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Evidence in Context for Occupational Health & Safety

OPERATIONAL HANDBOOK



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SafetyNet
Centre for Occupational Health & Safety Research

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Foreword

Effective decision-making in occupational health and safety (OHS) requires having up-to-date evidence on what works from the best available research at hand. However, the research literature does not typically take into account how implementation may be constrained by the demographic, economic or resource context of a jurisdiction/region that is considering action. Evidence-informed practices and policies need to be made based not only on an understanding of ‘what works,’ but also on an understanding of ‘what will work here.’

The Evidence in Context for Occupational Health and Safety Research (EC-OHS) team was funded by the Workers Compensation Board of Manitoba through its Research and Workplace Innovation Program (RWIP) to develop a methodology to help OHS stakeholders synthesize the available evidence on questions of concern to them and to adjust their findings to their specific context. The result is this *Evidence in Context for Occupational Health and Safety Operational Handbook* (simply referred to in this document as the *Handbook*), which provides a step-by-step guide for organizing and undertaking a contextualized synthesis.

Determining ‘what works’ in OHS is best achieved by undertaking a systematic review – essentially a reliable summary of the best available evidence. A systematic review will help you understand what, according to the best available information, can work to address your OHS issue. It will, however, only tell you what works in general rather than what is most likely to work in a particular setting.

To be fully useful to you as a decision-maker, the findings of a systematic review need to be contextualized so that they fit the circumstances (e.g., demographic, economic and resource context) in which your decision will be applied. This process helps determine if an intervention identified as promising in general is likely to work in a specific province, region, locality, industry or workplace.

This *Handbook* outlines the key steps required for the production of a contextualized evidence synthesis. For each step, the *Handbook* provides guidance about the resources required and the options available to you. It also provides concrete examples to make each step easier to understand, as well as strategies to address the issues that typically arise in the process. Our goal is that, by following the process outlined in this *Handbook*, stakeholders will be able to identify ways that will work in their context to improve the prevention of work injury and illness or the prevention and management of work disability.

Introduction

The *Evidence in Context for Occupational Health and Safety Operational Handbook* is a product of a research project funded in 2014 by the Workers Compensation Board of Manitoba. The project involved collaboration between researchers at Memorial University's SafetyNet Centre for Occupational Health and Safety Research and Ontario's Institute for Work & Health (IWH), in cooperation with research partners in Manitoba and a panel of Manitoba stakeholders. The purpose of the project was to develop and test an innovative methodology for providing decision support for provincial and local occupational health and safety (OHS) stakeholders by synthesizing the best available evidence on questions chosen by them, and then contextualizing the results to produce recommendations geared to be effective in their specific contexts. In most research synthesis studies (such as those undertaken by Cochrane¹ or the Campbell Collaboration²), the aim is to answer the question: '**what works?**' This methodology was designed to answer an additional question: **will it work here?**

The project used a series of pilot studies to develop and hone this approach and to develop the process outlined in this *Handbook*. These studies projects were:

1. The effectiveness of interventions in health-care settings to protect musculoskeletal health: identifying potential contextual factors for Newfoundland & Labrador ["MSK Contextualization (NL)"]
2. The effectiveness of training and education for the protection of workers: identifying potential contextual factors for Newfoundland & Labrador ["Training Contextualization (NL)"]
3. Contextualized synthesis: managing depression in the workplace – Manitoba ["Depression Contextualization (MB)"]

The result is this *Handbook*, which provides a step-by-step guide for OHS stakeholders and researchers for organizing and undertaking a contextualized synthesis. This *Handbook* can be used by OHS stakeholders (i.e., organizations or groups involved in OHS policy and practice) to:

¹ <http://www.cochrane.org/>

² <http://www.campbellcollaboration.org/>

- work with researchers to identify topics of concern to them
- formulate topics as researchable questions
- learn what the best available evidence recommends
- contextualize those findings (i.e., tailor them for effective implementation in a specific setting).

Our approach blends the methodologies of two existing programs:

- the Systematic Review Program at the Institute for Work & Health³
- the Contextualized Health Research Synthesis Program (CHRSP)⁴ at the Newfoundland and Labrador Centre for Applied Health Research (NLCAHR),⁵ a partner of the SafetyNet Centre for OHS Research (SafetyNet)⁶ at Memorial University.

A systematic review involves a comprehensive search of the relevant literature, identification of the pertinent information, evaluation of the information to assess quality and, for those studies that are of sufficient quality, a synthesis of the findings to summarize the evidence. The IWH team developed an approach to knowledge synthesis that gives its stakeholders a prominent and integrated role in the design, implementation and dissemination of systematic reviews in OHS.⁷

The CHRSP team at Memorial University works in the related fields of health policy, health services and health technology. CHRSP designed an approach to knowledge synthesis that involves working very closely with a small number of key stakeholders. It emphasizes the ‘contextualization’ of the topics, the syntheses and the recommendations, in order to provide decision support tailored to the needs and capacities of these stakeholders. Contextualization increases the chances of uptake of recommendations into policy and practice.

The novel approach developed by the EC-OHS project and set out in this *Handbook* combines the features of these two methodologies in a way that can be used by stakeholders to address important and pertinent OHS issues for specific contexts.

³ <http://www.iwh.on.ca/systematic-reviews>

⁴ <http://www.nlcahr.mun.ca/CHRSP/>

⁵ <http://www.nlcahr.mun.ca>

⁶ <http://www.safetynet.mun.ca/>

⁷ Keown, 2008

Who should use this *Handbook*?

This *Handbook* is designed to be used by OHS stakeholders seeking to improve policy and/or practice related to OHS issues or problems. We use the term “OHS” broadly to refer not only to the prevention of work injury and illness, but also to the prevention or management of work disability. By “stakeholders” we mean organizations or groups involved in OHS policy and practice. The terms “target audiences” and “knowledge users” are sometimes used (by the authors of this *Handbook* and others) to refer to the same concept, but in this *Handbook* we use the term “stakeholders.” Stakeholders include:

- policy-makers in government ministries or workers’ compensation boards
- professionals or organizations of professionals who provide OHS consulting services and/or training to workplaces
- workplace parties:
 - workers, unions, union umbrella groups/federations, and injured workers’ groups
 - employers and employer associations
 - OHS committees in the workplace
- clinicians and their associations whose work is relevant to OHS (e.g., physicians, nurses, occupational therapists, physiotherapists, chiropractors and kinesiologists).

Stakeholders seeking solutions to OHS issues may not have all the content expertise and/or the skills in evidence synthesis needed to draw on the best available research evidence to inform their decision-making. This *Handbook* explains how stakeholders can work with researchers to accomplish evidence synthesis that can be contextualized to take into account local/regional circumstances.

