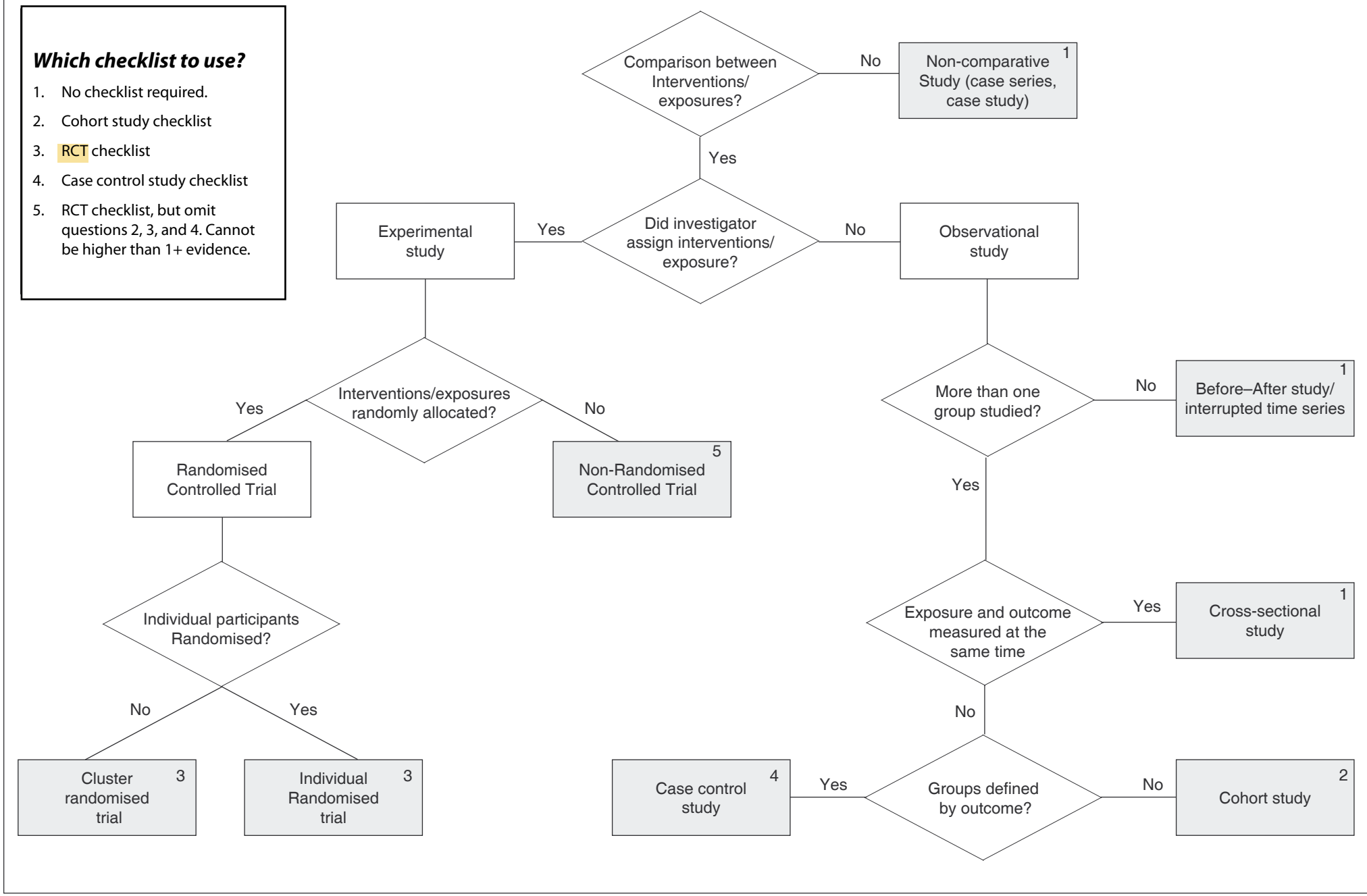
Algorithm for classifying study design for questions of effectiveness



Adapted from NICE (www.nice.org.uk)

SIGN

Methodology Checklist 3: Cohort studies

Study identification (*Include author, title, year of publication, journal title, pages*)

Guideline topic:	Key Question No:	Reviewer:

Before completing this checklist, consider:

1. Is the paper really a cohort study? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist.
2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist..

