COVID-END
COVID-19 Evidence Network to support Decision-making

Resources and tools for guideline developers, health technology assessment teams and decision makers

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1. Introduction

The COVID-19 pandemic has led to a massive increase in evidence synthesis activities, including in the technology-assessment and guideline-development communities. COVID-END has come together to help those already supporting decision-making to find and use the best evidence that is already out there (i.e., to support the evidence-demand side) and to help reduce duplication and better coordinate the evidence syntheses, technology assessments and guidelines being produced (i.e., to support the evidence supply side).

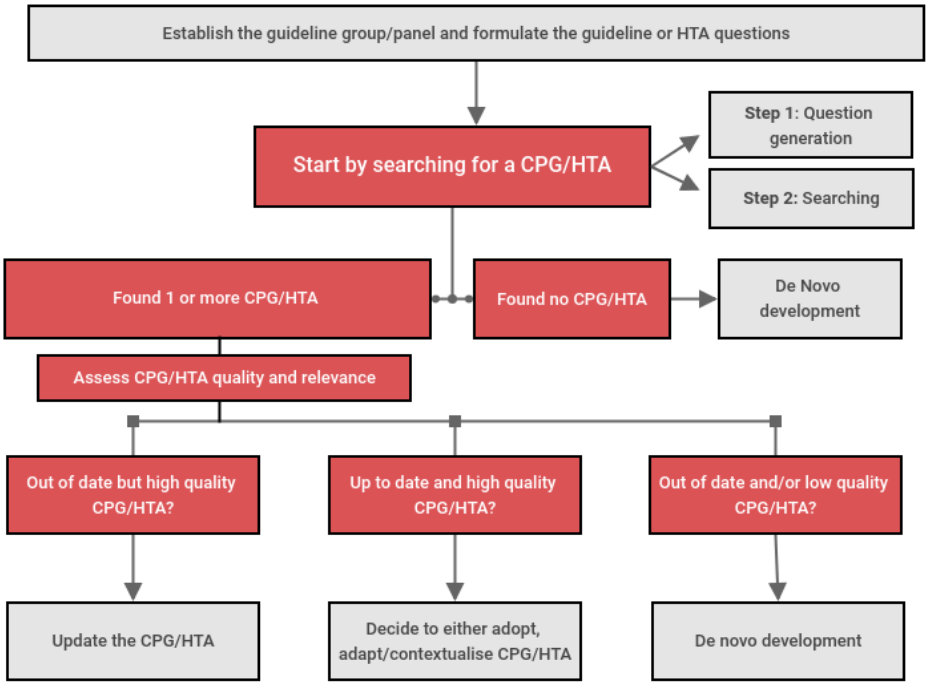
Towards this goal, the COVID-END Recommending Working Group has produced this resource for guideline development, health technology assessment and policy makers to support efficient and evidence-based guideline and health technology assessment development in light of the COVID pandemic. For resources linked to evidence synthesis see the COVID-END synthesis working group resources and tools for researchers considering evidence and conducting evidence synthesis.

How to navigate this document

Definitions and concepts

- What is a CPG?
- What is HTA?
- What is a Rapid Response?
- What is a living guideline?

How to develop a guideline



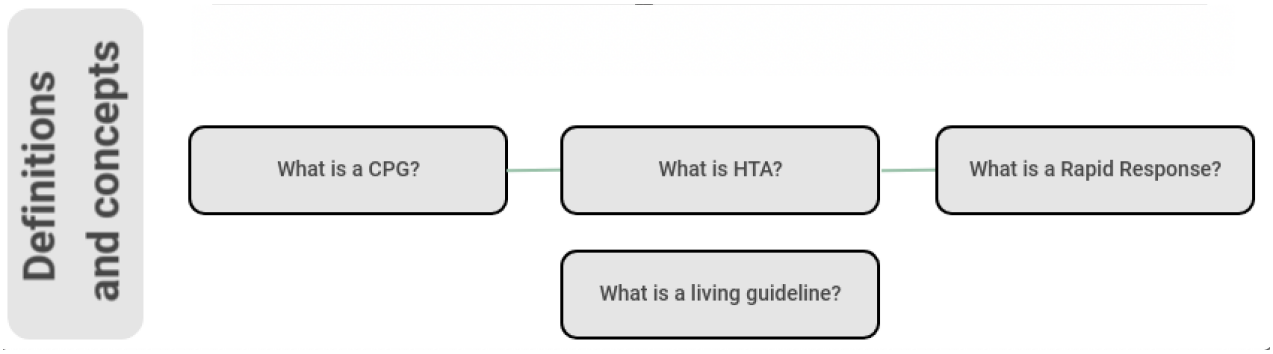
Adopt — Recommendations/CPGs/HTAs are adopted when they can be applied directly, without any changes, to a context. Adopting means a commitment to implement its recommendations as proposed, without any subtle changes or caveats

Adapt — Recommendations/CPGs/HTAs are adapted if changes are made in any way, either by updating evidence or adding implementation or context specific considerations

