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Special Article

Diabetes Canada Methods: 2025 GRADE Transformation

Diabetes Canada Clinical Practice Guideline Methods Committee:
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Introduction

Since 1992, Diabetes Canada has prioritized developing high-quality clinical practice guidelines (CPGs) to support health-care providers, people living with or at risk of diabetes, other health-care organizations, and policymakers in making informed, person-centred decisions [1,2]. In January 2025, Diabetes Canada updated its CPG methods to incorporate the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) approach, enhancing the rigour, transparency, and trustworthiness of the guideline development process. This methodological shift also aligns Diabetes Canada with national and international decision-making bodies and promotes consistent, evidence-informed decision-making for diabetes care and prevention [3].

The GRADE approach, first developed in 2000, is now the most widely endorsed international standard for practice guideline development [4,5]. GRADE provides a structured, practical, user-friendly, and sophisticated framework for 2 processes: interpreting the certainty of evidence and moving from evidence to recommendations or decisions. The core components of the GRADE framework are summarized in Table 1 [5]. This Methods chapter replaces the 2018 Diabetes Canada Methods chapter [2] and builds on the strengths and processes of its prior iterations, which highlighted developing evidence-based recommendations based on criteria for assigning levels of evidence, and their applicability to the Canadian context. Key updates are outlined in Table 2.

The objective of this document is to describe the foundational components of the updated methods process adopted by Diabetes Canada to continue to develop trustworthy CPGs.

Process for Guideline Development

Topic selection

A multipronged approach is used to select new chapter topics and to identify previously published chapters requiring an update. This includes annual surveys of health-care providers, people living with diabetes, and methodologists; informal reviews of recent literature and published guidelines; open invitations to members of the diabetes community for topic suggestions; and consideration of topics submitted from external groups and persons.

The CPG Steering Committee, composed of clinical experts from varied disciplines (e.g. endocrinology, family medicine, internal medicine, nursing, nutrition, pharmacy, and others), guideline methodologists, and people with lived experience of diabetes, then reviews the available data collected and votes on topics to be prioritized. A majority vote (i.e. $\geq$75%) determines the topics chosen for development of a new chapter and/or an update of a previously published chapter.

New chapters or updates are likely to be prioritized if any of the following criteria are met: a) new priority topic or area with equipoise is identified with relevant implications for clinical decision-making warranting practice guidance; b) new, potentially practice-changing evidence arises for existing or new interventions; c) potential change in context, including change in significance of an existing intervention, availability of new interventions, change in availability or system-level factors (e.g. costs, regulatory approval), perceived change in perceived efficacy in a population or subpopulation, or change in importance of effects of an intervention to individuals living with diabetes; and d) consideration of Inclusion, Diversity, Equity, and Accessibility (IDEA) principles merit language revision to improve specificity for individuals and communities.

Chapter panel selection

Once chapter topics have been determined, a chapter clinical lead is selected by the CPG Steering Committee through consensus. A member of the Methods Committee serves as a methods co-lead and supports integration of the GRADE approach throughout the guideline development process. Clinical and methods co-leads are ideally free of any relevant conflicts of interest (COI) whenever possible; where not possible, efforts are made to minimize the impact of identified conflicts on guideline deliberations and final recommendations.

To recruit chapter panel members for each prioritized chapter, a callout for expression of interest is posted on various Diabetes Canada publications and public channels. Interested candidates complete a guideline-specific skills matrix form, as well as a COI form. Potential candidates are formally reviewed and discussed by the CPG Steering Committee, who then vote to select candidates to represent the chosen chapter topics. To ensure the chapter panel is balanced in all factors, including geography, sex, and discipline or specialty, IDEA principles are incorporated throughout.

Target audience

Although the intended users of the CPGs are health-care professionals involved in the care of people living with or at risk of

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Table 1
Core components of GRADE approach [5]

Component	Description
Formulation of clinical questions	• Clinical questions are prioritized based on importance to people living with or at risk of diabetes, and structured using the PICO format to guide evidence synthesis and associated decision-making. • Outcomes relevant to people living with or at risk of diabetes are identified and their relative importance determined. Possible factors that can influence the relative effects of interventions (i.e. effect modifiers or subgroup effects) are pre-specified.
Evidence synthesis and rating certainty of evidence	• Relevant evidence for each PICO question is identified and summarized. Intervention effects are often summarized in both relative (e.g. relative risks, odds ratios, hazard ratios) and absolute (e.g. risk differences) terms. • Certainty (quality) of evidence is assessed for each outcome and judged as being either high, moderate, low, or very low. Domains incorporated in the assessment include risk of bias, inconsistency, indirectness, imprecision, and publication bias.
Evidence summaries and moving from evidence to recommendations	• Summary of Findings tables are frequently used to provide a structured summary of relative and absolute effect estimates, outcome level certainty ratings, and plain language summaries. • A diverse interdisciplinary chapter panel, including persons with lived experience relevant to the topic and methodologists experienced with GRADE, is recruited. • The chapter panel considers the balance of anticipated desirable and undesirable effects, certainty of evidence, and underlying values and preferences of people living with or at risk of diabetes. Additional factors include resource use (including costs), feasibility, acceptability, and equity.
Strength and direction of recommendations	• The chapter panel determines a clear direction (i.e. in favour of the intervention or of the comparator) and strength (i.e. strong or conditional/weak) for each recommendation.