Reason for rejection: 1. Paper not relevant to key question ☐ 2. Other reason ☐ (please specify):

Please note that a retrospective study (ie a database or chart study) cannot be rated higher than +.

Section 1: Internal validity

In a well conducted cohort study:		***Does this study do it?***	
1.1	The study addresses an appropriate and clearly focused question.	Yes ☐ Can't say ☐	No ☐
Selection of subjects			
1.2	The two groups being studied are selected from source populations that are comparable in all respects other than the factor under investigation.	Yes ☐ Can't say ☐	No ☐ Does not apply ☐
1.3	The study indicates how many of the people asked to take part did so, in each of the groups being studied.	Yes ☐	No ☐ Does not apply ☐
1.4	The likelihood that some eligible subjects might have the outcome at the time of enrolment is assessed and taken into account in the analysis.	Yes ☐ Can't say ☐	No ☐ Does not apply ☐
1.5	What percentage of individuals or clusters recruited into each arm of the study dropped out before the study was completed.		
1.6	Comparison is made between full participants and those lost to follow up, by exposure status.	Yes ☐ Can't say ☐	No ☐ Does not apply ☐

ASSESSMENT			
1.7	The outcomes are clearly defined.	Yes □ Can't say □	No □
1.8	The assessment of outcome is made blind to exposure status. If the study is retrospective this may not be applicable.	Yes □ Can't say □	No □ Does not apply □
1.9	Where blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the assessment of outcome.	Yes □ Can't say □	No □ □
1.10	The method of assessment of exposure is reliable.	Yes □ Can't say □	No □
1.11	Evidence from other sources is used to demonstrate that the method of outcome assessment is valid and reliable.	Yes □ Can't say □	No □ Does not apply□
1.12	Exposure level or prognostic factor is assessed more than once.	Yes □ Can't say □	No □ Does not apply □
CONFOUNDING			
1.13	The main potential confounders are identified and taken into account in the design and analysis.	Yes □ Can't say □	No □
STATISTICAL ANALYSIS			
1.14	Have confidence intervals been provided?	Yes □	No □
Section 2: OVERALL ASSESSMENT OF THE STUDY			
2.1	How well was the study done to minimise the risk of bias or confounding?	High quality (++) □ Acceptable (+) □ Unacceptable – reject 0	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, do you think there is clear evidence of an association between exposure and outcome?	Yes Can't say	No
2.3	Are the results of this study directly applicable to the patient group targeted in this guideline?	Yes □	No □
2.4	**Notes.** Summarise the authors conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.		

Methodology Checklist 2: Controlled Trials

Study identification (*Include author, title, year of publication, journal title, pages*)

Guideline topic:	Key Question No:	Reviewer:

Before completing this checklist, consider:

1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question ☐ 2. Other reason ☐ (please specify):

SECTION 1: INTERNAL VALIDITY

	In a well conducted RCT study…	***Does this study do it?***
1.1	The study addresses an appropriate and clearly focused question.	Yes ☐ No ☐ Can't say ☐
1.2	The assignment of subjects to treatment groups is randomised.	Yes ☐ No ☐ Can't say ☐
1.3	An adequate concealment method is used.	Yes ☐ No ☐ Can't say ☐
1.4	The design keeps subjects and investigators 'blind' about treatment allocation.	Yes ☐ No ☐ Can't say ☐
1.5	The treatment and control groups are similar at the start of the trial.	Yes ☐ No ☐ Can't say ☐
1.6	The only difference between groups is the treatment under investigation.	Yes ☐ No ☐ Can't say ☐
1.7	All relevant outcomes are measured in a standard, valid and reliable way.	Yes ☐ No ☐ Can't say ☐
1.8	What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?	
1.9	All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).	Yes ☐ No ☐ Can't say ☐ Does not apply ☐
1.10	Where the study is carried out at more than one site, results are comparable for all sites.	Yes ☐ No ☐ Can't say ☐ Does not apply ☐

