



Care-Ring™ Case Study “one-pager”

Project Title	Care-Ring™: development of an anesthetic delivery elastrator band.	
Client	Alberta Beef Producers 	Alberta Lamb Producers 
Timelines	<p>CCR was approached by stakeholders in the Alberta Beef (in 2016) and Lamb production industry (in 2021). The Care-Ring™ concept was developed and patented in 2017 (issued in 2021), alpha prototypes field trialed in 2018, commercial scale production was developed in 2022. Registration studies are currently on-going. The product is available under LidoBand™ trade name as prescription product in Canada and US currently through AVL/Solvvet (a related party company).</p>	
Problem to address	<p>CCR was approached by stakeholders in the Alberta Beef and Lamb production industry to develop a user-friendly solution to delivery local anesthetic for the duration of the castration process (which can take up to 42 days) to address the code of practice (NFACC, 2020). A further goal was to do this without the need to greatly change from existing practices. Globally, over one billion farm animals undergo some form of castration, dehorning or tail docking annually (FOA, 2017). Currently, a large majority of procedures are performed by a vet or farmer without analgesics. The global number of livestock requiring this procedure in 2017 was 26 billion, this is expected to reach 39 billion by 2030. (FOA, 2017) There is global pressure, supported by governments and non-governmental organizations, to provide pain relief alongside surgical procedures on animals.</p>	
Addressable Market Size	<p>Global market sizes (FOA, 2017):</p> <ul style="list-style-type: none"> • 500 million cattle procedures annually • 500 million sheep procedures annually • 1 billion procedures/year <p>20% addressable market with MRSP Compared to competitor \$1/unit</p>	
CCR proposal	<p>CCR proposed the idea of infusing lidocaine (approved for use in food animals) into already existing latex castration bands based on adapting our knowledge of testing antimicrobial eluting latex catheters and medical devices. A 5-stage phased gated research program we developed that started with in vitro builds and formulation down-selection to conclude with field trial studies. The proposal focused on partnerships with producer groups and government agencies to secure significant non-dilutive funding for the initial phases of the project. Stakeholder (producer engagement) was a central foundation to product conceptualization.</p>	
What CCR did	<p>5 Stage, Phase Gated Approach:</p> <ul style="list-style-type: none"> • Phase I: Discovery phase literature review, deep dive into problem and solution space, engagement with industry stakeholders on design problem. Engagement with medical device and formulation expertise to design early 	

	<p>prototypes. Functional down selection based on PUGH analysis. Intellectual property filing.</p> <ul style="list-style-type: none"> ● Phase II: Funding securement. Engagement with public funding sources (NSERC, ALMA, AAFC, RDAR, SRDP) to secure significant non-dilutive development funding. Engagement with regulatory authorities. ● Phase III: Early small scale (50 head) pilot studies to develop assessment and analytical performance methods to be used in later field validation and registration experiments. ● Phase IV: Scale up production and device manufacture optimization. Development of drug residue methodologies and improved drug elution analytics. Packaging optimization. Engagement with lamb producers domestically and in Australian market. ● Phase V: Formal engagement with manufacturing partner, regulatory agencies and design and execution of regulatory approval studies.
<p>Project Timelines</p>	
<p>Final output(s)</p>	<ul style="list-style-type: none"> ● Patented Novel technology US 11,596,510 ● Patented Packaging to consider human factors Design patent AU202214318 ● Functional product
<p>External References</p>	<ul style="list-style-type: none"> ● https://ccr01.com/products ● www.lidoband.com ● www.care-ring.ca ● Saville, J., Ross, J., Trefz, T., Schatz, C., Matheson-Bird, H., Ralston, B., . . . Olson, M. (2020, January). Development and field validation of lidocaine-load castration bands for bovine pain mitigation. <i>Animals</i>, 10, 1-16. Retrieved from https://doi.org/10.3390/ani10122363 ● https://youtu.be/IBhjcc3h2yU ● https://acerconsult.ca/output/dairy-digest-alberta-milk-ktt-videos/ ● Ross JA, Roche SM, Beaugrand K, Schatz C, Hammad A, Ralston BJ, Hanson AM, Allan N, Olson M. Assessment of the Pharmacokinetics and Pharmacodynamics of Injectable Lidocaine and a Lidocaine-Impregnated Latex Band for Castration and Tail Docking in Lambs. <i>Animals</i>. 2024; 14(2):255. https://doi.org/10.3390/ani14020255

	<ul style="list-style-type: none"> • Ross <i>et al.</i> “Assessment of the pharmacokinetics and pharmacodynamics of injectable lidocaine and a lidocaine-impregnated latex band for castration in calves”, <i>Animals</i> (2024 submitted). • Roche et al. “Efficacy of Lidocaine impregnated elastrator band for castration and tail-docking in lambs’, <i>Animals</i> (2024 submitted).
Next steps	<ul style="list-style-type: none"> • Licensing partnership agreement is under development. • Registration studies are currently underway in Canada. • The product is available under LidoBand™ trade name as prescription product in Canada and US currently through AVL/Solvat (a related party company). • Development of Care-Ring™ Grande (for >200lbs calves) • Development of Care-Ring™ anti-myiasis band for fly strike control Patent Pending
References	<p>FOA. (2017, Dec 1). <i>The future of food and agriculture: trends and challenges</i>. Retrieved March 28, 2021, from FAO.org: http://www.fao.org/3/i6583e/i6583e.pdf</p> <p>NFACC. (2020, March 31). <i>Code of Practice for the Care and Handling of Beef Cattle 2013</i>. Retrieved from www.nfacc.ca/beef-cattle-code</p>