Canadian Quality Circle pilot project in osteoporosis

Rationale, methods, and feasibility

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ABSTRACT

PROBLEM ADDRESSED Family physicians are not adequately following the 2002 Osteoporosis Canada guidelines for providing optimal care to patients with osteoporosis.

OBJECTIVE OF PROGRAM The Canadian Quality Circle (CQC) pilot project was developed to assess the feasibility of the CQC project design and to gather information for implementing a national study of quality circles (QCs). The national study would assess whether use of QCs could improve family physicians' adherence to the osteoporosis guidelines.

PROGRAM DESCRIPTION The pilot project enrolled 52 family physicians and involved 7 QCs. The project had 3 phases: training and baseline data collection, educational intervention and follow-up data collection, and sessions on implementing strategies for care.

CONCLUSION Findings from the pilot study showed that the CQC project was well designed and well received. Use of QCs appeared to be feasible for transferring knowledge and giving physicians an opportunity to analyze work-related problems and develop solutions to them.

RÉSUMÉ

PROBLÈME À L'ÉTUDE Les médecins de famille ne suivent pas bien les lignes directrices de pratique clinique 2002 pour le diagnostic et le traitement de l'ostéoporose au Canada.

OBJECTIF DU PROGRAMME Le projet pilote canadien des cercles de qualité (CQC) a été développé pour évaluer la faisabilité d'un tel type de projet et pour recueillir des informations en vue d'instaurer une étude nationale sur les cercles de qualité (CQ). L'étude nationale permettrait de savoir si l'utilisation des CQ est susceptible d'améliorer l'adhésion des médecins de famille aux lignes directrices sur l'ostéoporose.

DESCRIPTION DU PROGRAMME Le projet pilote a recruté 52 médecins de famille participant à 7 CQ. Il comprenait 3 phases: formation et collecte des données de base; intervention éducationnelle avec collecte des données de suivi; et sessions sur la mise en pratique des stratégies de traitement.

CONCLUSION Les résultats de cette étude pilote montrent que le projet des CQC est bien conçu et bien accueilli. L'utilisation des CQ semble adéquate pour le transfert de connaissances et pour offrir au médecin une occasion d'analyser des problèmes en lien avec son le travail et d'y trouver des solutions.

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The 2002 Osteoporosis Canada (OC) Clinical Practice Guidelines for the Diagnosis and Management of Osteoporosis provide evidence-based strategies for preventing, diagnosing, and managing osteoporosis.[1,2] Passive dissemination of the guidelines, while it will likely increase awareness of osteoporosis, is unlikely to change family physicians' management of the condition. Many studies have confirmed that, even though guidelines have been published, osteoporosis is still inadequately evaluated and treated.[3-7] Similar situations are well documented in other therapeutic areas.[8-10]

Given that patients with osteoporosis are not receiving optimal care,[11] the Canadian Quality Circle (CQC) project was developed to collect and analyze data and feedback from a cohort of family physicians regarding their practices in diagnosis and management of osteoporosis. From these data, gaps in care could be identified and more appropriate and effective interventions could be implemented through use of quality circles (QCs).[12,13]

Objectives of the program

The CQC project was designed to be conducted in 2 parts: an Ontario-Manitoba pilot study and a national study. Objectives of the pilot study were to assess the feasibility of the study for collecting meaningful data, to identify gaps in knowledge and care based on the findings, and to implement a multifaceted educational intervention through QCs to reduce deficiencies.

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From the experience gained in the pilot study, we were able to design the larger national study to assess whether use of QCs can improve family physicians' adherence to the 2002 OC guidelines. This article describes the rationale for and methods of the pilot study and reports outcomes bearing on the feasibility of using the pilot project's design for the national study.

Program description

The CQC project involved a broad coalition of stakeholders and was under the guidance of the CQC steering committee, which was composed of leading physicians and scientists, representatives from the Ontario College of Family Physicians, industry scientists, and representatives from OC. The protocol was approved by the Health Research Ethics Board and the St Boniface General Hospital Research Review Committee in Manitoba and a research ethics board in Ontario.

Recruitment

Three groups of physicians were recruited for the study: facilitators, osteoporosis specialists, and circle members. All participants provided written informed consent. Physicians were selected based on their interest in osteoporosis and the fact that their practices were focused on women's health.

The CQC facilitators were local family physicians recruited and trained specifically to lead study meetings. They were chosen by the CQC steering committee for their skills in facilitating small-group activities, their known interest in chronic disease management, and their involvement in continuing professional development.

