Resource review

Whiting P. *Quality of diagnostic accuracy studies: the development, use, and evaluation of QUADAS*. Bristol: P E Whiting, 2006.

The book is a compilation of articles about the quality of diagnostic accuracy studies that are coauthored by Penny Whiting. As a matter of fact, each book chapter except the introduction has been published in *Ann Intern Med*, *J Clin Epidemiol*, *BMJ*, and BioMed Central between 2003 and 2006.

The target audience is systematic reviewers of diagnostic accuracy studies. It is structured as a short reference book, providing detailed evidence on the development, use, and evaluation of a quality assessment tool of diagnostic accuracy studies (QUADAS).

In the short introduction, the author outlines the concepts underlying the evaluation of diagnostic tests and briefly describes each chapter's contents. The second chapter presents a systematic review of sources of variation and bias in studies of diagnostic accuracy. It defines variation and bias and describes clearly the sources of both of them.

The third chapter presents the quality assessment of diagnostic reviews. The 4 aspects of quality are (1) potential for bias, (2) conduct of the study, (3) applicability of the results, and (4) quality of reporting.

This chapter presents 2 reviews. The first identifies quality assessment tools and the items covered by those tools. In total, 91 quality tools are identified; these are partially described but not systematically evaluated. The second review explores the use of quality assessment in systematic reviews of diagnostic accuracy studies. Only a half of the studied reviews included limited quality assessment.

The fourth chapter—the logical and methodological consequence of the previous 2—presents the development of QUADAS, an ''evidence based quality assessment tool to be used in systematic reviews of diagnostic accuracy studies.'' The development of this tool incorporated the use of the Delphi process. The QUADAS tool is a 14 item questionnaire, with 8 items covering bias, 1 covering variability, and 5 on reporting. There is a user's guide that includes a detailed explanation of each item, suggestions about the situations in which the item does not apply, and guidelines on how it is scored.

Chapters 5 and 6 pilot QUADAS by presenting 2 diagnostic systematic reviews about the diagnosis and further investigation of urinary tract infection (UTI). The next chapter presents an exemplary diagnostic systematic review about the use of magnetic resonance imaging in diagnosing multiple sclerosis. The authors show that studies not fulfilling specific QUADAS criteria tend to overestimate sensitivity and underestimate specificity.

The last 3 chapters present 3 papers evaluating QUADAS. The authors explore the association of QUADAS items with estimates of test performance, without conclusive evidence. Furthermore, in chapter 9 they investigate the effects of incorporating quality scores into QUADAS. Because of the conflicting results they recommend against this practice. In the last chapter they evaluate the application of QUADAS by different reviewers, finding low inter-rater variability and positive feedback about the tool. Finally, there is a comprehensive summary of the book.

Although QUADAS should be further evaluated and compared with the Standards for Reporting of Diagnostic Accuracy (STARD) checklist,[1-2] the book will be very useful for its intended audience. It will help to incorporate at least some quality criteria in their reviews in a systematic, valid, and evidence-based way.

It could be also useful for any clinician trying to evaluate the findings of a diagnostic accuracy study, as QUADAS is an easy to use tool for assessing quality. The user's guide to QUADAS is detailed and simple. However, the average clinician would probably find the book rather difficult to read, as too much data are presented and discussed. In addition, some concepts are difficult to understand (eg, various statistical procedures that could be briefly explained in an appendix). Moreover, the very small size of the letters of the text makes reading tiring.

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RATINGS:
Methods: ★★★★★
Clinical usefulness: ★★★★★

1 Bossuyt PM, Reitsma JB, Bruns DE, *et al. Clin Chem* 2003;**49**:1–6.
2 Bossuyt PM, Reitsma JB, Bruns DE, *et al. Clin Chem* 2003;**49**:7–18.

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