Tools and resources

- Support development
- Support reporting and appraisal
- Technology/app tools

2. Definitions and concepts



2.1 What is an evidence-based guideline?

There are different definitions of a guideline. The most used and accepted definition is the one provided by the National Academy of Medicine (formerly Institute of Medicine) of the United States, which states that clinical practice guidelines (CPG) are *"statements that include recommendations, intended to optimise patient care, that are informed by a **systematic review of evidence** and an assessment of the benefits and harms of alternative care options"*. The development of these recommendations is reached by a consensus of a representative panel of experts in that area (screened for conflicts of interest), informed by analysis of the best available evidence[1]. In topic areas in which the scientific literature is weak or insufficient, and therefore will not support meta-analyses or network meta-analyses, evidence-informed and consensus-based guidelines have been developed employing the Trustworthy Consensus-Based Statement process (TCBS). One pillar of the TCBS requires an expert panel representing multiple stakeholder perspectives, screened for conflicts of interest (Lewis *et al.* 2014). Guideline producers incorporate explicit consideration of clinical effectiveness; cost and economic implications; ethical, social, cultural and legal issues; organisational and environmental aspects; as well as wider implications for the patient, relative, caregivers and the population. Evidence-based guidelines are increasingly being developed in areas beyond clinical practice, for example in public health and social care.

2.2 What is a health technology assessment (HTA)?

An HTA is defined as a multidisciplinary process that uses explicit methods to determine the value of a health technology[2] at different points in its lifecycle (O'Rourke *et al.* 2020). HTA aims at informing policy decision-making by independently developing accountable and reasonable recommendations that promote an equitable, efficient, and high-quality healthcare system for the benefit of the whole population served (Daniels, 2000). The process is formal (like CPG development), systematic and transparent, and uses state-of-the-art methods to consider the best available evidence. The dimensions of value for a health technology may be assessed by examining the intended and unintended consequences of using a health technology compared to existing alternatives. These dimensions often include clinical effectiveness; safety; costs and economic implications; ethical, social, cultural and legal issues; organisational and environmental aspects; as well as wider implications for the patient, relatives, caregivers, and the population (INAHTA). Health systems of democratic societies often share these values and principles, but it remains challenging to operationalise them in the HTA process. This might be achieved by systematically considering, throughout the HTA process, whether the interventions

[1] Historically, many organisations have categorized their guidelines as evidence-based or consensus-based. However, both types of guidelines require a consensus among the committee members to take a decision on what to recommend for improving health outcomes. Thus, we suggest not using the distinction of consensus-based vs evidence-based guidelines, as long as the process and decisions made are informed by a comprehensive and systematic review of the evidence.

[2] A health technology is an intervention developed to prevent, diagnose or treat medical conditions; promote health; provide rehabilitation; or organise healthcare delivery. The intervention can be a test, device, medicine, vaccine, procedure, programme or system.

assessed fulfil the objectives of health care systems defined as the triple aim (improving the experience of care, improving the health of populations, and reducing per capita costs of health care), as well as improving the organisation of care and generating a positive effect on the socio-political context.

2.3 What is a rapid response/guideline?

Developing a CPG or HTA requires considerable time and effort. However, there are urgent situations that require the development of recommendations in a sufficiently short timeframe without neglecting trustworthiness. Different labels have been used to describe these recommendations, such as rapid advice, rapid recommendations, rapid guidelines, or rapid responses. Across these resources we will use the term rapid response to refer to all those documents that provide recommendations in a rapid fashion.

Thayer & Schünemann (2016) have defined four levels of urgency for developing guidelines. Levels 1 and 2 can all be considered rapid guidelines; levels 3 and 4 can be considered the conventional clinical practice guideline development process which usually ranges from 3 months to 1-2 years.
Ultra-short emergency response (1-2 hours)
Urgent response (1-2 weeks)
Rapid response (up to three months)
Routine response (More than 3 months)

See the article by Akl *et al.* (2020) and Qaseem *et al.* (2020) about methods for developing guidelines as part of an urgent response, including guidance when evidence is scarce and consensus-guidance is appropriate.

2.3.1 What are living guidelines and why do we need them?

One of the perennial challenges of CPGs is that their development and updating is slow, often with months or years between a guideline and the next update. The COVID-19 pandemic has demanded a different approach, and guideline developers are rising to the challenge, bringing the concept of living evidence and guidance to the fore with dynamic updating of recommendations once new practice-changing evidence is publicly available. Innovated processes have been used such as applying digital technology over the past few years – based on best current methods and standards for both systematic reviews and guidelines (Huseyin *et al.*, 2020; Vandvik *et al.*, 2020).

A living guideline is defined by "an optimisation of the guideline development process to allow updating of individual recommendations as soon as new relevant evidence becomes available" (Akl et al. 2017In general, if developed under high-quality standards, living guidelines are optimal as they provide up-to-date evidence-based guidance. However, living guidelines require significant human resources and capital and often require automated processes such as literature monitoring for newly published studies and synthesis.