In the remainder of this *Handbook*, we refer to the reader as “you.”

How should you use this *Handbook*?

This *Handbook* is intended as an overview of the process for producing a contextualized synthesis for OHS issues. It provides a summary of the basic steps needed to complete a contextualized synthesis. For detailed guidance about how to perform the literature review,

critical appraisal and synthesis components of a systematic review, the users of the *Handbook* will need to consult other sources.⁸ You should work with experienced researchers and stakeholder partners with the skills and knowledge listed in “Building a contextualized synthesis project team” (see Step 2 below).

Why undertake a systematic research synthesis?

Effective action to prevent and reduce the impacts of workplace injuries and illnesses requires access to the best available evidence on OHS interventions and policies. A properly conducted systematic research synthesis can provide that evidence. A synthesis should be based on careful examination of all the relevant evidence that is available on an OHS issue, rather than focusing on a few recent studies that may not be of adequate quality or that may not be applicable to contexts other than the ones in which the research was based. Selective reviews of the literature and environmental scans can give an incomplete understanding of the evidence.

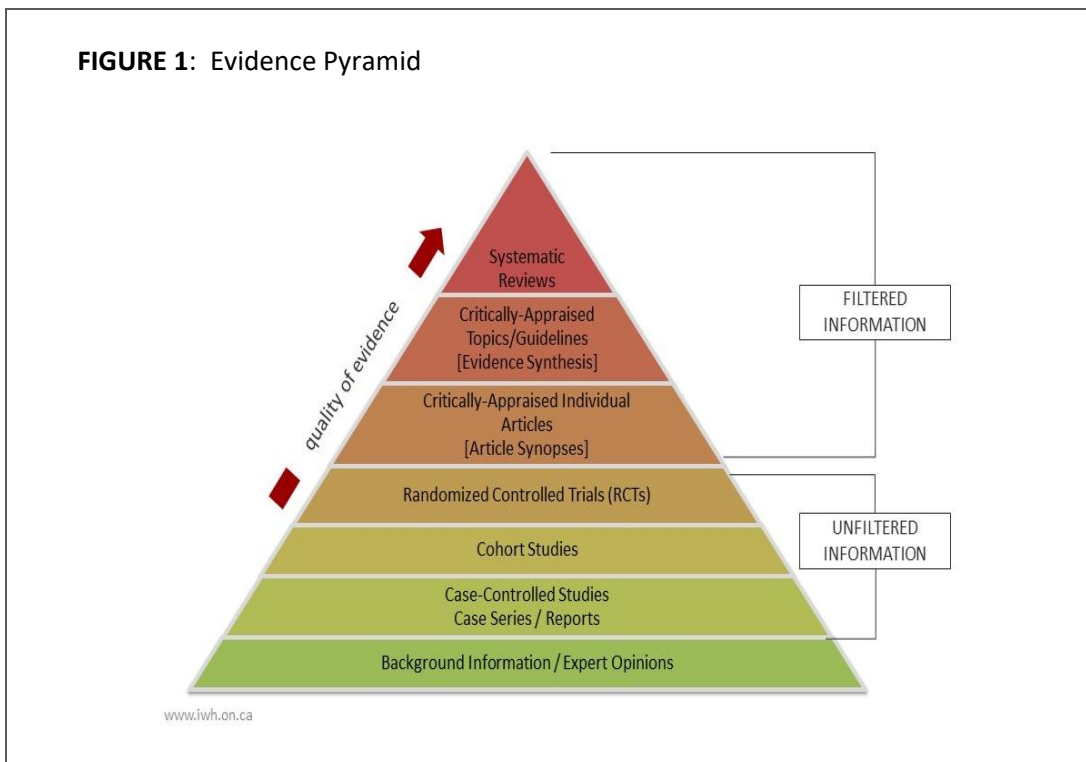
A reliable summary of the best available evidence is called a **systematic review**. Systematic reviews aim to identify all relevant studies on an issue and to consider and integrate the findings of these studies. They use reproducible and transparent methods to identify all relevant sources, assess their validity and reliability, and accurately synthesize their evidence, placing appropriate emphasis on the findings of the highest quality studies. While full-scale systematic reviews examine all studies on the issue at hand, researchers sometimes save time by focusing on existing systematic reviews rather than on primary research studies in order to produce a review of reviews or **meta-synthesis**.

Recently, the NLCAHR developed a program called the Contextualized Health Research Synthesis Program (CHRSP) that uses the meta-synthesis approach for evidence support on health services and health policy questions. The Institute for Work & Health has introduced a more comprehensive version of systematic reviews for OHS within its Systematic Review Program. Since its inception in 2005 the program has published a number of reviews on preventing work-related injury or disease, as well as lay-friendly summaries of these reviews contained in a publication series called *Sharing Best Evidence*.⁹

⁸ See additional resources at www.iwh.on.ca/systematic-reviews/resources.

⁹ A full description of IWH’s systematic reviews, including links to documents, can be found at <https://www.iwh.on.ca/systematic-reviews>.

A systematic review is considered one of the highest forms of filtered information and draws upon high-quality unfiltered information, as shown in Figure 1.



Why contextualize?

Producing a systematic review or a meta-synthesis is an essential first step in effective decision support, but it isn't always sufficient. To be useful, review findings need to be relevant to the specific challenges of the jurisdiction in which the findings are being considered by decision-makers. In smaller provinces, or in certain regions of larger ones, even when stakeholders are fully engaged in the research process, they may hesitate to adopt and implement the findings of scientifically credible syntheses. This can be the case when stakeholders see that the syntheses are based on studies conducted in other places that they regard as having significantly different demographic, economic, social and occupational contexts. Beyond wanting to know the answer to the question '**what works?**', they also want to know '**will it work here?**'

Accordingly, the methodology we have developed and described in more detail below adds **contextualization** to the systematic review approach. A contextualized approach to research synthesis involves carefully assessing the implications of scholarly research for the relevant demographic, economic and resource context of the province or of a selected region of the

province. This approach helps determine if an intervention identified as promising in general is likely to work in a specific place, setting, situation and time.

Contents of the *Handbook*

This *Handbook* outlines the key steps required for the production of a contextualized evidence synthesis.

1. Identify the issue(s) to study
2. Build a contextualized synthesis project team
3. Develop the research question
4. Choose the type of contextualized synthesis project to be done
5. Perform the search and synthesis
6. Contextualize the key findings
7. Report the results

For each step, the *Handbook* provides guidance about the resources required and the options available to you. It also provides examples to make the step easier to understand, as well as strategies to address the issues that typically arise in the process.

