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Development of a self-reported reflective tool for the implementation of advanced access for primary healthcare providers: Study protocol of a mixed method using a e-Delphi survey.

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Development of a self-reported reflective tool for the implementation of advanced access for primary healthcare providers: Study protocol of a mixed method using a e-Delphi survey

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ABSTRACT

Introduction

Timely access is one of the cornerstones of strong primary healthcare (PHC). New models to increase timely access have emerged across the world, including advanced access (AA). Recently in Quebec, Canada, the AA model has spread widely across the province. The model has largely been implemented by PHC professionals with important variations but a tool to evaluate its implementation is lacking. The general objective of this study is to develop a self-reported online reflective tool that will guide PHC professionals' reflection on their individual AA practice and formulation of recommendations for improvement. Specific objectives are: 1) Operationalization of the pillars and sub-pillars of AA; 2) Development of a self-reported questionnaire; and 3) Evaluation of the psychometrics.

Methods and analysis

The pillars composing the original model of AA will first be reviewed in collaboration with PHC professional and stakeholders, patients, and researchers in a face-to-face meeting. The goals of the consultation are to establish consensus on the pillars and sub-pillars of AA. Leading from these definitions, items will be identified for their evaluation through an e-Delphi consultation. Three rounds are planned in 2020-2021 with a group of 25 experts. A repository of recommendations

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on how to improve one's AA practice will be populated based on the literature and nurtured by our experts throughout the consultation. Median and measures of dispersions will be used to evaluate agreement. The resulting tool will be evaluated by PHC professionals for psychometrics in 2021.

Ethics and dissemination

The protocol has been approved by the Scientific Research Committee and ethics provided by the Research Ethics Board of the Centre Intégré de Santé et de Services Sociaux de la Montérégie-Centre (2020-441, CP 980475). Dissemination plan is a mix of community diffusion through and for our partners and to the scientific community in peer-reviewed journals and conferences.

Keywords: Advanced Access, Reflective tool, Primary healthcare, Timely access, Self-reported, Delphi consultation

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Provides a rigorously-developed up-to-date tool on advanced access based on the literature and on the experiences of various primary healthcare stakeholders in response to their expressed needs.
- Involves the participation of multiple stakeholders with different roles and attached to diverse organisation originating from multiple environments including urban, rural and remote regions.
- Allows for individual self-assessment.
- Allows users to obtain pragmatic and personalized recommendations on their AA practice.
- Development in French only with local experts (applicable to the current situation in Quebec).

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INTRODUCTION

Advanced Access model

Timely access is widely recognized as a cornerstone of effective primary healthcare (PHC). The Advanced Access (AA) model, developed to increase timely access, has been promoted and adopted in primary care settings in various countries. It is the most commonly used organizational model to reduce wait times for primary care appointments.[1] Timely access is one of the guiding principles of the Patient-centered Medical Home (PCMH).[2] The five pillars of AA complement the PCHM model (timely access, comprehensiveness, continuity, interprofessional collaboration) and emphasize organizational components. This organizational model is defined according to five pillars:[3,4] 1) Balance supply and demand; 2) Reduce the backlog of previously scheduled appointments; 3) Review the appointment system; 4) Integrate inter-professional practice; and 5) Develop contingency plans (see Figure 1). The effectiveness of AA has been demonstrated in various healthcare systems.[5–9] Many studies have shown benefits of AA in terms of reduced wait times,[5,6,9–11] fewer missed appointments,[5,10] increased professional,[8,12] patient satisfaction[5] and provider productivity[9]. The AA model is perfectly in line with the organizational guiding principles for a high-quality-high-performance primary care organization as put forward by the College of Family Physicians of Canada.[13,14] That said, even if the conceptualization of AA developed more than 20 years ago by Murray et al. remains current, its conceptualization needs to be adapted to the contemporary context, as a growing number of providers have implemented AA and seek to improve their practice, as well as interdisciplinary practices. This study contributes to redefine AA based on more interdisciplinary-based team and current practices.

Please insert figure 1 here

Historical background of research on advanced access

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In Quebec, AA was first introduced in 2012, and since then it has been widely promoted by the Quebec College of Family Physicians, as well as by the Ministry of Health and Social Services.[15] Family physicians are strongly encouraged to implement an AA model based on the five pillars based on Murray's AA model. Over the past six years, the majority of primary healthcare family physicians in Quebec have implemented AA in their organizations at varying levels of implementation.