2.3.1.1 Examples of living guidelines for COVID-19

The Cochrane Collaboration and scientific journals like the Annals of Internal Medicine and BMJ publish living systematic reviews for COVID-19. Recent experience with Australia's National COVID-19 Clinical Evidence Taskforce illustrates how a comprehensive set of recommendations can be dynamically updated weekly based on new practice-changing evidence, from a living network meta-analysis, further facilitated by innovative processes and digitally structured data in interoperable platforms (e.g., MAGICapp). Such platforms allow for immediate global dissemination of recommendations, interactive evidence summaries and decision aids that are available for re-use, adaptation and implementation.

The World Health Organization (WHO), American College of Physicians (ACP), and other prominent guideline development organisations are now moving towards producing living guidance for COVID-19. Some are dedicated to sharing evidence and recommendations in a globally-concerted effort, aiming for four weeks

from evidence to publication. *The* WHO living guidelines on drugs for COVID-19, also published as BMJ Rapid Recommendations, illustrates how such global collaboration and iterative guidance development can work, informed by living network meta-analysis. They are authored, dynamically updated and published online in user-friendly formats making use of the MAGICapp. One of many identified challenges challenges is the comprehensive peer-review and publication process, slowing down time to dissemination of the guidance, as compared to the more speedy Australian guidelines with weekly updates. ACP as well, is collaborating with other leading organizations to ensure sharing resources, avoid duplication, encouraging harmonization has shown that development of rapid and living guidance is possible while working together with other groups (Qaseem *et al.*, 2020).

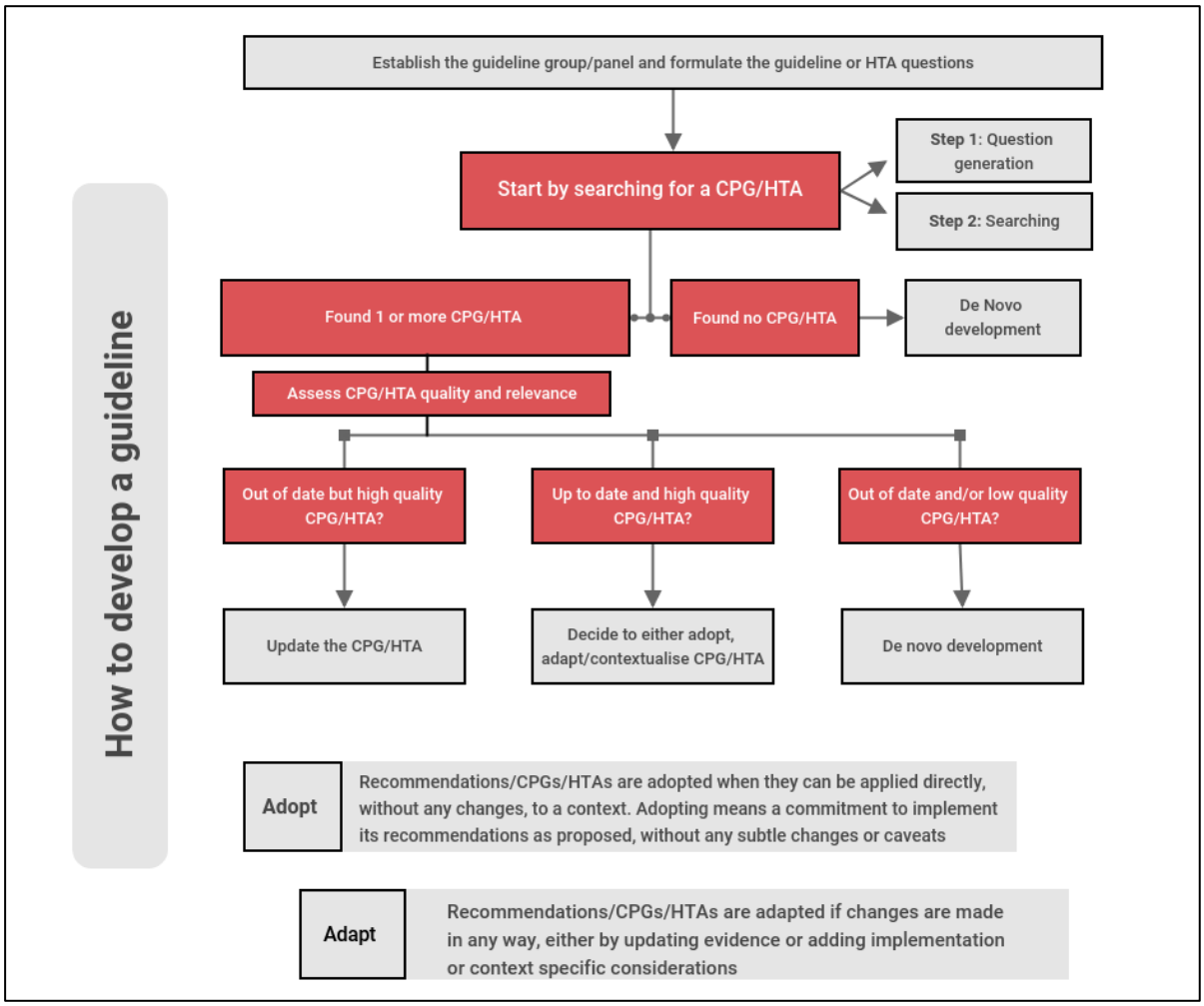
2.4 Why evidence-based guidance, such as CPG and HTA are desirable tools to inform decision-making at the clinical and policy levels