The Process, Step-by-Step

The process described is intended to be flexible and easily tailored to your specific needs. The time it will take to complete will vary depending on how you:

- identify and interact with other stakeholders to identify the issue to study (**Error! Reference source not found.**)
- assemble a contextualized synthesis project team (Step 2)
- choose the type of review to use (Step 4 and Table 1)
- report and disseminate the results (Step 7).

It is important to manage expectations by describing the benefits and challenges of contextualizing evidence. Regardless of the strengths and limitations of the decisions you make at each step, it is important to ensure that you are transparent so that all stakeholders can have confidence in the how process unfolded and the extent to which the results are applicable to them.

It is also important to note that the steps listed below may be iterative and not necessarily linear in nature. Some examples of different types of contextualization approaches are described in this section.

1. Identifying the issue(s) to study

You (and the team you will assemble) will need to identify the issue(s) you wish to study using our contextualized synthesis approach. This will help you develop your research question(s). You may prefer to do this one issue at a time or by generating a list of issues to be addressed over a designated period of time. It is best if the issues emerge not primarily from the interests and expertise of the researchers, but from those of the relevant stakeholders (see “Developing the research question” below). Researchers can provide various forms of helpful input at this stage. Their role can include proposing some possible topics or can be limited to managing the process of topic selection and prioritization, with all the essential input coming from the stakeholders.

Once an issue has been identified, researchers should conduct a brief examination of the literature to determine if sufficient studies have been done on the issue of interest to make a synthesis feasible. For each such issue, you should also consider whether:

- stakeholders are seeking the best available scientific evidence to inform decision making
- it is capable of being formulated as a researchable question
- the timing of decision making fits with the timelines of one or more of the review types described in Table 1
- sufficient resources are available to complete the work.

The stakeholder group can go about identifying issues for study in various ways. For example, you may:

- convene a small group of senior system leaders who, with input from members of their organizations, annually propose and select topics for study, using guidelines
- consult with a variety of stakeholder networks, e.g., labour, employers, policy-makers and clinicians, in a series of meetings throughout the calendar year.

The outcome of this step will be the identification of an OHS issue of concern to stakeholders that will be developed into a more precise research question (see Step 3).

EXAMPLE Identifying a issue for the “Contextualized Synthesis (MB)”

The EC-OHS team consulted with the Manitoba Stakeholder Advisory Committee (MSAC) to decide on a final contextualization synthesis for a research question of urgent concern to stakeholders in Manitoba’s OHS communities. Based on feedback from the MSAC and conversations with other OHS researchers and stakeholders, we know that depression is a highly relevant issue that affects the health of workers across Canadian jurisdictions. It is, therefore, an excellent candidate for contextualization within Manitoba. The MSAC agreed that answering “What interventions are effective to manage depression in the workplace?” would be a timely exercise given new legislation regarding worker’s compensation for mental health conditions [“Contextualized Synthesis (MB)” pilot study].

2. Building a contextualized synthesis project team

You will need to put together a project team to address the issue identified. You may wish to create a core team, including both stakeholders and research partners, for all of your contextualized synthesis projects. On any specific project, you would then add subject-matter specialists (stakeholders and researchers), as necessary. Alternatively, you may wish to create specific teams project by project.

The project team will usually include:

- researchers
 - a lead researcher (or co-leads)
 - researchers with expertise and experience in literature searches and synthesis methodology
 - researchers with relevant content expertise
 - at least one local researcher (may be included in the above)
- stakeholders
 - a lead stakeholder/knowledge user
 - representatives from other key stakeholder groups
 - local context advisors
- a project coordinator
 - usually a member of the research team
 - has skills and experience to coordinate both administrative/communications and research tasks.

As noted in the introduction to this *Handbook*, relevant stakeholder groups may include:

- policy-makers in government ministries or workers' compensation boards
- professionals or organizations of professionals who provide OHS consulting services and/or training to workplaces
- workplace parties:
 - workers, unions, union umbrella groups/federations and injured workers' groups
 - employers and employer associations
 - OHS committees in the workplace
- clinicians and their associations whose work is relevant to OHS (e.g., physicians, nurses, occupational therapists, physiotherapists, chiropractors and kinesiologists).

Teams may vary in size. A smaller project team means the same people may be involved throughout the whole process. A larger project team means more people with diverse expertise may be participating in the process, which offers opportunities for rotating partners, holding regular team meetings, creating detailed reviewer guides, and conducting pilot tests to ensure

the review process is consistent and detailed. While it can be more thorough, a larger team may require more time and resources.

EXAMPLE	Project team composition for the “Contextualized Synthesis (MB)”
<p><i>The project team for the updated review and contextualization of the “Contextualized Synthesis: Managing Depression in the Workplace – Manitoba” pilot study included:</i></p>	
<p>Research team led by members of IWH who were experienced in systematic reviews and research synthesis.</p>	
<p>Stakeholder representatives from the Province of Manitoba, SafeWork Manitoba, the University of Manitoba, the Manitoba Federation of Labour, and employers and employees from various sectors such as nursing, construction, the regional health authority, trucking and mining, and the EC-OHS researchers. Stakeholder representatives came from various levels of their respective organizations.</p>	
<p>Coordinator based at IWH who was responsible for communications and organizing research activities. In this case, the coordinator was also an active member of the research team.</p>	

Roles and responsibilities

Research members of a project team, and especially the research leaders, are responsible for ensuring the work is completed following established methodological standards. This includes:

- assisting in selecting and prioritizing issues for study
- helping formulate these issues as researchable questions
- ensuring that the review and contextualization process are rigorous
- doing data collection (literature, interview data, etc.) and analysis
- accurately presenting final results.

Stakeholders are responsible for:

- contributing their expertise and experience to the development of the research question
- ensuring the study remains relevant to stakeholder interests

- helping the researchers express the key findings from the research synthesis in language that is accessible
- identifying who should be consulted
- providing other input into the contextualization process.

Involving stakeholders in your project team is important. Stakeholders bring a practical perspective to the process and can help ensure that the work remains relevant. They can help the team identify and connect with people whose knowledge and expertise is critical to the contextualization process. They can advise on how best to frame the findings as key messages and assist with dissemination. When a stakeholder has the expertise, he or she may also serve as part of the team conducting the synthesis. However, stakeholder participation on the synthesis team requires a commitment to participate in team meetings at several stages of the project.

Different stakeholders will bring different interests and perspectives to the project. This will enrich the contextualization, but may also pose challenges when there are opposing views/interests. The researchers, as neutral parties, can play a role in ensuring that the messages are faithful to the evidence.

The **project coordinator** is often responsible for organizing team activities, communicating with team members, managing data and ensuring deliverables are met. The project coordinator is usually a member of the research team, with commensurate skills and experience.

