AGREEing on Canadian cardiovascular clinical practice guidelines

James A Stone MD PhD FRCPC FAAVCPR FACC¹, Leslie Austford RN MN², John H Parker RN MN³, Norm Gledhill PhD FACS⁴, Guy Tremblay MD FRCPC⁵, Heather M Arthur RN BScN MScN PhD NFESC⁶; on behalf of the Canadian Vascular Coalition*

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The use of clinical practice guidelines (CPGs), particularly the routine implementation of evidence-based cardiovascular health maintenance and disease management recommendations, affords both expert and nonexpert practitioners the opportunity to achieve better, and at least theoretically similar, patient outcomes. However, health care practitioners are often stymied in their efforts to follow even well-researched and well-written CPGs as a consequence of contradictory information. The purposeful integration and harmonization of Canadian cardiovascular CPGs, regardless of their specific risk factor or clinical management focus, is critical to their widespread acceptance and implementation. This level of cooperation and coordination among CPG groups and organizations would help to ensure that their clinical practice roadmaps (ie, best practice recommendations) contain clear, concise and complementary, rather than contradictory, patient care information. Similarly, the application of specific tools intended to improve the quality of CPGs, such as the Appraisal of Guidelines for Research and Evaluation (AGREE) assessment tool, may also lead to improvements in CPG quality and potentially enhance their acceptance and implementation.

Key Words: Best practices; Canadian health care system; Clinical practice guidelines; Health care policy; Health promotion; Health outcomes; Risk factors

In theory, there is no difference between theory and practice.

In practice there is.

– Yogi Berra

In theory, the daily clinical care of patients by health care practitioners is very similar to the care suggested by rigorously developed, evidence-based clinical practice guidelines (CPGs) and their integrated health maintenance and disease management recommendations. In practice, however, health care professionals may be aware of published guidelines for the management of chronic diseases such as cardiovascular disease, but only a minority routinely follow evidence-based recommendations in their daily practice (1,2). This clinical phenomenon has frequently been referred to as the 'care gap' and current evidence suggests that when this gap is narrowed or closed, clinical outcomes are significantly improved (3,4). Perhaps surprisingly, this care gap is not secondary to any overt or measurable knowledge gap regarding what information is contained within national CPGs, but instead represents a distinct 'action gap' in the behaviour of health care professionals in the application of CPG recommendations to their own patients (5). Tenable explanations for this action gap include the possibilities that some medical and health care professionals may actually distrust CPGs, they dismiss them as oversimplified, 'cookie-cutter' or 'one-size fits all' approaches to the complex art of clinical practice, or they may believe

S'entendre sur les guides de pratique clinique en santé cardiovasculaire au Canada

Le recours aux guides de pratique clinique (GPC), notamment l'application systématique des recommandations probantes sur le maintien de la santé cardiovasculaire et la prise en charge des maladies, permet à la fois aux praticiens spécialisés et non spécialisés d'obtenir de meilleures issues et, en théorie, des issues similaires pour les patients. Cependant, les praticiens de la santé sont souvent contrecarrés dans leurs efforts pour respecter les GPC, même s'ils sont bien documentés et font l'objet de recherches solides, en raison d'information contradictoire. Il est essentiel de procéder à l'intégration et à l'harmonisation volontaires des GPC canadiens en santé cardiovasculaire, quels que soient leurs facteurs de risque précis ou leur mode de prise en charge clinique, pour assurer l'acceptation et l'adoption généralisées des GPC. Ce niveau de collaboration et de coordination entre groupes et organisations de GPC contribuerait à garantir que leurs carnets de route de pratiques cliniques (c'est-à-dire les recommandations de meilleures pratiques) contiennent de l'information sur les soins aux patients qui soit claire, concise et complémentaire, plutôt que contradictoire. De même, l'application d'outils précis conçus pour améliorer la qualité des GPC, tels que l'outil d'évaluation AGREE pour évaluer les lignes directrices en matière de recherche et d'évaluation, pourrait permettre d'améliorer la qualité des GPC, de même que leur acceptation et leur adoption.

that CPGs lag behind recent convincing evidence and choose to follow their own evidence (6-8). This lamentable situation for patients comes from, in part, the belief among some key opinion leaders that "evidence- or experience-based practice" is infinitely more reliable and clinically more relevant than contemporary CPGs (9).