At the individual level, CPGs, like HTAs, aim to improve the quality of patient care and patient outcomes by recommending interventions with demonstrated benefits, while discouraging the use of ineffective or potentially harmful interventions. At the macro level, these should be responsive (essential during a pandemic) and influence public policies, reduce unnecessary variations in practice, and lessen disparities, thereby promoting equitable, efficient, and high-quality healthcare. Importantly, this will empower patients to be active participants in their care and care planning. The main difference is that HTAs are focused on health technologies and their financing, aiming at fair allocation of healthcare resources among the whole population served (Woolf *et al.* 1999; Daniels, 2000).

For both CPGs and HTAs, multiple considerations (e.g. feasibility, acceptability, equity) should be made beyond clinical efficacy to ensure these goals are achieved. Whether these goals are achieved when using simplified processes for rapid responses, such as was the case during the COVID-19 pandemic, remains a subject of debate, calling for defining what is absolutely necessary and sufficient to avoid misleading clinical and policy decision-making.

3. How to develop high quality evidence-based guidance

The first step should be to avoid duplication of effort, starting with searching for existing, high-quality and up-to-date guidelines by asking a clear question and then searching for the best available guidance (Steps 1 and 2). This should be followed by a critical assessment of that guideline or health technology assessment for relevance and quality and then assembling the guideline team. The flow diagram below highlights the key decisions (red blocks) with linked steps (grey blocks) and resources and tools listed from section 4 onwards.



Adopted from the guidelinetoolkit.org.za and Guidelines International Network (GIN)

3.1 Establish the guideline group/panel

The panel should be composed of a multidisciplinary group of people that includes all the relevant expertise and skills, as well as all stakeholder perspectives. The structure of a guideline group or panel will vary from guideline to guideline but should include a guideline committee (that considers the evidence and draft recommendations) and the guideline developers and methodologist (who identify, assess and synthesise evidence). Establishing the guideline group typically starts with targeted calls for applications to ensure all relevant stakeholders' perspectives are included.

Team composition for both CPGs and HTAs are broadly consistent. For CPGs, potential team members typically include (see details from the GIN McMaster Checklist):

- Clinicians (including all the fields and specialisation areas involved in the management of the disease or condition of interest)
- Patients, patient partners (carers or family members) or patient representatives
- Health economists
- Public health experts

For both HTAs and CPGs, experts in data analysis and synthesis for both quantitative and qualitative data is essential. Expertise in ethical, legal and socio-cultural aspects is likely to be relevant in addition to the expertise listed above to ensure fair and reasonable policy decisions are made. The guideline group/panel is also responsible to for establishing clear *a priori* guideline questions and outcomes (including rating outcomes for importance).

Once the guideline group is established, a key step is the disclosure and handling of potential conflicts of interest of all members of the group. This step is important to keep the process as trusted and unbiased as possible and is a cornerstone of the legitimacy of the guideline recommendations. Before the guideline processes can start, signed agreements outlining roles, expectations, deliverable dates, timelines, and any terms of management are essential.

3.2 Question generation, avoiding duplication and searching for guidelines and HTAs

One of the core aims of COVID-END is to help reduce duplication and better coordinate the evidence syntheses, HTAs and CPGs being produced (i.e., to support the evidence supply side). Therefore, developers are provided with guidance to make the best decisions as to whether the question(s) they wish to address are already answered in a manner that suits their needs and contexts.

This first step is to formulate an answerable question using the PICO or extended PICO format for HTAs and CPGs. See these general resources for developing a PICO and related questions from COVID-END. Well-developed PICO questions are central to developing new guidelines as they help limit the scope, clearly specify the search strategy, guide data extraction and help with formulating or identifying recommendations. Outcomes should be important for decision-making and determine the perspective of the guideline panel. But importantly, outcomes should be important for the people who are affected by the decision, and not only for the researchers (i.e., they should be patient-important outcomes and not clinical indices that have no meaning for patients). Outcomes can be ranked by the guideline panel from critical to not important, should be relevant to the target population and informed by priority setting. Setting questions and outcomes, and rating their importance is done via consensus development by the guideline group.

The second step is to search appropriate databases (such as those described below) for guidelines or HTAs in a database and/or a guideline/HTA clearinghouse. Unlike searching for primary evidence, search strings need not be complex (especially in guideline clearinghouse databases). Start with the most basic elements (such as the Population or Intervention) and expand or add additional elements. When searching for guidelines/HTAs in traditional databases, consider using a guideline search filter and the EUnetHTA Guideline Information Retrieval Guideline as reference. Also search (e.g. via the GIN Library and Registry) for guidelines being planned or currently in development to determine whether there are opportunities for collaboration and consider registering planned guidelines in the GIN Library (free and open to all for registering guidelines).