SECTION 2: OVERALL ASSESSMENT OF THE STUDY		
2.1	How well was the study done to minimise bias? *Code as follows:*	High quality (++)☐ Acceptable (+)☐ Low quality (-)☐ Unacceptable – reject 0 ☐
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?	
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	
2.4	**Notes.** Summarise the authors' conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.	

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Methodology Checklist 1: Systematic Reviews and Meta-analyses

SIGN gratefully acknowledges the permission received from the authors of the AMSTAR tool to base this checklist on their work: *Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C,. et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Medical Research Methodology 2007, **7**:10 doi:10.1186/1471-2288-7-10. Available from http://www.biomedcentral.com/1471-2288/7/10 [cited 10 Sep 2012]*

Study identification (*Include author, title, year of publication, journal title, pages*)

Guideline topic:	Key Question No:

Before completing this checklist, consider:

Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO reject. IF YES complete the checklist.

Checklist completed by:

Section 1: Internal validity

In a well conducted systematic review:		***Does this study do it?***
1.1	The research question is clearly defined and the inclusion/ exclusion criteria must be listed in the paper.	Yes ☐ No ☐ **If no reject**
1.2	A comprehensive literature search is carried out.	Yes ☐ No ☐ Not applicable ☐ **If no reject**
1.3	At least two people should have selected studies.	Yes ☐ No ☐ Can't say ☐
1.4	At least two people should have extracted data.	Yes ☐ No ☐ Can't say ☐
1.5	The status of publication was not used as an inclusion criterion.	Yes ☐ No ☐
1.6	The excluded studies are listed.	Yes ☐ No ☐
1.7	The relevant characteristics of the included studies are provided.	Yes ☐ No ☐

1.8	The scientific quality of the included studies was assessed and reported.	Yes ☐ No ☐
1.9	Was the scientific quality of the included studies used appropriately?	Yes ☐ No ☐
1.10	Appropriate methods are used to combine the individual study findings.	Yes ☐ No ☐ Can't say ☐ Not applicable ☐
1.11	The likelihood of publication bias was assessed appropriately.	Yes ☐ No ☐ Not applicable ☐
1.12	Conflicts of interest are declared.	Yes ☐ No ☐
SECTION 2: OVERALL ASSESSMENT OF THE STUDY		
2.1	What is your overall assessment of the methodological quality of this review?	High quality (++) ☐ Acceptable (+) ☐ Low quality (-)☐ Unacceptable – reject 0 ☐
2.2	Are the results of this study directly applicable to the patient group targeted by this guideline?	Yes ☐ No ☐
2.3	**Notes:**	

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Methodology Checklist 4: Case-control studies

Study identification (*Include author, title, year of publication, journal title, pages*)

Guideline topic:	Key Question No:	Reviewer:

Before completing this checklist, consider:

1. Is the paper really a case-control study? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist.

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: Reason for rejection: 1. Paper not relevant to key question ☐ 2. Other reason ☐ (please specify):

