Title: Development and implementation of a reporting guideline for systematic reviews and meta-analyses of diagnostic accuracy studies: The PRISMA-DTA initiative

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Background: Systematic reviews of diagnostic accuracy synthesize data from multiple studies to provide greater insight into the ability of medical tests to detect a target condition—this could be in the form of greater precision (e.g. more narrow confidence intervals around accuracy estimates), or a better understanding of determinants of test performance (e.g. patient, disease, or test characteristics) (1). The number of systematic reviews of diagnostic accuracy has grown rapidly over the past decade (2).

Clinicians commonly rely on systematic reviews as the highest level of evidence; it is crucial that their reporting is complete and informative, so that readers can assess the quality of the review, and the validity and applicability of the presented findings. Evaluations have shown that published systematic reviews of diagnostic accuracy are often not sufficiently informative, and are of heterogeneous quality (3-5); they demonstrate considerable variability in approaches to fundamental steps such as assessing for publication bias, heterogeneity, pooling data and assessment for risk of bias in the included studies (5-8).

Research waste from incomplete reporting has been identified as a major problem in biomedical research (9). To improve the quality of reporting of systematic reviews, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting guideline was developed (10), consisting of a 27-item checklist and a flow diagram. The introduction of reporting guidelines has been associated with improved completeness and quality of reporting (3, 4, 11).

PRISMA was developed primarily to facilitate reporting reviews of healthcare interventions. Though systematic reviews of diagnostic accuracy studies share general elements with such reviews, there are also some differences. As such, some PRISMA items are not appropriate for reporting reviews of diagnostic accuracy, while other crucial items unique to them are missing (1, 12, 13).

Over the past years, several extensions of PRISMA have been developed for specific types of reviews (14-18). We believe that the development of a specific extension of PRISMA for reviews of diagnostic accuracy studies would be a highly effective means of reducing waste in biomedical research.

Objective: To develop and implement a guideline for reporting systematic reviews and meta-analyses of diagnostic accuracy studies (PRISMA-DTA).

Project leaders and strategy: PRISMA-DTA will be developed in line with previously published guidance for establishing reporting guidelines, developed by the EQUATOR network (19). A detailed protocol outlining these steps for PRISMA-DTA has been established.

The project is led by a 3 person PRISMA-DTA executive; this includes the lead author of PRISMA (DM), and the lead author of STARD (STAndards for Reporting of Diagnostic accuracy studies) (PB) (Appendix 1) (20). A 12 person advisory board complements the executive; their extensive experience in diagnostic research, systematic reviews, and reporting guideline development will contribute to the project's success (Appendix 2).

Having established that the quality of reporting of diagnostic reviews is inadequate (3-5), and surveyed the literature for potential empirical evidence of items that might lead to bias, the PRISMA-DTA team will complete a 3 round survey among a group of experts in the field of diagnostics, systematic reviews, or reporting guidelines, to assess the appropriateness of potential items to be considered for the PRISMA-DTA checklist. The experts will also be invited to nominate other items for consideration. During an in-person consensus meeting in early 2017, the PRISMA-DTA advisory board will finalize a core set of items to be included in a PRISMA-DTA checklist.

The dissemination plan will aim at publication of the checklist and an elaboration document in at least one journal; incorporation of PRISMA-DTA into training for authors of systematic reviews of diagnostic accuracy (Cochrane author training, Cochrane handbook for Reviews of Diagnostic Test Accuracy, workshops at the Cochrane Colloquium, on-line tutorial on the Cochrane Screening and Methods Page); seeking endorsement from journals that publish systematic reviews of diagnostic accuracy; presentation at conferences where potential users are likely to attend; and publication on the PRISMA and EQUATOR websites.

Appendix 1: PRISMA DTA Executive

Name	Expertise	Affiliation(s)	Country of Origin
Matthew McInnes	DTA Reviews, Methods and User (Imaging)	Ottawa Hospital Research Institute University of Ottawa	Canada
David Moher	Reporting guideline development (PRISMA)	Ottawa Hospital Research Institute University of Ottawa PRISMA Group	Canada
Patrick Bossuyt	DTA and DTA Review methods, Guideline Development (STARD)	AMC Amsterdam STARD Group	Netherlands

Appendix 2: PRISMA DTA Advisory Board

Name	Expertise	Affiliation(s)	Country of Origin
Jeremie Cohen	DTA Methods and User (Pediatrics)	French Institute of Health and Medical Research STARD Group	France
Jon Deeks	DTA Review Methods (Statistics)	University of Birmingham Cochrane Methods Group	UK
Constantine Gatsonis	DTA Review Methods (Statistics)	Brown University STARD Group	US
Lotty Hooft	DTA Review Methods, Guideline Development (STARD)	UMC Utrecht Cochrane Netherlands STARD Group	Netherlands
Daniel Korevaar	DTA Review Methods & User (Internal Medicine)	AMC Amsterdam STARD Group	Netherlands
Mariska Leeflang	DTA Review Methods, Guideline Development (STARD)	AMC Amsterdam STARD Cochrane Methods Group	Netherlands
Petra Macaskill	DTA Review Methods (Statistics)	University of Sydney Cochrane Methods Group	Australia
Hans Reitsma	DTA Review Methods, Guideline Development (STARD, PRISMA-IPD)	UMC Utrecht Cochrane Netherlands Cochrane Methods Group STARD Group	Netherlands
Anne Rutjes	DTA Review Methods (Risk of Bias)	University of Bern Università G. D'Annunzio Cochrane Methods Group	Italy/ Switzerland
Yemisi Takwongi	DTA Review Methods (Statistics)	University of Birmingham Cochrane Methods Group	UK
Penny Whiting	DTA Review Methods (Risk of Bias)	University of Bristol Cochrane Methods Group	UK
Brian Willis	DTA Review Methods (Applicability) & User (Primary Care)	University of Birmingham Cochrane Methods Group	UK

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