



# Systematic Review Resource Package

## The Joanna Briggs Institute Method for Systematic Review Research Quick Reference Guide\*

Queen's Joanna Briggs Collaboration  
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*\*for full details please see Joanna Briggs Institute Reviewers' Manual*



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## Planning your systematic review

### 1. JBI Requirements: A JBI review requires at least two reviewers: a primary and a secondary reviewer.

These reviewers must have completed the JBI Systematic Review training program or equivalent systematic review training programs (Cochrane or Campbell) within the last 3 years, and have been active contributors to the development of systematic reviews for JBI including reviews co-registered with Cochrane. If this is not possible, at least the primary or secondary reviewer should have completed the JBI training program.

### 2. Authorship and the review panel: It is important to discuss authorship prior to undertaking a review.

Who will act as primary, secondary reviewers/authors, and associate reviewers? A library scientist or information specialist should be invited to participate and be included as co-author. JBI recommends that review panels are formed prior to beginning a systematic review. The review panel should consist of experts in review methods, content, and lay consumers or patients. A library scientist or information specialist should be an integral part of the panel. If you are conducting your review under the auspices of the Queen's Joanna Briggs Collaboration (QJBC), you are required to include a trained QJBC staff person on your review team. The QJBC staff person has completed the JBI Systematic Review Training and is certified to author JBI reviews. The QJBC staff person will provide general support to you and your review team, by acting as a liaison between you and JBI, and ensuring that your review complies with JBI guidelines, expectations, and timelines.

### 3. Registration: Will you register your review with JBI, Cochrane or both?

Cochrane: Reviews that deal with questions of effectiveness, and/or are limited to Randomized Controlled Trials (RCTs), Clinical Controlled Trials, Controlled Before and After trials, and Interrupted Time Series studies should be registered with Cochrane <http://www.cochrane.org/>. Reviews conducted through a Cochrane Review Group are uploaded to the Cochrane Library in the template for Cochrane Reviews. This is managed through Cochrane's Review Manager software. Reviews of effects conducted through Cochrane entities must follow Cochrane processes and procedures (see the Cochrane Handbook for Systematic Reviews).

Both: There is an in-principal agreement between JBI and Wiley-Blackwell that reviews of interventions focusing on RCTs may be conducted by entities of JBI through the Cochrane Collaboration. These reviews will not need to be subject to JBI's peer review process, although the final protocol is submitted to the JBI Collaboration Support Unit (CSU). Once the review is completed it is published in the online Cochrane Library, and the JBI library.

Registering a Systematic Review with Cochrane & JBI Systematic reviews of effect conducted and published by core staff of a JBI collaborating entity will be recognised as JBI output if the following are fulfilled:

- a) The protocol must have been submitted (following approval by a Cochrane Review Group along with evidence of approval) to the JBI Synthesis Science Unit (SSU)
- b) The author affiliation clearly identifies the name of their Centre/Group including the words “a Collaborating/Affiliate Centre/Group of the Joanna Briggs Institute”

JBIC: Reviews that deal with quantitative data that is expanded to include quasi- experimental designs and observational designs, should be registered with JBI and managed through the JBI System for the Unified Management, Assessment and Review of Information (SUMARI) Software. All reviews synthesizing qualitative evidence are conducted only through JBI.

## Resources:

**JBIC Reviewers’ Manual 2014 edition**

<http://joannabriggs.org/assets/docs/sumari/ReviewersManual-2014.pdf>

**JBIC SUMARI**

<http://joannabriggs.org/sumari.html>

**Cochrane Handbook for Systematic Reviews of Interventions**

<http://www.cochrane.org/handbook>

**Cochrane Review Manager**

<http://tech.cochrane.org/revman/download>

## Reviewers Checklist

STAGE	COMPLETED
Develop draft protocol	
Submit protocol to JBI for review	
Revise protocol based on JBI reviewers’ comments	
Submit revised protocol to JBI	
Begin review process	
Refine search strategy and conduct database searches	
Complete critical appraisal	
Complete data extraction	
Create synopsis tables	
Synthesize data	