Below we summarise some resources that provide access to guidelines, from health care related databases, guideline-specific databases and key guideline developers:

Guideline databases and resources" Listing of the names is not an endorsement of quality by COVID-END	
ECRI Guidelines	Repository of objective, evidence-based clinical practice guideline content.
Guideline Central	Guideline library for multiple formats. Requires registration.
Australian Clinical Practice Guidelines	Clinical practice guidelines developed for use in Australian health care settings.
GIN library	Global repository of guidelines and guidelines in development. The GIN website additionally Includes a COVID-19 collection of resources. See: https://g-i-n.net/covid-19
Trip Database	Database for systematic reviews, primary studies and guidelines. Useful PICO search and filter function.
BIGG (PAHO)	Pan American Health Organisation International database of guidelines developed with the GRADE methodology.

HTA clearinghouses	
INAHTA	The international HTA database provides free access to bibliographic information about ongoing and published health technology assessments commissioned or undertaken by HTA organisations from around the world. See also the INAHTA HTA database: https://www.inahta.org/hta-database/
BRISA (PAHO)	Pan American Health Organisation regional database of health technology assessment reports of the Americas.
EUnetHTA	European network for health technology assessment database, including COVID-19 response publications. See also the EUnetHTA ongoing projects (POP) database; methodological guidance; "companion guide" for preparing HTA.

3.3 Assessing guidelines/HTA quality

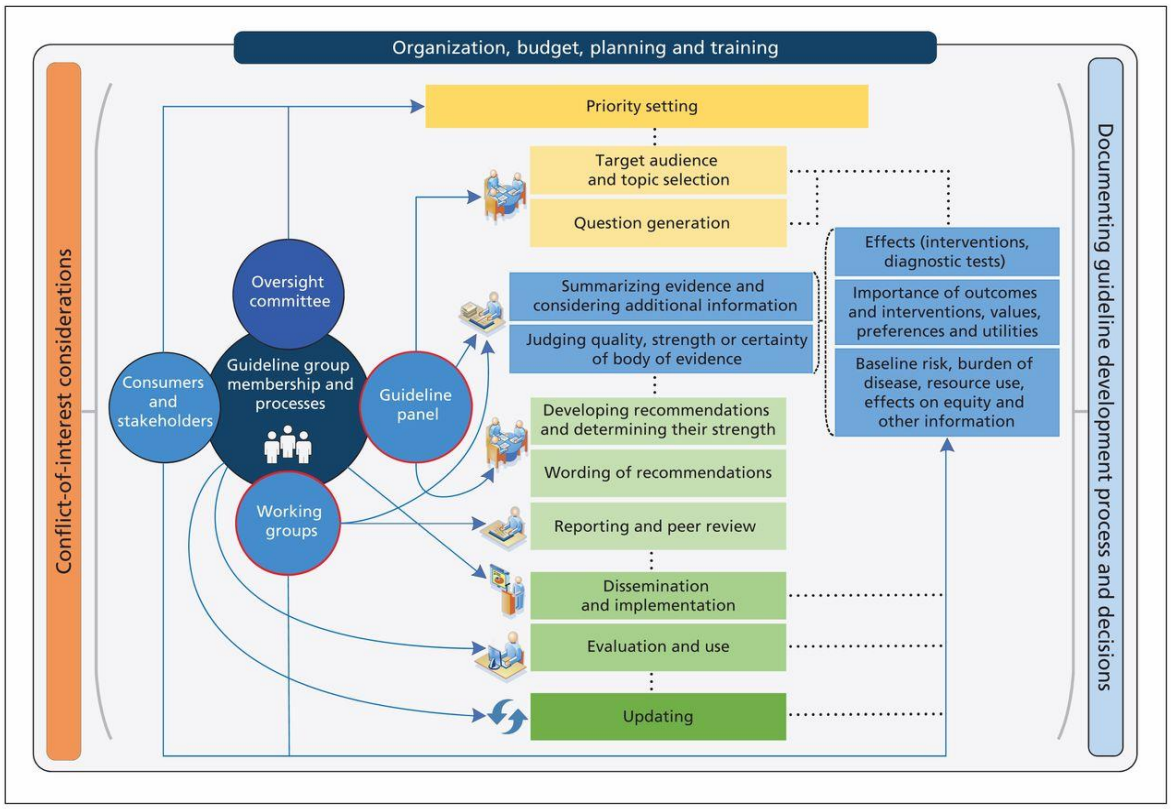
Guidelines that are up to date and of high quality, and that address the health question can be considered for adoption or adaptation. The AGREE II Tool should be used to assess CPG quality. Although there is no consensus on a specific threshold on the AGREE tool scores, we suggest that a high-quality CPG is one that has a score of more than 60% in the "Rigour of methodology domain". Lower thresholds for guidelines developed in the context of pandemics should be considered; however, guidance for this is lacking. No specific tool is currently available to appraise HTAs.

3.4 Guideline development approaches

There are various approaches to developing trustworthy CPGs or HTAs depending on the setting, the experience of the developers, and the available resources. We provide a brief overview and linked resources to three primary approaches, bearing in mind that the concept of living CPGs adds opportunities and challenges to traditional ways of authoring, publishing and updating recommendations for policy and practice.

