

# Book Reviews

**Bleeding the Patient: The Consequences of Corporate Health Care.** *D Himmelstein, S Woolhandler, I Woolhandler.* Monroe, ME: Common Courage Press, 2001, pp. 238, \$15.95. ISBN: 1-56751-206-2.

Unlike most books written by respected academics, this book is not directed at an audience of fellow researchers, but designed for polemical, not to say, political, purposes. It is a direct contribution to the debate about the funding of health care in the US. It is written for an American audience, and the authors assume a high degree of familiarity with the American health care system. No concessions are made for interested foreigners (or, indeed, Americans) who might need an introduction to the current state of play. For example, the key term, 'HMO' (health maintenance organization) is not explained.

As the authors state in their introduction, they wrote the book to rebut two arguments made in favour of market solutions in US health care: first, that 'extending coverage, bridling HMOs' power or improving quality would break the bank' and second, that 'although high quality national health insurance is affordable and theoretically feasible, it is politically impossible, the opposition is too rich and our democracy is too weak'. They say that the book confronts the first argument by demonstrating how extending coverage to all Americans is indeed possible using non-profit national health insurance. They contend that the second argument needs to be rebutted by direct political action. This book is intended to 'arm [...] activists and organizers' by providing them with a narrative outline (in the form of a précis at the beginning of each chapter) for speakers preparing a slide presentation using the charts in the book (which have been made freely available on the internet at [www.pnhp.org](http://www.pnhp.org)). As that is the intention of the authors, there is less justification than would be the case were this intended as a scholarly work in complaining that the book is not referenced and that counter arguments to those proposed are not canvassed. However, for the academic reader, these are both matters of some annoyance. Indeed, in my view, they weaken the arguments made for any audience.

The argument put forward is as follows. Forty-three million Americans (most of whom are children and the working poor) lack any form of health insurance, despite the existence of federally funded programmes to cover the elderly and the very poor. The situation is deteriorating for people who do have insurance—few Americans have adequate health care coverage. Workers are paying a higher share of premiums and retired people are also facing rising out of pocket costs. Long-term care is hardly covered by insurance at all. That the introduction of market forces into medicine has had the effect of decreasing choice and responsiveness of corporations to consumer demands is illusory—patients rarely switch health plans voluntarily. The effect of lack of coverage and insufficient coverage is that many people forego care for life threatening symptoms such as a chest

pain or breast lumps. Women who cannot afford it frequently delay prenatal care.

At the same time, there is a surplus of hospital beds, increasing numbers of administrators and an impending surplus of doctors. Competition in health care has been advocated to solve some of these problems, but it is not possible in many areas of low population density and does not help where it can occur. Profit driven HMO cannot afford to provide good quality care for expensively ill, non-profitable patients, and there is an incentive on them to recruit healthy, profitable patients instead (to 'cream skim'). Several studies are mentioned which it is claimed demonstrate that HMO provide poor quality care. (But as this is not an academic book, insufficient detail is given of these studies for the reader to evaluate the claims made.) Moreover, where there is for-profit care, charity care decreases and research suffers.

Every other developed nation apart from the US assures health coverage for the entire population. The US does badly in terms of life expectancy while its health care costs per capita are nearly double that of any other nation. These costs are not attributable to a larger elderly population (as other countries have larger ones) nor to health care utilization rates (as these are higher in some other countries). Canada provides a good model for an alternative system. In Canada, through a single payer (the government), universal health care is provided at about half the cost of the American system (and these costs are not rising). This form of funding has ameliorated inequalities in health and the quality is as good as insured Americans receive. It is relatively free of bureaucracy, is a system that allows planning of services and an emphasis on primary care, while it imposes relatively few constraints on patients' choice.

Drawing on Canadian solutions to address the American problems, the authors suggest a universal, tax-funded, non-profit national health programme organized like Canada's, though better funded. Hospitals would negotiate global budgets with the national programme, and receive a single payment to cover all costs, eliminating most billing bureaucracy. Doctors in private practice would be paid under a single negotiated fee schedule. The costs saved by eliminating bureaucracy would pay for the extension of coverage to all Americans. In the past the medical profession has been opposed to this approach, but now many doctors support it. Surveys show wide support for universal coverage among Americans generally.

While the argument has much to recommend in it, because the book is entirely polemical, it does not deal with many of the counter arguments and complexities which the vast amount of existing research evidence indicates are relevant. For example, the question of how fee-for-service remuneration for doctors tends to inflate levels of use is not adequately discussed; and the difficulty of setting global budgets for hospitals which provide adequate incentives to provide good quality care, while also

being good value for money, is not considered. In general, while the unacceptable incentives of the current system are made much of and lamented, the incentives of the proposed national programme are not addressed.

Furthermore, the initial exposition of the problem in the US is muddled. Due to the fact that no introductory description of the current system of funding and providing health care in the US is given, it is possible for the authors to confuse what are separate (albeit related) issues, namely the rise of 'managed care', mainly in the form of HMO; the increase in for-profit providers; and the advocacy of increased competition. None of these is inherently responsible for the lack of universal health care insurance coverage in the US. The book is designed to promote arguments in favour of such coverage. It would do so more effectively if it had made its initial analysis of the current organization and funding arrangements more clearly.

PAULINE ALLEN

### **Systematic Reviews in Health Care. Meta-analysis in**

**Context.** *M Egger, G Davey Smith, Doug Altman (eds). London: BMJ Books, 2001, pp. 487, £50.00. ISBN: 072791488X.*

This book has been launched as the second edition of the book *Systematic Reviews* by Iain Chalmers and Doug Altman published by the BMJ Publishing Group in 1995. The first edition counts 8 chapters and 119 pages, this second edition 26 and 487. It really is a new book, and rightfully so, because so much has happened since 1995 in this field of interest.