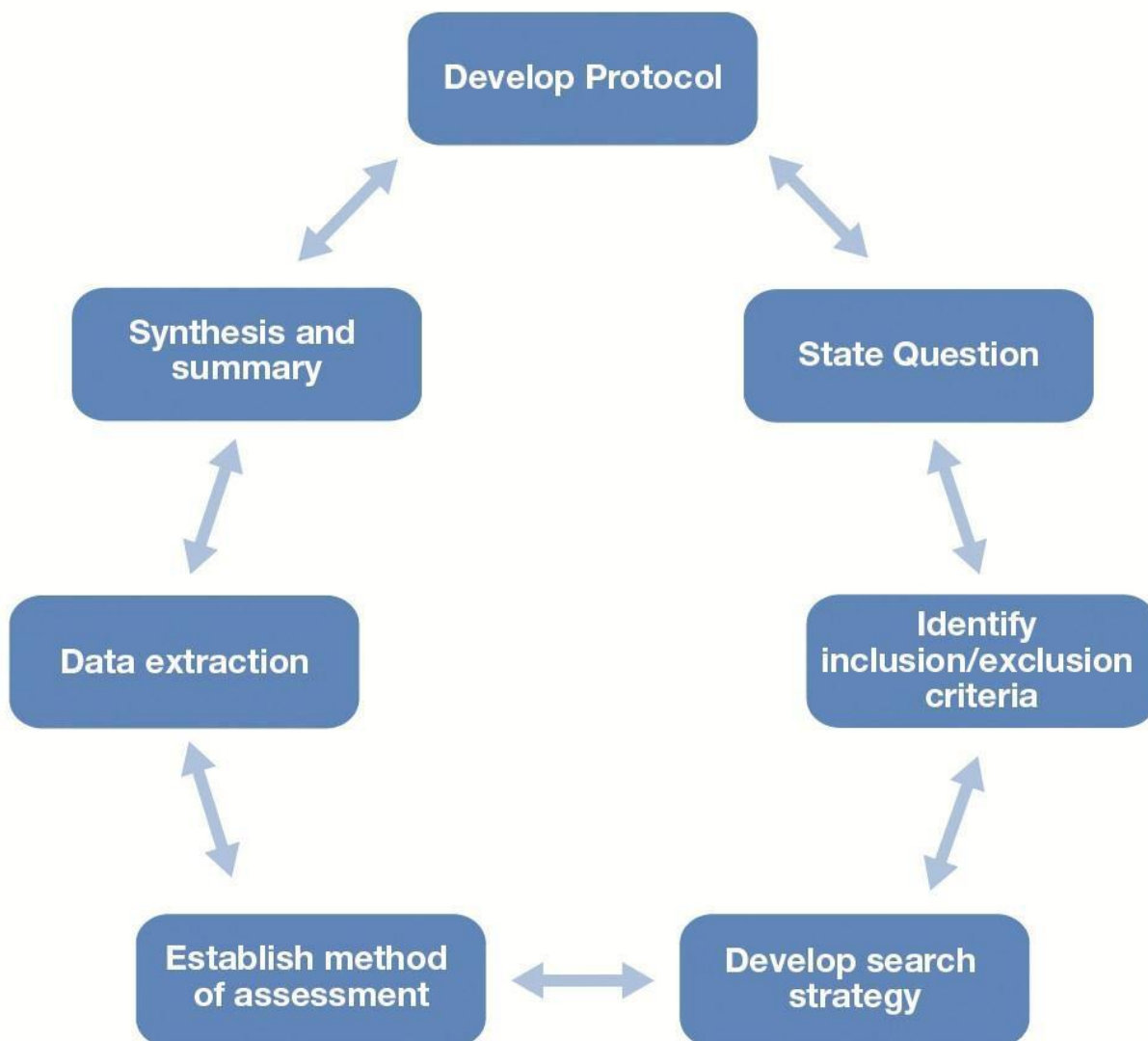
STAGE	COMPLETED
Write draft final report	
Submit final report to JBI for review	
Revise final report based on JBI reviewers' comments	
Submit revised final report to JBI	

## The Systematic Review Process

A systematic review involves the analysis of all of the available literature to determine the effectiveness (or otherwise) of a given practice. The Joanna Briggs Institute (JBI) method of synthesis involves the following stages:<sup>1</sup>

1. Developing a rigorous proposal or protocol
2. Stating the questions or hypothesis
3. Identifying the criteria that will be used to select the literature
4. Detailing a strategy that will be used to identify all relevant literature
5. Establishing how the quality of primary studies will be assessed
6. Detailing the extraction of data
7. Synthesis and summary

A systematic review is an iterative process, for example, you may revise and refine your search strategy and review question several times as you delve into the literature.



## Stage 1: Developing the review protocol

The review protocol provides a predetermined plan to ensure scientific rigor and minimize potential bias. It serves as a guide throughout the process and helps maintain focus on the chosen topic. The protocol needs to contain the following details:

- The review question
- The criteria that will be used to select the literature
- Databases you plan to search
- How the quality of the studies will be assessed
- What details will be extracted from the studies
- Strategies for synthesis

Please use **Appendix 11: JBI Protocol Template**, to write your draft protocol. This will serve as your working document and can be circulated to your review team. The actual protocol must be completed using the JBI software, CReMS. To access CReMS your JBI user ID and password is required.

## Stage 2: Developing the review question

As you formulate your review question, you can use the PICO or PIPOH templates to assist you in clarifying the key aspects. The Standard PICO<sup>2</sup> components are:

**P** = Problem/ Patient/ Population

**I** = Intervention

**C** = Control/ Comparison / Context

**O** = Outcome

Applying these concepts to your question will help provide clarity about the focus of your review and the issues you will explore. For example: if your review question was:

Which assessment instruments are the most effective for assessing the risk of skin breakdown?

**P** = individuals potentially at risk for skin breakdown, e.g., individuals with limited mobility

**I** = assessment of skin integrity

**C** = comparison between relevant assessment instruments

**O** = appropriate identification of individuals at risk for skin breakdown



The 'C' for comparison can also represent either **C**ontrol or **C**ontext. Control is appropriate if you are reviewing Random Controlled Trials (RCTs) and Controlled Before and After (CBA) studies which will include control groups in their experimental design. Context is appropriate if your review focuses on a particular circumstance. For instance, using the example above, you could investigate the risk of skin breakdown for individuals within the context of the community. That would introduce other aspects such as availability of nursing care to identify and treat these adverse events and cost factors.

It is essential to be very clear about these four aspects of your question as they will guide both your literature search and your data extraction. This process also assists you in the clarification of inclusion and exclusion criteria for your review.

### The PIPOH<sup>3</sup> template

PIPOH adds two further dimensions, namely **P**rofessionals, all healthcare practitioners either together or itemized in their individual professions; and **H**ealth Care Setting, being either acute, community or rehabilitation settings. The template components are:

- P** = Population
- I** = Interventions
- P** = Professionals
- O** = Outcomes
- H** = Health care setting

## Stage 3: Identifying inclusion and exclusion criteria

The PICO/PIPOH analysis process will assist you in defining your inclusion and exclusion criteria. Remember you need to keep the review topic specific and focused. Use the inclusion and exclusion criteria to vary the breadth of your topic, giving yourself enough to investigate but not so much that you drown in the literature. The inclusion criteria should address:

- participants
- interventions
- outcomes

At this time you could also specify what research methodologies will be considered for inclusion in the review (e.g. randomized controlled trials, clinical trials, case studies etc.).

## Stage 4: Detailing the search strategy

It is important to record your rigorous and systematic search of the literature. The use of a decision tree is helpful as it presents the results clearly and provides a record the decisions made as you are searching. There are several steps in the search process.

### Step 1: Finding keywords

Think about and around your topic and list relevant words that could be used to describe the topic. If you are going to be searching CINAHL or MEDLINE, you could use Medical Subject Headings (MeSH) terms to provide specific subject headings. MeSH terms are commonly used terms that have been indexed for use in search strategies.

