

Evaluation of a continuous quality improvement program in anticoagulant therapy: Feasibility, satisfaction and perception

This study was a part of a larger, ongoing pilot project, Programme ACO. Given the innovative nature of this pilot project, we aimed to evaluate the participants' satisfaction as well as quantify the effectiveness of the offered activities. We also wanted to determine the importance of having a facilitator available to offer assistance to the participants.

Cette étude fait partie d'un projet pilote en cours de grande envergure, le Programme ACO. Compte tenu de la nature innovante de ce projet pilote, notre objectif était d'évaluer la satisfaction des participants et de quantifier l'efficacité des activités offertes. Nous souhaitons également déterminer l'importance de disposer d'un facilitateur pour offrir de l'aide aux participants.

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ABSTRACT



Background: The ACO Program (Programme ACO), a continuous quality improvement program (CQIP) in anticoagulation therapy, was offered in community pharmacies as a pilot project.

Objective: To evaluate the participants' appreciation for the various activities of the program.

Methods: Participants had access to training activities, including an audit with feedback, online training activities (OTA), clinical tools and support from facilitators. Cognitive behavioural learning determinants were evaluated before and 5 months after the beginning of the program. Participants' satisfaction and perception were documented via online questionnaires and a semistructured interview.

Results: Of the 52 pharmacists in the ACO Program, 47 participated in this evaluation. Seventy-seven percent of the participants completed at least 1 OTA and 6% published on the forum. The feeling of personal effectiveness rose from 8.01 (7.67-8.35) to 8.62 (8.24-8.99). The audit and feedback, as well as the high-quality OTA and their lecturers, were the most appreciated elements.

Discussion: There was a high OTA participation rate. The facilitators seemed to play a key role in the CQIP. The low level of participation in the forum reflects the known phenomenon of social loafing. Technical difficulties affecting the platform and data collection for the audit with feedback constituted limitations.

Conclusion: The CQIP in anticoagulation therapy is appreciated by community pharmacists and is associated with an improved feeling of personal effectiveness. *Can Pharm J (Ott)* 2016;149:352-361.

Introduction

In Quebec, the follow-up of anticoagulated patients is conducted by the family physician, a cardiologist, a nurse or a pharmacist working in an anticoagulation therapy clinic or in a community pharmacy. According to a recent survey of

pharmacist owners in Quebec, 44% of pharmacies offer a clinical follow-up with a dose adjustment for patients treated with warfarin. This is the most frequently offered clinical service in community pharmacies.¹ Only a few studies have evaluated the quality of the follow-up offered in

community pharmacies. According to 3 studies conducted outside of Canada, the amount of time patients followed by pharmacists spent in the INR therapeutic window was between 56% and 77.5%.²⁻⁵ It is unclear whether similar results would be obtained in Quebec. Therefore, Quebec's community pharmacies would benefit from a quality optimization process.

A continuous quality improvement program (CQIP) is a systematic and continuous approach with the objective of examining the work processes of an organization in order to identify those that are problematic and correct them.⁶ Such an approach has already been shown to be more effective than the passive dissemination of information in scientific journals or conferences.⁷ To be useful, a CQIP must be personalized, offer a continuous and timely follow-up and be both simple and easily accessible.⁷⁻⁹ The audit with feedback improves clinical practices.⁹ To limit costs and promote participation, the program's requirements must be moderate.¹⁰⁻¹²

The ACO Program (Programme d'amélioration de la qualité de la surveillance de la thérapie anticoagulante orale en pharmacie communautaire [Programme ACO]), a CQIP, was put in place to evaluate and optimize the quality of the follow-up provided by community pharmacists to patients taking an oral anticoagulant. This is the first CQIP implemented in pharmacies across the province of Quebec. The program offers several training activities, including an audit with feedback, online training activities (OTA), clinical tools and support from facilitators.

The purpose of the MonACO study was to document the level of appreciation of pharmacists participating in the ACO Program by evaluating 1) the cognitive behavioural determinants, 2) their satisfaction and 3) their perception of the program.