NOTE: The importance of stakeholder engagement

In our experience at IWH and at CHRSP, and in our work together developing this integrated approach on behalf of the Manitoba Workers Compensation Board, we have found that the more direct and comprehensive the role played by stakeholders, the better the outcome is likely to be.¹⁰ Accordingly, the approach we are recommending involves assigning a significant leadership role to the decision-makers and other stakeholders who are seeking evidence to support their decisions. It is this explicit and extensive involvement of the stakeholders that is a key distinguishing feature of the approaches used by both IWH and the NLCAHR.

¹⁰ Keown, 2008.

Potential project team members should be aware of their roles and responsibilities from the outset. They should, where appropriate, have the support of their employer/supervisor for the time commitment involved.

At each stage of what follows, we have presented a range of options for the role of the decision-makers and that of the researchers. Each group of stakeholders undertaking a program of contextualized evidence support will need to find an approach to the allocation of roles that works best for them and for a specific project. Finding this approach may require some experimentation and iterative course correction.

3. Developing the research question

At this point in the project, each issue identified for evidence synthesis should be turned into a research question.

The project team should begin by developing research question(s) that are clear, relevant, timely and answerable (based on the discussion about the issues in Step 1 above). In developing the research question(s), consider:

- your objective/purpose regarding the issues set out in Step 1
- the kind of information you are looking for
- the need to engage with all members of the project team, especially the stakeholders who will be affected most by the question/results
- that a clear answerable question must be focused
- that the scope of the question should encompass the issue at hand, but not be broader than is necessary
- the real concerns and intentions of those who commissioned the study
- that you must be able to draw on a body of recent, high quality research literature.

EXAMPLE Formulating a focused research question

The following example is taken from experiences during the “Contextualized Synthesis (MB)” pilot study to illustrate how a research question was developed and refined so that it was clear, relevant, timely and answerable.

Purpose: *To reformulate a policy, evaluate an existing policy; determine effectiveness of an existing and/or planned policy.*

Issue: *As decided in Step 1, e.g. high incidence of depression in the working population.*

Research Question: *What intervention approaches to manage depression in the workplace were successful and yielded value for employers in developed economies?*

One method of developing a properly focused research question is to apply the PICO approach; that is, the question indicates the Population, Intervention, Comparator and Outcome being considered for the research synthesis. The key things to consider with respect to each of the PICO terms are examined in the box below from the perspective of a medical study, although the same principles apply to an OHS study.

NOTE: What is PICO?

PICO is a tool for distilling the essential components of a research topic into concepts. Finding relevant information is often easier if you break down your research topic by developing a PICO question. PICO is an acronym for:

Patient / Population / Problem: *What are the most important characteristics of the patient(s)? What sorts of participants, from where, with what features?*

Intervention: *Which is the main prognostic factor, intervention, treatment, or exposure you are considering? What do you want to do for the patient? What other factors can influence the prognosis?*

Comparison/Control Group: *What is the main alternative to compare with the intervention? At times your question may not have a comparison!*

Outcome: *What are you aiming to accomplish, measure, improve, make an impact on? Are you trying to eliminate or relieve symptoms? Reduce the number or severity of adverse effects? Improve functions?*

PICO Question (example):

What is the evidence to support the effectiveness of back belts (I) in reducing back pain (O) in warehouse workers (P) compared to those who used analgesics only (C)?

4. Determining the type of contextualized synthesis project

The type of contextualized synthesis project you decide to do depends on several factors. The research members of your team will play a key role in helping you to decide the scope and type of your project. Work with your team and consider the following:

- What resources (financial, human) are available?
- How much time is available to answer the question?
- Is there ‘high-level’, recent evidence already available (e.g. a systematic review or meta-analysis) relevant to your research question, or do you need to conduct a review first?

NOTE:	Benefits of existing syntheses and other pre-appraised literature
<p>Syntheses of evidence such as practice guidelines, systematic reviews, and meta-analyses are excellent sources of information as they bring together the latest evidence in a manner that is efficient to understand and use. Pre-appraised literature can be extremely handy because someone else has already done the job of assessing both biases and applicability.</p> <p>Even when a systematic review exists, often studies are published subsequent to the review that you may need to consider. If you are exploring an area that doesn’t have the benefit of pre-appraised evidence, then you may need to evaluate single studies.</p>	

The table below draws from the types of evidence in the evidence pyramid (see Figure 1) and illustrates six ways that a contextualized synthesis can be done. Each has different requirements with respect to resources, time and evidence. Types 1-4 require the existence of at least some high-level evidence, allowing a contextualized synthesis to be done using limited time and resources. By contrast, Types 5-6 do not depend on pre-existing high-level evidence and, therefore, require more time and resources.

TABLE 1: Types of contextualized syntheses				
Type of Contextualized Synthesis	Time Required @2 research staff FTE	Benefits	Challenges	Example
Type 1: Contextualize existing 'guidelines'	1-2 months	<ul style="list-style-type: none"> - Quick - Fewer resources required - Easily adopted 	<ul style="list-style-type: none"> - Credible, up-to-date guidelines required - Some may be too specific to other contexts - Often not available on identified topic 	World Health Organization: Rehabilitation in Health Systems ¹¹ <i>IWH Report</i>
Type 2: Contextualize an existing systematic review	2-3 months	<ul style="list-style-type: none"> - Quick - Fewer resources required - No literature review required 	<ul style="list-style-type: none"> - Limited to relevant, existing reviews - May not include recent studies 	"Training Contextualization (NL)" <i>(internal)</i>
Type 3: Update existing review(s) and contextualize	6-12 months	<ul style="list-style-type: none"> - Expands on and updates existing knowledge - Confidence in 'best evidence' 	<ul style="list-style-type: none"> - Lengthy - Resource intensive - Requires research / information specialist expertise - May be limited to search parameters set by previous review 	"Contextualized Synthesis (MB)" <i>(internal)</i>
Type 4: Conduct metasynthesis (review of systematic reviews) and	12-18 months	<ul style="list-style-type: none"> - Provides a succinct review of recent research evidence 	<ul style="list-style-type: none"> - Limited availability of systematic reviews in OHS - Existing reviews 	Mental Health Units in Acute-Care Facilities ¹² <i>NLCAHR Rapid</i>

¹¹ <http://www.iwh.on.ca/media/2017-feb-27>. The resulting WHO report can be accessed at www.who.int/disabilities/rehabilitation_health_systems/en/