Alternatively, the seemingly ad hoc clinical implementation of cardiovascular CPGs among vascular health care professionals may well be driven by the practitioners' perceptions of individual patient risk (1). Thus, the action gap among physicians who perceive a low vascular risk may be significantly higher for their patients than among those who perceive a higher vascular risk. However, regardless of the reasons for this action gap, properly researched, well-written, evidence-based vascular CPGs should empower, rather than disenfranchise, practitioners who consistently and conscientiously integrate evidence-based practice with practice-based evidence in the successful delivery of effective patient care services.

PRACTICE-BASED EVIDENCE AND EVIDENCE-BASED PRACTICE

The origin of the word 'guideline' comes from the practice of mountain guides who marked a climbing trail up and down a particular mountain using ropes and stakes. The climbing pathway identified by

¹University of Calgary; ²Cardiac Wellness Institute of Calgary, Calgary, Alberta; ³Canadian Cardiovascular Society, Ottawa; ⁴York University, Toronto, Ontario; ⁵Centre de Santé Publique-03, Quebec, Quebec; ⁶McMaster University, Hamilton, Ontario

Correspondence and reprints: Dr James A Stone, University of Calgary, Suite #803-3031 Hospital Drive Northwest, Calgary, Alberta T2N 2T8.

Telephone 403-571-8614, fax 403-571-6973, e-mail jastone@shaw.ca

*The current membership of the Canadian Vascular Coalition includes Drs Heather Arthur, Norm Campbell, Denis Drouin, Ross Feldman, George Fodor, Rene Gagnon, Norm Gledhill, Jacques Genest, Stewart Harris, David Lau, Lawrence Leiter, Andrew Pipe, Michael Sharratt and Guy Tremblay.

Chair: Dr James A Stone

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this technique was deemed safe and user-friendly, and was primarily intended for persons with less climbing or mountaineering experience. Although there were innumerable routes up and down any one mountain, the use of the guideline provided the fastest, surest and safest way for experts and nonexperts alike.

In a similar manner, contemporary cardiovascular CPGs juxtapose the best available basic science and clinical trial evidence (ie, which mountaineering routes proved to be the safest and best) with expert input (ie, how the disasters could have been predicated and prevented), in an effort to promote the safest patient care and facilitate the best clinical outcomes. And although there may exist as many ways to clinically manage patients as there are patients, not all of these practice variations provide the best outcomes for the largest number of individuals. However, as with the original rope-and-stake guidelines, the use of evidence-based CPGs allows nonexperts the opportunity to care for their patients and clients in a manner similar to the best experts in the field. In addition, contemporary CPGs can also inform the practice of experts by evaluating and consolidating overwhelming volumes of scientific information and affording them the opportunity to continuously improve their patient practice patterns and outcomes by constantly using the best available information.

But guidelines are simply that. They are not, or at least should not be, iron-clad standards of clinical care that impede or prohibit experienced practitioners from the intelligent and insightful application of evidence-based practice to their individual patients (10). Ideally, well-written CPGs are clinically robust and contain sufficient, high-level scientific evidence to allow the integration of health maintenance and disease care recommendations into usual care environments in which practice-based evidence, achieved through hard-won experience, is recognized and respected (11). Most importantly, CPGs should emphasize that individual health care professionals, in consultation with their patients or clients, are solely responsible for deciding when CPGs should be applied, suspended or amended (10). Well-informed, arguably expert health care professionals practising contemporary medicine must be free, and freely encouraged, to apply or not apply existing guidelines as a reflection of the art of practice, depending on particular patient care circumstances. Thus, evidence-based practice should complement, not compete with, practice-based evidence. However, in those circumstances in which practitioners feel the need to deviate from well-established and well-recognized CPGs, ideally, the logic and rationale for this decision should be documented in the patient's medical record and discussed with the patient.