Methods

Study design and oversight

The pharmacists taking part in the ACO Program were invited to participate in the MonACO study, a pre-post pilot study without a control group that included both qualitative and quantitative evaluations. The participants were recruited between March 2015 and September 2015. Questionnaires autoadministered online via SurveyMonkey were completed at the beginning of the study (T0), 5 months later (T5) and following each OTA. A subsample of participants

KNOWLEDGE INTO PRACTICE



- To be successful, a continuous quality improvement program (CQIP) should include a multifactorial process. As well, all employees of an organization should be involved in the CQIP.
- A facilitator who is in contact with the participants of a CQIP is essential for change.
- Any activity that is proposed in a CQIP should be user friendly. An online platform is recommended and very appreciated by the participants.

was invited to complete a semistructured qualitative interview at T5. The research protocol was accepted by the ethics committees of both the Centre de Recherche du CHUM and the Cité de la Santé Hospital. The pharmacists signed a consent form and did not receive monetary compensation.

Study population

To be eligible, pharmacists had to participate in the ACO Program (Appendix 1) and agree to participate in the MonACO study. Pharmacists were invited to participate in the MonACO study during the program's first training activity, the audit with feedback.

ACO Program

The ACO Program was offered via the Réseau-STAT, a networking and research Web platform specifically designed for community pharmacists. Participants of the program had to identify between 5 and 20 anticoagulated patients from their pharmacy and complete an online questionnaire for each patient. Based on this information, the quality of the follow-up provided to each patient treated with warfarin/nicoumalone or a novel oral anticoagulant was evaluated. The program began with an audit with feedback. Each facilitator presented the results of the audit during a conference call with all the participating pharmacists from each pharmacy and directed them toward specific training activities likely to improve their practice. Pharmacists from an anticoagulation therapy clinic supported the facilitators. These facilitators were residents in the advanced pharmacotherapy master's program. Throughout the program, they were responsible for answering the participants' questions via an online discussion forum.

MISE EN PRATIQUE DES CONNAISSANCES



- Pour qu'un programme d'amélioration continue de la qualité (PACQ) fonctionne bien, il doit inclure un processus multifactoriel. De plus, tous les employés de l'organisation doivent être impliqués dans le PACQ.
- Un facilitateur en contact avec les participants du PACQ est essentiel pour que des changements se produisent.
- Toute activité proposée dans le cadre d'un PACQ doit être conviviale. On recommande l'emploi d'une plateforme en ligne, ces plateformes étant très appréciées par les participants.

The OTA included 6 educational videos pertaining to the choice of anticoagulant therapy in atrial fibrillation, food and drug interactions, the management of complex situations and the documentation of information for the anticoagulated patient. The clinical tools included patient evaluation and follow-up forms, practice guidelines, clinical guides and scientific articles. Finally, 4 clinical cases published in the forum allowed the participants to put their knowledge and skills to the test. The forum was also used for case discussion between the participants and the facilitators. Participation in the OTA was self-reported and recorded when the questionnaire was completed at T5.

Cognitive behavioural determinants

Pharmacists' appreciation was documented based on the models of Haccoun and Kirkpatrick.^{13,14} According to these models, training activities are more likely to modify clinical practices when they influence the feeling of personal effectiveness (FPE) and motivation, when the participants feel they can influence their learning and their own work (perceived control) and when they feel supported as they modify their practice (perceived support).

