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Technology offer

Injectable sensor platform for continuous equine health monitoring

Background

Colic is one of the most common and deadliest medical emergencies in horses, affecting an estimated 3.5 to 10.6 horses per 100 each year across a global population of around 60 million horses [1]. In severe cases requiring surgery, fatality rates reach up to 31%, and treatment costs range from roughly €2,300 for a medical case to €15,000 or more for surgery, alongside months of recovery and lasting loss of performance or breeding value [2,3].

Outcome depends critically on how early colic is recognised: the likelihood of surgery rises steeply within the first hours after onset. Yet detection today still relies largely on intermittent, subjective human observation, which easily misses subtle early signs. Existing commercial tools, such as camera systems and wearable sensors, lack scientific validation, depend on fixed infrastructure or line of sight, and, in the case of wearables, are frequently rejected because of safety risks such as abrasion wounds and entanglement during long-term use [4].

Market

There is a substantial unmet need for reliable, continuous and early colic monitoring. The initial focus lies on high-value professional segments, where the economic and welfare impact is greatest, notably elite sport and racing horses (together around 1.3 to 1.4 million animals worldwide), as well as semi-professional owners who typically lack 24/7 on-site veterinary or grooming coverage [5,6]. In these segments individual horse values commonly range from €20,000 to well over €500,000, with annual costs of €20,000 to €100,000 or more per horse.

The broader equine health-technology market is growing at roughly 8% per year [7], and sits within a large global animal-care market — with a core animal-health market on the order of USD 30 billion and a comparable digital and diagnostic complement, together approaching USD 60 billion [8]. Continuous, objective health data further opens adjacent opportunities with equine insurers — one industry estimate places the global equine-insurance market at around USD 1.0 billion in 2024, growing towards USD 1.7 billion by 2033 (≈6% CAGR) [9] — where such data can support risk-based premium models. The sector has already embraced injectable technology: identification microchips are mandatory worldwide, and initiatives linking health information to these chips are becoming standard practice.

Technology

The proposed innovation is a minimally invasive, injectable chip that continuously monitors equine behaviour and physiology from within the horse, and automatically detects early signs of colic. It is placed by a veterinarian in a procedure comparable to standard ID-chip implantation, and streams alerts wirelessly to the owner or caretaker, anywhere and at any time.

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Proof of concept

A technological proof of concept has been built, integrating onboard behavioural sensing, embedded machine-learning inference and wireless data transmission in a single system, validated through laboratory, free-space and cadaver testing. The colic-detection algorithms were validated on horses in a double-blinded induced-colic study, detecting colic with 91.2% accuracy up to approximately 20 minutes before peak pain [10].

The technology is now being matured towards a miniaturised, implant-grade device, with in-body robustness, energy autonomy and thermal safety under active investigation. Large-scale data collection across approximately 200 horses in real-world conditions is planned to further validate detection performance and reduce false alarms ahead of in-body deployment.

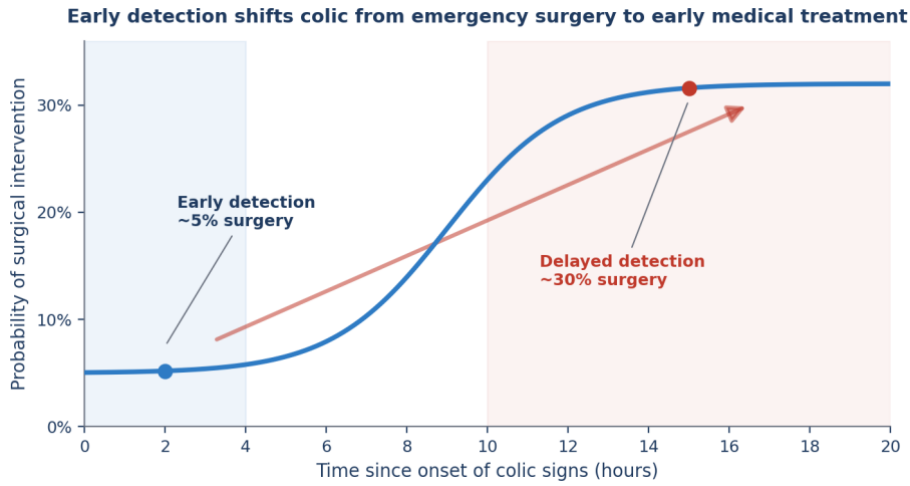

Figure 1: The probability of surgery rises steeply in the hours after colic onset. Early detection shifts management from emergency surgery to early medical treatment, substantially improving welfare and economic outcomes — each avoided surgery saves in the order of €12,700.

Value

- Early: critical events such as colic are detected before clinical peak, enabling timely intervention.
- Multi-parameter: continuous monitoring of activity, behaviour and temperature via onboard machine learning.
- Unobtrusive: fully internal, so it does not disturb the horse and carries none of the wound, chafing or entanglement risks of collars or wearables.
- Remote: low-power wireless telemetry alerts owner and carer 24/7, anywhere, with no handling. Low-maintenance: wireless recharging gives long autonomy.

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Other indications

Beyond colic, the platform provides a scalable foundation for injectable equine health diagnostics for conditions that manifest through behavioural or physiological change, without hardware replacement. The same behavioural approach has, for example, already been shown to detect foaling. Further potential extensions include sustained temperature elevations indicative of inflammatory or infectious processes, prolonged pain or discomfort states, and atypical activity patterns during recovery — positioning the device as a long-term platform for continuous equine health monitoring rather than a single-purpose sensor.

IP-position

The core intellectual property: annotated datasets, the detection algorithms, embedded firmware, system architecture and data-processing pipelines, is protected primarily through trade secrets.

Partnering

We are seeking investors and partners to support the spin-off pathway and bring the technology to market. We are seeking around €1.6M to fund the spin-off pathway (2028–2031). Alongside investment, we welcome collaboration with the equine-industry network, veterinary distribution channels and equine insurers for pilot and B2B2C opportunities.

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