In reality, contemporary CPGs are less draconian than some suggest, and the majority of Canadian cardiovascular CPGs are extensively and exhaustively researched, developed and laboriously written by large and diverse groups of stakeholders (10,12-15). They are not standards of practice or absolute therapeutic prescriptions that must be fully and unquestionably applied to all clinical practice environments and patient encounters. They are documents whose primary goal is to 'guide' expert and nonexpert practitioners through a confusing myriad of scientific information in an effort to improve knowledge translation and, ultimately, enhance clinical outcomes. For example, publications such as the Canadian Cardiovascular Society (CCS) consensus conferences on cardiovascular care are developed and written primarily for specialist audiences (ie, experts). However, the CCS has advanced the philosophical position that these *de facto* CPGs should also contain specific strategies to facilitate their implementation and use by non-specialist practitioners (ie, nonexperts) (16).

BENEFITS AND LIMITATIONS OF CPGs

The potential benefits, limitations and possible harm derived from CPGs have been explored in relation to patients, health care professionals and health care systems (17,18). The potential benefits to patients and clients include improved outcomes, favourable influences on public health and health care policy, and the development and dissemination of consumer-friendly versions of guidelines. The potential

benefits to health care professionals include improved quality of clinical decisions in association with support for quality assurance activities and outcomes assessments. Additional benefits include the identification of scientific knowledge gaps during the guidelines' development process and, therefore, opportunities for further basic science and clinical research. Consumer versions of guidelines have the potential to empower patients and assist them with adhering to prescribed therapies or interventions. The publication of program performance, as a putative reflection of guideline adherence, may also improve program visibility and credibility (18,19). Last, the implementation of guidelines may result in reduced health care expenditures and improved efficiency and cost-effectiveness. Indeed, there is a commonly held belief among some practitioners that this economic incentive is precisely why CPGs are so popular with health care administrators, government bureaucrats and third-party payers (17).

The limitations of CPGs are frequently and loudly trumpeted by those disinclined to adhere to health maintenance or disease management recommendations not of their own design or inception (6-9). With respect to individual patient care, CPGs that are inflexible may help to standardize care and increase the consistency of service delivery, but may ultimately limit individualized care (17,18). Lay versions of CPGs may be susceptible to misinterpretation, leading to direct negative influences on the health care provider-patient relationship. Clinical practice guidelines and health practice recommendations with biased or inaccurate scientific information may adversely affect public policy and patient outcomes (17,18). The fact that some Canadian CPGs, out of sheer necessity, have been developed in conjunction with industry support, has led to the conclusion that all such CPGs are inherently biased and may have limited value or clinical applicability (20,21). However, there is very little, if any, evidence to support the belief that CPGs generated primarily through industry support are inherently biased or inaccurate as a consequence of potential conflicts of interest arising from the relationship between the CPG authors and their industry sponsors (22).

The benefits and limitations of CPGs also extend to their use (or abuse) in medicolegal practice. Members of the legal profession, including judges, are increasingly turning to CPGs to help them to determine whether appropriate care was provided to patients (23). When applied in this manner, judges may assess the quality of the guideline by its scientific credibility, the prestige of the publishing organization, the development process, its clarity, its carefulness and its cognoscibility. However, if the cost-effectiveness analysis of any particular CPG is used as the rationale to limit otherwise effective medical care, health care practitioners must be aware that without the requisite organizational or legislative legitimization to facilitate this particular use of CPGs, they may very well have failed in their fiduciary responsibility to serve as the primary advocates for their patients. The adverse medicolegal implications of these circumstances for health care practitioners are self-evident.

In addition to their benefits and limitations, both CPG developers and users must be aware of the potential for CPGs to cause harm. Conflicting CPGs or clinical practice recommendations from different professional bodies or agencies (eg, different treatment targets for blood pressure, cholesterol or blood glucose control) are not only frustrating for health care providers, but the inevitable confusion they produce may indirectly harm patients through the delivery of suboptimal care by informed but confused practitioners. Furthermore, the desire by some experts to produce CPGs from minimal or nonexistent scientific evidence risks significant harm to the CPG process and patient care by potentially legitimizing what may only be health care dogma. Once such CPGs are published, it can be very difficult to find granting agencies willing to fund investigators and researchers interested in determining the integrity and validity of the clinical practice recommendations contained within suspect or substandard CPGs. Similarly, CPGs that erroneously conclude that a treatment or procedure lacks any evidence of benefit may inappropriately result in reduced or lost funding opportunities for future research into the

legitimacy of those very guidelines (17). In addition, guidelines may cause harm to health care systems in general when strict adherence to a particular guideline dramatically increases use, compromises operating efficiency or actually results in the wasteful allocation of limited resources (17,18). Finally, patient care or diagnostic algorithms that are overly simplistic or require very costly interventions may result in harm to patients or the clinical care system itself through inappropriate resource use (17,18).

