MOOSE Guidelines for Meta-Analyses and Systematic Reviews of Observational Studies*

**Title**  Identify the study as a meta-analysis (or systematic review)  page 1

**Abstract**  Use the journal’s structured format  page 3

**Introduction**

- The clinical problem  page 4
- The hypothesis  page 4
- A statement of objectives that includes the study population, the condition of interest, the exposure or intervention, and the outcome(s) considered  pages 4-5

**Sources**

- Qualifications of searchers (eg, librarians and investigators)  supplemental material
- Search strategy, including time period included in the synthesis and keywords
- Effort to include all available studies, including contact with authors
- Databases and registries searched  page 9
- Search software used, name and version, including special features used (eg, explosion)  page 9
- Use of hand searching (eg, reference lists of obtained articles)  supplemental material
- List of citations located and those excluded, including justification
- Method of addressing articles published in languages other than English  page 9
- Method of handling abstracts and unpublished studies  supplemental material
- Description of any contact with authors  supplemental material

**Study Selection**

- Types of study designs considered  page 9
- Relevance or appropriateness of studies gathered for assessing the hypothesis to be tested  page 9
- Rationale for the selection and coding of data (eg, sound clinical principles or convenience)
- Documentation of how data were classified and coded (eg, multiple raters, blinding, and interrater reliability)  supplemental material
- Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)
- Assessment of study quality, including blinding of quality assessors; stratification or regression on possible predictors of study results  supplemental material
- Assessment of heterogeneity  supplemental material
- Statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated  page 9

**Results**

- A graph summarizing individual study estimates and the overall estimate  Figure 4
- A table giving descriptive information for each included study  Tables S2-S3
- Results of sensitivity testing (eg, subgroup analysis)  page 12
- Indication of statistical uncertainty of findings

**Discussion**

- Strengths and weaknesses  page 15
- Potential biases in the review process (eg, publication bias)  page 15
- Justification for exclusion (eg, exclusion of non–English-language citations)
- Assessment of quality of included studies  table S3
- Consideration of alternative explanations for observed results  page 15
- Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)  page 16
- Guidelines for future research  page 16
- Disclosure of funding source  page 17