### Step 2: Initial search

Perform a limited search of MEDLINE and CINAHL using your preliminary subject headings and keywords.

Example: topic – pressure ulcers in individuals receiving home care.

Subject headings and keywords – pressure ulcer, decubitus ulcer, bed sore, pressure sore, pressure lesion, skin breakdown, home care, home care services

Browse through the list of displayed articles. Select those articles that appear appropriate to your topic and view either the abstract or the complete reference.

Make a note of relevant keywords contained in the title, abstract, and the index terms in each article.

When you find an article that is "on topic" or very appropriate for your review – set these articles aside as "gold standard" articles. Once your searches are complete it is important to confirm that your final searches have identified all the articles that you have set aside as "gold standard". That way you know your searches are on track.

### Step 3: Second search

Perform a second search of a range of databases using all relevant subject headings and keywords.

The terminology is different for each database. Each database will have a different set of subject headings. However, the same keywords can be used for each database.

Apply limits to the search if necessary, e.g. range of years, human or animal subjects, language.

Example of some databases to search:

MEDLINE;  
CINAHL;  
Cochrane Database of Systematic Reviews;  
The Cochrane Central Register of Controlled Trials;  
Database of Abstracts of Reviews of Effects;  
EMBASE;  
AMED (allied health literature)  
Healthstar

For unpublished data, search:

Dissertation Abstracts International <http://proquest.umi.com/login> (select 'dissertation and theses database')

For grey literature, search internet sources such as [www.greynet.org](http://www.greynet.org) and New York Academy Grey Literature site <http://www.nyam.org/library/online-resources/grey-literature-report/>

#### **Step 4: Hand search**

Perform a hand search of the reference lists in each of the papers you have already retrieved to pick any other papers that might be related to your topic.

#### **Step 5: Selecting Studies**

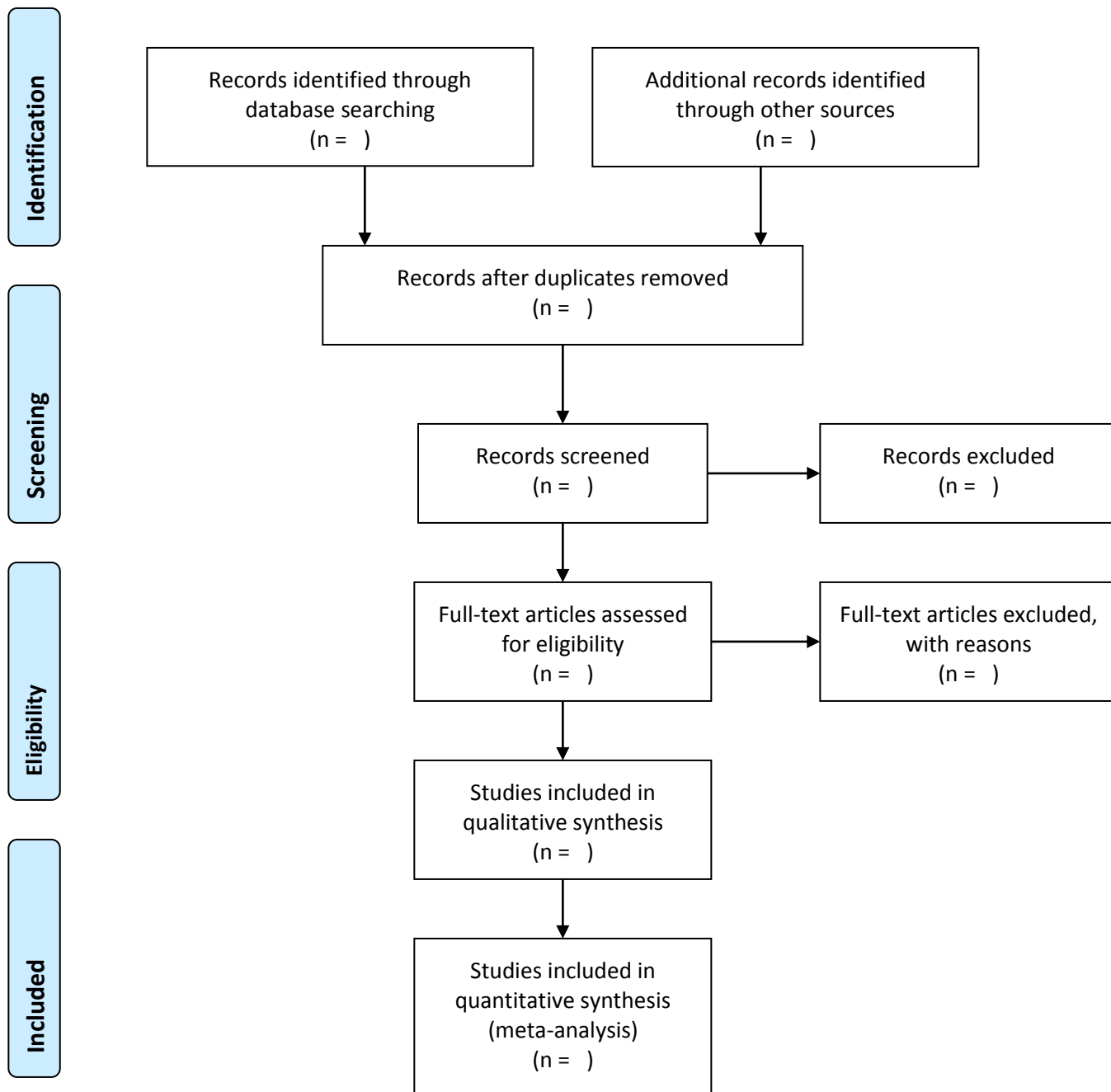
Assess all articles for relevance using the title and abstract or full article if the abstract is unavailable. If the article appears to meet the inclusion criteria, the full paper is retrieved.

