CASP Systematic Review Checklist:
10 questions to help you make sense of a systematic review

**Main issues for consideration:** Several aspects need to be considered when appraising a systematic review:

- Is the basic study design valid for a systematic review? (Section A)
- Is the systematic review methodologically sound? (Section B)
- What are the results? (Section C)
- Will the results help locally? (Section D)

The 10 questions in the checklist are designed to help you think about these aspects in a structured way.

**How to use this checklist:** Record 'Yes', 'No' or 'Can't tell' in response to the questions. Prompts below the questions highlight the issues it is important to consider. Record the reasons for your answers in the space provided.

The first three questions (Section A) are screening questions about the validity of the basic study design and can be answered quickly. If you think the study design is valid, continue to Section B to assess whether the study is methodologically sound and it is worth continuing with the appraisal; if you think the systematic review is methodologically sound, answer the remaining questions in Sections C and D.

As CASP checklists were designed to be used as educational/teaching tools in a workshop setting, we do not recommend using a scoring system.

***Narrative systematic reviews:*** If you are appraising a narrative systematic review:

- There is no need to answer Question 5 in Section B
- You need to take account of only two considerations under Question 6 in Section C

**About CASP Checklists:** The CASP systematic review checklist was originally based on JAMA Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL and Cook DJ), and piloted with healthcare practitioners. This version has been updated taking into account the PRISMA 2020 guideline [PRISMA (prisma-statement.org)] accessed 12 June 2022].

**Citation:** CASP recommends using the Harvard style, i.e., *Critical Appraisal Skills Programme (2022). CASP (Systematic Review) Checklist. [online] Available at: insert URL. Accessed: insert date accessed.*

| Section A: Is the basic study design valid for a systematic review? | | | |
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| 1. **Did the systematic review address a clearly focused research question?**<br>*CONSIDER: A research question can be 'focused' in terms of the:*<br>***Randomised studies***<br>• *Population*<br>• *Intervention*<br>• *Comparator*<br>• *Outcome/s*<br>***Non-randomised studies,*** *e.g., case-control or cohort studies*<br>• *Population*<br>• *Risk factors*<br>• *Detection of beneficial or harmful effects*<br>• *Outcome/s* | Yes<br>☒ | No<br>☐ | Can't tell<br>☐ |
| 2. **Did the authors specify appropriate study design(s) for the systematic review to answer the research question?**<br>*CONSIDER: For example, specifying:*<br>• *RCTs for a systematic review of an intervention's effectiveness*<br>• ***Non-randomised/observational studies for a systematic review of risk factors for a condition or disease severity*** | Yes<br>☒ | No<br>☐ | Can't tell<br>☐ |

| Section B: Is the systematic review methodologically sound? | | | |
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| 3. **Are all the important, relevant studies likely to have been included?**<br>*CONSIDER:*<br>• *Was the search conducted using major bibliographic databases (e.g., MEDLINE/PubMed, Embase)?*<br>• *Is the search strategy comprehensive and clearly reported?*<br>• *Did the search include non-English language studies?*<br>• *Did the authors hand-search reference lists from relevant primary sources?*<br>• *Did the authors search the unpublished as well as the published literature?*<br>• *Did the authors consult experts in the field/registers of trials to find ongoing or unpublished studies?*<br>• *Did the authors define appropriate screening, and inclusion/exclusion criteria?*<br>• *Did the authors present a PRISMA-type flow diagram, including numbers of papers screened out and excluded, and the reasons why?* | Yes<br>☒ | No<br>☐ | Can't tell<br>☐ |

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| 4. | **Did the authors assess the validity or methodological rigour of the studies in the systematic review?**<br>*CONSIDER: Lack of methodological rigour in the individual studies can affect the results and validity of the systematic review.*<br>• *Did the authors provide relevant methodological and other information about the studies in the systematic review?*<br>• *Did the authors use an appropriate validated tool to assess the methodological rigour of the studies in the systematic review? For example, for RCTs, the Cochrane Risk of Bias Tool; for non-randomised studies such as case-control or cohort studies, the Newcastle-Ottawa Scale.*<br>• *Did the authors present the findings from the assessment, and interpret them accurately?*<br>• *Did the authors discuss how any methodological issues or systematic bias (limitations) might have affected the results of the systematic review?*<br>• ***For an SR of RCTs:** Did the authors assess whether publication bias might have affected the results of the systematic review (e.g., use of funnel plot)?* | Yes<br>☐ | No<br>☐ | Can't tell<br>☒ |
| 5. | **If the results of the studies in the systematic review were combined to undertake a meta-analysis, was it reasonable to do so?**<br>*CONSIDER:*<br>• *Are the results of all the studies in the systematic review clearly displayed?*<br>• *Are the results similar from study to study?*<br>• *If not, is there variability (heterogeneity) among the included studies in terms of methodological or clinical diversity?*<br>• *Did the authors assess the level or impact of variability (heterogeneity) statistically (e.g., $I^2$ statistic)?*<br>• *Are the possible reasons for any variability in results across the individual studies discussed?*<br>• *Did the authors use an appropriate model of meta-analysis for the level of variability among individual studies (e.g., random-effects or fixed-effects model of meta-analysis)?* | Yes<br>☒ | No<br>☐ | Can't tell<br>☐ |