Both its size and the detailed level of the contents mean that it is not bedtime reading material to be finished in one go. Rather it is a work that anyone who is involved in preparing systematic reviews should have on their shelf for reference to specific elements of interest. In many but not all chapters, the level of detail goes far beyond what a user of systematic reviews, or a beginner about to start their first review is looking for; it is the methodologists who will read the book from cover to cover. It excels in the quality and extensiveness of referencing. Most chapters are at the brink of the methodological developments and some even take a risk and go beyond that. However, the users of systematic reviews are not forgotten and six chapters in part V of the book deal with issues of interest to various users. The focus, as demonstrated by the examples used, is mainly on systematic reviews in a medical context; those involved in systematic reviews in other fields such as psychology or social science will have to make a mental translation step to examples in their field of interest. However, its methodological principles and the emphasis on prevention of bias in all aspects make the book applicable to any area in which systematic reviews are being used.

The authors have pursued the laudable aim of clarifying what systematic reviews are and how they relate to meta-analysis (statistical pooling). Unfortunately, this is not realized completely, probably caused by the fact that there are so many authors of different chapters. One chapter mentions meta-analysis throughout and actually succeeds in using the words 'systematic review' only once and that is when referring to another chapter!

The fact that the book consists of a collection of separate chapters also shows itself in other ways. For example, two

excellent chapters on evaluation of prognostic variables and on evaluation of diagnostic and screening tests are organized according to the process of preparing a systematic review; whereas the preceding chapter on observational studies focuses on the problems of such studies with various biases and meta-analysis. In general, there is a lot of emphasis on the importance of exploring heterogeneity and bias and on helping the reader understand the limitations of meta-analysis. This is perhaps one of the most important messages this work has: too often reviewers go on to do meta-analysis of data that are unsuitable and where it clearly does not make any sense.

Still a lot of space is used to discuss the statistical details of meta-analysis, including references to software, examples and data sets (see [www.systematicreviews.com](http://www.systematicreviews.com)). Certainly many readers will appreciate that information. It would, however, have made the book more complete if it had also included a chapter about how to summarize data in situations where meta-analysis is not sensible and/or feasible. Granted, this is probably an even bigger challenge than clearly explaining the statistical details of pooling, in which the authors have succeeded very well.

One chapter discusses the assessment of quality (internal validity) of randomized trials that are included in the systematic reviews and the chapters on prognosis and diagnosis also touch upon quality assessment for those particular studies. The approach in these chapters is very academic and methodological (and valuable as such) as opposed to practical; possibly a main reason why the debate about how to assess quality has gone on for over a decade now. A more practical approach might start by considering the various reasons why quality is being assessed in a systematic review, and then follow on with the options of how to do it for different particular purposes.

One other theme that is consistently stressed throughout the book is the importance of meta-analysis based on individual patient data from randomized trials. The number of occasions where this currently is feasible might just be a few per cent or even less of all systematic reviews. We could not agree more about stressing the potential importance of such analyses and the importance of trialists making such data available for analysis in systematic reviews.

So what do we make of this book? This is probably the first and only 'textbook' on systematic reviews in the sense of its volume and the level of detail of most of the contents. It has been written by leading practitioners of the science of reviewing biomedical research and will be a valuable resource to those preparing, appraising and using systematic reviews. Highly recommended.

JOS KLEIJNEN AND GERD ANTES

**Tuberculosis in the Workplace.** *Marilyn J Field. Oxford: National Academy Press, 2001, pp. 356, £35.95, ISBN 0-309-07330-8.*

This book comprises a report prepared by the National Academy of Sciences at the request of the US Congress. At issue is the risk of tuberculosis among health care workers and the possible effects of federal guidelines and regulations intended to protect workers from such risks.

Obviously, the book has a dominantly US perspective. The bulk of the material is targeted towards the needs of regulatory

and government officials who are required to develop and implement institutional statutory guidelines. However, much of the material is relevant to educationalists in occupational health. Practising physicians will find little to interest them and some synthesis of the regulatory framework and practical measures for control and prevention might have been helpful in presenting the book to a wider readership, although there are several other relevant titles for the physician. Perhaps the most interesting aspect of the book was the process which the committee went through as they endeavoured to answer the questions posed to them by Congress.

SING-ENG CHIA

**Social Support Measurement and Intervention: A Guide for Health and Social Scientists.** Sheldon Cohen, Lynn Underwood, Benjamin Gottlieb (eds). New York: Oxford University Press, 2000, pp. 334 US\$45.00. ISBN 0-19-512670-X.

This is a useful book orientated towards the selection and development of measures of social relations suitable for assessment and intervention in studies of physical and psychiatric illness. The editors use the same format as in their earlier volume *Measuring Stress: A Guide for Health and Social Scientists* sponsored by the Fetzer Institute with the laudable aim of improving the dissemination of methods for measuring psychosocial concepts, in this case social support.

After a first historical chapter there is an informative chapter on the different possible mechanisms, some competing, some complementary, by which social support may influence health, described within the context of the theoretical frameworks from which they were derived. This is interesting material, rarely brought together in the empirical literature, that is a helpful background to the chapters that follow on measuring social integration, social networks, and perceived and received support.

This is a comprehensive, well thought out, theoretically grounded book which recognises that social support occurs within the wider context of relationships that can be differentiated from social interactions. The authors suggest that there is a functional congruence between relationship processes such as interdependence, perceived partner responsiveness, sentiment, on one hand and types of support on the other. Beyond this people have a predisposition to behave toward others in particular ways. Some of this may be captured by measures of empathy, emotional expressiveness, perceived acceptance, social competence and patterns of attachment. Instruments are suggested to measure all of these concepts. However, practically, it may be difficult for respondents and researchers to distinguish these concepts and even more difficult to isolate those elements that predict good health. There is an appropriate plea for attention to discriminant validity of instruments, to define the limits of what an instrument measures and reduce the scope for response bias. At this stage of research on social support it is difficult to disprove the idea that it is a general positivity within social relations rather than specific aspects of relationships or support that drives the beneficial effects on health. Perhaps research stimulated by this book will help to unravel this conundrum. Observational measures of social interactions are also described, which may be less likely to have some of the

problems found in self-report instruments. The use of self-report instruments is, nevertheless, essential to capture the subjective nature of social support.

If the measurement of social support is complex, social support interventions are even more so. There is an extremely helpful chapter encouraging would-be interventionists to design their interventions carefully taking account of the expressed needs of the population, the appropriate sources of support (from existing or new ties), whether to focus on dyadic relationships or support from groups, and the careful definition of health endpoints likely to be influenced by support and the mediating pathways through which support might act to achieve these health goals.