3.4.1 *De Novo* development

De novo (new) guideline development should be considered when there are no up-to-date, high quality and relevant guidelines that answer the question(s) at hand, or when there is only out-of-date and/or poor quality guidance available. There are various approaches to developing guidelines *de novo*; however, the fundamental steps remain similar. The below figure depicts the typical *de novo* CPG process, also applicable to HTA development. The direction of the guideline or HTA process starts at the top at priority setting and continues down to updating the guidelines.



**See* Schünemann *et al.* (2014) for details.

Some resources for developing CPGs and HTAs *de novo*:

- World Health Organization Handbook for Guideline Development

- Clinical Practice Guidelines we can trust (Institute of Medicine, US)
- Guidelines 2.0 (GIN-McMaster checklist)
- GIN Standards for Clinical Practice Guidelines
- GIN-McMaster guideline development checklist for rapid recommendations
- American College of Physicians Methods for Developing Clinical Practice Guidelines
- NICE Guideline development manual
- NHMRC Guidelines for Guidelines
- HTAi Vortal

3.4.1.1 Methods for assessing the quality of the synthesised evidence

Currently, the most widely accepted and adopted approach to assessing the quality (also called certainty) of the synthesised evidence is the GRADE approach. GRADE (Grading of Recommendations, Assessment, Development and Evaluations) is a transparent framework for developing and presenting summaries of evidence and provides a systematic approach for developing guideline recommendations.

For assessing the quality (or certainty) of the body of evidence, GRADE considers a series of criteria to rate the evidence (including when to upgrade or downgrade) and creates evidence tables that summarise the final quality assessment, per outcome of interest. The 5 criteria advising downgrading the quality (or certainty) of randomised controlled trials (RCTs) are study limitations (risk of bias), publication bias, imprecision, inconsistency and indirectness, and the 3 criteria for potentially upgrading observational evidence are, large magnitude of effect, dose-response gradient, and effect of plausible residual confounding. The GRADE handbook provides more information on how to apply the GRADE approach. When doing qualitative evidence syntheses, GRADE-CerQUAL should be used. Overall quality (or certainty) of evidence (per outcome) is stated as either High, Moderate, Low or Very Low, depending on the grading assessment.

For developing recommendations, the GRADE working group recommends the use of the Evidence-to-Decision framework (EtD). The EtD is an explicit and transparent framework for decision-making that can help to ensure that all important criteria are considered and that decisions are informed by the best available research evidence. EtD considers the following domains: priority of the problem, certainty of the evidence, outcome importance, balance between desirable and undesirable effects, resource use, equity, acceptability, and feasibility. An alternative EtD framework has been recommended by the WHO to include factors that may have been neglected and align better with WHO resources scope, in the WHO-INTEGRATE framework. This framework is applicable to any evidence-based guidance document but may be better suited for decisions about population-level and system-level interventions at the global as well as national levels.

3.4.2 Alternative guideline development methods (Guideline adoption or adaption)

De novo guideline development is often out of reach for resource constrained guideline development teams who may lack the funding and time needed for *de novo* methods. In this case, existing high-quality (e.g. assessed via AGREE II), relevant and up-to-date guidelines can be adopted or adapted for local use.

3.4.2.1 Guideline adoption

Adopting a guideline means to select a guideline (typically the most trustworthy, up-to-date and relevant for a specific context), and use or implement it in the context of interest. Guidelines or recommendations can be considered for adoption if there is no need to change the recommendation, the evidence base, or how it is implemented in a local setting; considering factors such as cost, workforce, health systems, management options and access to care.

3.4.2.2 Guideline adaptation

Although some decision makers and organisations would like to have their own guidelines or their own set of recommendations, it is neither efficient nor a responsible allocation of limited resources to develop new guidelines "from scratch" when existing guidelines can be adopted or adapted to meet the organisation's needs. With the advancement of the methods for developing guidelines in the last decade, in some cases it is very feasible to adapt an existing high-quality CPG to a specific context and obtain high-quality recommendations that are contextually specific. Below, we provide some ideas on what factors should be considered before making a decision about how to adapt evidence-based guidelines, and we propose an algorithm that may be followed to facilitate this decision.

Adaptation is defined by the Guidelines International Network (GIN) as the systematic approach to the modification of a guideline(s) or recommendation(s) produced in one cultural and organisational setting for application in a different context. Adaptation may be used as an alternative to *de novo* guideline development (e.g., for customising (an) existing guideline/s to suit the local context). Guideline adaptation is more common than guideline adoption.

When selecting the best approach for a specific context, development, group, country or clinical scenario, it is advisable to consider the following factors: capacity, costs, contexts and availability and quality of guidelines.

