

## **Prediction and prophylaxis of EIPH during racing by on-board monitoring of horses during training – a pilot study**

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Exercise-induced pulmonary haemorrhage (EIPH) – bleeding from the lungs - is a cause of reduced performance in Thoroughbred racehorses and some risk factors for the disease have been identified. However, while studies have clearly established a link between severity of EIPH and impaired performance, the EIPH risk factors identified to date are not useful in predicting or preventing EIPH. Understanding physiologic and clinical associations is important to provide an understanding of how EIPH impairs performance but also the potential for early detection or prediction of severe EIPH. This understanding does not currently exist because we lacked the technology enabling large scale real-time monitoring of horses during racing and training.

The development of advanced, sophisticated and reliable systems for monitoring various physiologic and locomotor variable in horses now provides us with the opportunity to break new ground in understanding EIPH and enabling more effective, drug-free, ways of preventing severe EIPH. These systems allow easy and non-invasive measurement of variables associated with heart rate, recovery, heart rhythm (Electrocardiogram (ECG)) and locomotion parameters such as stride length and, gait symmetry) in a single device.

Establishing unequivocal associations between EIPH and these variables involves the study of large numbers of horses to ensure that the findings are valid and reliable. The purpose of this pilot study is to determine the feasibility of the methods and technology, and number of horses required to provide statistical probity before embarking on a larger, more expensive study. This proof-of-concept study will enable the design of a rigorous, methodologically sound large scale study in subsequent years that will enable the use advanced on-board monitoring systems to detect premonitory signs for horses at risk of developing EIPH.