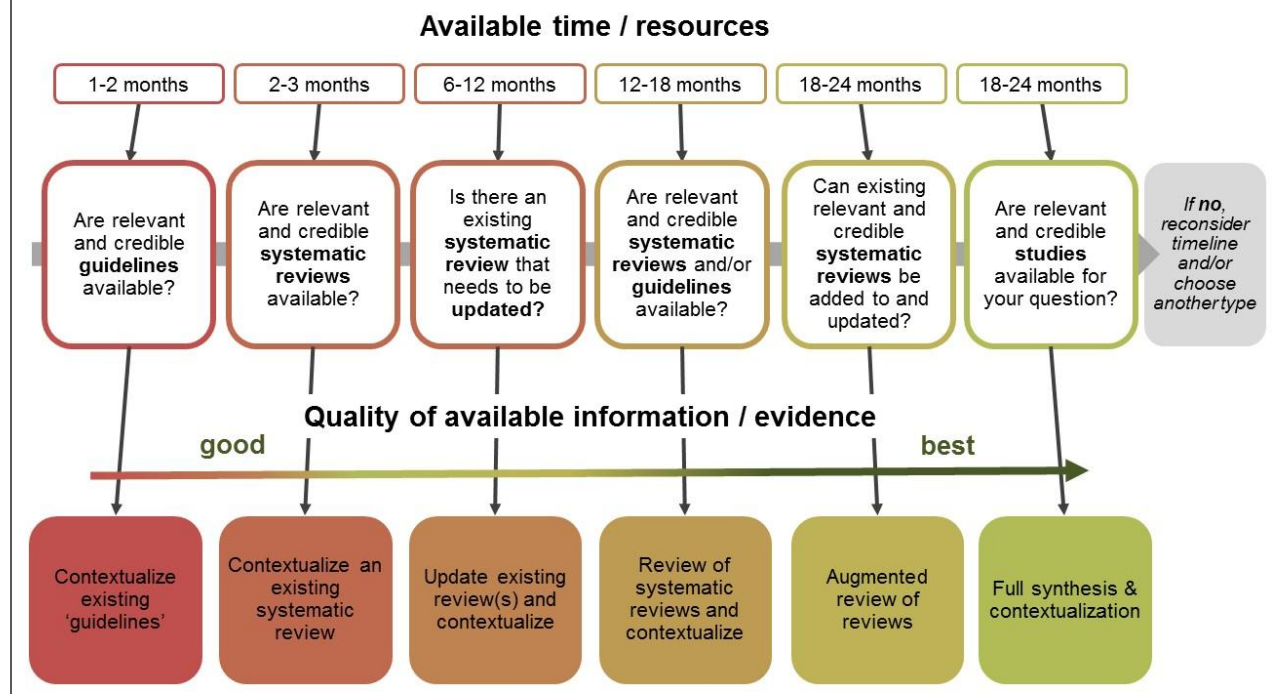
¹² http://www.nlcahr.mun.ca/CHRSR/RER_MH_Units_Jan_2017.pdf

contextualize			require careful quality assessment	<i>Evidence Reviews</i>
Type 5: Conduct augmented review of reviews (i.e., add recent primary studies) and contextualize	18-24 months	<ul style="list-style-type: none"> - Provides a succinct review of recent research evidence - Includes recent publications 	<ul style="list-style-type: none"> - Limited availability of systematic reviews in OHS - Existing reviews require careful quality assessment 	Fall Prevention for Seniors in Institutional Healthcare Settings¹³ <i>NLCAHR Evidence in Context Report</i>
Type 6: Conduct full synthesis and contextualize	18-24 months (average)	<ul style="list-style-type: none"> - Full, up-to-date knowledge - Confidence in 'best evidence' - Targeted search to match the OHS question - Intense work over time with team and stakeholder groups leads to a better understanding of concepts and issues (forms part of the contextualization in itself) 	<ul style="list-style-type: none"> - Lengthy - Resource intensive - Requires research expertise 	Effectiveness of workplace interventions in the prevention of upper extremity musculoskeletal disorders and symptoms: an update of the evidence.¹⁴ <i>IWH Synthesis</i>

Figure 2 visually demonstrates these considerations and the resulting options for a contextualized synthesis. It incorporates the two-dimensional nature of the decisions that stakeholders need to consider (i.e., both amount of time and levels of evidence available).

¹³ http://www.nlcahr.mun.ca/CHRSP/Fall_Prevention_Full_Report.pdf

¹⁴ <http://oem.bmj.com/content/73/1/62>

FIGURE 2: Decision Guide

5. Performing the search and synthesis

Skip this section if you have chosen to work from existing guidelines or an existing systematic review. See “Contextualizing the key findings” below for a description of contextualization.

If you have chosen to update existing reviews, review existing reviews (metasyntheses) or undertake a full literature synthesis from the beginning, you (in consultation with the research members of your team) will need to do some or all of your own synthesis using the steps set out below.

Both the CHRSP¹⁵ and IWH¹⁶ have resources that may be useful in this process. For example, IWH runs a Systematic Review Workshop twice a year that is designed to teach participants

¹⁵ <http://www.nlcahr.mun.ca/CHRSP/>

¹⁶ <https://www.iwh.on.ca/systematic-reviews>

how to plan, conduct and communicate the results of a systematic review.¹⁷ See the respective websites of these organizations and/or contact them for more information.

Steps of a review

Step 1: literature search

To find these sources of evidence, you should work with an information specialist to devise a carefully designed search strategy. This should be based on PICO parameters (Population, Intervention, Comparator and Outcome) that are agreed on by the project team. The information specialist will then apply this search strategy, customized for the specific search vocabulary in each of the relevant electronic databases for an agreed-upon time range of publication dates. Searching multiple databases and multiple languages is best in order to triangulate all relevant documents, as not all databases will index the same list of studies. Where appropriate, 'grey' (e.g. scientific conference presentations, professional association best practices, etc.) literature should also be searched and included.

Step 2: relevance screen

The next step is to filter the studies retrieved in the search, eliminating those that are not deemed directly relevant to the question being studied using preset inclusion/exclusion criteria. This is best done by reviewing in stages: first, by reading through only the titles and abstracts of source documents; and, second, by following up with a review of the full text of studies when there is doubt about relevance. Potential bias in this process should be minimized by using replicable, scientific and transparent criteria applied independently by at least two reviewers.

Step 3: quality appraisal

Once you have found the relevant documents to answer your question, the research members of your team will determine how trustworthy these sources of evidence are. Each methodology or study design has the potential for bias, and some have a greater potential than others.

Each study should be assessed independently by at least two research team members using an appropriate measurement tool (e.g., AMSTAR¹⁸ for systematic reviews, GRADE¹⁹ for

¹⁷ <http://www.iwh.on.ca/systematic-review-workshops>

randomized trials of clinical literature, or the IWH Quality Appraisal tool²⁰ for primary studies of occupational health and safety literature). Disagreements among the team members about the quality of studies should be resolved by seeking consensus and, if necessary, having an additional team member perform an assessment.