- *Capacity*: This refers to the ability of the guideline development group to execute a particular guideline development process or method, considering available time, scope and expertise. For example, if the guideline development group lacks the appropriate expertise or human resource capacity to conduct a *de novo* guideline development project, then alternative guideline development methods such as guideline adoption or adaptation might be preferable.
- *Costs:* This refers to the monetary and human resource cost of a particular guideline development approach. For example, if the guideline development group lacks appropriate funding for conducting new or updating systematic reviews as part of a *de novo* development process, then more cost effective approaches should be considered.
- *Context*: This refers to the various local, national or regional factors that need to be considered when deciding on a guideline development approach. These might include specific local preferences and sensitivities, competing demands, or specific resources (human and otherwise).
- *Availability and quality of guidelines*: Guidelines adaptation or adoption methods are dependent on a current, high-quality pool of guidelines. If, for a particular topic, no available guidelines exist, then *de novo* guideline development may be the only option. Alternatively, if guideline quality is lacking or out of date, then guideline adaption or updating should be considered. Adaptation processes heavily depend on the quality of the guidelines and evidence syntheses that are available.

We suggest considering the above factors when choosing best approach to the specific context and scenario. More information on different approaches to adapt guidelines are detailed below:

- GRADE-ADOLOPMENT approach
- ADAPTE Toolkit
- RAPADAPTE approach
- PAHO approach
- Adapt, Adopt and Contextualise (SAGE)
- American College of Physicians Guidance Statements Approach using AGREE Instrument

For further examples and resources for alternative guideline development methods, see below.

3.5 Examples and resources of guideline adaptation from LMICs

Tool or resource / topic	Explanation
Alternative guideline development / stroke guidelines	Clinical practice guideline using alternative guideline development methods for stroke in allied health. See linked article and experiences here.
Guideline adaptation / diabetic retinopathy	Describes the process of adapting clinical practice guidelines for diabetic retinopathy in Kenya.
Clinical practice guideline adaption methods	Four case studies from South Africa in mental health, emergency care, health promotion in primary health care and physiotherapy.
Alternative guideline development / emergency Care	Clinical practice guideline development methods and challenges in prehospital care in South Africa. See report here. See case study here. Landscape analysis here.
Contextualise training for guideline uptake	Describes an 8 step process of 'how to' contextualise a training programme to increase CPG-uptake for a targeted audience.
Contextualisation of western stroke guidelines / physiotherapy	Approach taken by the Philippine Academy of Rehabilitation Medicine in contextualising western stroke guidelines for their local setting.
Standardising evidence strength grading for recommendation from multiple CPGs / stroke	This paper outlines a novel process developed and tested in a resource-constrained country (South Africa) to synthesise findings from multiple international CPGs on allied health (AH) stroke rehabilitation.
CPG contextualisation / chronic musculoskeletal pain	Contextualisation of CPGs for chronic musculoskeletal pain in the South African context.
Contextualisation of health promotion guidelines / allied health	A contextualised approach to develop evidence-based health promotion recommendations and present the development of a contextually sensitive and illustrated fit-for-purpose product.

Adapting clinical guidelines in India—a pragmatic approach	As part of a national framework a pragmatic approach was developed to adapt relevant evidence-based guidelines to the Indian context commensurate with local resources. Twelve standard treatment guidelines have been published using this method, with explicit documentation of the adoption and adaptation process.
The 'Adapted ADAPTE': / guidelines adaptation in Egypt	This article presents an 'adapted ADAPTE' methodology to support more clarity, simplicity and practicality. It also aims at avoiding duplication within the process and reducing the resources and time allocated to the CPG adaptation projects.
Guidelines adaptation/ Kazakhstan	This article describes a process of large-scale adaptation of international CPGs with the pilot implementation of selected adapted CPGs and recommendations in Kazakhstan.
Guidelines adaptation/ rheumatology treatment guidelines	Adaptation of the 2015 American College of Rheumatology treatment guideline for rheumatoid arthritis for the Eastern Mediterranean Region: an exemplar of the GRADE Adolopment.
Description of eight frameworks for adaptation of health-related guidelines	This article presents a methodological survey identifying eight proposed frameworks for the adaptation of health-related guidelines.

4. Guideline tools and resources

4.1 Supporting development

Below are tools and resources for supporting the development of *de novo* or alternative guideline processes:

Tool/resource	Explanation
Priority setting resources	A useful scoping review and systematic review of prioritisation approaches in developing new guidelines.

Institute of Medicine (IOM) standards	The IOM (now called the National Academy of Medicine (NAM)) released standards for developing trustworthy CPGs in 2011. To be trustworthy, a CPG should comply with these standards.
GIN Standards	Stated key components and methods of high quality and trustworthy guidelines produced by the Guidelines International Network.
GIN-McMaster guideline resources	GIN-McMaster Guideline Development Checklist extension for rapid recommendations: This list provides principles that serve as guidance for guideline developers responding to urgent situations such as public health urgencies. It was developed as an expansion of the GIN-McMaster Checklist to the development of rapid guidelines. GIN-McMaster Checklist: This checklist contains a comprehensive list of topics and items outlining the practical steps to consider for developing guidelines. The Guideline Development Checklist project is a partnership between the Guidelines International Network and McMaster University and has been translated into 6 languages.
ISPOR HTA Council report on good practices for HTA	Describes good practice components of HTA within the healthcare decision-making process from the ISPOR HTA Council Working Group. Also see: A practical guide for HTA agencies to enhance legitimate decision-making.

