

Editorial

Introducing the *Critical Care Forum's* ongoing review of medical statistics

Elise Whitley* and Jonathan Ball†

*Lecturer in Medical Statistics, University of Bristol, Bristol, UK

†Lecturer in Intensive Care Medicine, St George's Hospital Medical School, London, UK

Correspondence: Editorial office, *Critical Care Forum*, editorial@ccforum.com

Published online: 29 January 2002

Critical Care 2002, **6**:3

© 2002 BioMed Central Ltd (Print ISSN 1364-8535; Online ISSN 1466-609X)

Abstract

Statistics is increasingly used in all fields of medicine but is often poorly understood and incorrectly applied. *Critical Care* is therefore launching a series of articles aimed at providing a simple introduction or refresher to some of the more commonly used statistical tools and ideas. This series does not aim to be an exhaustive review of medical statistics but rather a starting point to inform readers and stimulate more thought and investigation as to the most appropriate statistical methods to use and the theory and assumptions behind them.

Keywords data analysis, medical statistics

The science of statistics is increasingly employed in all fields of medicine. Statistical techniques are used not only by academics and clinicians directly involved in medical research but also by advocates of evidence-based medicine, who must synthesise results from many different sources to reach useful conclusions. Because of this widespread use, it is important that all those involved in research or the management of patients have a sound grasp of at least the basics of statistical methods. Unfortunately, in practice this is often not true, with many relying on distant memories of poorly understood lectures from undergraduate courses.

In response to this, *Critical Care* is launching a series of articles aimed at providing a simple introduction and/or refresher to some of the more common tools and ideas used in medical statistics. The articles are aimed at a non-specialist audience and will keep algebra and technical language to a minimum. Although some of the topics covered in this series will probably be familiar, it is hoped that there will still be useful lessons to be learned, for example the underlying assumptions of a hypothesis test that were not fully appreciated, or some previously unrecognised confusion between terms.

The first article, presented in this issue, covers the presentation and summary of data. It is unlikely that the material covered by this article will be entirely new to any reader but it is included as a simple introduction to some of the ideas and philosophies

that will be built upon in subsequent articles. Topics to be covered in the series include: standard errors and confidence intervals; hypothesis testing and errors; power calculations; measures of disease; parametric and non-parametric tests; simple regression; and analysis of survival data. Ideally the series will evolve to meet the needs of *Critical Care* readers, and you are encouraged to suggest additional topics that you would like to see covered in the future.

It is vital that the quality of medical research continues to improve and that readers develop a critical eye when considering evidence from published reports. The conduct of badly designed, under-powered and inappropriately analysed studies is not only an indefensible waste of precious resources but is also highly unethical. Unfortunately such research is all too common, and every effort should be made to prevent these situations from arising. Statistical statements can enlighten or mislead depending on how well they are understood, and individuals have a responsibility to ensure that their knowledge is sufficient for their needs. It is hoped that this series will inform readers but also that it will stimulate more thought and investigation as to the most appropriate statistical methods to use and the theory and assumptions behind them.

This series does not claim to be a complete course in medical statistics. There are many useful introductory texts

that cover the ideas presented in this series, and more, in considerably greater detail [1–4]. However, even these might frequently not be sufficient and it is vital that researchers recognise their own limitations and seek professional advice whenever it is needed, if only for reassurance. Medical statistics is a scientific discipline in its own right and a medical statistician fully achieves that role only after years of training and practical experience. Most academic departments, and also many clinical departments, include properly qualified medical statisticians and they should be consulted as early as possible in the research process.

Competing interests

None declared.

References

1. Altman DG: *Practical Statistics for Medical Research*. London: Chapman & Hall; 1991.
2. Bland M: *An Introduction to Medical Statistics*, edn 3. Oxford: Oxford University Press; 2001.
3. Campbell MJ, Machin D: *Medical Statistics: A Commonsense Approach*, edn 2. London: John Wiley & Sons Ltd; 1993.
4. Kirkwood BR: *Essentials of Medical Statistics*. London: Blackwell Science Ltd; 1988.