The evidence for the effectiveness and failures of peer support groups for coping with specific life events are described and ways of avoiding pitfalls in designing future groups are identified. Other types of interventions are discussed such as one-to-one support interventions: home visiting and mentoring programmes and the noted advantages of concentrating on enhancing support from the person's existing social network, where this is possible, rather than introducing external support which may not always match the person's cultural and personal needs. Karen Rook, in a thoughtful final commentary, emphasises the importance of the effects of companionship on health, and the necessity of attempting to separate the trait, personality-related aspects of social relations from the support received in social interactions. She also discusses social support as a form of social control and the relevance this has for curbing or encouraging unhealthy behaviours—an area that would benefit from further research.

There are a few criticisms of the book. Occasionally there is a lapse into deep jargon, which will not help the untutored reader in this field. Not surprisingly the book is very focused on the North American literature and ignores some of the recent European literature. This is a pity and limits some of the universal appeal of the book.

On the whole, however, this is an excellent book which is essential reading for anyone embarking on aetiological research or interventions in social support and health. In one bound it has become a classic text for social support researchers.

STEPHEN STANSFELD

**Bodies Politic: Disease, Death and Doctors in Britain, 1650–1900.** R Porter, London: Reaktion Books 2001, pp. 304, £25. ISBN 1-86189-094-X.

Social scientists, or at least a subset of them, have recently become more interested in the visual, in both theoretical and methodological terms.<sup>1,2</sup> This may be due to a realisation that we live in what Jay refers to as an increasingly 'ocularcentric' world<sup>3</sup>—where the image is central to contemporary Western life. As Porter's 'select bibliography' at the end of his book suggests, the study of images in their historical context, and in relation to science and medicine in particular, is also a burgeoning field of scholarship. However, this is a new area of research for Porter; as he himself points out he has only recently begun to grapple with visual evidence.

The book looks at the story that historical pictures have to tell about the body, disease and medicine, although as Porter



An illustration from Chapter 9—an engraving by James Gillray, 1793. Reproduced by kind permission of the British Museum.

informs us, the genre of etchings, cartoons and drawings that he refers to were in fact usually presented not as stand alone pictorial devices but in conjunction with text; the verbal and the visual were fused. The first chapter is entitled 'Framing the Picture'. Here Porter jumps straight in—describing the particulars of selected prints, immersing the reader in historical detail and anecdote—occasionally offering a generalizing, contextualizing comment to help the reader find their way. At the end of the chapter Porter (finally) explains what the book is about:

'This is a book, I wish to make clear, about the culture conveying the understanding of the body, the quest for health, and the practice of medicine. Alongside the tales and teachings embedded in texts, visual images form an important element. Prints and fictions, together provided guides as to what was to be thought, said and done in painful, shameful and potentially life-threatening situations. The chapters that follow explore such images, verbal and visual, within the wider context of representations at large.' (p. 34)

The following chapters travel through two and a half centuries in England and consider public representations of health, illness and the practice of medicine, and the shifting culture of embodiment. Early chapters (2. The Body Grotesque and Monstrous; and 3. The Body Healthy and Beautiful) refer mostly to plates from the 18th century (though it includes plates ranging from the 6th to the 19th centuries). Then, the prevailing view was to

dismiss doctors as ineffective quacks, the depiction of medicine was thus as 'a costume drama or a travelling circus, embodied in performance, rhetoric and ritual' (p. 272).

The next chapter (4. Imagining Disease) covers the visualization of symptoms of disease and diagnosis, variously showing the victims' illnesses as sympathetic, ridiculous or self-inflicted. Chapters 5 and 6 focus on representations of practitioners and patients respectively, though it seems fair to say that Porter seems more interested in the former. The images in chapter 5 are for the main part straightforward, serious portraits (though there is one caricature of a doctor taking snuff and a photograph of an 18th century gold-headed cane); in chapter 6 the plates are more varied. Chapter 7 and 8 (Outsiders and Intruders; Professional Problems) revert to focusing on the portrayal of the medical profession—the imagery of self-promotion and professionalism. Chapter 9 (The Medical Politician and the Body Politic) looks at the politicization of the body and the medicalization of politics. This chapter contains the most gory images—madness, dissection, cannibalism and plenty of diarrhoea. By contrast the final chapter (10. Victorian Developments) contains rather more sedate portrayals, as the medical profession gained power and prestige and women were included among their ranks.

This will no doubt be a fascinating book for many readers, but some may be left craving a more contemporary analysis of images of health and medicine. The book stops short of the 20th century but is at its most interesting when comparisons and connections are made to current events and representations. Although clearly seduced by the visual (the book contains 137 illustrations, 39 in full colour) Porter has in no way abandoned text, his characteristic style remains, and it is (for this reader at least) overwhelmingly wordy and at times bombastic. In addition, Porter appears to treat visual sources in the same manner as he uses other historical sources; comments on the selected plates are for the most part confined to remarks placed under the illustration rather than being embedded into the main text. Sadly, the production of the book has also failed to give primacy to the visual material—plates that ought to be reproduced as full pages are reproduced at such a diminutive size that the detail would only be visible with the aid of a magnifying glass.

MARY SHAW

## References

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- <sup>2</sup> Woodiwiss A. *The Visual in Social Theory*. Athlone Press: London, 2001.
- <sup>3</sup> Jay M. *Downcast Eyes: The Denigration of Vision in Twentieth Century French Thought*. California University Press: Berkeley, 1993.

**Regression Modelling Strategies with Applications to Linear Models, Logistic Regression, and Survival Analysis.** Frank E Harrell Jr, New York: Springer 2001, pp. 568, \$79.95. ISBN 0-387-95232-2.

Most statistical textbooks present techniques and give simple examples of their use. This book is different. It assumes you already have the basic tools of linear and logistic regression,

parametric and semi-parametric survival analysis in your well-stocked statistical tool box which you acquired in graduate school. The question this book addresses is how do you use those regression tools properly. The book succeeds in being both philosophical and intensely practical in nature. It is about the art of data analysis and modelling strategies. It takes you through the whole process starting with imputation of missing data, leading you through dealing with non-linear relationships, estimating transformations, variable selection, model building and finally validation of the model using powerful bootstrap techniques.