Section 1: Internal validity

In an well conducted case control study:		***Does this study do it?***	
1.1	The study addresses an appropriate and clearly focused question.	Yes Can't say	No
Selection of subjects			
1.2	The cases and controls are taken from comparable populations.	Yes	No
		Can't say	
1.3	The same exclusion criteria are used for both cases and controls.	Yes Can't say	No
1.4	What percentage of each group (cases and controls) participated in the study?	Cases: Controls:	
1.5	Comparison is made between participants and non-participants to establish their similarities or differences.	Yes Can't say	No
1.6	Cases are clearly defined and differentiated from controls.	Yes Can't say	No
1.7	It is clearly established that controls are non-cases.	Yes Can't say	No
ASSESSMENT			
1.8	Measures will have been taken to prevent knowledge of primary exposure influencing case ascertainment.	Yes Can't say	No Does not apply
1.9	Exposure status is measured in a standard, valid and reliable way.	Yes Can't say	No
CONFOUNDING			
1.10	The main potential confounders are identified and taken into account in the design and analysis.	Yes Can't say	No
STATISTICAL ANALYSIS			

1.11	Confidence intervals are provided.	Yes	No

Section 2: OVERALL ASSESSMENT OF THE STUDY

2.1	How well was the study done to minimise the risk of bias or confounding?	High quality (++) □ Acceptable (+) □ Unacceptable – reject 0 □	
2.2	Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, do you think there is clear evidence of an association between exposure and outcome?	Yes Can't say	No
2.3	Are the results of this study directly applicable to the patient group targeted by this guideline?	Yes	No
2.4	**Notes.** Summarise the authors conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above..		

Considered judgement

Key question:

A: Quality of evidence

1. How reliable are the studies in the body of evidence? (*see SIGN 50, section 5.3.1, 5.3.4*)
If there is insufficient evidence to answer the key question go to section 9.

Comment here on any issues concerning the quantity of evidence available on this topic and its methodological quality. Please include citations and evidence levels.	**Evidence level**

2. Are the studies consistent in their conclusions? (*see SIGN 50, section 5.3.2*)
Comment here on the degree of consistency demonstrated by the evidence. Where there are conflicting results, indicate how the group formed a judgement as to the overall direction of the evidence.

3. Are the studies relevant to our target population? (*see SIGN 50, section 5.3.3*)
For example, do the studies:

- *include similar target populations, interventions, comparators or outcomes to the key question under consideration?*
- *report on any comorbidities relevant to the target population?*
- *use indirect (surrogate) outcomes*
- *use indirect rather than direct comparison of outcomes*

4. Are there concerns about publication bias? (*see SIGN 50, section 5.3.5*)
Comment here on concerns about all studies coming from the same research group, funded by industry etc

B: Evidence to recommendations

5. Balancing benefits and harms (*see SIGN 50, section 6.2.2, 6.2.3*)
Comment here on the potential clinical impact of the intervention/action – eg magnitude of effect; balance of risk and benefit.

What benefit will the proposed intervention/action have?
Describe the benefits. Highlight specific outcomes if appropriate.

What harm might the proposed intervention/action do?
Describe the benefits. Highlight specific outcomes if appropriate.

6. Impact on patients (*see SIGN 50, section 6.2.4, 6.2.5*)

Is the intervention/action acceptable to patients and carers compared to comparison? Consider benefits vs harms, quality of life, other patient preferences (refer to patient issues search if appropriate).

Are there any common comorbidities that could have an impact on the efficacy of the intervention?

7. Feasibility (*see SIGN 50, section 6.2.6*)

Is the intervention/action implementable in the Scottish context? Consider existing SMC advice, cost effectiveness, financial, human and other resource implications.

8. Recommendation (*see SIGN 50, section 6.3*)

What recommendation(s) does the guideline development group agree are appropriate based on this evidence?

'Strong' recommendations should be made where there is confidence that, for the vast majority of people, the intervention/action will do more good than harm (or more harm than good). The recommendation should be clearly directive and include 'should/ should not' in the wording.

'Conditional' recommendations, should be made where the intervention/action will do more good than harm, for most patients, but may include caveats eg on the quality or size of the evidence base, or patient preferences. Conditional recommendations should include 'should be considered' in the wording.

	strong/conditional

Briefly justify the strength of the recommendation

9. Recommendations for research

List any aspects of the question that have not been answered and should therefore be highlighted as an area in need of further research.