Our research team conducted the first two studies (2014, 2016) on the implementation of AA in Quebec with early adopters of the model; one with family physicians,[15] and the other with university family medicine groups.[4] Our results showed a wide variation in the level of implementation of AA among PHC organizations as well as among PHC providers within the same organization. We are currently conducting a study to get a portrait of the implementation of AA in all university family medicine groups across Quebec to better understand the influence of the contextual factors on the level of implementation of AA and also on outcomes.[16]

An expressed need for a reflective tool

There is still a need to guide improvement of the implementation of each pillar of AA within PHC clinics. Several guides have been developed in Canada,[17–19] the United States[20–22] and Europe[23] to assist PHC professionals and/or organizations to plan and implement AA. These guides offer recommendations to plan supply, reduce demand, and organize appointment management in order to achieve and maintain a balance between supply and demand, thus enabling timely responses to patient requests. The guides generally offer recommendations based on the five pillars of AA developed by Murray et al.,[3] as well as indicators to assess some of the aspects of AA in PHC settings at the individual or team level. There is nevertheless no tool to guide the improvement of AA implementation and sustainability. This project was therefore developed in response to a clearly expressed ministerial desire to meet the needs of PHC professionals to be

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supported in the implementation of AA in PHC settings. This study will provide an online reflective tool that will be used as requested by primary healthcare professionals seeking to improve their level of implementation of AA.

Self-reported tools are useful reflective strategies to support quality improvement as they are easily accessible and available when needed, regardless of location. These tools also provide an effective way to promote self-reflection and identification of strengths and areas in need.[24] Some tools, available online, provide diagnosis, document or assess a level of practice or alignment with goals such as those of the tool developed by the College of Family physician in Canada to assess the Patient-centered Medical Home[25] or the UHC (Universal Health Coverage) Primary Health Care Self-Assessment Tool.[26] Online tools sometimes also offer a reflective perspective to provide actionable advice[25] or immediate results and guidance.[27] Our self-reported reflective tool will be developed with precisely these objectives to improve AA implementation and sustainability.

There is a need to develop a self-reported online reflective tool to support AA implementation by PHC providers. In order to develop a tool to assess the level of implementation of AA, it is important to ensure that there is consensus on the model that will serve as a basis. A difference in the definition or interpretation of the pillars of the model can lead to operationalization difficulties that can and should be avoided.

OBJECTIVES

The main objective of this study is to develop a self-reported reflective tool to support PHC providers to improve their AA practice.

The specific objectives are to:

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AA Reflective tool development

1) Operationalize the pillars and sub-pillars of the AA model;

2) Develop a self-reported questionnaire on their practice in AA,

2.1 Develop a questionnaire to assess the level of implementation of the AA model

2.2 Identify key recommendations to improve AA

3) Evaluate the psychometrics of the tool.

The main deliverable of our study will be a self-reported reflective tool on AA that will be combined with a repository of recommendations for improving AA, available on an electronic platform easily accessible to PHC providers and teams. Providers will thus be able to receive, in one place, an evaluation of their AA practice and personalized recommendations to support improvement.

METHODS

Study design overview

This study follows a modified Delphi methodology combining a literature review, analysis of the selected articles to identify different conceptual constructs and an iterative consensus achievement process using a face-to-face meeting with key experts and a e-survey in order to develop a reflective tool and identity strategies to improve AA. Using an iterative process, a Delphi consultation is an effective technique designed to obtain the most reliable consensus within a group of experts regardless of their geographical spread;[28–30] here, a group of experts from the province of Québec composed of various type of providers such as family physicians, nurse practitioners, nurses, front-desk and administrative staff and policymakers. Grounding the initial Delphi round in concepts derived from literature and based on initial experts input during the face-to-face meeting will both be efficient, and will stimulate participation in the following steps of the tool development. When an online survey tool is applied, the term e-Delphi (electronic) is

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used.[31]

The overall process will require three sequential phases: phase 1 being qualitative, while phases 2 and 3 being mostly quantitative. Table 1 briefly presents all three phases with their specific objectives. Phase 1 consists of a face-to-face meeting. This pre e-Delphi consultation aims to establish common bases in the operationalization of a revised AA model (objective 1). Phase 2 will consist of a three-round consultation to identify the content of the self-reported reflective tool. Phase 3 will follow to assess the developed reflective tool and its applicability to different PHC professionals and in different PHC environments. The AA self-reported reflective tool aims to provide a score on each pillar, that will allow its users to grasp their strengths and weaknesses with respect to their implementation of AA and context of practice.