Physicians specializing in osteoporosis management were assigned to each QC to assist participants in addressing clinical matters. These specialists were recruited from the local referral network on the recommendation of the facilitators of each QC.

Circle members were family physicians recruited from specific geographic regions across Canada based on a list of names developed by the facilitator of each QC (ie, colleagues known to the facilitator). This list was supplemented with physicians from the membership lists of the provincial colleges of family physicians. Each potential member received an introductory letter and was invited to join the CQC project. Facilitators or the project manager followed up by telephone. Up to 15 physicians were enrolled in each geographic area.

Fifty-two circle members participated in the pilot project. Two dropped out of the study before follow-up data collection. The remaining physicians formed 7 QCs. Six were in Ontario: Toronto core (n = 6), Toronto east (n = 5), London (n = 8), Kingston (n = 11), Hamilton-Niagara (n = 7), and Ottawa (n = 7); and 1 was in Manitoba: Winnipeg (n = 6). About 36% of circle members were women, 69% of the physicians were between 40 and 59 years old,

39% came from solo practices, 42% came from group practices, and 11% came from family medicine units.

Overview of project phases

The project was divided into 2 parts: part 1 was the pilot study, and part 2 was the national study. The pilot study was conducted to assess the feasibility of the study design and to gather information necessary for implementing the national study. Based on results from the pilot study, the methodology of the national study was slightly modified to improve physician education and data collection and interpretation.

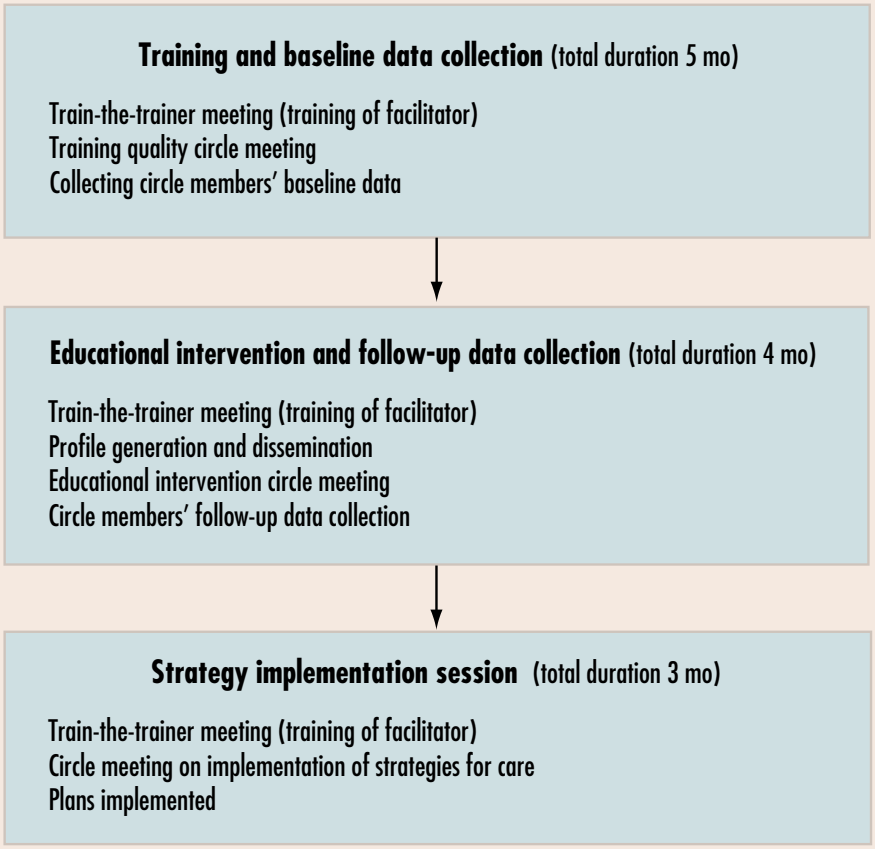
The pilot project had 3 phases: training and baseline data collection, the educational intervention and follow-up data collection, and a session on implementing strategies for care (**Figure 1**). Participants received 12 Mainpro-C credits or 24 Mainpro-M1 credits for participating. Mainpro® credits are awarded by the College of Family Physicians of Canada to acknowledge participation in accredited continuing medical education. All phases of the pilot project incorporated QC meetings led by the facilitators. Before the meetings, train-the-trainer workshops were conducted to assist facilitators in their role as group leaders.