GRADE, Grading of Recommendations, Assessment, Development, and Evaluation; *PICO,* Population, Intervention, Comparison, Outcomes.

diabetes, recommendations are also intended to inform shared decision-making for people living with or at risk of diabetes and their caregivers. Given a substantial proportion of this care occurs in the primary care setting, the guidelines prioritize a primary care focus and a "generalist" overview where possible.

Harmonization of guideline methods

Elements covered by the Appraisal of Guidelines for Research and Evaluation (AGREE) II instrument are incorporated into the guideline development process [6]. Ongoing efforts to achieve harmonization in guideline methods and processes with other Canadian guideline bodies are underway. These organizations include the Canadian Cardiovascular Harmonization of National Guidelines Endeavour (C-CHANGE), of which Diabetes Canada has been a collaborative member since 2009 [7].

Guideline Development

Table 1 provides a comprehensive overview of the process of formulating clinical questions, summarizing relevant evidence, rating certainty of evidence using GRADE, producing evidence summaries, and moving from evidence to recommendations [5]. Specific aspects pertaining to each step are outlined in further detail below. While the methods are framed for interventional questions, the principles discussed here are applicable across other topics, such as diagnosis, prognosis, and prevention questions.

Formulation of clinical questions

For each new or updated chapter, chapter panel members begin by specifying focussed clinical questions for which recommendations are warranted using the PICO (Population, Intervention, Comparison, Outcomes) format. PICO provides a structured and explicit framework for defining precise questions [5,8]. In developing clinical questions, chapter panel members prioritize those that are common in practice, those relating to uncertainty in practice resulting in variation, those that have not been previously addressed, or where new evidence has emerged. The clinical and methods co-leads will facilitate panel discussions regarding PICOs to ensure questions are specific, well-structured, and meaningful.

The chapter panel members subsequently identify and prioritize outcomes of interest based on their importance to people living with or at risk of diabetes. Consistent with GRADE methods, a maximum of 7 outcomes that are critical and/or important to decision-making are specified.

Evidence synthesis and rating certainty of evidence

A librarian develops a sensitive and comprehensive search strategy guided by the PICOs to identify relevant published, peer-reviewed literature in the English language, using validated search strategies. A minimum of 2 electronic databases are searched, and the clinical and methods co-leads coordinate the process of identifying evidence addressing the prioritized questions. The process follows 2 steps. First, existing systematic reviews are identified and assessed, using tools such as AMSTAR to guide appraisal of review quality [9,10]. If a review is identified but is judged to not include most recent evidence, chapter panel members may undertake an update of an existing review to inform recommendations. Second, where no adequate systematic reviews are available and where sufficient resources are available, a de novo systematic review or rapid review will be conducted to address the PICOs. The latest edition of the Cochrane Handbook for Systematic Reviews of Interventions can be used as a reference for developing systematic reviews.

The certainty of evidence—formerly referred to as quality of the evidence— is determined for each prioritized outcome, and judged as being either high, moderate, low, or very low. The 5 domains incorporated in the assessment include risk of bias, inconsistency, indirectness, imprecision, and publication bias. Evidence from randomized controlled trials generally begins as high certainty evidence, and evidence from nonrandomized studies of interventions may begin as low certainty depending on the risk of bias tool used. Certainty may then be further decreased due to limitations in 1 or more GRADE domains. In specific circumstances pertaining to nonrandomized studies (where there is evidence of a large intervention effect or a dose-response gradient), certainty may also be rated up.