Table 1: The AA reflective tool development in brief

Phase 1 **Pre-Delphi consultation** Establishing common bases – Operationalize the AA model	- Research team identifies AA pillars and definitions from the literature - Identification and recruitment of AA experts - Consensus building on pillars and brainstorming about sub-pillars of AA through a facilitated face-to-face meeting
Phase 2 **e-Delphi consultation** Creation of the AA reflective tool (List of essential items to be assessed in the reflective tool by PHC practitioners/clinicians)	**1st round of consultation** - Panel expert agreements scores (from 1 to 9) on sub-pillars and definitions - Suggestions/comments for modification or addition to sub-pillars
	2nd round of consultation - Global and individual feedback report from round 1 (Level of consensus achieved, global and individual expert panel scores) - Panel expert agreement scores (from 1 to 9) on new propositions and modification emerging from round 1 - Panel expert agreement scores (from 1 to 5) on the importance of each sub-pillar and the list of items to measure the level of implementation - Panel expert agreement (yes/no) on suggested response scales - Suggestions/comments for modification or addition of items

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	3rd round of consultation - Global and individual feedback report from round 2 (Level of consensus achieved, global and individual expert panel scores) - Consensus building on items by pillar and sub-pillar - Suggestions for practical recommendations by item to provide to clinicians to improve their AA practice
Phase 3 **Piloting, adjustment and development of a repository of recommendations** To assess the tool and its applicability in different PHC environments	- Questionnaire completion by PHC clinicians in different PHC settings - Psychometric properties analyses - Focus groups for receiving feedbacks and improvement hints - Final adjustments - Development of a repository of recommendations with actionable guidance

Study management

This study will rely on a research team which includes researchers with AA and methodological expertise and PHC professionals, including family physicians and nurses. An advisory committee will oversee the development and ongoing processes of the study, as well as major decisions regarding the selection of AA experts to invite to the face-to-face meeting (Phase 1) and to the e-Delphi consultation (Phase 2).

The expert panel

To maximise the acceptability and usefulness of the reflective tool in Quebec's contemporary context, the advisory committee will establish an AA expert panel comprised of provincial and local decision-makers from the Quebec's Ministry of Health and Social Services, and from professional organisations that were involved in the first training initiatives for the implementation of AA.[32] PHC professionals from around the province who were early adopters of AA including family physicians, practitioner and clinical nurses, continuous quality improvement officers, front desk, and administrative staff, as well as patients and researchers working in the field of AA were invited.

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Forty experts will be invited to join the expert panel, with the objective to have between 20 and 30 participants in both Phases 1 and 2. Purposive as well as a snowball sampling, will be used to recruit participants. Based on their expertise in AA implementation in Quebec PHC settings, the advisory committee will first identify potential participants who will then be invited by the principal investigators by email or telephone to join the expert panel. Snowball sampling will follow to ensure broad representation of diverse organizations as well as various roles within PHC clinics.

The ideal number of experts for a Delphi process is not set in stone; recommendations vary between 10 to 18 to ensure the development of productive group dynamics and to maximize chances of reaching consensus among experts.[31] Around 20 experts will be invited to participate to the e-Delphi consultation, with the goal to reach a minimum of 70% of participation at each round.[31,33]

Phase 1: Operationalization of the AA model

Building a consensus around the AA model will first entail agreeing on the pillars and sub-pillars that are essential to integrate in an AA practice in PHC. The starting point will be the conceptual framework of the five guiding principles of AA developed by Murray and Berwick in 2003:[3] 1) Balance supply and demand; 2) Reduce the backlog of previously scheduled appointments; 3) Review the appointment system; 4) Integrate inter-professional practice; and 5) Develop contingency plans (see Figure 1).

Phase 1 will consist of a literature review to conceptualize a revised AA model. The literature review will include scientific studies and grey literature reports at local, national, and international levels. This scan will allow us to delineate the pillars and sub-pillars as defined in models of AA in the contemporary literature, as well as constructs that need to be measured within each sub-pillar.

