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## A single high dose of buprenorphine to provide 24 hour opioid analgesia in sheep

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**Statement of the Problem:** Sheep are commonly used as models in medical research, including invasive cardiovascular and orthopedic surgery. Because sheep are stoic in their responses, the assessment of pain may be challenging. In addition, handling induces stress and flight responses. Three times daily buprenorphine regimens risk exacerbating erratic escape behaviour, which can lead to accidental trauma in already traumatized animals.

**Methodology & Theoretical Orientation:** The aim of this study was to determine if a single high dose of buprenorphine achieves therapeutic plasma concentrations for an extended period of time with minimal side effects. Sheep were administered buprenorphine 0.1mg/kg IV or SC. Throughout the monitoring phase serial blood samples taken for analysis by HPLC-MS/MS.

**Findings:** In all sheep plasma levels of buprenorphine exceeded the recognized lower analgesic threshold for at least 24 hours. The buprenorphine dose was well tolerated and no adverse reactions were observed.

**Conclusion & Significance:** Provision of full duration after-hours/overnight opioid analgesia is the primary welfare consideration following surgery in our patients. Because of buprenorphine's relatively high safety margin compared with other opioids, once daily dosing may also be translatable to other veterinary species, following pharmacodynamics-pharmacokinetic integration.

## Biography

Scott H Edwards is a Murdoch graduate who embarked on 12 years of small animal practice in Australia and the UK before undertaking a PhD on intra-articular drug delivery, using ovine and equine models. Aligned projects tested hyaluronate, NSAIDs and stem cells in the treatment of arthritis. Currently teaching pharmacology at the School of Animal and Veterinary Sciences, Charles Sturt University (CSU), Australia. His research interests include pharmacokinetics, arthritis, drug delivery systems (particulate and implant), equine endocrinology and ruminant welfare (in production and research). He strongly believes that research should be directed towards practical benefit goals, a reflection of CSU's focus on patent protection of researcher IP and active engagement of industry partners in commercialisation venture. He still finds time to help in the Teaching Hospital, terrifying final year veterinary students and keeping in touch with the real world (unless Emus are involved).

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