#### **Step 6: Maintaining a record**

Maintain a detailed ongoing record of all your searches including:

- Databases searched plus the specific years or other limitations specified
- Subject headings and keywords used for each database
- Total number of articles displayed for each search strategy
- Number of articles that met your inclusion criteria that were finally selected

See example of search strategy decision tree below and **Appendix 1** for a useable template.

**PRISMA 2009 Flow Diagram<sup>4</sup>**

## 5: Critical appraisal – quantitative evidence

The quality of each article needs to be assessed in order to establish and maintain a consistent and high standard of methodological rigor. Furthermore, it is important to assess the quality of the research to minimize the risk of an inconclusive review resulting from excessive variation in the quality of the studies. Critical appraisal must be performed by **two** reviewers.

This is a two-step process:

1. Selection  
An initial assessment that occurs following the search and addresses the question “should the paper be retrieved?”
2. Critical Appraisal  
Occurs when paper has been retrieved and addresses the question “should the study be included in the review?”

Depending on the actual design of the investigation, a research study may be executed with more or less methodological rigor. The hierarchy from greatest rigor to the least is presented below.

### Hierarchy of QUANTITATIVE Study Designs<sup>5</sup> - Studies of Effectiveness:

1. Experimental studies (e.g. RCT with concealed allocation)
2. Quasi-experimental studies (e.g. experimental study without randomization)
3. Controlled observational studies
  - a. Cohort studies
  - b. Case control studies
4. Observational studies without control groups
5. Expert opinion based on bench research or consensus.

## Description of Selected Study Designs<sup>5</sup>

### • Experimental

A study in which some conditions, particularly decisions concerning the allocation of participants to different intervention groups, are under the control of the investigator:

#### **Randomized controlled trial**

Follow-up of participants randomly allocated to intervention or control groups, with a comparison of outcome rates during the time covered. Randomization (with concealment of allocation sequence) avoids bias because both known and unknown determinants of outcome are on average evenly distributed between intervention and control groups.

#### **Quasi-experimental**

A study in which the allocation of participants to different intervention groups is controlled by the investigator but the method falls short of genuine randomization and allocation concealment.

### • Observational

A study in which natural variation in interventions or exposure among study participants is investigated to explore the effect of the interventions or exposure on health outcomes:

#### **Cohort study**

Comparison of outcomes between participants who have received an intervention and a group that has not (i.e. not allocated by investigator) in a follow-up study.

#### **Case-control study**

Comparison of exposure to interventions between participants with the outcome (cases) and those without the outcome (controls).

#### **Cross-sectional study**

Examination of the relationship between disease and other variables of interest as they exist in a defined population at one particular time.

#### **Before-and-after study**

Comparison of findings in study participants before and after an intervention.

#### **Case series**

Description of a number of cases of an intervention and outcome (without comparison with a control group).

## Assessment of Research Studies<sup>1; 5</sup>

The major aim in critically appraising experimental or quantifiable data is to limit bias and thus establish the validity of a study. From a quantitative perspective, sources of bias includes selection bias, performance bias, measurement bias and attrition bias. Validity of a study is assessed by establishing the extent to which the study design and activities conducted by the researcher address the potential biases.

## Types of Biases

### **Selection bias (allocation bias)**

Systematic differences between comparison groups in prognosis or responsiveness to treatment. Protect against this bias by randomizing large numbers of patients and conceal their allocation into different groups.

### **Performance bias**

Systematic differences in care provided apart from the intervention being evaluated. Protect against this bias by standardizing the care protocol and blind both clinicians and participants.

### **Measurement bias (detection bias, ascertainment bias)**

Systematic differences between comparison groups in how outcomes are ascertained. Protect against this bias by blinding both study participants and outcome assessors.

### **Attrition bias (exclusion bias)**

Systematic differences between comparison groups in terms of withdrawals or exclusions of participants (e.g. because of side effects of the intervention) from the study sample. Protect against this bias by including all participants in the analysis (in combination with a sensitivity analysis).

There are several templates available for critical appraisal depending upon the design of the study (see critical appraisal templates **Appendices 2-4**).

## **Stage 6: Data extraction – quantitative evidence**

Data extraction is the process of summarizing the pertinent details from each study. The extraction form should be developed to provide you with the necessary details and evidence to answer your review question. It is often necessary to adapt the data extraction form so that you are retrieving data that is specific to your research question. See **Appendix 5: JBI Data Extraction Form for Experimental/ Observational Studies**

## Stage 7: Data synthesis – quantitative evidence

Once the data extraction is complete, create a synopsis table to bring together of all your data for easy reference. This table allows you to compare the **relevant** extracted data for all of your articles. For example:

### Pressure Ulcers in Individuals Receiving Home Care Services

Author	Study Purpose	Total Participant	How Outcome Measured	Time Period
Doran et al. 2009	The purpose of this study was to identify the nature of patient safety problems among Canadian homecare (HC) clients	238,958	Data obtained from Resident Assessment Instrument RAI-HC, includes cognitive performance, activities of daily living scales, index of social engagement, depression rating scale, falls and pressure ulcers.	2003 - 2007 reporting period
Iizaka et al. 2010	To investigate the impact of nutritional status and nutrition-related factors on the development and severity of pressure ulcers acquired in the home care setting	746	Medical charts	1 month
Bergquist & Frantz 1999	To determine the prevalence and incidence of pressure ulcers in community-based adults receiving home health care and to identify risk factors for incident Stage II to IV pressure ulcers.	1,711	<p>Patient's records were followed forward to one of two outcomes:</p> <ul style="list-style-type: none"> <li>Development of the first stage I to IV pressure ulcer</li> <li>No pressure ulcers development.</li> </ul> <p>Development of a pressure ulcer was determined from: the Nursing Visiting Reports, documentation of a pressure ulcer on the agency's Wound Assessment form, an ICD-9 code 707.0 (Decubitus Ulcer) on a 62-day HCFA 485 Recertification form, or documentation on the 1- year post-administration nursing assessment form. Stage and location of the pressure ulcer were also noted. Ulcers were staged by the agency according to the criteria recommended by the National Pressure Ulcer Advisory Panel.</p>	Jan 1995 - March 1996



## Stage 5: Critical appraisal – qualitative evidence

The focus of critical appraisal for qualitative evidence is on the rigor of the research design and quality of reporting. Qualitative approaches are located in diverse understandings of knowledge; they do not distance the researcher from the researched; and the data analysis is legitimately influenced by the researcher when they interpret the data. Critical appraisal therefore focuses on:

1. Congruity between philosophical position adopted in the study, study methodology, study methods, representation of the data and the interpretation of the results.
2. The degree to which the biases of the researcher are made explicit.
3. The relationship between what the participants are reported to have said and the conclusions drawn in analysis.