These cognitive behavioural determinants were evaluated with questionnaires inspired by existing questionnaires that had been shown to be reliable (Cronbach $\alpha = 0.85-0.9$).¹⁵ The questionnaires developed for the MonACO study were revised by an expert (Céline Bareil, PhD) and tested by 2 independent pharmacists. They used a Likert scale of 0 to 10. All questionnaires were autoadministered via SurveyMonkey. The initial questionnaire (T0) included 37 questions with the purpose of measuring the FPE,

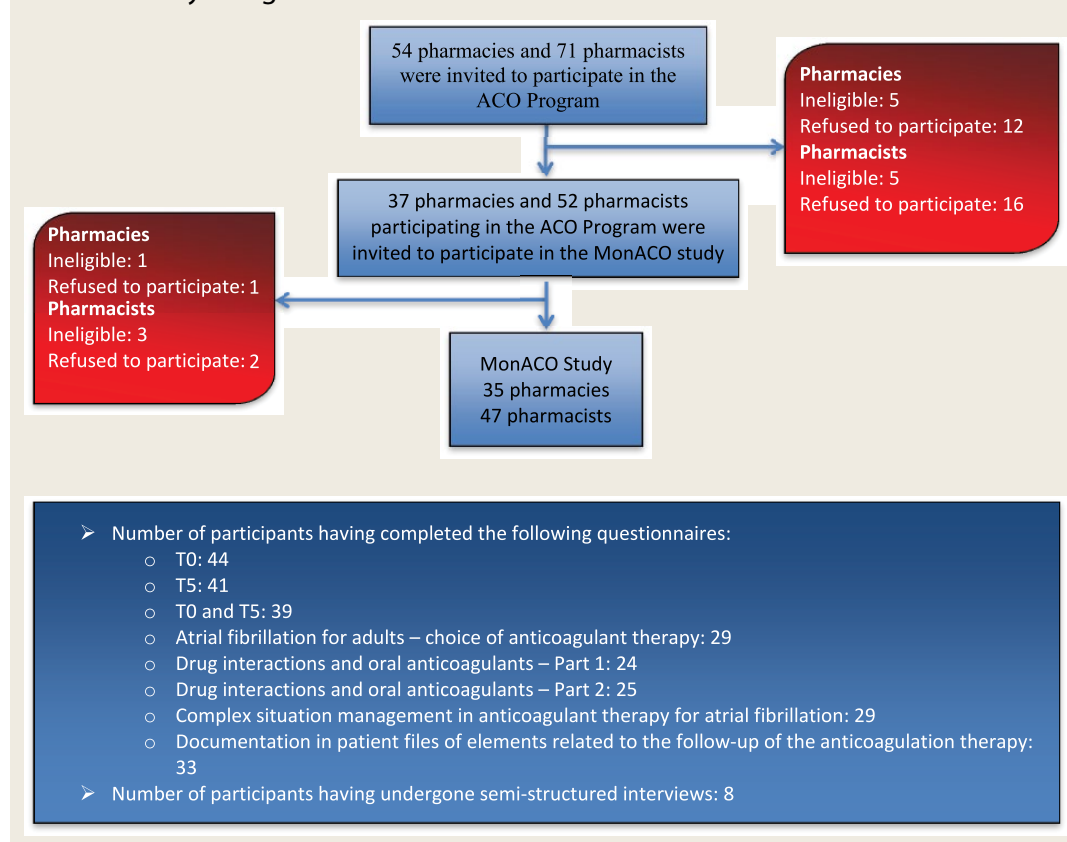
perceived control, expected support and motivation to learn. The questionnaire administered at T5 included 52 questions with the purpose of measuring the FPE, control and support received, motivation to transfer knowledge, satisfaction, usefulness, perception of the capability to modify practices and benefits of the follow-up. The questionnaires completed after each training included 9 or 10 questions evaluating the FPE, satisfaction and usefulness. A mean score was calculated for each determinant. Possible scores ranged from 0 to 10, with 0 indicating the participant completely disagreed with the statement and 10 indicating the participant completely agreed. Satisfaction was also evaluated through semistructured interviews.

