

# book reviews

## Horizons in medicine 18

**Edited by Jonathan Rhodes. Royal College of Physicians, London 2007. 314 pp. £30.00 (£20.00 for Fellows and Members).**

'Increasing pressures on clinicians sometimes squeeze some of the fun out of clinical medicine', writes Jonathan Rhodes, editor of this admirable collection of clinical review articles. The articles have been assembled in 25 chapters grouped under headings of 12 major medical specialties, to which are added the text of three prestigious College lectures, all originally presented at the popular 43rd Advanced Medicine Conference held at the College in 2006. Each section ends with a self-assessment questionnaire (answers provided), and each article includes 10–12 up-to-date references. There is a sense of excitement and innovation in many of the articles, which help to restore the 'relevance of experimental medicine to clinical practice', and at the same time help to bridge 'the worrying division between clinical practice and academic medicine'.

Chapter headings give some sense to the style and content of this book – 'novel therapies', 'management', 'recent progress' – indicating that it is chiefly about clinical advances for practising physicians. Type 2 diabetes, rheumatoid arthritis, some hypertensive syndromes, stroke and sepsis are just some examples of covered subjects. It is exciting to discover new aspects of the physiology of 'second wind angina', or gas exchanges in chronic obstructive pulmonary disease which are driving the development of new treatments. The concept of the 'heart as a self-renewing organ' and the potential of injected stem cells to improve cardiac function must raise exciting prospects. To read of the influence of inflammation on the development of malignant diseases or the genetics of Parkinsonism are advances which could lead to future clinical developments.

Translation of research from bench to bedside, together with the key role of clinicians to move research from bedside to bench, are critical issues of the day. Mitochondrial disorders are probably not foremost in the minds of most of us, yet in this article physicians will be astonished to learn that they are among the most common metabolic diseases (listed over two whole pages of this book) affecting multiple organ systems in at least one in 5,000 of the population, and caused by impaired oxidative phosphorylation leading to adenosine triphosphate depletion. Many physicians are also probably unaware that hypoxia can alter molecular structure by its effect on hypoxia-inducible factor (HIF) which in turn regulates genes with key functions in a broad range of processes, ranging from angiogenesis to vasomotor function and much else. These profoundly important observations were presented by Professor Peter Ratcliffe in his Croonian lecture, and raise the potential to develop agents which might augment HIF activity and could be used to treat hypoxic or ischaemic conditions.

'The chase of ideas' (a phrase often used by the late David Pyke) is crucial to the generation of new research. Specialist physicians

reading of advances developing in so many fields other than their own must result in cross fertilisation of ideas. This volume and its predecessors do much to enhance some of the thrill of investigative medicine, and the necessary sense of fun and enjoyment in clinical practice.

PETER WATKINS

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## Study design and statistical analysis: a practical guide for clinicians

**Mitchell Katz. Cambridge University Press, Cambridge 2006. 200 pp. £26.99.**

With the increasing pressure on clinicians to undertake research as part of their busy day-to-day lives comes a need for these individuals to have an appreciation of study design and an understanding of basic statistical concepts. While some are lucky enough to work in an environment with good statistical support and others have managed to develop close links with statistical colleagues, the majority of individuals are unlikely to have this luxury and will have to try a bit of 'do-it-yourself'. As most medical schools provide only fairly basic training in statistical methods (and, for practical reasons, little of this is genuinely 'hands-on'), it is usually up to the individual to reacquire themselves with statistical methodology. Unfortunately, many of the 'classic' statistics text books that prop up library shelves were written in an era when people had little access to computers, the internet and simple-to-use software packages, and readers were expected to get some perverse joy out of ploughing through pages of Greek letters. Today's clinical researchers, however, have different needs: much as we would hope that they would want to fully appreciate the whys and wherefores of any analysis, we have to be pragmatic and recognise that most simply want to be told what to do and when to do it.

*Study design and statistical analysis* is precisely that – a book aimed at clinical researchers conducting their own research who need to know how to design their studies, manage their data, perform basic statistical analyses and publish their results. The author is both a clinician and statistician with many years experience of collaborating with colleagues on a wide variety of projects and teaching statistical concepts to students. In his own words, his aim is to 'put the fun first' by including motivating clinical examples at the start of each section and regularly throughout the text. He has tried to avoid providing too many formulae on the basis that most people will now use statistical packages to perform all analyses and will not feel the need to analyse their data with a calculator from raw principles.