Due to the subjectivity of qualitative research, critical appraisal is always performed by **two** reviewers.

### The process of critical appraisal

The appraisal of qualitative evidence is based on the researcher's interpretation of the data and the presentation of the participants' perspectives. This is referred to as the **plausibility** of the research and there are three levels:

1. Unequivocal
2. Plausible
3. Unsupported

**Unequivocal** - relates to evidence beyond reasonable doubt which may include findings that are matter of fact, directly reported/observed and not open to challenge.

In this instance the research provides direct quotes from the participants to substantiate the themes and conclusions.

**Plausible** - relates to those findings that are, albeit interpretations, plausible in light of the data and theoretical framework. They can be logically inferred from the data. Because the findings are interpretive they can be challenged.

In this instance the researcher provides quotes from the participants that imply or lead towards the themes and conclusions.

**Unsupported** – relates to findings that are not supported by the data.

In this instance the researcher infers themes and conclusions that are not directly supported by quotes from the participants.

There are two Critical Appraisal Instruments:

1. To assess the validity of opinion papers (NOTARI)
2. To assess the validity of interpretive or critical studies (QARI)

Assessment of a study determines whether the study is to be included or excluded from the review.

#### **a) NOTARI Critical Appraisal Instrument for Assessing the Validity of Opinion Studies**

In the absence of findings from rigorous inquiry, expert opinion may represent the 'best evidence'. Expert opinion in the form of consensus guidelines, reports from learned bodies or professional discourses can be appraised, extracted and synthesized. Where you have opinion papers it is expert opinion that is being appraised.

In NOTARI it is the "authority" of the source of the narrative that is being appraised. Authority is defined as:

The degree to which the source of the evidence is generally accepted in the field or the degree of confidence that can be applied to the evidence terms of the experience or standing of the person(s) from which it is derived.

The validity of expert opinion relates to the soundness of the opinion in terms of its logic and its ability to convince. It is the authority of the source and the quality of the opinion that renders it supportable. Validity in this context therefore relates to what is being said, the source and its credibility and logic.

#### **b) QARI Critical Appraisal Instrument for Assessing the Validity of Interpretive and Critical Studies.**

Where you have interpretive or critical studies it is the rigor of the process of inquiry that is being appraised.

See critical appraisal checklists **Appendices 6-7**

**Explanation of the QARI critical appraisal instrument:****1. There is congruity between the stated philosophical perspective and the research methodology.**

In responding to this question, consider whether the report clearly states the philosophical or theoretical premises on which the study is based. Does the report clearly state the methodological approach adopted on which the study is based? Is there congruence between the two?

For example there is congruence where a report states that the study adopted a critical perspective and participatory action research methodology was followed. There is congruence between a critical view (focusing on knowledge arising out of critique, action and reflection) and action research, which is an approach that focuses on: working with groups to reflect on issues or practices; how such groups could be different; groups acting to change; and identifying new knowledge arising out of the action taken. However, there is incongruence where a report states that the study adopted an interpretive perspective and survey methodology was followed. There is incongruence between an interpretive view (focusing on knowledge arising out of studying what phenomena mean to individuals or groups) and surveys (an approach that focuses on asking standard questions to a defined study population). Further, a report may state that the study was qualitative or used qualitative methodology or make no statement on philosophical orientation or methodology (such statements do not demonstrate rigor in design).

**2. There is congruity between the research methodology and the research question or objectives.**

This question seeks to establish if the study methodology is appropriate for addressing the research question. For example, a report may state that the research question was to seek understandings of the meaning of pain in a group of people with rheumatoid arthritis and that a phenomenological approach was taken. Here, there is congruity between this question and the methodology. However, a report which states that the research question was designed to establish the effects of counselling on the severity of pain experience and that an ethnographic approach was pursued lacks congruity. This is because cause-and effect cannot be addressed using an ethnographic approach.

**3. There is congruity between the research methodology and the methods used to collect data.** This question guides reviewers to consider whether the data collection methods are appropriate to the stated methodology.

For example, a report may state that the study utilized a phenomenological approach and data was collected through phenomenological interviews. There is congruence between the methodology and data collection. However, a report may state that the study pursued a phenomenological approach and data was collected through a postal questionnaire. In this example, there is incongruence between the methodology and approach to data collection as phenomenology seeks to elicit rich descriptions of the experience of a phenomenon, which cannot be achieved through seeking written responses to standardized questions.

#### **4. There is congruity between the research methodology and the representation and analysis of data.**

This question examines whether the methods by which data was analyzed and represented were congruent with the stated methodological position. For example: a report may state that the study pursued a phenomenological approach to explore people's experience of grief by asking participants to describe their experiences. If the text generated from asking these questions is searched to establish the meaning of grief to participants, and the meanings of all participants are included in the report findings, then this represents congruity. The same report may, however, focus only on those meanings that were common to all participants and discard single reported meanings. This would not be appropriate in phenomenological work.

#### **5. There is congruity between the research methodology and the interpretation of results.**

This item on the appraisal instrument asks whether the results interpreted in ways that are appropriate to the methodology. For example, a report may state that the study pursued a phenomenological approach to explore people's experience of facial disfigurement and the results are used to inform practitioners about accommodating individual differences in care. In this instance, there is congruence between the methodology and this approach to interpretation. Another report may state that the study used a phenomenological approach to explore people's experience of facial disfigurement and the results are used to generate practice checklists for assessment. There is incongruence between the methodology and this approach to interpretation because phenomenology seeks to understand meaning for the study participants. It cannot be interpreted to suggest that this can be generalized to total populations to a degree where standardized assessments will have relevance across a population.