Evidence summaries and moving from evidence to recommendations

Methodologists provide support for the use of GRADE Summary of Findings tables to provide a structured summary of relative and absolute effect estimates, outcome-level certainty ratings,

Table 2
Summary of key changes to Diabetes Canada CPG methods

Method domain and key changes
Formulation of clinical questions
• Ten to 15 PICO questions are defined and prioritized per chapter (no specific limit on number of questions per chapter was previously established).
• PICO generation adheres to a structured process in alignment with GRADE and is published with each chapter.
• Prioritized PICOs undergo both internal and external peer review.
Identifying and appraising the evidence
• Preexisting systematic reviews are identified from the literature by a librarian. In the absence of an applicable, current, and comprehensive systematic review, a de novo systematic review and/or rapid review is conducted (where possible, in collaboration with an evidence centre or experts).
• Where a de novo systematic review is not feasible, externally conducted evidence syntheses and most recently available evidence are carefully and systematically considered by the panel.
• Certainty of evidence is assessed and presented for each prioritized outcome.
Grading recommendations and moving from evidence to recommendations
• As per Table 1.
Update planning
• The chapter panel recommends timelines for updating the new chapters and/or individual recommendations they are involved in developing.
Conflict of interest (COI) disclosures and management
• Updated COI disclosure forms and policies were developed to identify, evaluate, and manage relevant financial and intellectual relationships for all chapter panel members and CPG Steering Committee members involved.
• Ongoing efforts are iteratively underway to optimize processes to minimize relevant COI and their impact on guidance produced.
Other changes
• Methods co-chairs are assigned to each chapter to ensure methodological rigour and adherence to revised standards and processes outlined.

CPG, clinical practice guideline; *GRADE*, Grading of Recommendations, Assessment, Development, and Evaluation; *PICO*, Population, Intervention, Comparison, Outcomes.

and plain language summaries. Chapter panel members are subsequently convened to move from evidence to recommendations.

First, chapter panel members determine which perspective to adopt—either that of an individual person (applied in all or almost all chapters and recommendations) or that of a population (including societal or health system perspectives).

Second, they determine which decision threshold to use to make judgements. To base judgements on what people living with or at risk of diabetes would consider important, guideline panels frequently use the minimal important difference (MID), which is the smallest effect considered important, as the decision threshold for interpreting intervention effects. Evidence to inform the choice of MID for decision threshold may be derived from existing literature, clinician experience, or focus groups with people living with or at risk of diabetes.

Third, the chapter panel members review the Summary of Findings tables and consider the balance of benefits and harms across prioritized person-important outcomes and associated certainty of evidence. Perceived values and preferences of average people living with or at risk of diabetes underlie how the chapter panel members interpret the trade-off across intervention effects on outcomes and directly bears on the recommendations made. Finally, the chapter panel members consider secondary factors relevant to decision-making, such as resource use (including costs), feasibility, acceptability, and equity. The GRADE Evidence-to-Decision framework facilitates the process of moving from evidence to recommendations by incorporating those factors [11].

Strength and direction of recommendations

Using GRADE, chapter panel members ultimately make recommendations, which are action statements, with a clear direction and strength. The direction of a recommendation can be in favour of an intervention or a comparator (i.e. against an intervention). The strength of a recommendation can be strong or weak (synonym conditional). Chapter panel members make strong recommendations when they perceive that the desirable effects of an intervention clearly outweigh the undesirable effects or vice versa; when the balance of effects is less clear, chapter panel members make weak recommendations. Strong recommendations are typically supported by high or moderate certainty evidence for person-important outcomes relevant to the decision; where only low or very low certainty evidence is available, weak recommendations are more appropriate (with few exceptions). Recommendation wording makes clear their associated strength; the language “recommend” (or similar) is used for strong recommendations, whereas “suggest” is used for weak recommendations. Each recommendation is clearly presented and accompanied by associated Summary of Findings tables, an Evidence-to-Decision framework, a clear rationale or justification, and practical information for its application.

Internal and External Review

Each new and updated chapter undergoes an internal review by the CPG Steering Committee, as well as external review by clinical experts in the field. This occurs at 2 time points in the guideline development process: a) after development of PICOs and outcomes; and b) after drafting of the final chapter and recommendations. Internal and external reviews provide an opportunity for feedback and critical revisions to guideline recommendations and text. Following revisions, it is returned to the chapter co-leads and other panel members for a second review. The final version is then reviewed and approved by the CPG Steering Committee. Finally, the guideline manuscript is submitted to the *Canadian Journal of Diabetes* for publication.

Disclosure of COI

All members involved in guideline development are required to complete Diabetes Canada’s standard COI and disclosure form. The disclosure form is reviewed by the Methods Committee and managed as per Diabetes Canada’s disclosure and COI policy. Any perceived or actual potential conflicts are identified in the beginning of the guideline process and are reported transparently during guideline dissemination.

Chapter panel members are volunteers and receive no remuneration or honoraria for their participation.

Update Planning

Chapter panel members recommend timelines for updating chapters and/or individual recommendations they are involved in developing. All chapters are also reviewed on a biennial basis by the CPG Steering Committee to assess their currency, ongoing relevance, and need for updating.

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