THE IMPORTANCE OF CPG INTEGRATION AND HARMONIZATION

With the myriad of CPGs that primary care and other health care practitioners must be familiar with, there is a real and pressing need for guidelines in related fields of clinical practice to be integrated, harmonized and, as is safely and scientifically possible, simplified. Thus, in the area of cardiovascular health maintenance and disease management, there exists an opportunity to streamline and simplify the management of cardiovascular disease risk factors such as diabetes, dyslipidemias, hypertension, obesity, physical inactivity and tobacco abuse. Many of the therapeutic lifestyle change interventions and pharmacological therapies, presented as health maintenance and disease management recommendations from organizations such as the Canadian Association of Cardiac Rehabilitation, the Canadian Diabetes Association, the Canadian Council for Tobacco Control, the Canadian Hypertension Education Program, the Canadian Society for Exercise Physiology, the Canadian Working Group on Hypercholesterolemia and other Dyslipidemias, and Obesity Canada can be formulated into simple, consistent and easily understandable messages (Table 1). Purposeful cardiovascular CPG integration can greatly assist and inform chronic disease care programs, such as cardiac rehabilitation, and can also be significantly beneficial to primary health care practitioners (10). In addition, the integration and harmonization of cardiovascular CPG development, dissemination and evaluation can afford health care practitioners the opportunity to absorb the clinically relevant parts of CPGs into their practices without worrying about whether the guideline had been rigorously researched or whether it suggested different treatment targets for the same cardiovascular risk factors in exactly the same patients. Similarly, if Canadian cardiovascular care stakeholders agree on a uniform methodology regarding the development, dissemination and clinical evaluation of guidelines in conjunction with a uniform system for the classification of scientific evidence and CPG-generated practice recommendations, patients themselves are likely to be the overwhelming winners. These potential patient benefits, however, require health care practitioners to become increasingly familiar with and comfortable using CPGs and clinical practice recommendations in daily practice.

The development of simple, similar key messages within an environment in which those key messages are integrated and harmonized to prevent intra- and interdisciplinary conflicts, can, at least theoretically, improve clinical outcomes. Furthermore, fully integrated and harmonized CPGs can promote greater knowledge transfer and facilitate the process of continuous professional development among health care professionals. However, caution is required in this integration process to ensure that only high-quality CPGs, ie, CPGs that adhere to the Appraisal of Guidelines for REsearch and Evaluation (AGREE) (see below), are consolidated in this fashion. Otherwise, the consolidation of poor-quality CPGs may further compound their potential to adversely impact both patient outcomes and health economics by institutionalizing or systematizing inferior patient care practices.

With respect to CPG dissemination and implementation, a sound, theoretical and scientifically valid strategy within which health maintenance or disease management recommendations are most likely to be effective, and under which specific circumstances, remains elusive (17,24). This concept is supported by those who believe that while the guideline development process in Canada is becoming more rigorous,

TABLE 1
Common messages in vascular protection (developed by the Canadian Vascular Coalition)

Know your vascular risk

- Use cardiovascular risk prediction tools such as Framingham, SCORE-CANADA or United Kingdom Prospective Diabetes Study (UKPDS) to determine a patient's absolute risk of future events
- Ensure that patients understand their personal risk

Know your vascular treatment targets

- Use national cardiovascular clinical practice guidelines to determine the treatment targets required to significantly reduce your patient's risk
- Inform patients of the treatment targets they need to be aiming for