Phase 1: Training and baseline data collection. Training was conducted through baseline circle meetings and included a thorough review of the study protocol, a review of the CQC project data-collection form (CQC-form), and a brief discussion about the OC 2002 osteoporosis guidelines. Following the training meeting, CQC members collected baseline data on patients from their practices using the CQC-form to ascertain how they currently diagnosed and treated osteoporosis. Completed CQC-forms were faxed to a central data-collection centre. The steering committee met to evaluate the data and generate key learning points. Profiles, "snapshots" of how members managed osteoporosis, including risk-factor identification, bone mineral density testing, and therapy, were created from the baseline data. These profiles, displayed graphically with brief text summaries, permitted anonymous comparisons of individual circle members' practices.

Phase 2: Educational intervention and follow-up data collection. The educational intervention was initiated at follow-up QC meetings. The intervention consisted of presentation and discussion of baseline individual, group, and overall profiles. The profiles were provided to participating members before the meetings. Educational materials related to the 2002 OC guidelines were distributed and discussed, and a workshop was conducted. Facilitators led discussions with their circles to identify barriers to managing osteoporosis and strategies for improving patient care. Following the intervention, each member collected data on additional patients using the CQC-form. On this second lot of data, the steering committee followed the same process outlined above to generate key learning points, create profiles, and plan interventions.

Phase 3: Strategy implementation session. After the second phase of data collection, meetings were conducted over a period of 3 months to discuss how to implement strategies for care. Discussions were based on individual, group, and overall profiles generated from both baseline and follow-up data. Descriptions of progress made by incorporating strategies identified in earlier phases of the project

Figure 1. Three phases of the Canadian Quality Circle pilot project



were shared among the groups. Based on major findings from the profiles, members discussed additional measures they should implement in their practices to adhere more closely to the 2002 OC guidelines.

Procedures for data collection

Patient eligibility criteria were being female, 55 years old or older, and known to their physicians, and having made at least 2 visits to their physicians in the 24 months before enrolment. For each data-collection period, 30 different patients were randomly selected.

Patient screening was designated for 1 day each week and was repeated for 12 weeks. At the end of each screening day, a clinic nurse or assistant randomly selected 3 patient charts from all the charts of patients visiting that day who fit the eligibility criteria.

After randomly selecting 3 patients for enrolment in the CQC project, the clinic nurse or assistant placed the CQC-form in each of their charts and gave the charts to the physician for completion. The physician then completed the CQC-form for each patient. All CQC-forms were faxed to a central site, and the information was incorporated into an electronic database for analysis. A total of 1505 and 1359 CQC-forms were collected during phases 1 and 2, respectively.

Educational workshop

The QC Educational Intervention Workshop was developed by the Core Educational Committee, which consisted of members of OC, representatives from the Ontario College of Family Physicians, leading physicians and scientists, and industry partners. The "Breaking News for Breaking Bones" accredited workshop was developed over a period of 18 months. The workshop was based on a provincial learning needs assessment and data from focus groups of family physicians from each of the provinces to ensure the curriculum material would meet the needs of physicians across Canada. The 2002 OC guidelines were used as the main evidence-based reference for the program. The needs assessment consisted of a 10-item survey that was mailed to approximately 3500 family physicians.

The workshop facilitator presented an overview of osteoporosis and led a case discussion. For the first workshop, the facilitator selected 1 of 3 cases, the one that seemed best for meeting the educational needs of participants: case 1, "Managing osteoporosis in the older adult"; case 2, "Osteoporosis in the postmenopausal woman"; or case 3, "Osteoporosis in the 50-year-old healthy woman." The case was selected based on a pre-evaluation questionnaire sent to individual QC members before the meeting.

Multifaceted educational intervention

Our educational intervention had 8 key components (**Table 1**). Studies have demonstrated that single-component interventions are unlikely to change clinical practice,[14-16] and that combining various techniques into 1 multifaceted intervention could be more effective.[17,18]

Table 1. Techniques used in the multifaceted educational intervention strategy

Educational materials
• Dissemination of Osteoporosis Canada guidelines
• Osteoporosis update (newsletter)
• Osteoporosis educational workshop developed through a needs-assessment instrument
Interactive small-group meetings
• CQC meetings
Use of opinion leaders
• CQC facilitators, who were local family physicians, were trained before each meeting (train-the-trainer)
Audit and feedback
• CQC members completed the standardized CQC-form to audit their practices
• Data from the form were used to generate physician profiles (snapshots of physicians' practices in managing osteoporosis)
Reminders
• Standardized CQC-forms were completed over several weeks (3 to 4 patients/wk)
Multiprofessional collaboration
• CQC osteoporosis specialists attended each meeting to assist in addressing clinical matters
Financial interventions
• Physicians were given $10 for each completed CQC-form
Patient-mediated interventions
• Physicians distributed information on osteoporosis and educational materials to patients

CQC—Canadian Quality Circle.