#### **6. There is a statement locating the researcher culturally or theoretically.**

Are the beliefs and values - and their potential influence on the study - declared? The researcher plays a substantial role in the qualitative research process and it is important in appraising evidence to know the researcher's cultural and theoretical orientation. A high quality report will include a statement that clarifies this.

#### **7. The influence of the researcher on the research, and vice-versa, is addressed.**

Is the potential for the researcher to influence the study and for the potential of the research process itself to influence the researcher and her/his interpretations acknowledged and addressed? For example, is the relationship between the researcher and the study participants addressed? Does the researcher critically examine her/his own role and potential influence during data collection? Is it reported how the researcher responded to events that arose during the study?

#### **8. Participants and their voices are adequately represented.**

Does the report provide illustrations from the participants' data to show the basis of their conclusions and to ensure that participants are represented in the report?

**9. The research is ethical according to current criteria or, for recent studies, there is evidence of ethical approval by an appropriate body.**

A statement on the ethical approval process that was followed should be in the report.

**10. Conclusions drawn in the research report do appear to flow from the analysis, or interpretation, of the data.**

This criterion concerns the relationship between the findings reported and the views or words of study participants. In appraising a paper, appraisers seek to satisfy themselves that the conclusions drawn by the research are based on the data collected; data being the text generated through observation, interviews or other processes.

## Stage 6: Data Extraction – qualitative evidence

Data extraction summarizes the methods, interventions and outcomes of the research. The first stage of data extraction is to set the stage by extracting the following details about the research study:

### Methodology

A methodology usually covers the theoretical underpinnings of the research. Here is a list (though not exhaustive) of commonly used qualitative methodologies. For example, ethnography may be critical or feminist.

Action/ Description	Subjectivity (Structures of Consciousness)	Analytical
Ethnography	Phenomenography	Conceptual/Analytical
Grounded Theory	Ethnomethodology	Historical
Action Research	Hermeneutic	Discourse analysis
Case Studies	Phenomenology	Biographical/textual/narrative
Descriptive		Cultural/media analysis
Programme Evaluation		Deconstructive analysis

## Method

Method is the way that the data is collected, for example:

- Interview (open-ended, semi-structured, face-to-face, telephone)
- Media Analysis
- Field Notes
- Observation
- Survey
- Questionnaire

## Intervention

An intervention is a planned change made to the research situation by the researcher as part of the research project. There won't necessarily be an intervention in this type of research. For example: An intervention could be: serving lunch at 10am in a nursing home; or providing an education intervention.

## Setting

Setting and context is where the research is conducted - the specific location. Some research will have no setting at all (e.g. discourse analysis). For example: at home; in a nursing home; in a hospital; in a dementia specific ward in a sub-acute hospital.

## Geographical

The geographical context is the location of the research, be as specific as possible. For example: Poland, Austria, or rural Canada.

## Cultural

Cultural context is the cultural features in the study setting such as: time period (16th century); ethnic groupings (indigenous people); age groupings (older people living in the community); or socioeconomic groups (working class). When entering information be as specific as possible. This data should identify cultural features such as employment, lifestyle, ethnicity, age, gender, socioeconomic class, location and time.

## Participants

Information entered in this field should be related to the inclusion and exclusion criteria of the research, and include descriptions of age, gender, number, participation rate, ethnicity, level of functionality, and cultural background. Included in this section should be definitions of terms used to group people that may be ambiguous or unclear. For example, a carer is a personal care attendant.

**Data analysis**

Data analysis is the techniques the researcher used to analyze the data. A list of examples is provided below. Be as specific as possible when entering data in this field.

For example:

Named software programs (e.g. NVIVO)

Contextual analysis

Comparative analysis

Thematic analysis

Discourse analysis

Content analysis

**Author's conclusions**

Information entered in this field should provide an overview of the author's conclusions.

**Reviewer's comments**

Information entered in this field should provide an overall assessment of the quality of the paper.

**See Appendix 9: Data Extraction Template for Qualitative Evidence**

The units of extraction in this process are **specific findings** and illustrations from the text that demonstrate the origins of the findings.

A finding is defined as: A conclusion reached by the researcher after the examination of the results of data analysis (e.g.: themes, metaphors), consisting of a statement that relates two or more phenomena, variables or circumstances that may inform practice.

**See Appendix 10: Extraction of Study Findings Template**

## Data Synthesis

Synthesis of qualitative research aims to capture the essence of the phenomenon of interest. The most complex problem in synthesizing textual results is **comparing the findings** of each study. This involves a process of:

- Translating themes, metaphors or concepts;
- Transferring actual text or summarized text that illustrates the theme, metaphor or concept
- Re-categorizing the data obtained to arrive at a synthesis.

Before carrying out data synthesis the two reviewers need to establish:

- Rules for setting up categories
- How to assign findings to categories and
- How to aggregate categories into synthesized topics

These decisions and the rationale behind them need to be documented in the systematic review report.

There are three steps in the process:

Step 1: Identifying findings

Step 2: Grouping findings into categories

Step 3: Grouping categories into synthesized findings

## Findings

A conclusion reached by the researcher and often presented as themes or metaphors.