Know how to reach to those vascular treatment targets

- Use the treatment recommendations from national cardiovascular clinical practice guidelines
- Emphasize the synergetic effects between therapeutic lifestyle changes (TLC) and pharmacological intervention
- Ensure that initial therapy always includes TLC, but for some intermediate-risk patients and most high-risk patients, simultaneous initiation of pharmacological intervention may also be required
- Educate and inform patients of the constant need for TLC and pharmacological interventions when more aggressive vascular protection is indicated

improvements can be made in the use and identification of efficacious, clinically effective and cost-effective methods of guideline implementation by clinicians (24). As one potential means to improve CPG implementation, it has been suggested that a shift in emphasis away from efforts to modify physician behaviour to the adoption of processes and frameworks that support the desired behaviours (eg, better remuneration for better patient outcomes), may be a more effective means of guideline implementation (18,25-28). Finally, the methodology for evaluating a guideline's effect on health care outcomes also needs to be developed. The Canadian Hypertension Education Program and the Canadian Cardiovascular Society Heart Failure Consensus Conference are pioneering this critical aspect of CPG efficacy (15,29). These outcome assessment initiatives are a key component of sustained CPG implementation and will eventually need to be adopted by CPG groups throughout Canada.

In reality, the entire process of CPG development, from publication through to ascertaining potential impact on clinical practice and health outcomes, represents a significant long-term and recurring investment for not-for-profit organizations. To be successful in realizing this long-term commitment, organizations producing high-quality CPGs must agree to a clearly articulated and replicable process that encourages the establishment of benchmarks for CPG development, integration, harmonization, dissemination, implementation and evaluation. Perhaps most importantly, differences in national cardiovascular CPGs with respect to parameters such as risk stratification, risk intervention thresholds and risk factor treatment targets should be resolved at the national level through the cooperative use of expert opinion and the best available scientific evidence (30).

THE AGREE INSTRUMENT

In 1998, an international group of scholars and clinical investigators formed the AGREE Collaboration (31). Their goal was to develop an assessment tool for the appraisal of CPG quality. The AGREE assessment tool describes six key areas for the evaluation of CPGs (Table 2). The application of this tool to CPGs allows for the standardized assessment and grading of CPGs with respect to their overall quality. For example, the recently published CCS Heart Failure Consensus Conference was evaluated in this manner before publication, and the CCS has endorsed the use of the AGREE instrument to ensure the production of high-quality CPGs (15,16).

TABLE 2
Principal categories of the Appraisal of Guidelines for REsearch Evaluation (AGREE) instrument for assessing clinical practice guidelines (31)

Scope and purpose
• Overall objectives are specifically described
• Clinical questions are specifically described
• Target patient population is specifically described
Stakeholder involvement
• Development includes stakeholders from all relevant professional groups
• Patient views and preferences are sought
• Target users are clearly defined
• The guideline has been piloted among target users
Rigour of development
• Systematic methods are used to search for evidence
• Evidence selection criteria are clearly described
• Recommendation formulation methodology is clearly described
• Health benefits, risks and side effects are used in formulating recommendations
• Explicit link between scientific evidence and recommendations
• External review by experts not involved in the development process
• Update procedure is clearly identified
Clarity and presentation
• Recommendations are specific and unambiguous
• Different treatment options are clearly presented
• Key recommendations are easily identifiable
• Guidelines are supported by tools for application
Guideline applicability
• Potential barriers to recommendation implementation are discussed
• Potential cost implications of recommendations are considered
• Key outcome review/audit targets are described
Editorial independence
• Guidelines are editorially independent from funding body
• Potential conflicts of interest of stakeholders are identified

Certainly, not all Canadian cardiovascular CPG groups will agree with all aspects of the AGREE tool. Some will find the process of second and third table review simply too costly or, more likely, too time-consuming, rendering guidelines and recommendations obsolete by the time a very large and diverse number of stakeholders have reviewed them. However, by building sufficient rigor into the evidence-based aspects of guidelines development, widespread consultation outside of a large group of core stakeholders is unlikely to provide significant additional benefit. And, when the number of stakeholders directly involved with the CPG development process is large and professionally robust, the probability that a small number of individuals will successfully hijack or prejudice the CPG production process for personal, professional or commercial purposes is virtually eliminated.