Harrell has a unifying approach to regression modelling strategies in that he emphasises how the methods he presents may be used across many different types of regression model in a variety of subject areas, although his examples are biomedical. One of the main points of the book is that there is a dishonesty that is widespread in that we treat inference from *P*-values, confidence intervals and statistics as if the data were not used to build the model. We need to recognise that it is usually not possible to pre-specify a multivariable regression model, for example, whether a survival model should be a Weibull or a lognormal model, what transformations of variables are appropriate, inclusion of non-linear terms and interaction terms and so on. However, statistics are often computed as if the data were not used to make decisions about the form of the model and how predictors are represented in the model. This means that models over fit the data on which they are estimated and poorly predict responses of future observations. Great emphasis is placed on addressing this fundamental problem of the modelling process. In particular, the author strongly recommends using bootstrap methods in many steps of the modelling strategy, including variable selection, derivation of distribution-free confidence intervals and estimation of optimism in model fit. For example, there has been much criticism of stepwise variable selection, but Harrell uses this procedure with bootstrapping and shows that variation in bootstrapped samples of the same dataset will lead to selection of different sets of variables and that a better strategy is to use the set of variables which occurs most frequently in the bootstrapped samples. This will give a more reliable and useful set of prognostic factors in the model which will predict responses from new data with greater precision and accuracy.

There are detailed case studies of real examples which are analysed using S-Plus with the code being explicitly given. The web site of the book gives access to the datasets and an S-Plus library with 200 functions for model fitting and testing, estimation, validation, prediction, graphics and typesetting. The book is particularly strong on graphical presentation of the regression models and claims that a picture will often persuade a non-statistician of the necessity for a particular transformation of a predictor rather than to opt for a simple linear term which does not fit the data so well. In particular, cubic splines and non-parametric smoothers are recommended early on as a way of relaxing linear assumptions and are used throughout the case studies.

This is an excellent book for its target audience, postgraduates who know the technical details of regression models, but not necessarily when and how to use them. It is also a worthwhile addition to the reference shelf of data analysts and statistical methodologists who will appreciate the many recipes given for

successful modelling strategies and tips on validation when the data have been used to inform the modelling process.

MARGARET MAY

**The Health Effects of Chrysotile Asbestos: Contribution of Science to Risk Management Decisions** *RP Nolan, AM Langer, M Ross, FJ Wicks, RF Martin (eds). Ottawa: Mineralogical Association of Canada, 2001, pp. 304, \$US38. ISBN: 0-921294-41-7*

This is the fifth Special Publication of *The Canadian Mineralogist*, produced by the Mineralogical Association of Canada (MAC). It presents the peer-reviewed proceedings of a 3-day International Workshop of the same title held in September 1997, in Montreal, Canada. The workshop was sponsored jointly by the MAC and the Mineralogical Society of America.

The preamble reveals that as long ago as 1978, the International Mineralogical Association ruled that the hyphenated terms *grunerite-asbestos* and *riebeckite-asbestos* be used instead of the 'invalid' terms 'amosite' and 'crocidolite', respectively (commonly known as 'brown' and 'blue asbestos', colloquial terms which are also recommended for abolition). This will be news to many scientists in this field. I wonder if the relative obscurity of the new hyphenated terms proves the case for retaining the old and familiar names that are, in fact, still in common usage. One is reminded of other convenient name changes and the public relations exercises behind them.

Professor Sir Richard Doll dedicates the book to Dr Robert Murray, an active participant of the workshop and one of the world's more colourful experts on asbestos-related disease. This is a poignant reminder of the controversial view, regularly expressed by Dr Murray before his death in 1998, that asbestos may have saved more lives in wartime situations as a result of its fire-resistant properties than it claimed in occupational settings. It is a pity that more effective legislation and protective gear were not organized in the mad rush to profitably exploit asbestos, although one would not expect a discussion of this important moral argument in the proceedings of such a conference.

The purpose of this monograph is reportedly to provide a scientific perspective to the historical era of high exposure to mixed asbestos (where the amphibole-group asbestos minerals of amosite, crocidolite and anthophyllite made up 5% of the asbestos used), and the modern era of controlled use of what is supposedly almost exclusively chrysotile ('white') asbestos in limited products, that will be useful in making risk-management decisions regarding the use of chrysotile asbestos. It appears oblivious to the fact that an increasing band of nations have successfully banned the importation and use of chrysotile (including the UK in 1999 and every country within the EU by 2002, except for Portugal and Greece who will be required to do so by 2005).

It could also be accused of downplaying the dangers of chrysotile given that the World Health Organization declared that chrysotile causes asbestosis, lung cancer and *mesothelioma* in a dose-dependent fashion (with no threshold) and alternatives should be used if at all possible. The World Trade Organization has declared that *controlled use of chrysotile* is not an effective

alternative to a national ban. Perhaps the fact that this book is sponsored and published by the CMA, and that Canada has actively opposed the banning of chrysotile asbestos is relevant. The fact that Canada itself uses very little asbestos in manufacturing (preferring man-made mineral fibres), and exports 99.8% of the asbestos it produces (mostly to the developing world), is also relevant.

We can conclude from all the papers presented that historical occupational exposure tended to be very heavy and mixed resulting in mixed disease and will tend to be much lower and due to chrysotile only (unless inadvertently contaminated by amphibole fibre such as tremolite) in the future, resulting in a much lower risk of mainly lung cancer. But, is it as simple as that? Unpredictably high counts of mixed fibre that can still arise, particularly in the user, construction and demolition side of the industry, are not highlighted by this book which prefers to concentrate on the more easily controlled and therefore lower levels on the manufacturing side of the equation. This imbalance is featured in the reassuring and clear message that occupational exposure levels now, and in the future, *should be* low (<0.1 fibre/ml of ambient air) as a result of modern control technology and increasingly strict regulations emanating from health and safety legislation. In fact, we are told that the 'best available technology' *should be able* to achieve occupational levels of <0.02 fibres/ml. The risk of fibrotic or malignant lung disease developing from these exposure *should be* negligible. Nevertheless, occupational hygienists report instances of very much higher counts, particularly when asbestos materials are demolished or buildings renovated. Even more importantly, this entire issue is skirted over in the context of the developing world, the major consumer of both chrysotile and amphibole asbestos, where the concept of *controlled use* is regularly ridiculed by victim support groups, labour organizations and trade unions.

