seven common feline health measurements – creatinine, blood urea nitrogen, white blood cell

count, urine-specific gravity, urine protein, urine pH and approximate age – to deliver an intuitive score of between zero and 100. A score of greater than 50 indicates the cat has 95% chance or higher of suffering from CKD in two years. A score of less than five means the cat will not suffer from the disease. Dr Aucoin said a score between five and 50 suggests more data is needed.

Dr David Aucoin: "I believe we are the first company in this field to work with artificial intelligence and I do believe we will be the leader. RenalTech is the first instalment of a platform and we've already begun working on other disease states in cats and dogs."

Antech's chief technology officer David Aucoin said CKD is a very common and complex disease, with up to a third of cats suffering from it at some point in the lives. CKD typically occurs in cats over the age of 10 and it reduces kidney function by over 50% before clinical signs are apparent. In fact, CKD is the number one cause of death in cats over the age of five.

This particular area is ripe for innovation, as vets have not been able to predict onset of the disease. Until now, vets have only been able to diagnose CKD. More importantly, they could only diagnose the disease when the cat was already suffering badly.

Dr Aucoin stated: "We can now tell pet owners before any damage has been done. Pet owners know their cats but by the time owners notice their cat is sick, they're really sick. There's not a whole lot that can be done to mitigate the disease. Catching it earlier or before it even occurs is revolutionary."

'New era of innovation'

Mr Eaton told *Animal Pharm*: "Many people think about VCA and Antech in the same breath. That's because these companies were founded at the same time by the same people around 30 years ago. In the ensuing years, Antech grew into being the largest veterinary reference laboratory network in the US. We're about 70 labs in North America right now. At the same time, our sister company VCA grew into being one of the largest veterinary hospital corporation in the US.

"Two years ago, Mars Petcare – the world's largest pet care company – came along and purchased both companies. Since the acquisition, Antech has been building its core reference laboratory business. We've really been turning our sights to a new era of innovation. We are able to do that because of the energy, talent and resources Mars brings to us."

This thirst for the next generation of reference diagnostics did not exist even five years ago, Dr Aucoin noted.

He explained: "We are now inundated with innovation because costs have come down and capabilities have

improved. We will continue on this pathway utilizing the vast amount of data the ecosystem at Mars has available to it. Molecular diagnostics is some we're extremely interested in, particularly genomics.

"Where we're going with diagnostics is to know the pet on an individual basis. On the human side we have personalized medicine – that's really where we're going. Anything that gives us an edge and allows us to say: We know your dog and we know what we're going to do to make sure it lives as long as possible.'

"I believe we are the first company in this field to work with artificial intelligence and I do believe we will be the leader as new products are released. RenalTech is the first instalment of a platform and we've already begun working on other disease states in cats and dogs. This is really just the start."