Systematic reviews of diagnostic accuracy studies

Background

The number of diagnostic technologies is rapidly growing, and so are the costs associated with testing. Evaluating whether new tests are accurate and whether they can play a specific role in a diagnostic pathway is of growing importance. As a consequence, the number of primary studies evaluating diagnostic tests is rising. Critically summarizing such studies in a systematic review is beneficial for health care professionals seeking the best evidence about the use of diagnostic tests. Reviews of diagnostic studies are more challenging because of more variation in review questions & designs, specific types of bias & sources of variation, and the need to use more complex statistical approaches in the meta-analysis step. In this course we discuss and practice the methods relevant for each of the review process, including formulating focused & relevant review questions, how to search for diagnostic accuracy studies, how to assess the methodological quality of diagnostic test accuracy studies (QUADAS-2 instrument including the extension), the statistical models to meta-analyze the paired measures of test accuracy (bivariate meta-regression model of sensitivity and specificity), and how to critically read and interpret the findings of systematic review of diagnostic studies. This online course consists of presentations, collaborative small-group exercises, discussions and reflections on discussion forums, and computer exercises using the statistical software package *R*.

Objectives

In this three-day workshop participants will be introduced into the concepts and different steps of a systematic review of diagnostic accuracy studies.

At the end of the course, the participant is able to:
- List the key steps of a systematic review of diagnostic accuracy studies
- Formulate a focused review question addressing a diagnostic problem
- Understand the key issues to build a proper search strategy to identify relevant diagnostic studies in electronic bibliographic databases
- Explain the main types of bias in a diagnostic study
- Explain the concept "concerns for applicability"
- Assess the risk of bias and concerns for applicability in a diagnostic study using the QUADAS-2 instrument
- Explain in words the assumptions of the bivariate random effects model for meta-analyzing diagnostic accuracy data
- Interpret the results of the bivariate model with and without covariates
- Fit basic bivariate random effects models in statistical package R
- Interpret the main findings of a review in light of the review question(s)

Target audience

This workshop is directed to healthcare researchers, healthcare providers, guideline developers and policy makers to increase their knowledge and skills in order to critically read a systematic review of diagnostic accuracy studies or to become a valuable member of a team performing a diagnostic review.

Prerequisites

In this course, we expect participants to have a basic knowledge about the principles of diagnostic research. This includes the basic design of diagnostic accuracy, the various measures of test accuracy (e.g. sensitivity & specificity, predictive values, odds ratio, ROC-curves). Furthermore, computer exercises will be done using the free statistical software R, so an understanding of the basic commands in R is anticipated (basic tutorials will be provided).

Topics

1. Introduction to diagnostic accuracy reviews
2. Searching for diagnostic accuracy studies
3. Assessment of risk of bias and concerns about applicability
4. Bivariate meta-analysis and meta regression
5. Reporting & interpretation of diagnostic review findings

Workshop Style

This workshop will consist of online lectures, interactive small group exercises with ample room for discussion, and computer exercises. Participants are asked to do some preparatory work before the workshop and to do some self-study during the workshop. Participants are asked to have the statistical R package installed on their computer (guidance will be provided).

Faculty

- Lotty Hooft, Cochrane Netherlands and Julius Center, Utrecht
- Pauline Heus, Cochrane Netherlands and Julius Center, Utrecht
- Anneke Damen, Cochrane Netherlands and Julius Center, Utrecht
- Hans Reitsma, Cochrane Netherlands and Julius Center, Utrecht, course coordinator

Language

English.

Dates, insurance & cancellation

See our website for exact dates.

A full refund will be available if you notify us by email up to 5 working days before the date of the event. Refunds are not available if you cancel your place within 5 working days before the date of the event. The organization does not accept liability for individual medical, travel or personal insurance. In case an unforeseen event would force the organization to cancel the meeting, the organization will fully reimburse the participants registration fees.

Course fees

The course fee amounts € 895.-

Registration and additional information

To register for the course or to receive additional information, you can contact the course organizer at Cochrane Netherlands, Sabine van Dijk- van der Sluijs, PAOJuliusCenter@umcutrecht.nl.

For more information on the content of the course, you can send an e-mail with your question(s) to cochrane@umcutrecht.nl.

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