In addition, we are told that airborne concentrations of asbestos in buildings representing worst case scenarios and containing friable asbestos-laden fire-proofing material tend to be *indistinguishable* from outside air, suggesting that long-term, low-level environmental exposure from occupying suspect buildings is probably safe. Unfortunately, this is not supported by work from the Institute for Environment and Health at the University of Leicester. It reported levels of up to 0.3 fibres/ml in buildings where the asbestos material was in poor condition, in contrast to background ambient or outdoor levels of asbestos fibres which ranges up to 0.0001 fibres/ml.

Mesothelioma, a marker for previous asbestos exposure, continues to rise in the UK and predictions based on age-specific death rates suggest it will continue to do so for many years to come. This trend is assumed to have resulted from inadequate enforcement of health and safety protective legislation, confirming that significant exposure to *mixed* asbestos continued into the 1970s and perhaps later, and was experienced by workers in a range of occupations not covered by the legislation. When the use of crocidolite was discouraged by 1969 regulations the use of amosite expanded to fill the niche. With the widespread use of asbestos insulation board (40% amosite by weight) the exposed population expanded substantially. The importation and use of all amphibole fibre was banned in the UK as recently as 1985. Unfortunately, there is the continued occupational threat from the demolition of existing structures (particularly system-built flats clad, sprayed or partitioned

between 1948 and 1980 with mixed asbestos). The men most likely to be occupationally exposed are those most likely to smoke, which will compound their risk of asbestosis and lung cancer.

The legacy of asbestos-related disease, that has yet to fully declare itself, is a result of inadequately controlled exposure to the most hazardous occupational hazard known to man. It is a great shame that, in their pursuit of the study of diseases of lifestyle, the public health community showed little interest while the scientific community neglected to take on board the ethical aspects of an industry that allowed hundreds of thousands of men to die with crippling or painful chest diseases, and usually in poverty. This monograph fails to provide a balanced view of both current and future exposure, particularly at an international level, and the resultant level of disease we might expect from it.

HELENE IRVINE

**Models for Repeated Measurements (Second Edition).**

*JK Lindsey. Oxford: Oxford University Press, 1999, pp. xx + 515, £45.00, \$75.00 (HB). ISBN: 0-19-850599-0.*

This, the enlarged second edition, expands the first edition's four parts in places and adds a fifth part on design issues, leading to a 25% increase in length.

Briefly, Part I describes the basic concepts of modelling repeated measures data, showing how familiar and unfamiliar distributions can be generalized to describe complex data structures. Part II details models for continuous responses, focusing on longitudinal data and incorporating discussions of heterogeneity and non-normality. This leads naturally to Part III, where models for over-dispersed and then longitudinal discrete data are considered. Part IV is devoted to duration data and comprises a discussion of frailty models and models for event histories. Finally, Part V discusses design issues and missing data.

Two other significant differences from the first edition are the omission of the section on generalized estimating equations (GEE) and the shorter, less comprehensive bibliography.

The omission of the section on GEE is regrettable in my opinion, and indicative of the book's focus on parametric models, interpreted through the 'likelihood' school of inference<sup>1</sup> and selected using Akaike<sup>2</sup> information criterion (AIC). While Lindsey claims the conclusions arrived at using AIC 'always appear to be more plausible' it is not clear why in general this should be so, especially when the  $X^2$  calibrated likelihood ratio test is applicable.

The strength of this book is the detailed analysis of a wealth of examples from a wide variety of sources. Additionally, numerous data sets are provided, so readers can experiment for themselves. While few computational details are given, R code for both the examples and thought provoking exercises can be found at [www.luc.ac.be/cemstat](http://www.luc.ac.be/cemstat).

My reservations centre around Lindsey's slightly idiosyncratic approach, which is captured by an unusual phrase in the preface, '... much of the most interesting new material comes from articles rejected by well-known statistical journals'. This, and the implicit criticism of established texts, suggests that uncritical adoption of the methods presented here may not find universal favour.

The technical difficulties of the book mean that epidemiologists without a strong statistical background will struggle. Nevertheless, when faced with a novel problem, this book is a useful place to seek appropriate parametric approaches. Thus, I would recommend the library have a copy, but not choose it for my bookshelf.

JAMES CARPENTER

## References

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- <sup>2</sup> Akaike H. Information theory and an extension of the maximum likelihood principle. In: Petrov BN, and Csàka F. (eds). *Second International Symposium on Inference Theory*. Budapest: Akadémiai Kiadó, pp. 267–81.

**Musculoskeletal Disorders and the Workplace: Low Back and Upper Extremities.** *Panel on Musculoskeletal Disorders and the Workplace, Commission on Behavioral and Social Sciences and Education, National Research Council and Institute of Medicine. Washington DC: National Academy Press, 2001, pp. 429, £39.95. ISBN: 309-07284-0 (HB).*

Musculoskeletal disorders of the back and the upper limb are a major source of morbidity, particularly occupational morbidity. They are a major cost in terms of loss of productivity to the health service and to the sufferer, and impose a substantial economic burden in compensation costs. This book, prepared by a panel on musculoskeletal disorders and the workplace, is based on a report of a comprehensive review of the scientific literature on the relationship of work and the workplace to musculoskeletal disorders of the low back and upper extremities. The impetus for this review came from a series of questions posed by the US Congress about, amongst other things, the incidence and prevalence of work-related musculoskeletal disorders, the evidence about the role of work and non-work factors in causation of such disorders, and about preventative strategies.

The screening criteria used to select the research literature for review were: (1) focus on low back and upper extremity musculoskeletal disorders, (2) conducted within the last 20 years (3) published in peer-reviewed publications and (4) published in English.

The book consists of an executive summary and three parts plus five appendices. In Part 1 there is an introductory chapter containing contextual material followed by chapters on the prevalence, incidence and costs associated with musculoskeletal disorders and their economic and social influence. The final chapter in this part contains an overview of the methodological issues and approaches used in the research on musculoskeletal disorders. The second part provides the reviews of the evidence and consists of five chapters containing detailed descriptions of epidemiological studies about the importance of physical and psychosocial factors, tissue mechanobiology, biomechanics, physical and behavioural responses to stress, workplace interventions and general characteristics of the workplace now and in the future. The final part presents a synthesis of the evidence and the panel's conclusions and recommendations, including an agenda for future research. The appendices include a report by a dissenting voice and the panel's response.