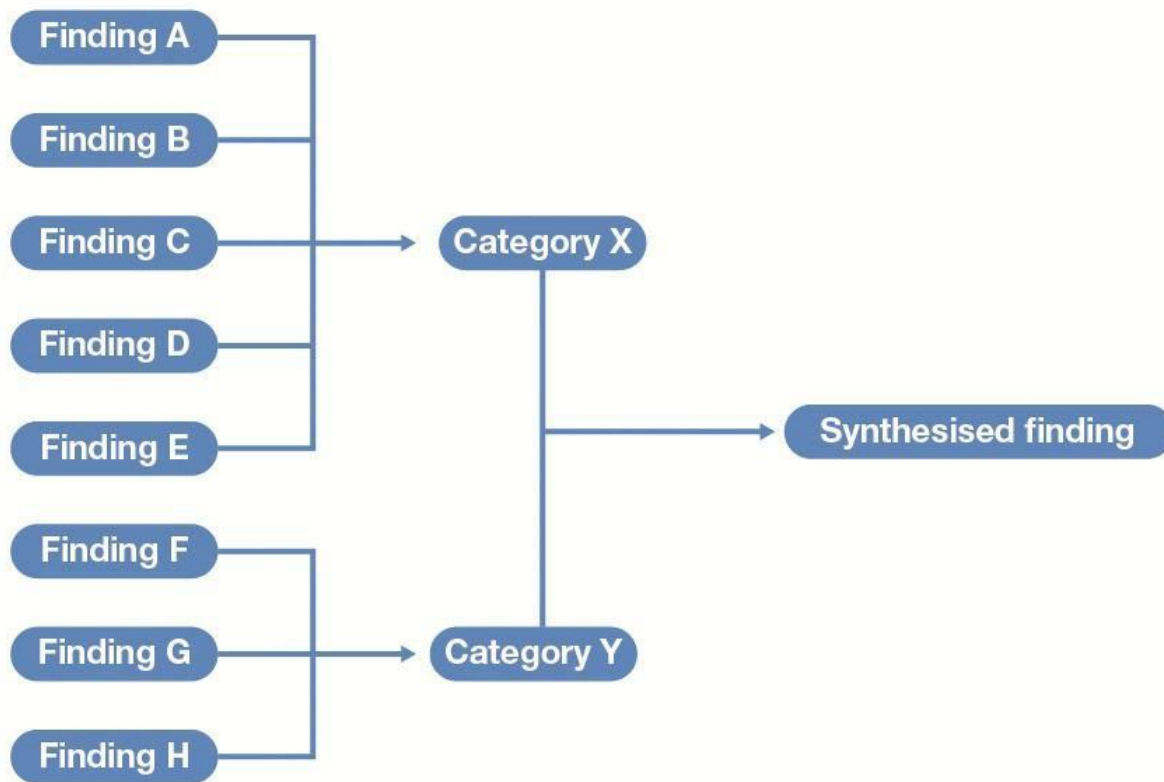
## Categories

Groups of findings that reflect similar relationships between similar phenomena, variables or circumstances that may inform practice.

## Synthesized Findings

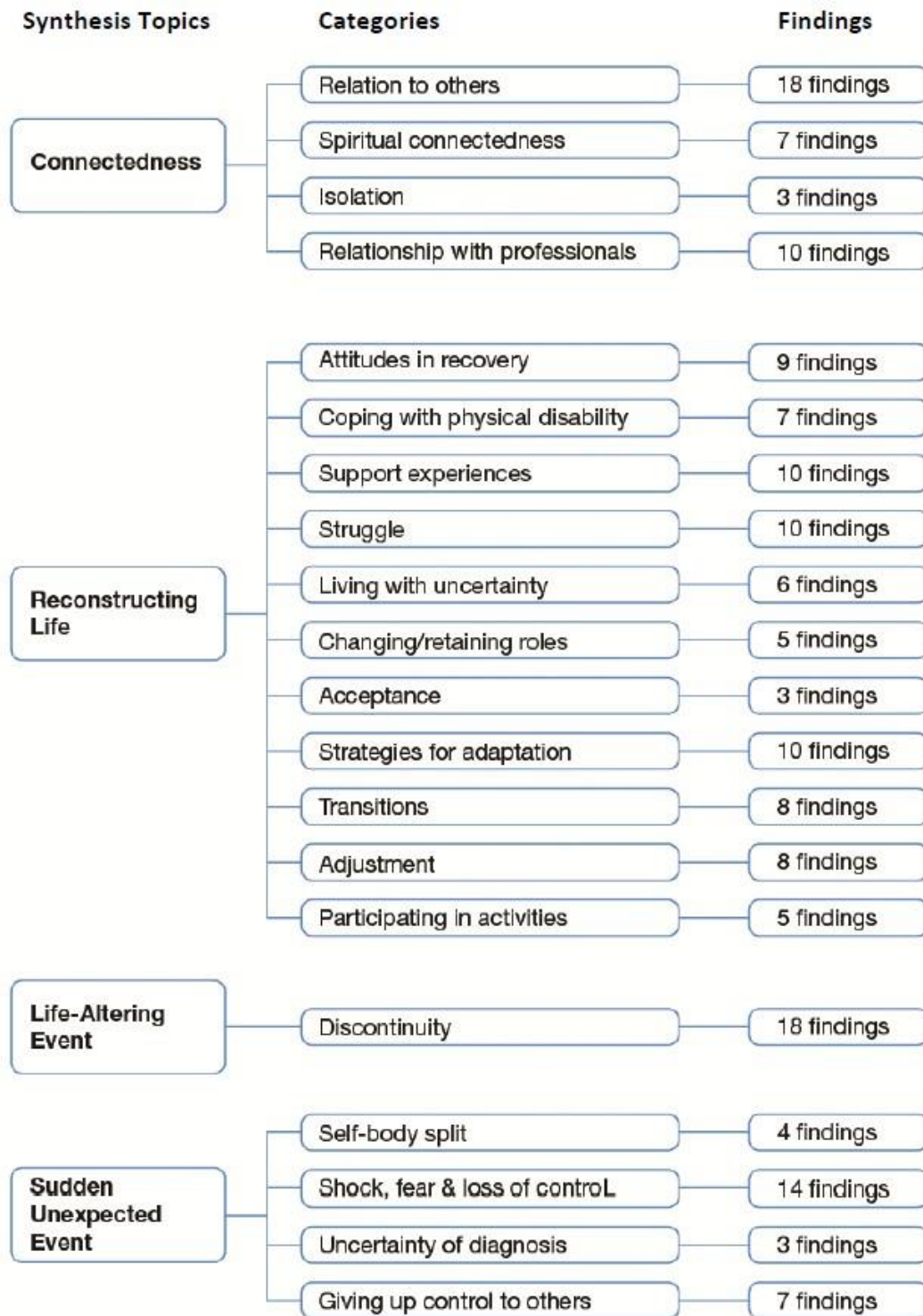
The combining of separate elements to form a coherent whole; reasoning from the general to the particular; logical deduction. In QARI synthesized findings allow for the generation of recommendations for practice.