This type of broad stakeholder input into CPG development represents a form of continuous peer review and at least partially mitigates the need for AGREE-adherent CPGs to undergo extensive external peer review by small numbers of experts not involved in that particular CPG process. Indeed, medical editors and health care policy advisors should be wary of those individuals or organizations that feel they should have the right to require substantive changes to AGREE-adherent CPGs and recommendations before publication. Allowing this type of post hoc CPG contamination perverts and renders redundant the entire CPG process that has preceded peer review. Of course, prepublication peer review should take place, and both editors and reviewers should look for and use objective assessment tools, such as the AGREE instrument, in this process. This would afford the reviewers the opportunity to inform the CPG development and production

process before publication without the right to unilaterally demand substantial or substantive changes. Once this process of objective external peer review is complete, the CPG authors and editors must then have the opportunity to respond to the issues raised through peer review before publication.

The AGREE assessment tool can also be retroactively engineered to facilitate contemporary CPG development. This is suggested by the AGREE Collaboration developers as a potentially successful strategy for ensuring both structured and methodologically rigorous CPG development methodology (31). Indeed, the AGREE instrument is recognized as the 'business standard' in the development of CPGs and may be viewed as the de facto CPG for the production of CPGs (10,16,19). By prospectively applying the principles of the AGREE assessment tool to the CPG production process, stakeholder groups significantly increase the likelihood of ultimately producing a scientifically valid, high-quality, clinically useful and relevant document. This prospective AGREE process has already been applied to cardiovascular CPGs in Canada (10). However, it should be acknowledged that there is currently no evidence to document that adherence to the AGREE principles necessarily ensures the production of high-quality CPGs or improvements in use and patient outcomes.

SUMMARY

The use of CPGs, particularly as they apply to the practice of cardiovascular health maintenance and disease management, affords nonexpert and expert practitioners the opportunity to achieve potentially better and, hopefully, similar patient outcomes. Thoughtful, insightful, engaging and, thus, potentially beneficial CPGs seek to minimize or avoid patient care circumstances in which health care practitioners simply dismiss them without sufficient reflection or, conversely, regard them as stone tablets whose every statement is to be followed without question (32). The purposeful integration and harmonization of cardiovascular CPGs, in their development phase, would help to ensure that they contain complementary, not contradictory, knowledge transfer strategies. Indeed, such a process has been active in Canada since 2002.

The Canadian Vascular Coalition (CVC) is an ad hoc group of cardiovascular CPG editors and authors engaged in informal discussions regarding the need for collaboration among CPG groups to ensure the publication of complementary and consistent health maintenance and disease management recommendations. The goals of the CVC are completely aligned with the principles of the 1998 International Heart Health Conference – the Singapore Declaration and other national cardiovascular health promotion groups, which emphasize that cardiovascular researchers and clinicians must assume leadership roles in the areas of health care policy and CPG implementation if they wish to substantially further and enhance cardiovascular disease care and prevention (30,33). The CVC hopes to encourage rather than enforce CPG collaboration by recognizing that the elimination of conflicting information and the integration of common messages into CPG practice recommendations greatly enhances the likelihood of those recommendations being integrated into daily patient care practices.

Encouraging CPG producers to adhere to the AGREE instrument or a similar, objective external CPG assessment tool may improve the quality of CPGs. Although this initiative alone will not be sufficient to achieve widespread CPG implementation, it will almost certainly increase stakeholder confidence in routinely applying cardiovascular CPG recommendations. By agreeing on AGREE, patient outcomes may well be improved. Failure to reach consensus with most of the AGREE Collaboration principles, or at the very least to embrace the spirit of AGREE and develop a 'made-in-Canada' solution, may threaten the clinical applicability of even high-quality, nationally promoted CPGs. Most importantly, the failure of national organizations involved in the development, dissemination and evaluation of cardiovascular CPGs to substantially integrate and harmonize their CPGs

only increases the probability of implementation failure. Thus, if the present circumstances persist, the action gap between theory and practice will persist and patients will not benefit from the full weight of scientific evidence shown to improve clinical outcomes. In practice, and not just in theory, it is time for a change.

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