| Section C: What are the results? | | | |
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| 6A. **Have the results of the systematic review been reported comprehensively, and interpreted appropriately?**<br>*CONSIDER:*<br>• *Are you clear about the main findings of the systematic review?*<br>***For a narrative systematic review:***<br>• *Are the main findings consistent with the information presented from the individual studies?*<br>***For a systematic review with meta-analysis:***<br>• *What is the size (or magnitude) of the effect, and how is it expressed (e.g., odds ratio, risk ratio, mean difference, number needed to treat)?*<br>• *Was the total number of participants in the systematic review sufficient to detect an effect?*<br>• *Did the authors provide p values for the results of the systematic review, and discuss the implications?*<br>• *If the results were statistically significant (i.e., less likely to be due to chance), are they important or meaningful clinically or for population health and wellbeing?*<br>• *Did the authors report any missing data (reporting bias) and describe how they dealt with it?*<br>• *Did the authors undertake a sensitivity analysis to assess the robustness of the results of the systematic review?* | Yes<br>☒ | No<br>☐ | Can't tell<br>☐ |
| 6B. *<u>If the authors performed one or more subgroup analyses, go to Question 6B; if not, go to Question 7.</u>*<br>**Has any subgroup analysis been designed appropriately, and the results interpreted accurately?**<br>*CONSIDER:*<br>• *Were the characteristics for subgroup analysis specified during the design of the systematic review?*<br>• *Was the rationale for selecting those characteristics aligned with the research question?*<br>• *Can the effect of the characteristic/s be identified (differentiation)?*<br>• *Is there potential for confounding (i.e., are the characteristic/s for analysis closely related to one or more of the other characteristics which could be causing the effect)?*<br>• *Was the number of participants in the subgroup analysis sufficient to detect an effect?* | Yes<br>☐ | No<br>☐ | Can't tell<br>☒ |

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| 7. | **Did the authors report on how precise the results of the systematic review were, and the implications?**<br>*CONSIDER:*<br>• *Did the authors provide confidence intervals for the results?*<br>• *What is the range for the confidence intervals? (A smaller range – that is, narrower confidence intervals – means the result is more precise, and closer to the true effect.)*<br>• *Does the confidence-interval range include the "line of no effect" (0 for a difference, 1 for a ratio, which is where the null hypothesis holds true)?*<br>• *If the confidence interval range does not include the "line of no effect", is the lower limit of the confidence-interval range close to the "line of no effect"?*<br>• *Did the authors discuss the implications of the level of certainty associated with the results of the systematic review?* | Yes<br>☐ | No<br>☐ | Can't tell<br>☒ |

| Section D: Will the results help locally? |
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| 8. | **Can the results of the systematic review be applied to your local population/in your local context?**<br>*CONSIDER:*<br>• *Are the participants in the studies in the systematic review sufficiently different from your local population to influence whether you act upon these results?*<br>• *Does your local setting differ from that in the studies in the systematic review?*<br>• *Are there any outcomes the authors could have studied that would have been useful to you in deciding whether to change practice or introduce an intervention?* | Yes<br>☐ | No<br>☐ | Can't tell<br>☒ |
| 9. | **Are the benefits worth the harms and costs?**<br>*CONSIDER:*<br>• *Did the authors identify any harms, and if so, did they assess these against the benefits, and discuss the balance between the two?*<br>• *Did the authors report any information on the cost of intervention?*<br>• *Even if the balance of benefits to harms, or to costs, is not addressed by the authors, what do you think?* | Yes<br>☐ | No<br>☒ | Can't tell<br>☐ |

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| 10. | **Would the experimental intervention provide greater value to the people in your care than any of the existing interventions?**<br>*CONSIDER: The Value of an intervention is the Outcome/s (Benefits minus Harms) divided by the Resources.*<br>• *What resources would be needed to introduce the intervention? Take account of various types of resource, not only expenditure, but also time, skills mix, skills development or training needs, IT requirements, and other material resources.*<br>• *Are you able to disinvest resources in one or more existing interventions to be able to re-invest in the new intervention?*<br>• *Does the intervention increase or decrease the treatment burden for patients?*<br>• *Is the intervention likely to increase patient or population compliance?*<br>• *Does the intervention increase patient safety?* | Yes<br>☐ | No<br>☐ | Can't tell<br>☒ |

| APPRAISAL SUMMARY: *List key points from your critical appraisal which need to be considered when assessing the validity of the results and their usefulness in decision-making.* | | | |
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| Positive aspects of the systematic review | Methodological and other issues affecting the systematic review and its results | | |
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| What is your conclusion about the systematic review – can it be used to support decision-making?<br>• *Would you use it to change your practice or to recommend changes to care/interventions used in your organisation?*<br>• *Could you judiciously implement this intervention without delay?* | Yes<br>☐ | No<br>☐ | Can't tell<br>☐ |