Step 4: data extraction

The research members of your team, in this step will, summarize the key contents of each retained study, focusing on elements that will help answer the research question. Putting the data into a table using software such as Microsoft Excel will help keep the entries consistent from study to study and will also make the next step easier.

Step 5: evidence synthesis

In Step 5, the research members of your team, use the summaries developed in the data extraction step to produce a synthesis of the agreements and disagreements among the retained studies. The quality assessments produced in Step 3 can help weight the relative contribution of each study to the overall findings. The synthesis should include a section on “key findings” that call attention to the noteworthy points on which the reviewed studies agree and highlight the strength of the overall evidence for each of these points.

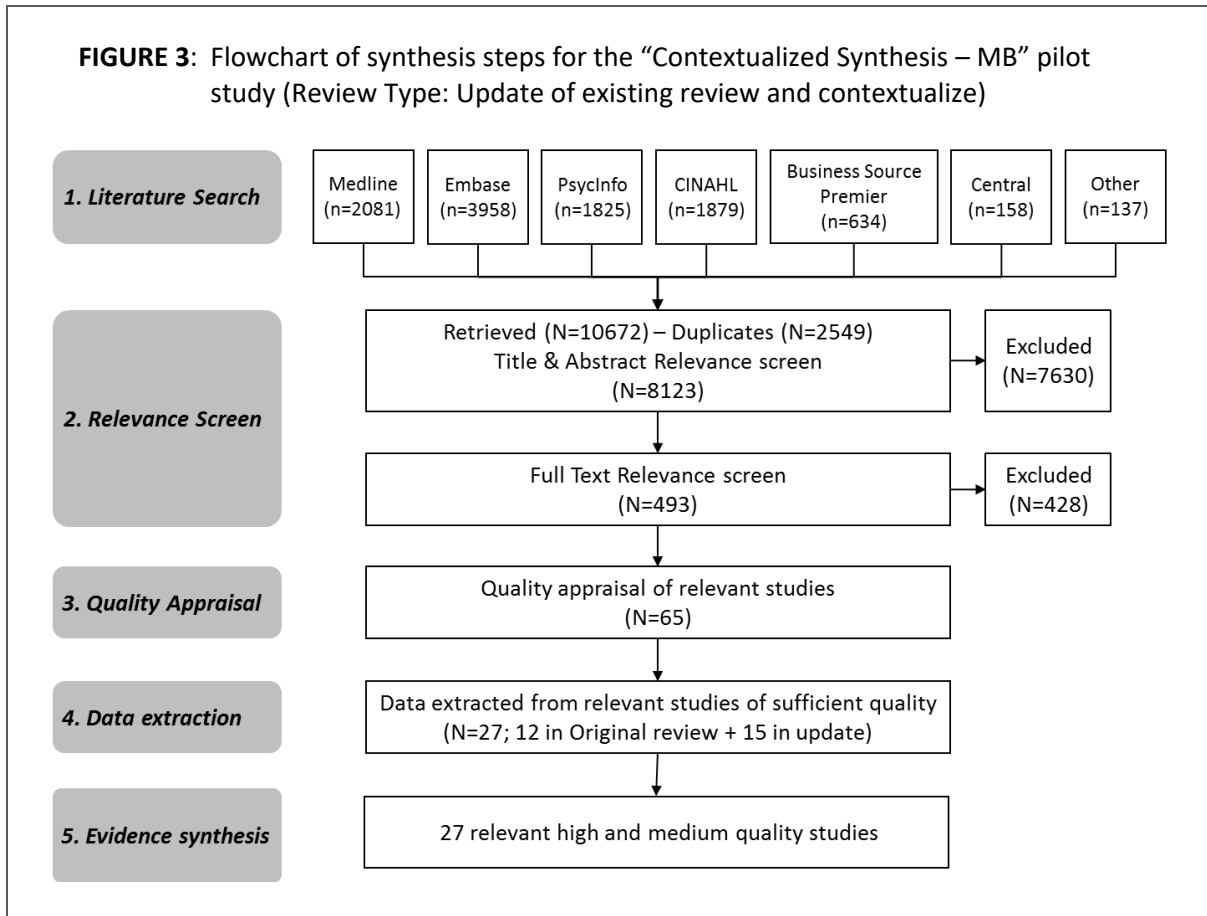
If, for example, strong evidence of an effect to support an intervention is found, it will be identified as a candidate for action to be considered in the next step (contextualization). If there is strong evidence of no effect, then the recommendation would be not to consider this intervention going forward. If there is moderate evidence of an effect or of no effect, this would need to be integrated with the experience of practitioners. There may be insufficient or absent evidence to support the intervention, which will inform the recommendation to not adopt the intervention.

Figure 3 (below), illustrates the PRISMA flow chart of results from the Managing Depression in the Workplace—Manitoba updated review, which was contextualized for this project.

¹⁸ <http://www.amstar.ca/>

¹⁹ <http://www.gradeworkinggroup.org/>

²⁰ See “Effectiveness of Workplace Interventions in Return-to-Work for Musculoskeletal, Pain-Related and Mental Health Conditions: An Update of the Evidence and Messages for Practitioners” as an examples of IWH’s use of a quality appraisal tool (<http://link.springer.com/article/10.1007/s10926-016-9690-x>).



6. Contextualizing the key findings (i.e., ‘Will it work here?’)

By following the steps to this point, you will have identified, updated or completed a synthesis of the evidence to determine ‘what works’ in answer to your research question. In order for you to decide about applying the findings in your specific context, however, you will also want to answer the question: **Will it work here?**

You will want to examine the extent to which features of your specific context may increase or decrease the potential applicability of each of the key findings reported in the synthesis. Variations in applicability typically result from differences between the settings in which the research was done and your local conditions. For instance, interventions that work well in large workplaces or firms may not translate well into smaller workplaces. Alternatively, an intervention that has been found to be only moderately effective in urban settings may work better in rural or northern settings.

In order to **contextualize** the findings produced by your synthesis, you will need to identify features of your context, including whether you are looking at plant-level context or jurisdictional-level context. As above, to do this systematically, we suggest that you start with an idea of the kinds of factors that might be relevant (see Table 2).²¹

Potential contextual factors

A number of factors may influence the applicability and/or effectiveness of a finding in any given context. Table 2 lists types of contextual factors that could be considered.²² This list is not meant to be prescriptive or exhaustive, but is intended to serve as a tool for identifying the areas and topics to explore.