Perception of the ACO Program

Semistructured interviews of 8 participating pharmacists were conducted to document their perception of the program. The interview grid (see Appendix 2) included 5 main questions and 26 follow-up questions inspired by models found in the literature.¹⁶ It was revised by an expert in qualitative research and knowledge transfer (Fabie Duhamel). Telephone interviews of a subsample of 8 pharmacists were conducted and recorded on an audiorecording device by a member of the research team between 24 August and 8 September 2015. To report the participants' statements as faithfully as possible, 2 investigators (A.C. and A.L.) listened to the recordings and gathered the key information anonymously. Data collected were classified according to different themes in order to facilitate the qualitative analysis.

Statistical analyses

The population's characteristics are presented as averages (standard deviation) and proportions for continuous variables and categorical variables, respectively. The percentages of subjects who participated in the forum, as well as the activities recommended and not recommended by the facilitator, were calculated. For each cognitive behavioural determinant, a mean score (95% confidence interval [CI 95%]) was calculated at T0 and T5, as well as the mean score change (T5-T0) when both questionnaires had been completed. A per protocol analysis was used to demonstrate the magnitude of the potential impact of the ACO Program on the participants. Cronbach α coefficient was calculated to evaluate the interitem feasibility and coherence

FIGURE 1 Study design

of questionnaires T0 and T5. The statistics were generated using SPSS 20.0.0 software.

Results

In total, 47 of the 52 (90%) pharmacists taking part in the ACO Program agreed to participate in the MonACO study (Figure 1). Questionnaires T0 and T5 were completed by 44 (94%) and 41 (87%) participants, respectively. Thirty-nine (83%) participants answered both questionnaires. Twenty-four (51%) to 33 (70%) participants completed a questionnaire following the completion of each OTA. A total of 8 semistructured interviews were conducted.

Two-thirds of participants were women (Table 1). Most were salaried pharmacists (77%), compared with 23% who were pharmacist owners. Approximately 38% were accredited by a faculty of pharmacy in Quebec to supervise pharmacy students. On average, the pharmacists had undergone 3 hours of continuing education in anticoagulant therapy during the past 2 years.

Thirty-six pharmacists (77%) completed at least 1 OTA (Table 2). The participants completed an average of 69% of the training activities

recommended by the facilitator, compared with 54% for activities that had not been recommended. The average participation rate was 60%, and participation rates for specific OTA varied between 51% and 77%. Only 3 pharmacists (6%) published on the forum to respond to clinical cases or ask questions.

Fifteen participants (32%) underwent all training offered. Thirty (64%) completed 4 or more trainings. Eleven (23%) did not participate in any training activity.

Cronbach α coefficients for the questionnaires on cognitive behavioural determinants at T0 and T5 were 0.93 and 0.98, respectively. As reported in Table 3, the FPE mean score at the beginning of the program was 8.01 and, 5 months later, increased to 8.62. This represents a statistically significant difference of 0.63 (CI 95% 0.32-0.93). No significant change between T5 and T0 was observed concerning control or perceived support. The mean motivation to learn score was an average of 9.05 at T0. At the end of the program, the average satisfaction and usefulness scores were 8.66 and 8.58, respectively.

The data collected during the evaluation of each OTA indicate that the FPE increase was

TABLE 1 Description of the pharmacists and pharmacies participating in the study

Characteristic	
Community pharmacists	
Number	47
Gender, <i>n</i> (%)	
Women	31 (66)
Men	16 (34)
Profession, <i>n</i> (%)	
Pharmacist owners	11 (23)
Salaried pharmacist	36 (77)
Graduation year, <i>n</i> (%)	
2011 or after	15 (32)
2001-2010	16 (43)
1991-2000	11 (23)
1990 or before	5 (11)
Degree, <i>n</i> (%)	
Bachelor's in pharmacy	39 (83)
Master's	3 (6)
Doctorate	5 (11)
Number of hours worked per week in pharmacies, average (SD)	34 (6)
Holders of associate clinician title, <i>n</i> (%)	18 (38)
Number of continuous training hours completed in anticoagulation therapy in the past 2 years, average (SD)	3 (5)
Number of pharmaceutical opinions concerning anticoagulation therapy issued per year, average (SD)	5 (13)
Community pharmacies	
Number	35
Number of prescriptions processed per day, <i>n</i> (%)	
<250 prescriptions per day	10 (29)
250-500 prescriptions per day	12 (34)
> 500 prescriptions per day	13 (37)
Number of opening hours per week, average (SD)	60 (21)
Surface area of the pharmacy, <i>n</i> (%)	
<1000 feet ²	3 (8.6)
1000-2499 feet ²	9 (26)
2,500 – 4999 feet ²	10 (29)
≥5000 feet ²	13 (37)