The review and analysis of the evidence led to a number of conclusions. One of these suggests that because workplace disorders and individual risk and outcomes are difficult to disentangle, musculoskeletal disorders should be approached in the context of the whole person rather than focusing on body regions in isolation. This is mainly because of the lack of congruity between the pain reported by sufferers with low back or upper limb disorders and the clinical evidence of abnormalities i.e. the lack of fit between disease and illness.

The literature on the risk factors for upper limb extremities is less well developed than that for low back pain. However, despite this a similar set of explanations emerges for both in that external loads and psychosocial factors are associated with work-influenced outcomes. More specifically, the panel concluded that there is a clear relationship between back disorders and physical load, i.e. manual, material handling, load movement, frequent bending and twisting, heavy physical work and whole-body vibration. For disorders of the upper extremities, repetition, force and vibration are particularly important work-related factors. In terms of psychosocial factors, rapid work pace, monotonous work, low job satisfaction, low decision latitude and job stress are associated with low back disorders. High job demands and high job stress are work-related psychosocial factors that are associated with upper limb extremities. These risk factors are mediated by individual risk factors, including age, gender, body mass index, and a number of individual psychosocial factors.

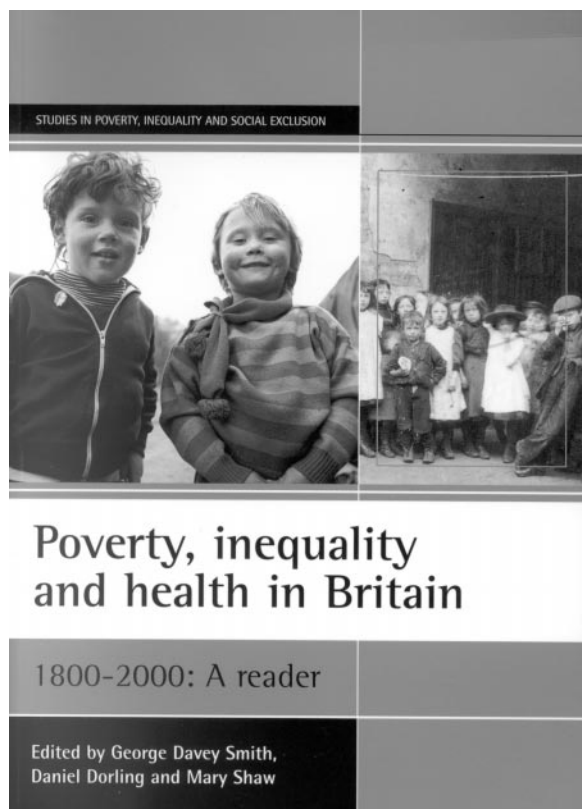
They conclude that modifying the various physical and psychosocial factors could reduce substantially the risk of symptoms for low back and upper extremity disorders. The approach suggested to reduce both types of risk factors is mainly through the application of ergonomic principles.

What are the implications of the predicted changes in working patterns and activities for musculoskeletal disorders? It is suggested that work in the future may pose a lower risk for back problems and a higher risk for upper extremities. The latter is explained by the increasing diversity of jobs and work which will lead to increasing interactions with computers and the rapid movement of a large variety of relatively lightweight products. Heavy lifting may decrease because of automation. However, continued long working hours and the increasing requirement for shift work increase the opportunities for fatigue and exposure to musculoskeletal disorder risk factors. In addition, psychosocial stress is expected to play a greater role in the workplace of the future.

A well-written and structured book which provides a wealth of carefully analysed evidence. A useful handbook for those who require an up-to-date picture of the relationship between work and musculoskeletal problems, and to identify priorities for policy and future research. Of particular interest is the role of stress and other psychosocial factors in the development of musculoskeletal disorders. What appears to be lacking in this research is a coherent theory which links the working environment, how workers experience it and how their experiences are translated into signs and symptoms of musculoskeletal disorders. This requires a truly interdisciplinary perspective which seems to be lacking in this area.

MICHAEL CALNAN

**Poverty, Inequality And Health In Britain, 1800–2000: A Reader.** *George Davey Smith, Daniel Dorling, Mary Shaw (eds).* Bristol: The Policy Press, 2001, pp. 384, £55.00 (HB). ISBN: 1-86134-328-0; £15.99 (PB). ISBN: 1-86134-211-X.



The editors of this volume are to be congratulated on the quality of the selections from classic texts on poverty, inequality and health in Britain during the nineteenth and twentieth centuries. They have ranged widely both in time and subject matter, including material from Malthus, Farr, Chadwick, Engels, Mayhew, Marx, Rowntree, Booth, Pember Reeves, Greenwood, McGonigle, Boyd-Orr, Beveridge, Titmuss, Morris, Abel-Smith, Townsend, and the recent Black and Acheson Reports.

The book has focussed both on the history of poverty and its effect on health and mortality. The authors quote widely from statistical studies as well as narrative descriptions of poverty from social surveys and other sources. For example, they cite Collis and Greenwood's influential work on the health of the industrial worker, detailing the effects of poverty and overcrowding on tuberculosis mortality during the early twentieth century. The selections on poverty often stand in their own right, and evoke an appropriate sympathy for the poor and their plight in grappling with extreme poverty. Some of the most effective sections of the book on poverty are selections from relatively unknown working class authors, such as Robert Roberts and Robert Tressell.

It is only possible to convey the flavour of this writing by quoting from the text of the book. Tressell worked as a painter and decorator in Hastings at the beginning of the twentieth

century and described in his autobiographical novel the following scene:

'The woman did not reply at once. She was bending down over the cradle arranging the coverings which the restless movements of the child had disordered. She was crying silently, unnoticed by her husband. For months past—in fact ever since the child was born—she had been existing without sufficient food. If Easton (her husband) was unemployed they had to stint themselves so as to avoid getting further into debt than was absolutely necessary. When he was working they had to go short in order to pay what they owed; but of what there was Easton himself, without knowing it, always had the greater share. If he was at work she would pack into his dinner basket overnight the best there was in the house. When he was out of work she often pretended, as she gave him his meals, that she had hers while he was out. And all the time the baby was draining her life away and work was never done. She felt very weak and weary as she crouched there crying furtively and trying not to let him see.'

