Contents

Foreword to the first edition by Professor Sir David Weatherall xii
Preface to the sixth edition xiv
Preface to the first edition xvi
Acknowledgements xviii

Chapter 1 Why read papers at all? 1
Does ‘evidence-based medicine’ simply mean ‘reading papers in medical journals’? 1
Why do people sometimes groan when you mention evidence-based healthcare? 4
Before you start: formulate the problem 11
Exercises based on this chapter 13
References 14

Chapter 2 Searching the literature 16
What are you looking for? 17
Levels upon levels of evidence 18
Synthesised sources: systems, summaries and syntheses 19
Pre-appraised sources: synopses of systematic reviews and primary studies 22
Specialised resources 23
Primary studies – tackling the jungle 23
One-stop shopping: federated search engines 25
Asking for help and asking around 26
Online tutorials for effective searching 26
Exercises based on this chapter 27
References 27

Chapter 3 Getting your bearings: what is this paper about? 29
The science of ‘trashing’ papers 29
Three preliminary questions to get your bearings 31
## Contents

Randomised controlled trials 35  
Cohort studies 38  
Case–control studies 40  
Cross-sectional surveys 41  
Case reports 41  
The traditional hierarchy of evidence 42  
Exercises based on this chapter 43  
References 43

### Chapter 4 Assessing methodological quality 45

- Was the study original? 45  
- Whom is the study about? 46  
- Was the design of the study sensible? 47  
- Was bias avoided or minimised? 49  
- Was assessment 'blind'? 53  
- Were preliminary statistical questions addressed? 54  
- A note on ethical considerations 57  
- Summing up 58  
- Exercises based on this chapter 59  
- References 60

### Chapter 5 Statistics for the non-statistician 62

- How can non-statisticians evaluate statistical tests? 62  
- Have the authors set the scene correctly? 64  
- Paired data, tails and outliers 69  
- Correlation, regression and causation 71  
- Probability and confidence 73  
- The bottom line 75  
- Summary 77  
- Exercises based on this chapter 77  
- References 78

### Chapter 6 Papers that report trials of drug treatments and other simple interventions 79

- 'Evidence' and marketing 79  
- Making decisions about therapy 82  
- Surrogate endpoints 82  
- What information to expect in a paper describing a randomised controlled trial: the CONSORT statement 86  
- Getting worthwhile evidence from pharmaceutical representatives 86  
- Exercises based on this chapter 89  
- References 89
Contents ix

Chapter 7  Papers that report trials of complex interventions  92
Complex interventions  92
Ten questions to ask about a paper describing a complex intervention  94
Exercises based on this chapter  99
References  100

Chapter 8  Papers that report diagnostic or screening tests  101
Ten men in the dock  101
Validating diagnostic tests against a gold standard  102
Ten questions to ask about a paper that claims to validate a diagnostic or screening test  107
Likelihood ratios  111
Clinical prediction rules  113
Exercises based on this chapter  114
References  115

Chapter 9  Papers that summarise other papers (systematic reviews and meta‐analyses)  117
When is a review systematic?  117
Evaluating systematic reviews  120
Meta‐analysis for the non‐statistician  125
Explaining heterogeneity  130
New approaches to systematic review  132
Exercises based on this chapter  133
References  133

Chapter 10  Papers that tell you what to do (guidelines)  137
The great guidelines debate  137
Ten questions to ask about a clinical guideline  141
Exercises based on this chapter  147
References  148

Chapter 11  Papers that tell you what things cost (economic analyses)  150
What is economic analysis?  150
Measuring the costs and benefits of health interventions  152
A note on ‘Choosing Wisely’  157
Ten questions to ask about an economic analysis  157
Conclusions  162
Exercises based on this chapter  162
References  162
Contents

Chapter 12 Papers that go beyond numbers (qualitative research) 165
What is qualitative research? 165
Ten questions to ask about a qualitative research paper 169
Conclusions 176
Exercises based on this chapter 176
References 177

Chapter 13 Papers that report questionnaire research 179
The rise and rise of questionnaire research 179
Ten questions to ask about a paper describing a questionnaire study 180
Conclusions 188
Exercises based on this chapter 189
References 189

Chapter 14 Papers that report quality improvement case studies 191
What are quality improvement studies, and how should we research them? 191
Ten questions to ask about a paper describing a quality improvement initiative 193
Conclusions 200
Exercises based on this chapter 200
References 201

Chapter 15 Papers that describe genetic association studies 203
The three eras of human genetic studies (so far) 203
What is a genome-wide association study (GWAS)? 204
Clinical applications of GWAS 207
Direct-to-consumer genetic testing 209
Mendelian randomisation studies 210
Epigenetics – a space to watch 211
Ten questions to ask about a genetic association study 212
Conclusions 216
Exercises based on this chapter 216
References 216

Chapter 16 Applying evidence with patients 219
The patient perspective 219
Patient-reported outcome measures (PROMs) 221
Shared decision-making 222
Option grids 223
N of 1 trials and other individualised approaches 227
Exercises based on this chapter 228
References 229
Chapter 17  Criticisms of evidence-based healthcare  
What’s wrong with EBHC when it’s done badly? 232  
What’s wrong with EBHC when it’s done well? 235  
Why is ‘evidence-based policymaking’ so hard to achieve? 238  
Exercises based on this chapter 239  
References 240  

Appendix 1  Checklists for finding, appraising and implementing evidence 242  
Appendix 2  Assessing the effects of an intervention 252  
Index 253