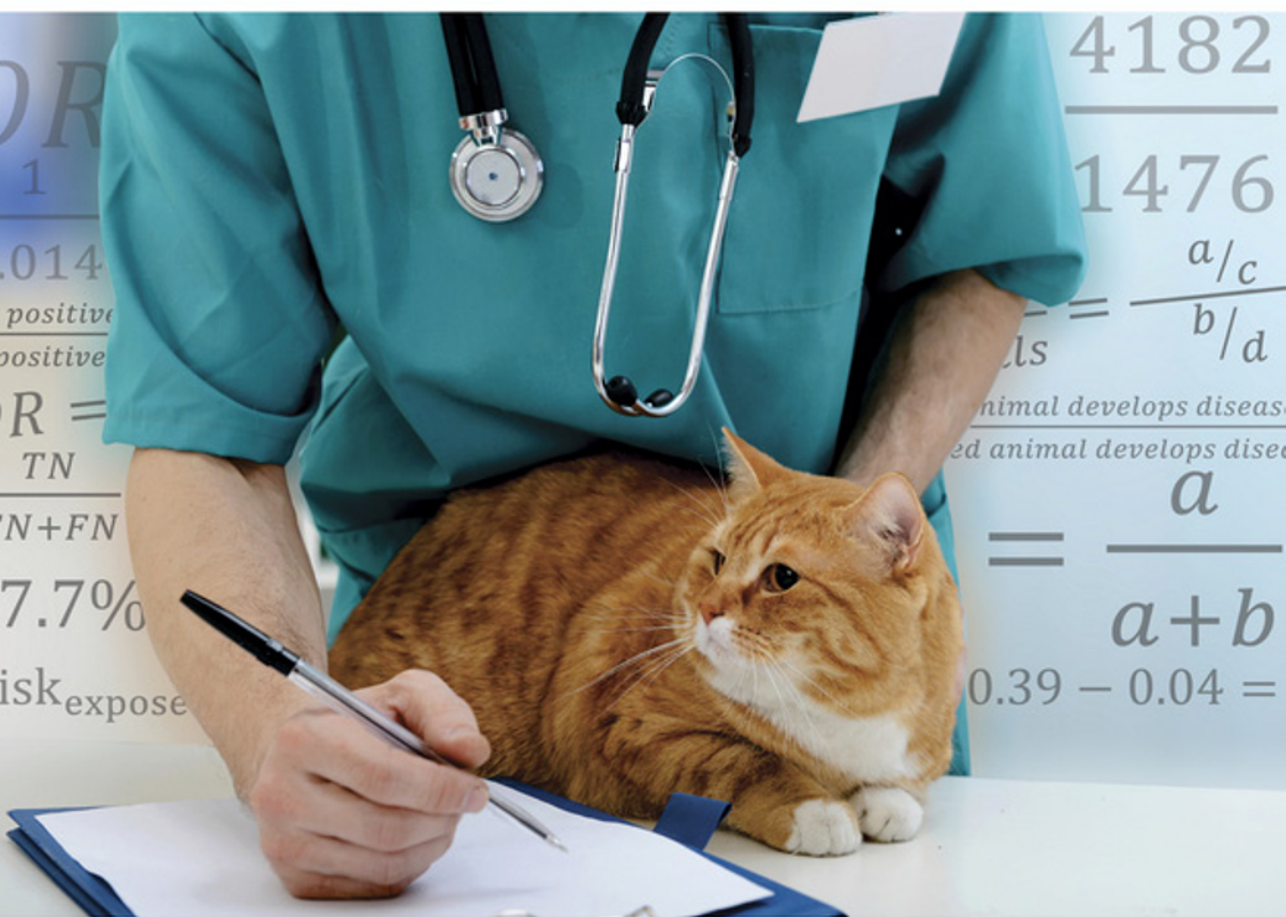




PRACTICAL CLINICAL EPIDEMIOLOGY FOR THE VETERINARIAN



Aurora **Villarroel**



WILEY Blackwell

Practical Clinical Epidemiology for the Veterinarian

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Dedicated to all (present and future) members of this great profession

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Preface

The intention of this book is to open your eyes to the tools that epidemiology provides in the daily work of a clinician working with any animal species. This book will not help you become an epidemiologist; it is only a glimpse into what you can do with epidemiology.