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Following revision by the advisory committee, the revised AA model will be submitted to the AA expert panel in a face-to-face meeting and discussions intended toward consensus will take place while further refining the pillars and definitions. This in-person meeting will be highly interactive and the use of facilitation techniques for group consultations will encourage everyone's participation. The meeting will be organized in two steps. First, a variation of a "World Café" will be used to initiate and lead a collective reflection around the AA pillars and definition identified by the advisory committee. A World Café is a simple yet powerful method, originated by Juanita Brown, to enable meaningful conversations driven completely by participants and the topics that are relevant and important to them.[33,34] As a second step, a "carousel brainstorming" technique will be used with AA experts to brainstorm on important components to be included in each pillar. A Carousel Activity is a communicative and interactive opportunity for participants to get up and move around a room in a circular fashion, stopping intermittingly to comment, discuss, or respond in writing to probing headings/questions/topics/themes posted by a facilitator that is related to a given topic/theme.[35] This technique allows for small group discussion, followed by whole-group collective reflection.[36] Facilitation techniques ensure that everyone is able to participate equally and is able to express his/her viewpoint freely, while ignoring hierarchical concerns.[37] The results of this meeting will be analyzed by the advisory committee to come to a consensus on the conceptual model of AA including the name, number of pillars, and definition of each identified pillar. This will serve as groundwork for the e-Delphi consultation.

Phase 2: Creation of the AA reflective tool through e-Delphi consultation

For this phase, an online survey tool will be used (Survey Monkey platform). After each round, a personalized report will be sent to each AA expert providing an overall view of responses as well as their own, in an anonymized format. A list of items to evaluate the various pillars and sub-pillars developed during Phase 1 will be reviewed and adapted by the advisory committee before

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its submission to the expert panel. The mandate of the panel will be to set the importance of the suggested items for each of the sub-pillars and to achieve a consensus on a final list of items, considered to be very important or essential for the assessment of an AA practice. Experts will also be surveyed regarding the adequacy of suggested response scales for each item of the reflective AA tool.

Round 1

An individualized link to a personalized questionnaire will be sent to each AA expert. The first round of consultation will propose sub-pillars that have emerged from Phase 1. For each of the proposed sub-pillars, AA experts will be asked to indicate their level of agreement (on a scale of 1 to 9) regarding the relevance of this sub-pillar to the concept of AA. The median as well as measures of dispersion will be used as indicators of the level of consensus. More specifically, items with a median above 6 will be considered as being relevant. Similarly, items with a median score below 3 will be considered irrelevant. The remaining items will be retained for the second round of consultation. Experts will also be asked to comment on the sub-pillar and to provide their definition, indicate if this sub-pillar is attached to the appropriate pillar, and add any sub-pillars they think are missing along with suggested definitions.

Round 2 and 3 surveys

A feedback report from the previous round will accompany each new round of questionnaires, including the level of consensus achieved along with global and individual relevance scores for each item. In round 2 and 3, AA experts will be given the opportunity to modify their initial response in light of the answers provided from the group, so as to facilitate the group evolution towards consensus[30,38]. They will also be asked to score new propositions and modifications emerging from the previous round. The process will continue with further rounds until a consensus on the relevance of each item is reached - or not.[30,38] The e-Delphi will cease when

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an acceptable degree of consensus is reached.[39,40] Particular attention will be given following each round to assess whether consensus has been reached over a particular round, or rather evolved throughout the process, and whether the group's opinion has changed over the rounds.[41]

Phase 3: Assessment and applicability of the newly developed AA reflective tool and development of a repository of recommendations

Phase 2 will result in the creation of the online reflective tool based on the list of items for which consensus was achieved, to rigorously assess the implementation of an AA practice. In an additional exercise, some AA experts who participated in phases 1 and/or 2 will be consulted to determine an appropriate score threshold for each pillar. We aim to determine a gradient of scores allowing the reflective tool users to situate themselves on an implementation continuum for each of the AA pillars, and to set goals towards an optimal practice.

AA reflective tool refinement

Survey completion sessions will be organized with PHC professionals and staff in five different PHC settings. These survey completion sessions will include feedback discussions on the completion of the tool, and will be led by the research team. Following cognitive testing techniques[42], these sessions are intended to identify items that are not clear or need to be reformulated, as well as any difficulties encountered during completion of the questionnaire. Following this piloting and development period, the AA reflective tool will be considered to be final, and ready to be evaluated by a larger number of potential users.