The book is ordered chronologically, following the steps that are usually employed in any research study. Hence, the book starts with chapters on study design and data management, followed by

chapters on basic univariate/bivariate statistical methods, more advanced statistical methods (multivariable methods, sample size calculations, analyses of diagnostic and prognostic studies) and finally, the interpretation and publication of results. It is these last few chapters that are, to me at least, the most novel (even if the author is a little optimistic about the ease with which potential authorship disagreements might be resolved!). The layout of the book is clear – important definitions and/or statements are shown in unshaded boxes in the wide left-hand margin on each page and tips for the practical application of some of the techniques (rather reminiscent of the words of advice from a fortune cookie) are shown in shaded grey boxes, enabling the reader to identify the key points on a page at a quick glance. This feature, I imagine, will be particularly helpful for those cramming for exams who simply want to memorise a few key phrases. Additional references to more detailed texts are included as footnotes on each page. The chapters are, in general, fairly short and easy to digest, although Chapter 5 ('Bivariate statistics') is rather too long, taking up almost a third of the book, and could have been split into a series of shorter chapters. In practice, Chapter 6 ('Multivariable statistics') is probably far too short to be of any real use, reflecting the fact that the author has already published a book on this topic which the reader is encouraged to buy. I did feel slightly cheated by this – although this book is relatively cheap (at around £25 in paperback, £55 in hardback), it becomes less attractive if, halfway through your analyses, you find that you have to buy the second part of the series!

On the whole I enjoyed this book. The information was presented clearly and I found it easy to dip in and out of. The clinical examples helped to put the statistical methods into context. I did have a few minor gripes, however, that started to irritate after a while. In particular, the tips were not always as helpful as they could be, and some were even misleading when taken out of context. For example, on page 31, the reader is told 'when initiating prospective cohorts, bank serum and cells' without any mention of the major implications that this has for the cost and acceptability of the project and the additional ethical hurdles that this introduces. On page 19, the reader is told to 'use cross-over studies when you cannot recruit enough subjects to randomise subjects to different groups' – while this is certainly an added advantage of cross-over studies it is not, in itself, a reason to choose a cross-over study over a parallel trial design. Indeed, in many cases, it would be inappropriate to use a cross-over study because of the nature of the disease, its treatment or the possibility of carry-over effects, regardless of the available sample size. The terminology chosen is occasionally at odds with other texts on the subject, which may confuse readers who are switching between books. For example, in chapter 4, the author explains that he uses the term 'univariate' to refer to the analysis of a single variable, and the term 'bivariate' to refer to the relationship between two variables – this distinction is often not made in other texts, where both types of analyses are generally referred to as 'univariate'. Finally, there were times when the examples given were rather convoluted and simpler examples could have achieved the same aim (eg the discussion of confounding on pages 120–1).

These are fairly minor issues, however, and, as long as readers do not rely solely on the tips and key point boxes, then they are unlikely to go far wrong in their analyses. I have already recommended the

book to statistical colleagues (as a good source of examples for teaching) and would certainly recommend it to clinical colleagues when they decide that my services are no longer needed!

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### Evidence based physical diagnosis, 2nd edn

Steven McGee. Saunders, St Louis, MO 2007. 880 pp.  
£49.99.

What is the role of the physical examination in modern medicine? In an age where echocardiography, computed tomography and magnetic resonance imaging are readily available, it may appear to some that the ancient art of bedside clinical diagnosis is in danger of becoming a historical curiosity. The second edition of Steven McGee's *Evidence based physical diagnosis* should help to dispel this dangerous misconception.

The book begins with an introduction to some important concepts, such as pre-test probability and likelihood ratio. The reader is invited to consider clinical findings as analogous to diagnostic tests, each with their own sensitivity and specificity for detecting the clinical condition under investigation. The remainder of the volume consists of a thorough exposition of every conceivable clinical sign, together with its historical context, pathogenesis and, most importantly, its sensitivity and specificity for detecting the disease process in question. The book is meticulously referenced to well over 2,000 primary studies, making it an impressive scholarly achievement. It is unique in the medical literature in bringing together in one volume a wealth of fascinating and useful information on the subject of clinical examination, which could hitherto only be obtained, with difficulty, from numerous disparate sources. It is the only book to systematically present the sensitivity and specificity of the entire spectrum of clinical examination techniques. In addition, it is one of the few books to provide a comprehensive account of the pathogenesis of clinical signs, such as clubbing, pulsus paradoxus and Kussmaul's sign. It should be required reading for all aspiring MRCP(UK) candidates as well as clinicians of all levels.

The principle of parsimony dictates that what can be accomplished with simple means should be exhausted before pursuing more complex and costly alternatives. Clinical examination is cheap, non-invasive, and, in skilled hands, accurate. In the same way that every sea captain, despite the ubiquity of the global positioning system, has the ability to navigate by the stars if necessary, the art and science of bedside diagnosis must remain a fundamental skill of all practising clinicians. This book is a valuable addition to the literature on clinical examination, and the first one to fully explore its scientific basis.

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