

# Evaluating data for beef cattle enterprises

Eric J. Behlke, MS, PhD, DVM

TELUS Agriculture & Consumer Goods  
Okotoks, AB T1S 2A2, Canada

## Abstract

Establishing a data-based decision-making process is an important component of veterinary medicine, cattle production, and the interface of these 2 enterprises. There are various methods that can be utilized for the decision-making process, with evidence-based decision-making being a very common method. The backbone of data-based decision making is the appropriate collection, databasing and evaluation/interpretation of the data collected.

**Key words:** data, database, decision making

Data-based decision-making aims to apply evidence gained from the scientific method to certain parts of veterinary practice and beef production.<sup>1</sup> Many systems have been developed to stratify evidence by quality. In general, these systems all follow a similar hierarchy, with the most valuable and highest quality evidence being derived from properly designed, randomized, controlled trials.<sup>2</sup> Multiple trials following this design can be evaluated together by meta-analysis and systematic reviews to provide an even higher level of quality and value. On the other end of the spectrum, the lowest level of evidence available is derived from expert opinion, bench research, first principles and anecdotal observations. While not always useful in the decision-making process, these forms of data are typically the basis behind a great deal of research which eventually leads to the development of higher forms of evidence. The central theme to all of these decision-making processes is that they all require some form of data, and the collection of high-quality data from beef enterprises is paramount for meaningful conclusions to be established from these data.

## Data collection

The essential information required for appropriate evaluation of data from beef cattle enterprises includes the who, what, where, when and why. “Who” would include unique identifiers associated with the animal from which observations are obtained, such as unique ear tag identification number or unique national identification number. “What” refers to the event from which the data are being collected, and examples would include an arrival processing event, treatment event, calving event, etc. “Where” is the physical location of the animal at the time the data are collected, and this may refer to a specific pasture, paddock, pen or handling facility. “When” would be the date and time stamp of exactly when the data were captured. “Why” refers to the event during which the data are collected, such as it being a routine procedure, a treatment, a pregnancy evaluation, etc.

There are several data collections systems available to for all aspects of the beef industry. In addition to capturing the who, what, where, when and why, there are several other features that are essential for capturing data that have the potential to be evaluated in such a way that management decisions can be made from the evaluation. Data must be collected and accessible in real time to avoid retrospective evaluations, which limits the ability to make decisions to affect outcomes associated with the current population. It is paramount that the data are entered with consistency with a high degree of integrity, which alleviates much of the data clean up prior to evaluation, and expedites the process of making decisions based on those data. A user-friendly interface is encouraged to increase the probability of client compliance with data upload. Additionally, the hardware utilized for data collection should be physically located where the data can be collected in real time. In the case of feedlot data collection, the data should be captured chute-side. For cow-calf data capture, a mobile friendly interface is ideal. Last, the data collection system needs to support automatic and frequent data upload to a database where data can be warehoused and accessed for evaluation. Again, there are many commercially available options that meet these criteria, but 2 options have been designed to specifically capture data for data-based decision making for cow-calf and feedlot enterprises are TELUS Animal Record Management and TELUS Feedlot Record Management, respectively.

## Discussion

Various methods exist for use in the decision-making process for veterinary medical and cattle production enterprises. Each have underlying strengths and limitations, and each may be useful for the decision-making process in different scenarios. It is important that the strengths, limitations and implications of the process by which each decision is made be known in order to ensure that the correct method is used for the scenario at hand. Additionally, it is imperative that the data are collected in a manner that allows for efficient evaluation so that those data can be leveraged to make real time management and production decisions.

## References

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