TABLE 2 Participation in the ACO Program activities

Trainings/Facilitation	Participation Rates (<i>N</i> = 47), <i>n</i> (%)
Participation in at least 1 online training activity	36 (77)
Rate of participation in activities recommended and not recommended by the facilitator, evaluated at T5, %	
Rate of participation in the recommended activities	69
Rate of participation in nonrecommended activities	54
Average participation rate	60
Online trainings	
Atrial fibrillation for adults, choice of anticoagulation therapy	29 (62)
Drug interactions and oral anticoagulants	
Part 1	24 (51)
Part 2	25 (53)
Nutrition approach in the anticoagulation treatment with warfarin	31 (66)
Complex situation management in the anticoagulation therapy for atrial fibrillation	28 (60)
Documentation in patient files of elements related to the anticoagulation therapy follow-up	33 (70)
Publications on the forum	
Responses to clinical vignettes	1 (2)
Participants' questions	3 (6)

statistically significant following the completion of these OTA (Table 4). The mean FPE change varied between 1.25 and 2.55. The nutrition training was the most effective, with a mean change of 2.55 (CI 95% 1.98-3.11). This OTA also had the highest satisfaction level, with a mean score of 9.44. The OTA deemed the most useful was that offered by the INESSS, with a mean score of 9.46.

The semistructured interviews lasted 29 minutes on average. Six major themes and 16 sub-themes associated with specific components and attributes of CQIPs were identified (Appendix 3). The major themes identified were the following: facilitation, trainings offered, practice support, accessibility, program organization and profitability. Generally, the program was perceived as accessible and comprehensive. The participants appreciated the lecturers' and facilitators' credibility and quality. The online format and decision-facilitation tools brought added value. The participants perceived a real impact on patient care. However, the pharmacists

expressed the desire to be better supported by their colleagues in order to implement the program in their entire pharmacy. Also, these interviews shed light on the difficulties related to using the Web platform; according to the participants, the platform was not user friendly and finding information quickly was difficult. Further details are available in the online appendices (cph.sagepub.com/supplemental).

Discussion

The ACO Program was the first CQIP in anticoagulation therapy in community pharmacies in Quebec. The data gathered indicate that the main elements the participants appreciated were the audit with individualized feedback, the program's accessibility and the lecturers' and facilitators' credibility. The main drawbacks were the difficulty of navigating the Web platform and the technical problems associated with the data collection. This suggests that the support used to offer a training program is a key element influencing the program's success. The participants'

TABLE 3 Evaluation of the ACO Program

	Beginning of Program (T0), Mean Score (CI 95%)	Five Months into Program (T5), Mean Score (CI 95%)	Mean Change (CI 95%)
Feeling of personal effectiveness (FPE)	8.01 (7.67 to 8.35)	8.62 (8.24 to 8.99)	0.63 (0.32 to 0.93)
Perceived control	8.08 (7.63 to 8.53)	7.86 (7.32 to 8.40)	−0.16 (−0.51 to 0.20)
Perceived support	7.29 (6.72 to 7.86)	7.20 (6.58 to 7.84)	−0.07 (−0.67 to 0.53)
Motivation to learn	9.05 (8.79 to 9.31)	Not evaluated	Not evaluated
Motivation to transfer knowledge	Not evaluated	8.36 (7.96 to 8.75)	
Satisfaction		8.66 (8.25 to 9.06)	
Usefulness		8.58 (8.11 to 9.05)	
Perception of the ability to modify clinical practices		8.21 (7.80 to 8.61)	
Benefits of the follow-up		7.69 (7.08 to 8.31)	
Calculated Cronbach α coefficient	0.93	0.98	

FPE increased significantly following each training, and a significant increase in the FPE was noted at the end of the program. This pilot study did not demonstrate that the ACO Program affected control or perceived support, 2 cognitive behavioural determinants of learning.