Feasibility of the pilot-project design

Data from the pilot study were used to assess the feasibility of the CQC project design and to gather information for implementing the national study. Findings were determined from data compiled from family physician focus-group discussions and responses to questionnaires, facilitator and specialist focus-group discussions, ongoing communication between researchers and study participants, and from information gleaned from the research group and the CQC steering committee.

The findings indicated that family physicians perceived that the CQC project was effective (**Table 2**). Circle members thought that the data-collection process and CQC meetings were effective (**Tables 3** and **4**), that the data collection and management system appeared to work well, and that the assignment of site and participant identification numbers to the CQC-forms was effective in maintaining confidentiality. Monthly updates to

Table 2. Feasibility of the pilot project: *Family physicians' perceptions of the effectiveness of the research (N = 50).**

STATEMENT	NO. OF PHYSICIANS WHO AGREED WITH STATEMENT (%)
The CQC initiative had either "some" or "a great deal" of influence on how physicians managed osteoporosis	49 (98)
Patients benefited "a little" from physicians' participation in CQCs	22 (45)
Patients benefited "most definitely " from physicians' participation in CQCs	26 (53)

CQC—Canadian Quality Circle.
*N does not always equal 50 owing to missing data.

Table 3. Feasibility of the pilot project: *Evaluation of the CQC-form and process (N = 50).**

STATEMENT	NO. OF PHYSICIANS WHO AGREED WITH STATEMENT (%)
CQC-form was easy to use	45 (90)
CQC-form could be completed in a reasonable amount of time	47 (94)
Providing guidelines was useful for completing the CQC-form	47 (94)
It was reasonable to collect data on 30 patients per phase	40 (80)
Remuneration ($10/form) to complete the CQC-form was sufficient	34 (69)

CQC—Canadian Quality Circle.
*N does not always equal 50 owing to missing data.

Table 4. Feasibility of the pilot project: *Evaluation of CQC meetings (N = 50).*

STATEMENT	NO. OF PHYSICIANS WHO AGREED WITH STATEMENT (%)
Format of the meetings was conducive to learning	48 (96)
Meetings enabled physicians to compare their profiles with those of their peers	49 (98)
All concerns were addressed at the meetings	48 (96)
Information received at the meetings was practical	49 (98)
Attendance of CQC specialists increased the value of meetings	47 (94)
Length of the CQC meetings was appropriate for holding participants' attention	46 (92)
CQC meetings' locations and venues were convenient	42 (84)

CQC—Canadian Quality Circle.

members that compared the number of data-collection forms completed by their circles with the number completed by other circles encouraged participants to continue to collect data and helped maintain the general momentum of the project. Finally, 84% of circle members agreed that the profiles helped them understand their current practice patterns and decide on areas that needed improvement.

DISCUSSION

The principle of QCs originates from the assumption that those involved in certain work are best qualified to identify deficiencies in it and suggest improvements to it.[12,19] A variety of health care settings have implemented QCs for a number of years. There are reports of the effect of QCs on first-year medical students' satisfaction[20]; the effect of QCs on British general practitioners' management of chronic diseases[21]; and the effect of QCs on nurses' job tension, role clarity, quality of work life, organizational commitment, overall job satisfaction, absenteeism, and voluntary turnover.[22] In Germany, 25 QCs involving 243 general practitioners were used for developing clinical guidelines in general practice. Results of the 106 QC meetings indicated that QCs were effective at improving doctor-doctor relationships; at fostering consensus on diagnostic procedures, therapy, and local guidelines; and at encouraging the exchange of practice experiences among colleagues.[23]

The QC methodology has also been used for improving management of patients with osteoporosis.[24,25] Such circles consisted of interdisciplinary groups of physicians, and results indicated that rates of successful patient treatment improved.[25] Our study was designed to examine the barriers and facilitators to implementing evidence-based guidelines in primary care settings, including evaluation of practice environments, general opinions, and physicians' knowledge and attitudes. We developed a multifaceted intervention that could be implemented through QCs to improve knowledge transfer. It involved practice audits, feedback on performance by peers (using profiles), interactive discussion of evidence, small-group educational workshops led by local family physicians (facilitators) and supported by local osteoporosis specialists, diagnosis and treatment reminders (CQC-forms), and making personal plans for improving clinical management of osteoporosis in accordance with the OC 2002 guidelines. An important component of our intervention was that many professional stakeholders were engaged as partners in the project to ensure that an integrated plan was followed and that consistent messages were communicated across the network. This integrated osteoporosis management

program is the first of its kind to be implemented in Canada especially for family physicians.

