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

11th, 12th, 15th and 16th of May, 2023

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 when listening any conference presentation (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 11th, 12th, 15th, and 16th of May, 2023. It comprises lectures the first two days (before the week-end), and practicals the next two days (after the week-end). Practicals will be based on results presented in papers published in international per-reviewed veterinary journals. The participants will be asked to prepare the practicals during the week-end (reading of papers).

OVERALL OBJECTIVES OF THE MASTERCLASS

At the end of the 4-day MasterClass, 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 be no data manipulation with a statistical software, since *performing* data analyses is not the objective of this MasterClass.

TARGET AUDIENCE

Veterinary residents or interns, 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: 20.

LEARNING SKILLS

When reading a scientific paper making causal inference, the participants will be able to:

- To understand the results obtained from usual statistical tests;
- To critically read statistics presented in tables;
- To avoid miss-interpretation of the p-values;
- To appreciate the *a priori* statistical power of the study;
- To interpret the results from univariate survival analyses (Kaplan-Meier curves);
- To interpret the results from univariate and multivariate regression models;
- To identify the presence of differential or non-differential misclassification bias and to discuss the impact of such bias;
- To identify the presence of confounding bias and to discuss the impact of such bias;
- To appreciate the level of confidence when reading the clinical message of the paper.

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).

LANGUAGE

English.

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."
- "Excellent quality of the lectures and practicals, great working atmosphere"
- "Focused on clinically relevant topics, good overview of critical appraisal of scientific papers"
- "It is enlightening to learn statistic from an Epidemiologist, since it's 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"
- "The professor pays attention to everyone who is involved and gets everyone involved in the hard work."
- "Loic has tremendous teaching skills which make this MasterClass both pleasant and effective."
- "Passionate and entertaining teacher working all his talents to make you like statistical analysis."
- "The is a really fantastic course! I would highly recommend it to anyone who reads/reviews scientific papers."
- "This masterclass was just great. Perfect organization with flawless respect of scheduled times, clear and punctual explanations, spontaneous and joyful interactivity, tons of resources to deepen the topic. I strongly recommend it to anyone since I think that being able to read papers with a critical mind should be the first lesson to learn."

PROGRAM

Day 1

9h00-9h30: Introduction to Evidence-Based Veterinary Medicine
9h30-10h45: Fundamental basics in statistical testing (1/2)
10h45-11h00: Break
11h00-12h45: Fundamental basics in statistical testing (2/2)
12h45-13h30: Lunch break
13h30-15h15: Statistical power of a study and sample size calculation
15h15-15h30: Break
15h30-17h00: Introduction to survival analysis and Kaplan-Meier curves

Day 2

9h00-10h45: Quantification of associations and biases (1/2)
10h45-11h00: Break
11h00-12h45: Quantification of associations and biases (2/2)
12h45-13h30: Lunch break
13h30-15h15: Introduction to multivariate regression models
15h15-15h30: Break
15h30-17h00: Study design for causal inference

Day 3

9h00-9h45: Clarifications of misunderstandings during previous lectures
9h45-10h45: Choosing the correct statistical test and interpreting the usual statistics performed in papers (1/2)
10h30-10h45: Break
11h00-12h45: Choosing the correct statistical test and interpreting the usual statistics performed in papers (2/2)
12h45-13h30: Lunch break
13h30-15h15: Interpreting results from a survival analysis
15h15-15h30: Break
15h30-17h00: Practical on the statistical power of a study and sample size calculation

Day 4

8h30-10h30:	Anticipating and discussing the presence of confounding bias
10h30-10h45:	*Break*
10h45-12h15:	Use of a grid to critically appraise a paper making causal inference (1/2)
12h15-13h30:	*Lunch break*
13h30-15h15:	Use of a grid to critically appraise a paper making causal inference (2/2)
15h15-15h30:	*Break*
15h30-17h00:	Final quiz and take-home messages

PRACTICAL INFORMATIONS

Fees:

800€

If resident/intern/student: **400€**

Fees must be paid by bank transfer only.

Registration

Please click here to register. Chrome® is recommended since the webpage is in French and Chrome® can easily translate a webpage in a chosen language (right click anywhere on the webpage).

Software used for online lectures and practicals

Teams® from Microsoft. It is highly recommended to download the free app' by clicking here. A webcam and a micro are necessary to follow and to participate properly during the MasterClass. It will be asked to all participant to activate their webcam all the time during lectures and practicals.

ADDITIONNAL INFORMATION

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