

Introduction to diagnostic test accuracy studies

Aims and objectives of the course

This course aims to highlight and target the importance of understanding and critically appraising diagnostic accuracy studies. This is critical in progressing to understanding diagnostic meta-analysis.

By the end of the workshop participants will be able to:

- understand the principles of diagnostic test accuracy studies
- identify the strengths and weaknesses of different diagnostic accuracy study designs
- appraise study outcomes and judge the quality of study methodology
- be familiar with measures of diagnostic accuracy, such as sensitivity, specificity, positive and negative predictive value and receiver operating characteristic (ROC)/area under the curve (AUC)
- understand the difference between diagnostic test accuracy studies and test-and-treat studies

Diagnostic tests are a critical component of health care to enable accurate and timely diagnosis. The role of diagnostic testing in guidelines is not well understood and this workshop shows how diagnostics underpin the success and impact of a guideline enabling focused implementation. It is imperative that clinicians, policy makers and patients understand the principles behind diagnostic test accuracy in order to use and implement the recommendations in guidelines with confidence.

Detailed programme and timetable, including overall length of course

Time Minutes	Topic
15	An introduction to diagnostic accuracy studies
15	Characteristics of different study designs relevant to diagnostic accuracy questions
60	Measures of diagnostic accuracy, such as sensitivity, specificity, positive and negative predictive value and receiver operating characteristic (ROC)/area under the curve (AUC) <ul style="list-style-type: none">• Understanding 2x2 tables and the measures above – interactive task with clinical examples
10	Break
60	Risk of bias assessment of diagnostic accuracy studies <ul style="list-style-type: none">• Quadas2 – interactive task
10	An introduction to test-and-treat trials ('diagnostic RCTs')
10	Summary
Total 170 minutes	

Biographies of the workshop facilitators

Serena Carville

Dr Serena Carville, is an Associate Director for the National Guideline Centre at the Royal College of Physicians. She received her BSc from University College London, and subsequently completed a PhD in human physiology at King's College London. She currently jointly leads a team of systematic reviewers developing clinical guidelines, including contributing to the development of research methodology in the field of evidence-based medicine. Dr Carville has led the development of numerous clinical guidelines for the National Institute for Health and Care Excellence (NICE) and European organisations and has extensive experience in evidence-based medicine, systematic reviewing and healthcare research.

James Gilbert

Dr James Gilbert is a senior research fellow at the National Guideline Centre at the Royal College of Physicians, currently working on the National Institute for Health and Care Excellence (NICE) guidelines for thyroid disease and renal replacement therapy. He has developed the National Guideline Centre's external course on diagnostic study critical appraisal and has taught on the centre's critical appraisal and systematic reviewing courses. He received his medical degree, with an intercalated BA in pharmacology, from the University of Cambridge and Imperial College London.

Kate Kelley

Dr Kate Kelley, is an Operations Director for the National Guideline Centre at the Royal College of Physicians. She received her undergraduate degree and PhD from the University of Sussex and MPH from University of Manchester. She is part of the senior team in the NCG and responsible for a team of systematic reviewers developing clinical guidelines. Dr Kelley has led the development of numerous clinical guidelines for the National Institute for Health and Care Excellence (NICE) and specialist societies and has extensive experience in evidence-based medicine, systematic reviewing and healthcare research.

Sharon Swain

Dr Sharon Swain PhD, is an Associate Director for the National Guideline Centre at the Royal College of Physicians. She received her BA from University of Wales, Bangor, and subsequently completed a PhD in neuropsychology at Institute of Psychiatry, King's College London. For the past twelve years Dr Swain has worked on systematic reviews to inform National Institute for Health and Care Excellence (NICE) guidelines, moving from a reviewer to methods advisor to more recently taking the lead on the development of guidelines.

The target audience is early career systematic reviewers, systematic reviewers with little experience of diagnostic test accuracy studies, clinicians (all levels and grades of doctor, medical or natural sciences students, nurses and midwives, pharmacists, allied health professionals and policy makers. Some knowledge of general basic research methods is required. No prior knowledge of diagnostic research methods is required.

The workshop is delivered through presentations and interactive examples, taking participants through different types of diagnostic study designs, measures of diagnostic accuracy, and the process of critical appraisal, including an extensive risk of bias assessment. The interactive work can be done individually or in small groups.