Inevitably, such poverty and maternal malnutrition led to poor health, not only for mothers but also for their children, an association which has been emphasized by Barker and others in their work on infant growth and later adult disease. This research necessarily leads to the study of historical conditions, and Davey Smith, Dorling and Shaw are pioneers in bringing the relevance of historical evidence to the attention of epidemiologists and other medical researchers, with their work on Booth's poverty map and its links to twentieth century patterns of adult disease mortality.

However, there are problems with some of the assumptions made by Davey Smith, Dorling and Shaw. At one point they write that 'the association between poverty and ill-health has been apparent across the two centuries with which we are concerned'. This was certainly true of the twentieth century, but there is increasing evidence that it was not true of the nineteenth. Historically, there was no simple relationship between poverty and mortality before the twentieth century. The editors of the present volume have quoted nineteenth century evidence which has long been discredited. For example, they quote Chadwick, Engels and Titmuss on the relationship between social class and expectation of life in the nineteenth century, based on average age at death detailed in various records. Neisson, Farr and others pointed out that this method was fundamentally flawed, as it did not allow for variations in the age structure of populations at risk.

Neisson and other Victorian actuaries concluded from insurance, friendly society and civil registration data that adult mortality was actually higher amongst middle class groups than it was amongst working class populations. For example, they found that mortality amongst clerks and schoolteachers was higher than that amongst manual workers. This difference only disappeared in the twentieth century with the emergence of the classical social class gradient.

Neisson and others believed that the 'inverse' social class adult mortality gradient was due to the healthier lives lived by manual workers, particularly those engaged in active outdoor occupations. However, it is possible that the explanation for higher middle class adult mortality was partly a function of patterns of infectious disease. There is some evidence that the middle classes managed to avoid certain diseases in childhood, and certainly they

went to great pains to avoid plague, smallpox and other contagious diseases, frequently fleeing from areas where these diseases were rife. As a result, middle class families probably caught some of these diseases—such as smallpox—later in adolescence and adulthood, increasing their levels of adult mortality.

Farr and other writers on nineteenth century mortality were certainly aware of the importance of disease environment in shaping levels of mortality. Davey Smith and colleagues quote Farr to this effect as follows: '(Those living in low-mortality healthy districts) generally follow agricultural pursuits; and they are scattered thinly over the country, often on high ground, so that the impurities which they produce are dispersed and diluted in the air and water. They do not breathe each others' exhalations in theatres and churches. They do not drink water sullied by impurities.'

There is a consensus emerging amongst historical demographers that geographical location was probably more important than social class in influencing mortality in the nineteenth century. Generally, rural areas were much healthier than urban ones, and this only really changed at the end of the nineteenth and beginning of the twentieth century. This was probably linked to the 'epidemiological transition', with infectious diseases being replaced by degenerative ones. The historical evidence is that poverty did not significantly affect infectious disease mortality, but did have a major impact on mortality from degenerative diseases, explaining why it had so much more impact on mortality in the twentieth than in the nineteenth century.

These patterns of historical transition mean that epidemiologists have to be very careful in their use of historical data. For example, Davey Smith *et al.*'s work on the correlation between Booth's poverty map and twentieth century adult mortality assumes that late nineteenth century poverty was associated with poor health, and yet recent research has found a lack of a correlation between the poverty colour-coding of streets and levels of infant mortality in one of Booth's London districts, although there may well be an association with child mortality. This new work is based on copies of civil birth and death registers, many of which have survived and been deposited in county record offices, allowing epidemiological and demographic research for both the nineteenth and twentieth centuries.

The above reservations about the present volume should not however detract from the success that the editors have in demonstrating the relevance of historical evidence to a wider account of epidemiology. Many epidemiologists wish to create a timeless body of generalizations independent of historical variation, but the editors have alerted us to the importance of medical history for a complete understanding of epidemiological reality. The selections contained in the book abundantly and effectively illustrate a wide body of work both on poverty and its effect on health and mortality in the twentieth century.

PETER RAZZELL

**Ecological Integrity: Integrating Environment, Conservation and Health.** *D Pimentel, L Westra, RF Noss (eds). Washington DC: Island Press, 2000, pp. 428, £55.00 (HB). ISBN: 1-55963-8-079; £27.95 (PB). ISBN: 1-55963-8-087.*

This book brings together and synthesizes the work to date of the Global Integrity Project, which was started in 1992. The aims of

the project, as stated on the back cover of the book, have been '... to examine the combined problems of threatened and unequal human well-being, degradation of the ecosphere, and unsustainable economies'. The biographies of the contributors to this edited volume highlight that the project has brought together specialists from the fields of ecology and related biological/environmental sciences, economics, philosophy, epidemiology, ethics and law. Between them the contributors have an equally broad experience of academia, industry, governmental and non-governmental organizations. This bodes well for a project and book that aim to take a transdisciplinary approach to the issues concerned.

I would emphasize now that this is not simply a book that describes which and how environmental factors affect human health today. The whole approach of the book is to focus on definition, measurement and effects of 'ecological integrity' and its loss, in the context of which the impacts on human health are considered.

The book has a straightforward structure, similar to that of many edited collections, and is amenable to 'dipping in' to chapters of interest. Indeed it may be quite difficult to plough through the book in its entirety. However, I would recommend against health specialists simply heading straight for the chapters that deal explicitly with human health, without some consideration of the remaining content of the book. The book tries to show that human health not only responds to the state of ecological integrity (at whatever scale), but is also an inherent part of it. Focussing solely on the health section would therefore lead to missing the key point of the book. Having said that, there is probably more detail than is needed on ecological theory and specifics such as forestry for even the broadest-minded epidemiologist, but that does not limit the utility of the book as a whole.