Evaluation of the pilot project

Family physicians thought the CQC project was well designed, and the intervention plan was well received. The success of the intervention plan was due to several factors, including the train-the-trainer sessions for facilitators; the prior development of PowerPoint presentations summarizing the main points of discussion during each meeting; the materials for participants, such as binders to hold correspondence and profiles; and the ongoing reminders of meeting dates, venues, and agendas.

Providing participants with profiles summarizing their fracture-prevention treatment strategies appeared to be an effective approach, both to making physicians aware of their current practices and to allowing them to compare their practices with those of their peers. The database application successfully addressed challenges, such as authenticating and authorizing data, and other critical functions.

EDITOR'S KEY POINTS

- Quality circles are based on the assumption that those involved in the work are best qualified to identify deficiencies in it and suggest improvements to it.
- Research has shown that quality circles can be valuable for developing clinical guidelines, transferring knowledge, and improving work and learning environments.

POINTS DE REPÈRE DU RÉDACTEUR

- Les cercles de qualité sont fondés sur l'hypothèse voulant que les personnes qui participent à un travail sont les plus compétentes pour en cerner les failles et y trouver des solutions.
- La recherche a montré que les cercles de qualité peuvent être utiles pour élaborer des lignes directrices de pratique clinique, transférer des connaissances et améliorer les milieux de travail et d'apprentissage.

Suggestions for improvement

Although participants in the pilot project thought the study was successful and efficient, they did suggest ways to improve the project design for the national study. They suggested using the facilitators more effectively in the recruitment process to build on their local networking capabilities. They also suggested shortening the time between recruitment and baseline meetings to maintain enthusiasm and involvement in the project.

Facilitators in the pilot project recommended that the steering committee provide a more clearly defined role for the osteoporosis specialists in advance of meetings and have more face-to-face contact with the research team and their peers during the study, both in preparation for the meetings and as a debriefing exercise. Although most participants agreed that the CQC-form was easy to complete, they said that questions related to the use of pharmaceuticals were difficult to interpret and that efforts should be made to balance the amount of information required with the need to assess additional factors that influence treatment decisions.

With regard to the educational workshop, they suggested that too much information was provided and that the focus of the workshop should be narrowed. They also suggested that simpler and clearer QC profiles could help in interpreting findings from particular graphs. The methodology of the national study will be modified based on these recommendations.

Conclusion

Use of QCs as an integrated disease-management process provides an opportunity for physicians from similar work environments to analyze work-related problems and discuss solutions to them systematically. Physicians said that the QC program was a valuable method of receiving information and feedback about their practices in an appropriate and personalized manner. The national study will test whether a program using QCs can improve family physicians' care of patients with osteoporosis based on the OC 2002 guidelines. We hope the program will identify barriers and help participants develop strategies to address these barriers in clinical practice to optimize diagnosis and treatment of osteoporosis.

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Competing interests

Dr Papaioannou *has been on the advisory boards of and had prior consultations with Proctor and Gamble, Sanofi-Aventis, Novartis, Merck Frosst, Amgen, and Eli Lilly.* **Dr Hodsman** *has been a member on the Medical Advisory Boards of and has received annual payments from Proctor and Gamble, Sanofi-Aventis, Eli Lilly, Merck Frosst, NPS Allelix, Zelos Therapeutics, and Servier. He has been sponsored as a speaker by Merck Frosst, Servier, and Proctor*

and Gamble. **Dr Kvern** *is a member of the Alliance for Better Bone Health advisory committee. For the past 5 years, he has received funding from Merck Frosst Canada, Proctor and Gamble, and Sanofi-Aventis to help develop and deliver osteoporosis-related educational programs.* **Mr Johnstone** *and* **Ms Plumley** *are employees of Proctor and Gamble, which sponsored this project.* **Dr Doupe** *received no direct benefits from the Alliance for Better Bone Health for participating in this research.* **Dr Katz** *was a Director of the Primary Health Care Research Unit commissioned to perform this pilot study and was paid upon completion of this work by Alliance for Better Bone Health. His contract specifically limited any potential input into research findings and their interpretation.* **Dr Adachi** *has been consulted by Amgen, Eli Lilly, GlaxoSmithKline, Merck Frosst, Novartis, Proctor and Gamble, Sanofi-Aventis, and Servier.*

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