So, what is epidemiology? The definition of epidemiology is the study of diseases in a population. Maybe due to the population term, most people think that epidemiology is only suited to veterinarians working with cattle or food animals in general. However, companion animal veterinarians use epidemiology every day; they do not work with individual animals in a vacuum because their patients are part of a population that interacts at the dog park, at shows, at parties, on the street, and also at the vet clinic—that is your vet clinic! We all deal with animal populations and we use epidemiological methods every day. Being aware of how to use these methods to our advantage will enable us to become better practitioners to improve the health of our patients, prevent disease, and provide the best therapeutic options.

Throughout this book, you will notice the use of the terms “disease” and “condition” interchangeably. This is because the same epidemiological methods can be used to determine the risk of a disease such as lameness or a condition such as twin pregnancies in mares, which is not a disease per se but a problem. Other “conditions” that can be studied with the same epidemiological methods are not problems but positive outcomes such as “cure,” “positive response to a treatment,” or “extended life,” as happens with cancer treatments.

The book starts by describing the most common measurements of disease and some of the most commonly used terms in epidemiology in Chapters 1 and 2. There is a minimal part on statistics, simply to point out what are the appropriate statistical tests to be used. These tests are not explained and there are no formulas; for that you need to look into statistics books. The book continues in Chapter 3 with what I consider to be the most important part of the book: how to read and interpret research papers. Research papers are the “point of the spear” for new knowledge; however, just because something is published does not mean that it is good work, accurate, or true. My hope is that after applying the knowledge in this chapter, you will realize that you can determine whether a study warrants the conclusions that are published or not and whether you can use that information to help your patients. Chapter 4 covers in a simple straightforward manner examples of the different epidemiologic study designs to show the pros and cons, as well as the information obtained from each. Chapter 5 covers a core

distinction in epidemiology: association does not mean causation. If you have ever spoken in length with an epidemiologist, you would have probably noticed that epidemiologists are very careful in the use of each term. This chapter will explain why. The final two chapters of the book will cover two of the most common uses of epidemiology encountered on the daily work at a veterinary clinic, that is, diagnostic tests (Chapter 6) and outbreak investigations (Chapter 7). In the chapter about diagnostic tests, you will learn how to evaluate the strengths and weaknesses of a test and properly interpret the results. In the chapter on outbreak investigations, you will learn how to determine the transmission pattern of a disease or condition so you can help your patients by preventing disease spread and future disease occurrence. At the end of the book, there is a section that collects all formulas in one place, as well as a glossary of the most important epidemiologic terms used throughout the book.

This book is intended to provide concise and straightforward information on how to apply epidemiological concepts in daily practice. Only the most necessary formulas and calculations will be presented, with real-life examples from all animal species, but especially focused on companion animals. Most reference articles are “open access,” which means they can be downloaded for free from the Internet. My hope is that this book will help make you a better clinician.

Acknowledgments

I want to sincerely thank everyone who has made this book possible. Among them are the veterinary students who I have had the privilege to guide over the years and have taught me so much during that time. Special gratitude is due to my dear mentor Dr. V. Michael Lane, who helped me grow when I was a fledgling epidemiologist and did plant the seed for this book in my mind. He has also graciously helped me make it better with his reviews. Finally, I have to thank my family (two- and four-legged) for always allowing me to follow my dreams. Thank you all.

About the companion website

Practical Clinical Epidemiology for the Veterinarian is accompanied by a companion website:

www.wiley.com/go/villarroel/epidemiology

The website includes:

- Exercises for self-study and review