Online MasterClass in Biostatistics and Epidemiology to practice Evidence-Based Veterinary Medicine

6th, 7th, and 12th of May, 2021

RATIONALE

"Evidence-based medicine (EBM) is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of EBM means integrating individual clinical expertise with the best available external clinical evidence from systematic research." (Sackett, *British Medical Journal*, 1996). The Evidence-Based Veterinary Medicine may be considered as a subspecialty of EBM (Schmidt, Vet Clin North Am Small Anim Pract, 2007). There are five steps in the practice of the EBM: to convert information needs into answerable questions, to track down the best evidence, to critically appraise this evidence, to apply the results from this evidence to clinical practice, and to evaluate performance. Being able to critically appraise the evidence when reading papers or listening any conference presentations (step #3 of EBM) requires minimum skills in Biostatistics and Epidemiology. These skills are not necessarily the ones to *perform* statistical analyses, but the ones to (a) *understand* the statistical analyses performed by scientists, (b) to *interpret* the statistical results, and (c) to *analyze* the consistency between the statistical methods used to obtain the results and the clinical message(s) based on these results (Arlt, Reprod Domest Anim, 2014). As Evans and O'Connor said, "Correct statistical design reduces bias and improves generalizability, and correct analysis leads to appropriate inferences. […] Because veterinarians are responsible for the medical care of their patients, it is also their responsibility to understand inferences about treatments presented in papers." (Evans, Vet Clin North Am Small Anim Pract, 2007).

OVERALL ORGANIZATION OF THE ONLINE MASTERCLASS

This MasterClass is 100% online, and will be held on May 6, 7, and 12. It comprises lectures the first two days, and practicals followed by take-home messages the last day. Practicals will be based on results presented in papers published in international per-reviewed veterinary journals.

OVERALL OBJECTIVES OF THE MASTERCLASS

At the end of the 3-day session, participants will be able to analyse the consistency between the statistical methods used to obtain the results of published studies and the clinical message(s) based on these results. The MasterClass will focus on comparative studies only (case-control studies, cohort studies, clinical trials) in order to make causal inference. To reach this objective, participants will be able to understand the statistical analyses performed by scientists and to interpret the statistical results. There will not be any data manipulation, since *performing* data analyses is not the objective of this MasterClass.

TARGET AUDIENCE

Veterinary residents, PhD students, academic staff, and veterinary surgeons from private companies or clinics involved in clinical veterinary research. Non veterinarians can attend the MasterClass if the maximum number of participants has not been reached.

Maximum number of participants: 30.

LEARNING SKILLS

- To understand the results obtained from usual statistical tests;
- To critically read statistics presented in tables of papers;
- To adapt the level of uncertainty when concluding from the results of statistical analyses;
- To avoid miss-interpretation of the p-values;
- To calculate the number of recruited subjects in a superiority randomized controlled trial;
- To identify the presence of differential or non differential misclassification bias by reading the Material and Method Section of a paper making causal inference;
- To discuss the impact of misclassification bias on causal inference;
- To identify the presence of confounding bias by reading the Material and Method Section as well as the Results Section of a paper making causal inference;
- To interpret results from univariate survival analyses (Kaplan-Meier curves);
- To interpret results from univariate and multivariate regression models;
- To rank the type of studies for causal inference (Pyramid of Evidence in EBM) and to explain this ranking.

LECTURER

Loic Desquilbet, PhD in Public Health and Epidemiology, Professor in Biostatistics and Clinical Epidemiology at the Ecole nationale vétérinaire d'Alfort (Click here for publications in peer reviewed journals).

PREREQUISITES

Having read scientific papers presenting results with p-values in (veterinary) clinical research. There are no prerequisites about being able to perform statistics.

SOME WORDS FROM PREVIOUS PARTICIPANTS

- "All types of lectures have been followed by examples which are familiar to us. During lectures statistics has shown to be easy (which is not) just because of expertise and knowledge of the lecturer."
- "Small number of participants, easy to interact with the teacher, Good ratio lectures / practicals"
- "Excellent quality of the lectures and practicals, great working atmosphere"
- "Titrated on the participants needs, very good lecturer (patient and enthusiastic!), good number of participants (everybody was able during the lectures to say if something was not clear)"
- "Focused on clinically relevant topics, good overview of critical appraisal of scientific papers"
- "It is enlightening to learn statistic from an Epidemiologist, since its not about Maths, but about study design as well as asking and answering clinical questions. You will rarely find a lecturer more passionate about his subject and still extremely patient with his audience"

PROGRAM

Day 1

8h30-9h00 : Introduction to Evidence-Based Veterinary Medicine
9h00-10h30 : Fundamental basics in statistical testing (Part I)
10h30-10h45 : Break
10h45-12h15 : Fundamental basics in statistical testing (Part II)
12h15-13h30 : Lunch break
13h30-15h15 : Statistical power and sample size calculation
15h15-15h30 : Break
15h30-17h00 : Introduction to survival analysis and Kaplan-Meier curves

Day 2

8h30-10h30 : Quantification of associations and biases (Part I)
10h30-10h45 : Break
10h45-12h15 : Quantification of associations and biases (Part II)
12h15-13h30 : Lunch break
13h30-15h15 : Introduction to multivariate regression models
15h15-15h30 : Break
15h30-17h00 : Study design for causal inference

Day 3

8h30-10h30 : Critical analysis of papers making causal inference (part I)
10h30-10h45 : Break
10h45-12h15 : Critical analysis of papers making causal inference (part II)
12h15-13h30 : Lunch break
13h30-15h15 : Critical analysis of papers making causal inference (part III)
15h15-15h30 : Break
15h30-17h00 : Take-home messages to practice Evidence-Based Veterinary Medicine

PRACTICAL INFORMATIONS

Fees:

600€

If resident/intern/student: **300€**

Fees must be paid by credit/debit card only.

Registration form

Please visit the following website to fill in the online questionnaire as well as to download the registration form: https://alforpro.vet-alfort.fr/course/view.php?id=191

Software used for online lectures and practicals

Teams® from Microsoft. The Web version is ok but it is recommended to download the free app' by clicking here. A video camera and a micro are necessary to follow and participate properly during the MasterClass.

ADDITIONNAL INFORMATION

Please contact Loïc Desquilbet if any question (loic.desquilbet@vet-alfort.fr)