4.2 Technology/app-based tools

Below are electronic or app-based tools to assist with evidence synthesis and developing recommendations in guidelines:

Tool/resource	Explanation
GRADEpro GDT	Online guideline development tool allows input from summarising the evidence to making recommendations and dissemination. Uses the GRADE EtD methodology.
MAGIC app	Making GRADE the Irresistible Choice (MAGICapp) is a web-based tool that helps users and organisations to author, publish and update digitally structured Clinical Practice Guidelines based on best current evidence, enabling clinicians and patients to make well-informed healthcare decisions at the point of care. MAGICapp is well suited for living guidelines, as demonstrated for COVID-19 (see website).

4.3 Supporting reporting and appraisal

Below are tools and resources for assessing the quality of guidelines and the quality of the guidelines reporting:

Tool/resource	Explanation	Access
AGREE II	The most widely used tool to assess the quality of the guidelines consists of 23 items that evaluate the	The English version can be accessed here. It provides

	following domains: scope and purpose, stakeholder participation, rigor of development, clarity of presentation, applicability and editorial independence. The tool has been translated to 20 languages.	step by step guidance for users. The website of the AGREE collaboration provides more information, tools and resources useful for developers and users.
Other AGREE tools	The AGREE collaboration has created additional tools to support guideline developers and users. A recent publication provides guidance on how to use them. Below is a summary of these tools and their uses: AGREE-REX: New tool for assessing the quality of CPGs recommendations. It can be used to assess separate recommendations (rather than the whole CPGs) and complement the AGREE II tool. AGREE GRS: The AGREE Global Rating Scale is an abridged version of the AGREE II. It comprises four core items and three overall quality items. It is useful when time and resources are limited as an alternative to AGREE II. AGREE-HS: A recently developed tool designed to evaluation the quality of health systems guidance (HSG) documents, and provides a blueprint for HSG documents development and reporting. CheckUp is a checklist developed to evaluate the completeness of reporting in updated guidelines and as a tool to inform guideline developers about reporting requirements.	AGREE-REX can be accessed here. AGREE-GRS can be accessed here. AGREE-HS can be accessed here. CheckUp can be accessed here.
RIGHT	RIGHT (Essential Reporting Items for Practice Guidelines in Healthcare), is a checklist-based set of reporting standards for healthcare practice guidelines.	More information about the RIGHT statement can be found here.
Other RIGHT resources	The RIGHT statement working group has published public versions of guidelines, adapted guidelines, and others.	These advances can be followed here.
iCAHE Rapid Guideline Appraisal Tool	A rapid and easy-to-use guideline appraisal tool. Excellent for use by busy clinicians.	More information on the iCAHE tools can be found here.

CHEERS	The Consolidated Health Economic Evaluation Reporting Standards (CHEERS) for reporting HTAs.	Paper can be found here. Tool via the equator-network.org can be found here. Related work by Watts (2018) describing how checklists can be used in systematic reviews of HTA.
INAHTA – Quality checklist on reporting	The INAHTA Checklist is an aid to furthering a consistent and transparent approach to HTA. Available in different languages.	Checklist available here.

5. Implementing guidelines

Guideline development should unfold in light of the needs and constraints of guideline implementers, and ideally in collaboration with them. Over the last several years the US Centres for Disease Control and Prevention (CDC) has led the multi-stakeholder Adapting Clinical Guidelines for the Digital Age initiative that has provided strategies and tools for doing this in an 'agile' fashion while making guidance computable. Building on this and related work, the US Agency for Healthcare Research and Quality (AHRQ) has formed the multi-stakeholder ACTS COVID-19 Guidance to Action Collaborative. This Collaborative's goal is to help stakeholders in the US and other countries to improve the flow from COVID-19 studies to systematic reviews to guidelines to action and then to results that feed back into new evidence. A particular focus is ensuring that evidence-based living guidance is broadly applied to improve care delivery processes and outcomes. Collaborative participants are using the 'Knowledge Ecosystem Recommendations page' of the Collaborative's website to synthesize recommended resources, best practices, tools, standards, etc. for each knowledge ecosystem step. This page is intended as a guide and 'front door' to knowledge ecosystem enhancement recommendations and includes pointers to resources from COVID-END (e.g., this document) and many other leading initiatives and organizations.

An updated section for implementing guidelines will be considered in future iterations.

6. Conclusion

COVID-19 has drastically changed the manner and speed in which evidence syntheses and guidelines are developed. It is now more important than ever that guidelines and health technology assessments produced are trustworthy and efficient, yet are delivered in a responsive manner to match evidence and policy needs. The concept of living evidence and guidance with dynamic updating of recommendations once new practice-changing evidence is publicly available has experienced a breakthrough during COVID-19. The need to collaborate closely on evidence syntheses and the creation and updating of high-quality evidence-based CPGs and HTAs are more important than ever, to increase efficiency and reduce the duplication of efforts. This warrants generous collaboration and sharing of evidence and guidance in a globally concerted effort. COVID-END and the recommending working group remain devoted to achieving this goal.

This resource is a work in progress.
For any comments or suggestions please contact covidend@mcmaster.ca.