TABLE 2: A template for considering potential contextual factors	
Contextual Factor	Potential Issues
Geography	<ul style="list-style-type: none"> • density and spread of workforce/workplaces • environmental conditions of workplace(s) (e.g., cold, remote, sheltered, urban, rural)
Industry / Workplace Type	<ul style="list-style-type: none"> • differences in type of industry (e.g., fisheries, oil & gas, mining) • different types of workplaces (e.g., large, small enterprises, local, national) • level within the organization being targeted
Legislative / Political Environment	<ul style="list-style-type: none"> • legislated health & safety requirements • enforcement • policy context/history • media scrutiny • relevance to partisan/electoral politics • collective bargaining issues
Safety Culture	<ul style="list-style-type: none"> • attitudes, beliefs, perceptions and values that employees share in relation to safety
Worker Population	<ul style="list-style-type: none"> • characteristics of the workforce

²¹ A resource has been produced by the National Collaborating Centre on Methods called the Applicability and Transferability of Evidence Tool (A&T Tool). More information about how to assess the applicability and transferability of evidence and how to use NCCMT tools can be found in the resources section of the NCCMT website: <http://www.nccmt.ca/resources/search/24>

²² These contextual factors were previously identified for the CHRSP program and have been adapted to be more applicable for OHS issues.

	<ul style="list-style-type: none"> • staffing • retention/turnover • training • benefits and incentives
Infrastructure / Services	<ul style="list-style-type: none"> • existing infrastructure and/or services • technological/logistical requirements • support/follow-up services • requisite inputs and supplies • appropriate academic and research environments
Economic Factors	<ul style="list-style-type: none"> • fiscal constraints/opportunities • state of the provincial and regional economy • profitability of a firm or sector

The above list will need to be amended to suit the specific context and issue you are studying. The importance of each of the potential factors will vary depending on your context.

For example, the box below outlines how questions were developed from Table 2 above so that they could potentially identify factors that may influence the effectiveness of OHS training in Newfoundland and Labrador [“Training Contextualization (NL)”].

EXAMPLE: Considering potential contextual factors [“Training Contextualization (NL)”]	
ISSUE: The effectiveness of OHS training	
Potential contextual factor	Possible variables / issues
Geography Density and spread of workforce/workplaces	<ul style="list-style-type: none"> • <i>How might where one lives/works influence availability, quality, affordability of the intervention?</i> • <i>Is there a ‘critical mass’ that will enable workers to maintain levels of competence?</i>
Industry / Workplace Type Differences in type of industry (fisheries, oil & gas, mining, etc.) Different types of workplaces (large, small enterprises, local, national, etc.)	<ul style="list-style-type: none"> • <i>What are the specific intervention needs of the industry/workplace type?</i> • <i>At what level is the intervention being targeted (front-line worker, management, policy, legislation)?</i> • <i>Does the industry/workplace have adequate resources to introduce/maintain intervention?</i>
Legislative Environment Legislative health & safety requirements	<ul style="list-style-type: none"> • <i>Are there specific legislative requirements surrounding the intervention (specific</i>

	<p><i>knowledge/training? specific training/recertification timelines?)</i></p> <ul style="list-style-type: none"> • <i>Are these enforced? How?</i> • <i>How is legislation enforced overall?</i> • <i>How might collective bargaining influence the demand for the interventions?</i> • <i>How does policy context/history influence 'culture of safety'/acceptance of intervention?</i>
Safety Culture Attitudes, beliefs, perceptions and values that employees share in relation to safety	<ul style="list-style-type: none"> • <i>How are safety issues typically addressed in workplaces?</i> • <i>How might the organizational culture influence implementation?</i> • <i>What are the policies & procedures that may enable/inhibit interventions?</i>
Worker Population Characteristics of the workforce Staffing Retention Training Benefits and incentives	<ul style="list-style-type: none"> • <i>How might the average age, language, education level, training level/style influence implementation?</i> • <i>Are there any unique risk factors for this group?</i> • <i>Does the workforce have special needs/considerations?</i> • <i>Are there adequate personnel to support the intervention?</i> • <i>Are peer support and opportunities for consultation available?</i> • <i>Will workloads and schedules facilitate introducing/maintaining the intervention?</i> • <i>Are there opportunities for continuing education and professional development?</i> • <i>Are there opportunities/incentives to implement the intervention through employee benefits and programs?</i>
Infrastructure / Services Existing infrastructure	<ul style="list-style-type: none"> • <i>What is the availability of:</i> <ul style="list-style-type: none"> ○ <i>sites that meet technological/logistical requirements</i> ○ <i>support/follow-up services</i> ○ <i>requisite inputs and supplies</i> ○ <i>appropriate academic and research environments?</i>
Economic Factors Financial	<ul style="list-style-type: none"> • <i>How much will the intervention(s) cost as a</i>

- percentage of total financial resources?*
- *Can the intervention be financially sustained over time (if needed)?*

These categories may overlap. Some factors may be placed in more than one category. Some factors may not be applicable to your project.

Using a checklist of this sort, adapted as necessary to the specific project, the project team (with a particular emphasis on input from stakeholders) should seek data and advice about ways in which your context may (or may not) be distinctive for each type of factor. Information can be gathered in a variety of ways:

- standard national and provincial data sets
- other data sources identified by members of the project team and key informants
- interviews and/or focus groups involving key informants identified by the project team
 - these can include local policy-makers, regulators, administrative managers, labour, workers, employers, and clinicians.

In addition to pointing the team towards sources of data, these interviews can also provide useful qualitative information about current local/provincial policies and practices and about complex contextual factors and their implications.

EXAMPLE: Key informants for NL pilot studies

In the “MSK Contextualization (NL)” pilot study (our contextualization exercise to see how OHS interventions to prevent musculoskeletal injuries in health-care settings may be influenced by the context in which they exist), we spoke with representatives responsible for addressing safe patient handling in several of the four health regions in NL. Included were management, front-line workers and policy-makers, as well as researchers involved with other, similar evaluation exercises.

In the “Training Contextualization (NL)” pilot study (to see how context might influence the effectiveness of OHS training), we spoke with key contacts responsible for training (including front-line safety officers), enforcement, management and policy-makers representing the provincial government, compensation system, safety councils, the health system, organized labour and employers’ organizations.

The input of the stakeholders on the project team is especially important at this stage in the process. The stakeholders provide overall guidance as to the most relevant contextual factors, help to identify key stakeholder informants and sources of data, participate in designing and conducting key informant interviews and focus groups, and help interpret the significance of the information generated by these.

EXAMPLE: Stakeholder group “Contextualized Synthesis (MB)”

The “Contextualized Synthesis (MB)” exercise focused on updating an existing systematic review on workplace depression interventions that affect return-to-work or stay-at-work outcomes, and identifying the types of factors that might influence the effectiveness of these interventions in the Manitoba provincial context.

The research team engaged with representatives from EAPs, employer groups, labour, clinician/scientists, OHS professionals, disability managers and SafeWork Manitoba.