The introductory section does a good job of telling the story of what the book is about, while making the argument for why the following chapters are important and how they fit into the story. This is followed by the four main sections of the book: the history and philosophy behind the ecological integrity concept; the concept as applied to natural resource systems, including agriculture, landscape and fisheries; human and societal health; and economic and ethical aspects. The book ends with a final synthesis, which brings together the ideas and summarizes a prescription for action.

In contradiction to my recommendation above, but with a view to the readership of the *International Journal of Epidemiology*, a brief review of the health-relevant chapters follows. In chapter 14, Professor Tony McMichael sets out to answer the question 'In what ways do global environmental changes affect the prospects for human health?' The focus on health prospects highlights that this is concerned with possible environmental effects on health in a long-term, ecological framework rather than measurement of current exposure effects. The chapter provides a neat summary of the manifold means by which public health is likely to be affected by global and regional environmental changes, which will be familiar to anyone who has read McMichael's book *Planetary Overload*.<sup>1</sup> In common with much of the rest of the book, McMichael argues for the need for transdisciplinary, holistic scientific assessment, since these complex and large-scale issues do not fit reductionist and classical linear analyses. He suggests that to assume that things are getting, and will continue to get, 'better' because life expectancy

is increasing, is to misunderstand the situation, and that public health needs the equivalent of clinical prognostic indicators as well as purely diagnostic ones.

In chapter 15, Soskolne *et al.* neatly lead on to investigate how we might go about measuring the potential consequences of environmental degradation on human health. While acknowledging the difficulties inherent in this type of science, they suggest that epidemiological methods do provide a means to assess environment-health relationships in this context. They give a simple summary of epidemiological study types, and highlight that epidemiology used in this context can almost never be 'gold-standard' (randomized controlled trials), but argue that ecological studies are perhaps the most appropriate, despite limited causal inference.

Laura Westra's chapter that follows on 'institutional environmental violence' might sound a little dramatized. However, it puts forward a cogent argument for the consideration of potential and actual public health impacts of activities that are (or were) not illegal or proscribed and are/were viewed as part of a legitimate 'modern' lifestyle and of technological progress. She also discusses, at some length, the ethical dimensions of the previous two chapters.

On a personal note, the chapter that I found to be most useful is that by James Karr, who relates ecological and environmental health, and emphasizes the importance of not considering them to be wholly separate entities (the chapter is subtitled *The Importance of Measuring Whole Things*). This helps the reader to see the links between the explicitly human health-oriented chapters and the remainder of the book.

Given its inherently cross-disciplinary nature, the book appeals to a wide audience, and would be recommended to anyone with an interest in environmental sciences, sustainable development, environmental and more general epidemiology, and global public health. A little prior knowledge of ecology may help with understanding some of the concepts, but is by no means essential.

There is a growing awareness of, and interest in, health ecology and taking an ecological approach to epidemiology and public health.<sup>2,3</sup> *Ecological Integrity* delves deeply into these concepts with a very broad remit, that might at some times seem too broad to be of interest to specialists. However, it pulls together a coherent argument, and presents some challenging and very interesting ideas for the ways in which we should approach the future with regard to ecological—including our own—health.

BEN WHEELER

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- <sup>3</sup> Torres AM, Monteiro CA. Towards an ecology minded public health? *J Epidemiol Community Health* 2002;**56**:82.

## Ecosystem Change and Public Health. A Global Perspective.

Joan L Aron, Jonathan A Patz (eds). Baltimore, MD: Johns Hopkins University Press, 2001, pp. 526, \$85.00 (HB). ISBN: 0-8018-6581-6; \$38.00 (PB). ISBN: 0-8018-6582-4.

Musing on the way time passes more quickly now than it used to, John Mortimer quotes an acquaintance who said that after 80 one seemed to be eating breakfast every five minutes. Public health textbooks do not come round quite as quickly as that, but it does seem that there is more to choose from than previously. Whether or not that perception is true, 'Ecosystem change and public health' stands out from the pack for two reasons.

First, I know of no other public health text that gives central place to ecological considerations. *Public Health and Human Ecology*, published in the late 1980s by John Last, was essentially a compact version of Maxcy-Rosenau, and kept the traditional structure and emphasis on human diseases. Tony McMichael and others have written on the links between ecosystems and human health, but their work has been in the form of polemic rather than text. The purpose of Aron and Patz's book is twofold: to advance the argument that the foundation of human health is ecological, and to provide at the same time an instrument for curriculum reform.

The other distinguishing feature of the book is that it engages directly with the question of what textbooks are for. The question is a timely one. For that fraction of the world's population with a computer and an internet connection, information has never been so accessible. Type in 'how fast is the speed of light?' and Google gives you a million answers in less than half a second. Look up current knowledge on anything from Pap smears to anthrax and thousands of entries await a tap of the button. Paper-based texts cannot compete with that volume of data and ease of access. So if they do not serve as an enduring repository of knowledge, what purpose do textbooks have?

The answer, according to *Ecosystem Change and Public Health*, is that textbooks should serve to prompt, challenge, guide and illustrate. On the whole, I think this book meets these objectives. There is a good introduction, explaining the different ways in which the book can be used and reflecting on textbooks and information literacy in the internet age. An appendix provides an annotated listing of relevant, reviewed websites.

The book is arranged in three parts. These include approaches to studying global change and its effects on human health, descriptions of major changes that are currently occurring, and case studies. The net is cast wide. For instance, chapters in the first section include epidemiology in 40 pages, geographical information systems, integrated assessment and (oddly placed) a short account of the policy/science interface. The authors are senior people in the field, mostly American, and mostly from Johns Hopkins. However, as befits a book on global change, the perspective is international, and examples are given from many parts of the world.

For me the attractions of this book include the variety of the material included, the serious attention paid to combining methods and applications (the chapter on integrated assessment is an excellent introduction to the topic), and the emphasis on learning through case studies. The epidemiology chapter, for example, includes a very interesting and instructive account of the sequential application of epidemiological methods (survey

to intervention study) to control of filariasis in the Nile delta. There is a downside of course to the width: none of the chapters explore their topics in depth, and certainly the epidemiology chapter would not, on its own, provide a graduate student with an adequate introduction to the topic. However, the book does

provide a bridge between traditional public health disciplines and new concerns, and as a model of the new generation of texts it is well worth reading.

ALISTAIR WOODWARD