Assessing the validity of primary research in bovine practice: What approaches are there and what are the limits of the approaches

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Introduction
Every day in bovine practice, veterinarians need to make decisions ranging from a decision as to whether (or not) to use an intervention or to apply a diagnostic test, to decisions about the overall management of complex conditions. Increasingly, it is expected that decisions are evidence-based. Evidence-based medicine (EBM) is the conscientious, explicit and judicious use of current best evidence in making decisions about the care and management of patients.

Materials and methods
The aim of EBM is to integrate the experience of the clinician, the values of the patient/farm/production setting, and the best available scientific information to guide decision-making about clinical management. Because of the focus on the “best available evidence”, the primary research should be evaluated for internal validity, i.e., whether the result is free from meaningful bias (reflects the true state of nature). However, assessing the “internal validity of the studies” appears more difficult than it should due to a confusing array of approaches available. Should clinics assess a research finding presented at a conference, by a company technical representative, or in a publication using levels of evidence, quality assessment and risk of bias assessment? We evaluated these approaches used by authors to assess internal validity that are commonly used in critical appraisal tools, systematic reviews and clinical practice guidelines and aimed to determine what differentiates these 3 broad approaches and what are the limitations and advantages of each approach.

Results
These approaches are differentiated by the assumptions made. Risk of bias assessment requires judgment about the context of the study. Therefore, a risk of bias assessment requires the least assumptions, but requires the most time and knowledge.