The representative stakeholders were invested in the topic and acknowledged the importance of the issue in their contexts. Having all of the key stakeholders in the same room also created a high level of engagement and exchange. Information was easily shared, and the potential for future work and uptake of results beyond the project was identified.

Be aware that information collected for the purposes of contextualization can be limited in various ways. For example, data collected from administrative, statistical and other datasets may be outdated or may be aggregated at a level that is not useful to your context. However, this data also has benefits in that it is generally less subjective and is often freely available. The data collected from key informants may be partial or subjective, but will tend to be timely and relevant to your specific context.

On the basis of the data, including input from key informants, the team can now draw some conclusions about the extent to which the key findings of the synthesis do or do not fit your context. The project team should provide recommendations and/or next steps.

7. Reporting

At the end of the project, you should prepare a contextualized synthesis report that provides an overview of the:

- issue examined
- membership of the team
- research question identified
- process used
- findings from the synthesis
- results of the contextualization process
- recommendations / next steps.

Your contextualized synthesis report should be shared with potential stakeholders who might be able to use your findings and recommendations, either directly or by adapting them to other contextual settings and needs.

Strategies for Success

Know your starting point and limits

The circumstances under which you will be working may vary from those described in the steps above. You may have more or less time to produce a contextualized synthesis report, or you may have more or less human and financial resources available to you. You can, to a certain extent, tailor your approach to fit these conditions, expanding or restricting the scope of the question and the methods you will use to search for and synthesize evidence.

Another important factor that will vary is the quantity and quality of the available evidence. Some topics will already have high quality systematic reviews available that synthesize high quality primary studies. Others will have high-quality primary studies, but few or no systematic reviews. Other topics will have been the subject of very little research at all.

These varying circumstances could influence the way you shape your question, how your project is conducted, and how long it is likely to take. For example, if a considerable body of high-quality research is available on your question, but very few well-done systematic reviews have been done to synthesize this research, you will need to do a full synthesis and contextualization, which will require considerable time and human resources. If, on the other hand, several high quality systematic reviews are available on your question, you may be able to save time by synthesizing those reviews, and then synthesizing as well the recent high-quality primary studies that were not included in these reviews. A question for which very little is available in the way of research evidence can be studied quite quickly, but will yield results with significant limitations. When, on the other hand, there is a considerable body of literature to synthesize but pressure to produce results rapidly, you may wish to limit the time period (e.g., the last five years) or the language (e.g., English only, or English and French only) in which the articles were published.

Be flexible

Plan well, but be prepared to change your plans as the process unfolds and new knowledge, opportunities, demands and setbacks present themselves. For example, if you discover that the available evidence is not directly pertinent to the question you have agreed on, you may wish to consider seeking consensus to modify the question. Changing the question may alter the time and human resource requirements of the project. Similarly, you may be asked to produce

your contextualized synthesis report sooner. It may or may not be possible to do so depending on the availability of additional funding and/or human resources. In addition, achieving consensus on the contents of your report may require some back-and-forth discussions with your sponsors and with the members of your team. Be prepared for multiple iterations of your report (see also the section below “Document thoroughly”).

Consider your team’s composition and size

You will want to put together a team that includes people with expertise, both theoretical and practical, on the key dimensions of the question you are examining. In the field of OHS, many of the issues for which contextualized synthesis reports are requested will be contentious, and key stakeholders will often represent a wide range of organizations (compensation boards, government regulators, labour unions, employers, sectoral organizations, OHS professionals, and private consultants) with an equally wide range of interests and priorities. A larger team may increase your ability to study the question effectively, but it may also increase the challenges involved in reaching consensus.

Consult and communicate extensively

Contextualizing systematic reviews involves collecting information both from research publications and from local lay knowledge. The team will prove invaluable in determining how to formulate the research question, designing how the information will be gathered, determining the sources of information (published and gathered from stakeholders), and interpreting and contextualizing the results. Allow for the time it will take to build the team, in terms of both identifying members and establishing working relationships that will allow the team to reach consensus and handle disagreements.

In most cases, information-gathering exercises involve not only *what* you know, but also *who* you know; therefore, asking stakeholders to identify others in their networks may be of help. It will be important to go beyond your own direct contacts to identify different people who can provide different perspectives. The vantage point from which someone is speaking about a problem may also be part of the contextualization process. What may work from one vantage point may be more challenging from another.

Document thoroughly

It will be difficult to remember all the various decisions that are made during your review process if significant decisions and actions are not recorded. It is important to document the reasons for the exclusion of all articles not included in the synthesis and any deviations from the original plan of action. Such documentation should also ensure that ideas are noted, even if they do not seem relevant at the time. As the process unfolds and information is gathered, information that once seemed irrelevant may become important. Documentation helps the process to be transparent and replicable, and it can be valuable for writing up the final contextualized synthesis report.

Share your findings

The contextualized review methodology described in this *Handbook* involves adapting knowledge developed in one situation for use in another. If the knowledge you produce is, in turn, to be useful to others, the results should be communicated in such a way that others may learn from your experience. Tell people not only about what you learned, but also about how you learned it. Discuss how it may or may not apply in other situations and in what ways. In addition, it may be helpful to communicate your findings in a variety of formats so that they can be used by a wide range of possible audiences.

Additional Resources

Higgins JPT, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.1.0 [updated March 2011].

Irvin E, Van Eerd D, Amick III BC, Brewer S. Introduction to special section: Systematic reviews for the prevention and management of musculoskeletal disorders. *Journal of Occupational Rehabilitation*, 2010; 20(2):123-6 [Epub 2010 Jun 4].

Keown K, Van Eerd D, Irvin E. Stakeholder engagement opportunities in systematic reviews: knowledge transfer for policy and practice. *Journal of Continuing Education in the Health Professions*. 2008; 28(2): 67-72.

Mahood Q, Van Eerd D, Irvin E. Searching for grey literature for systematic reviews: Challenges and benefits. *Research Synthesis Methods*, 2013. doi:10.1002/jrsm.1106 [Epub 2013 Dec 6].

A description of the CHRSP, including links to documents, can be found at:
<http://www.nlcahr.mun.ca/CHRSP/>

A description of IWH's systematic reviews, including links to documents, can be found at:
<https://www.iwh.on.ca/systematic-reviews>

The Campbell Collaboration “promotes positive social and economic change through the production and use of systematic reviews and other evidence synthesis for evidence-based policy and practice”: www.CampbellCollaboration.org

Cochrane (formerly the “Cochrane Group”) conducts systematic reviews of randomized controlled trials of health-care interventions and diagnostic tests, which it publishes in the Cochrane Library: www.Cochrane.org