In our study, the proportion of salaried pharmacists (77%) appears to be higher than that of all registered pharmacists of the Quebec Order of Pharmacists (68%).¹⁷ This difference, reported in other studies, might suggest that salaried pharmacists have more time to devote to training programs and are therefore more likely to participate in such programs.¹⁸

Nevertheless, the level of participation in the discussion forum was low. Several participants reported that they had consulted the forum without actively participating. The difficulty using the platform, the limited accessibility from the workplace, as well as the fear of being judged, despite the anonymity of the participants, were cited as reasons. Moreover, the participants reported that they were able to obtain answers to their questions by simply consulting the forum and that they did not feel the need to contribute to the discussion. This phenomenon, lurking or social loafing, is described extensively in the information technology and social science literature.^{19,20} The more participants that an online community, such as the ACO Program forum, has who only observe (lurkers), the lower the feeling of community and

the lower the participation.²¹ About 90% of online community users are lurkers,^{19,22} and, according to Nielsen's rule, only 1% of users actively contribute to forums,²³ which correlates with our participation rate (6%). Using a forum is therefore enticing if the community is sufficiently large, which was not the case in our study. Other means of discussion, such as social media, could have been possible and accessible.

The quality of the training material was identified as a key success factor in the participation in the OTA. The facilitators seemed to play a key role in the CQIP, given the higher participation rate in recommended activities compared with nonrecommended activities.

As a whole, the ACO Program was found to improve pharmacists' feelings of personal effectiveness. Certain authors maintain that, to be considered successful, training programs must target the development, or at least the consolidation, of the FPE.²⁰ This suggests that the ACO Program is an effective training program. In contrast, control and perceived support were not influenced by the ACO Program. These determinants are affected by external factors to the training programs, such as the will of the pharmacist owners to involve all their pharmacists. In the ACO Program, not all pharmacists from a given pharmacy were obligated to participate, and this constitutes a limitation. In fact, during the semistructured interviews, the participants

TABLE 4 Evaluation of the OTA

	Mean Score before Training (CI 95%)	Mean Score after Training (CI 95%)	Mean Change (CI 95%)
Feeling of personal effectiveness			
AF for adults; choice of the anticoagulation therapy	6.95 (6.48-7.42)	8.90 (8.60-9.19)	1.94 (1.48-2.41)
Drug interactions and anticoagulation therapy, part 1	6.13 (5.43-6.82)	8.24 (7.72-8.76)	2.11 (1.48-2.75)
Drug interactions and anticoagulation therapy, part 2	7.33 (6.87-7.80)	8.77 (8.43-9.11)	1.43 (1.10-1.77)
Nutrition approach in the anticoagulation treatment with warfarin	6.04 (5.40-6.69)	8.58 (8.22-8.95)	2.55 (1.98-3.11)
Complex situation management in the anticoagulation therapy for AF	7.30 (6.73-7.88)	8.56 (8.14-8.97)	1.25 (0.75-1.75)
Documentation in patient files of elements related to the anticoagulation therapy follow-up	6.88 (6.27-7.49)	8.35 (7.89-8.81)	1.47 (0.91-2.02)
Satisfaction			
AF for adults; choice of the anticoagulation therapy	Not evaluated	9.31 (9.02-9.60)	Not evaluated
Drug interactions and anticoagulation therapy, part 1		8.72 (8.25-9.19)	
Drug interactions and anticoagulation therapy, part 2		8.84 (8.43-9.25)	
Nutrition approach in the anticoagulation treatment with warfarin		9.44 (9.17-9.71)	
Complex situation management in anticoagulation therapy for AF		8.61 (8.02-9.20)	
Documentation in patient files of elements related to the anticoagulation therapy follow-up		8.85 (8.48-9.22)	
Usefulness			
AF for adults; choice of the anticoagulation therapy	Not evaluated	9.46 (9.16-9.76)	Not evaluated
Drug interactions and anticoagulation therapy, part 1		8.39 (7.86-8.91)	
Drug interactions and anticoagulation therapy, part 2		8.79 (8.31-9.26)	
Nutrition approach in the anticoagulation treatment with warfarin		9.41 (9.08-9.73)	
Complex situation management in anticoagulation therapy for AF		9.22 (8.75-9.68)	
Documentation in patient files of elements related to the anticoagulation therapy follow-up		8.85 (8.44-9.25)	