When working through the process of meta synthesis, note that:

- Differing research methods, such as phenomenology, ethnography or grounded theory, can be mixed in a single synthesis of qualitative studies because the synthesis is of findings and not data.
- The aim of meta-synthesis is to portray an accurate interpretation of the phenomenon, and to compare and contrast the constructs of individual studies to reach consensus on a new construction of the phenomenon.
- Meta-synthesis utilizes an approach that is markedly different from that used during meta-analysis. At the conclusion of both these approaches, the product of the synthesis provides an understanding that is based on a range of populations, settings and circumstances. This broad base for generation of evidence on a phenomenon allows for greater confidence in the evidence. However, unlike meta-analysis, meta-synthesis deals in multiple realities and so provides but one interpretation of the phenomenon.
- **Only interpretive studies that explicitly report finding of use to practice are appropriate for meta synthesis in a systematic review.**

**Example:** Relation of Synthesis Topics, Categories and Findings

## Stage 8: Final report (for both quantitative and qualitative syntheses)

The synopsis table will help you write your final report. The synopsis table is not your final report. You need to summarize your findings and discuss the applicability and/or relevance of your review's findings to practice. Please use **Appendix 12: JBI Final Report Template** to write your draft final report. This will serve as your working document and can be circulated to your review team. The actual final report must be completed in the JBI CReMS software system (cut and paste into the relevant sections).

When synthesizing your results, if your review has yielded a high number of homogeneous studies, it may be possible to pool the numerical data and do a meta-analysis. However, if you have a higher number of heterogeneous studies or textual data, it is best to develop a narrative summary that will describe the common themes or concepts that have arisen out of your results.

## Rating the Evidence – the FAME Framework<sup>6</sup>

What do we mean by ‘rating the evidence’? Evidence comes in all shapes and sizes, from many different sources. Evidence can play a critical role in any investigation and it is important for detectives to recognize evidence that will provide ‘reliable’ information to aid in the investigation. This is also the case when assessing health information, as some types of evidence are more reliable than others. So once you have gathered all of the evidence, how do you assess how reliable it is? This is where ‘rating the evidence’ comes into play.

For every publication produced by the Joanna Briggs Institute, the evidence related to the topic being investigated is assessed for reliability and quality. We do not rate a procedure or treatment, but the evidence (or research) that is available to support it.

Traditionally, the Joanna Briggs Institute has used established evidence ratings from other organizations. These rating systems generally deal with quantitative research and so the JBI is in the process of developing a rating system that deals more broadly with evidence from both quantitative and qualitative research. We are not only interested in how ‘effective’ a treatment is, but how ‘feasible’, ‘appropriate’ and ‘meaningful’ it is. What do we mean by these terms exactly? Well, let me explain.

The **effectiveness**, how well a treatment works, the effectiveness of a treatment is obviously very important, but effectiveness can be influenced by a number of things.

The **feasibility** of a treatment relates to how achievable a treatment is. When discussing feasibility it is important to take into consideration the cost of the treatment and the availability of equipment or medication required to carry out the treatment.

How **appropriate** the treatment is relates to how suitable a particular treatment is. Vacuum assisted drainage (a device to assist the draining of a wound) is a more effective method for treating wounds, but for some people there is immense pain associated with this, so therefore the treatment might be inappropriate.

How **meaningful** a treatment is relates to the patient’s experience regarding a treatment. For example, research that investigates the experience of women with breast cancer is concerned with what that experience ‘means’ to the patient.

A good example of how these elements complement each other is the use of compression stockings to treat leg ulcers. Compression stockings have been shown to be cost effective, convenient and to have minimal side effects, making them a ‘feasible’, ‘appropriate’, and ‘effective’ treatment option. However, if the patient’s experience (meaningfulness) of compression stockings is that the stocking is uncomfortable to wear and they refuse to wear it, the other three are compromised.

**The FAME Framework<sup>6</sup>**

<b>Level of Evidence</b>	<b>Feasibility F</b>	<b>Appropriateness A</b>	<b>Meaningfulness M</b>	<b>Effectiveness E</b>	<b>Economic Evidence EE</b>
<b>1</b>	SR of research with unequivocal synthesised findings	SR of research with unequivocal synthesised findings	SR of research with unequivocal synthesised findings	SR (with homogeneity) of Experimental studies (eg. RCT with concealed allocation)  Or 1 or more large experimental studies with narrow confidence intervals	SR (with homogeneity) of evaluations of important alternative interventions comparing all clinically relevant outcomes against appropriate cost measurement, and including a clinically sensible sensitivity analysis
<b>2</b>	SR of research with credible synthesised findings	SR of research with credible synthesised findings	SR of research with credible synthesised findings	Quasi-experimental studies (eg. without randomisation)	Evaluation of important alternative interventions comparing all clinically relevant outcomes against appropriate cost measurement, and including a clinically sensible sensitivity
<b>3</b>	SR of text/opinion with credible synthesised findings	SR of text/opinion with credible synthesised findings	SR of text/opinion with credible synthesised findings	3a. Cohort studies (with control group)  3b. Case-controlled  3c. Observational studies without control groups	Evaluation of important alternative interventions comparing a limited number of outcomes against appropriate cost measurement, without a clinically sensible sensitivity analysis
<b>4</b>	Expert opinion without explicit critical appraisal	Expert opinion without explicit critical appraisal	Expert opinion without explicit critical appraisal	Expert opinion without explicit critical appraisal, or based on physiology, bench research or consensus	Expert opinion without explicit critical appraisal, or based on economic theory

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