AF, atrial fibrillation; OTA, online training activities.

mentioned that they wanted their fellow pharmacists to be more involved in the various stages in the program to standardize their practice. Thus, to modify practices and support the principle of continuing improvement, all employees of a pharmacy must adhere to the change.²⁴

As for the OTA, our results show an increase of the FPE for each activity, confirming that each activity met with its respective learning objective. The participants were very satisfied with the OTA as a whole. This also suggests that the content targeted participants' needs and that

the educational support fostered knowledge acquisition and development of self-confidence. According to Kirkpatrick's first level, it is important that the participants react positively to the training so that they are effective and motivating.²⁵

The semistructured interviews generated rich and detailed data on participants' perception and satisfaction. The participants revealed that they had greatly appreciated the telephone call detailing the results of the quality report (feedback). The benefit of the process of audit and feedback

on the effectiveness of continuing training programs is well described in the literature.^{24,26}

To our knowledge, no other study on facilitation by pharmacists has been published to date, which testifies to the innovative character of this study. However, certain elements observed in this study were consistent with those of recent published articles. While developing an anticoagulation management course for pharmacists in Alberta, Bungard et al.²⁷ evaluated the impact of such a program on the participants' confidence and on their practice, among other outcomes, through survey questionnaires and semistructured interviews. The authors found that such a program improved the pharmacists' confidence and had a positive impact on their practice. In an Australian study, Coombes et al.²⁸ aimed to document the pharmacists' views on a tool evaluating their performance and generating tailored feedback and training activities for each participant. Feedback from pharmacists was collected using a 7-point rating scale. While this study showed an improvement of the participants' competencies, the pharmacists' feedback revealed that participants found the program to be taxing although an overall positive experience.

The MonACO study had several strengths. The various questionnaires used were developed following a rigorous process involving a literature review and consultations with specialists in the field. Relying on a quantitative and qualitative method produced richer and more detailed data. The high participation rates reinforced the results obtained and made it easier for us to apply them to our population.

This study has certain limitations. Without a control group, it was not possible to state that the

changes observed were due entirely to the ACO Program. Other external training related to anti-coagulant therapy could have been given during the program and therefore could have influenced participants' cognitive behavioural determinants. While the method for approaching participants was standardized, evaluator bias was inevitable during the semistructured interviews. Also, the time in therapeutic range of the patients was not reported, as it is one of the objectives of the ACO Program. It will be interesting to see if the CQIP affected this parameter. Certain limitations associated with the Web platform, such as the inability to make an inventory of training participation rates automatically, complicated data collection and analysis. The participation rates calculated were based on data self-reported by the participants. In addition, a 6-month follow-up is short for observing changes in practice.

Conclusion

The results of the MonACO study suggest that community pharmacists appreciate continuous practice improvement programs such as the OAC Program. The key elements of a successful CQIP in community pharmacy are the audit and feedback, the user-friendly nature of the platform supporting the program, the provincewide accessibility, the availability of the facilitator and credible professionals providing high-quality training material. Finally, such a program should promote the participation of the entire team of the pharmacy. Consequently, the MonACO study can guide future program developers in understanding the key elements for a successful CQIP. ■

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