Development of a repository of recommendations

A repository of recommendations aligned with the different components of the revised AA model will be created, in relation to the “portrait” obtained with the tool. This repository of

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recommendations will be made available through the electronic platform, upon completion of the evaluation using the AA reflective tool. Recommendations will be personalized according to the professional "portrait" based on their score on each pillar, providing them with actionable avenues. Such an approach was inspired by the primary care quality improvement tool of the College of Family Physicians of Canada.[25]

The repository of recommendations will be inspired by systematic collation of best practices, by reviewing the literature related to each of the components of AA (e.g., improving interprofessional collaboration, optimization of telephone reception, managing escalation of emergencies) and using feedback generated by the expert panel on the final e-Delphi round. The repository will be expanded and refined during the third round of the e-Delphi and during the survey completion sessions.

Assessing the psychometric properties of the Reflective tool

The final step of development of the tool will consist of an evaluation of some of its psychometric properties. To do so, we plan to recruit a minimum of 150 to 200 primary healthcare professionals in more than 10 PHC clinics.[43] Following qualitative feedback, the first analysis will be at the item level: after excluding items with more than 4% missing values, we will do an item discrimination analysis to learn how well an item can discriminate between high and low performers of the implementation of AA. Items with a lack of variation in responses – that are either too easy to or too difficult to attain – will be reviewed for content and to ascertain whether the response scale is adequate. Other properties tested will be the tool's reliability (repeatability, intra- and inter-reliability in different contexts or between different types of healthcare professionals), and validity (construct validity with a confirmatory factor analysis). Finally, internal consistency will be analyzed for each pillar and sub-pillar.

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Patient and public involvement

One patient was part of the face-to-face meeting in phase 1. Also, five patient partners are part of broadly research infrastructure on AA carried out by the research group and has informed the needs for important elements of a reflective tool. We are aiming to invite our patient partners on the e-Delphi consultation and will make sure to have at least one patient representative on our expert committee.

Dissemination plan

Dissemination plan for the study is a mix of community diffusion through and for our partner organizations and to the scientific community in a peer-reviewed journal and presented at relevant conferences. We will attempt to reach many primary healthcare professionals to let them know of our findings through professional organisations and by organising a symposium that will bring together our expert participants as well as colleagues from their organisations or from other organisations and PHC clinics.

DISCUSSION

Scientific articles on the foundations of AA have been published over the past 20 years. During this time, interdisciplinary collaborative practice has evolved within PHC family practices with several healthcare professionals now being part of the PHC team. This study will help to redefine the foundations of the AA model by integrating an interdisciplinary team-based focus, while considering changes that have been put in place in PHC practices. The inclusion of various PHC stakeholders in the tool development process will allow the tool and its content to reflect realities experienced in the field. Participation of AA champions in the overall development process of the AA reflective tool will benefit the community's acceptance of the tool.

This study will provide a rigorously developed up-to-date AA reflective tool based on the literature and on the experiences of various PHC stakeholders, while providing a response to their expressed

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needs for a reflective tool. The newly developed reflective tool will be helpful as the Ministry of Health and Social Services and professional medical organisations are currently promoting AA in PHC settings.

The repository of recommendations developed in parallel with the tool will provide the AA tool users with advice in relation with their own AA evaluation, and provide pragmatic and personalized recommendations to improve their AA practice. This will all be conveniently available online.

The results dissemination plan for this study includes two components: a community diffusion element through and for our partner organizations involved in PHC, and a scientific community component. Elements and lessons learned from this study will be shared through multiple community media resources, including presentations and webinars, newsletters, and a symposium on AA initiated by the research team.

List of abbreviations

AA: Advanced access

PHC: Primary healthcare

DECLARATIONS

Ethics approval and consent to participate

The protocol for this study has been reviewed and approved by the Scientific Research Committee and ethics provided by the Research Ethics Board of the Centre Intégré de Santé et de Services Sociaux de la Montérégie-Centre (CISSS MC) (2020-441, CP 980475).

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AA Reflective tool development

Consent for publication

Not applicable

Availability of data and material

Not applicable

Authors' contributions

MB and IG led the conceptualization and design of the study, but all authors were involved. MB, IG and CB will lead the coordination of the study. MB, IG and CB wrote the first draft and all authors critically reviewed it and provided comments to improve the manuscript. All authors read and approved the final version.

Competing interests

The authors declare that they have no competing interests.

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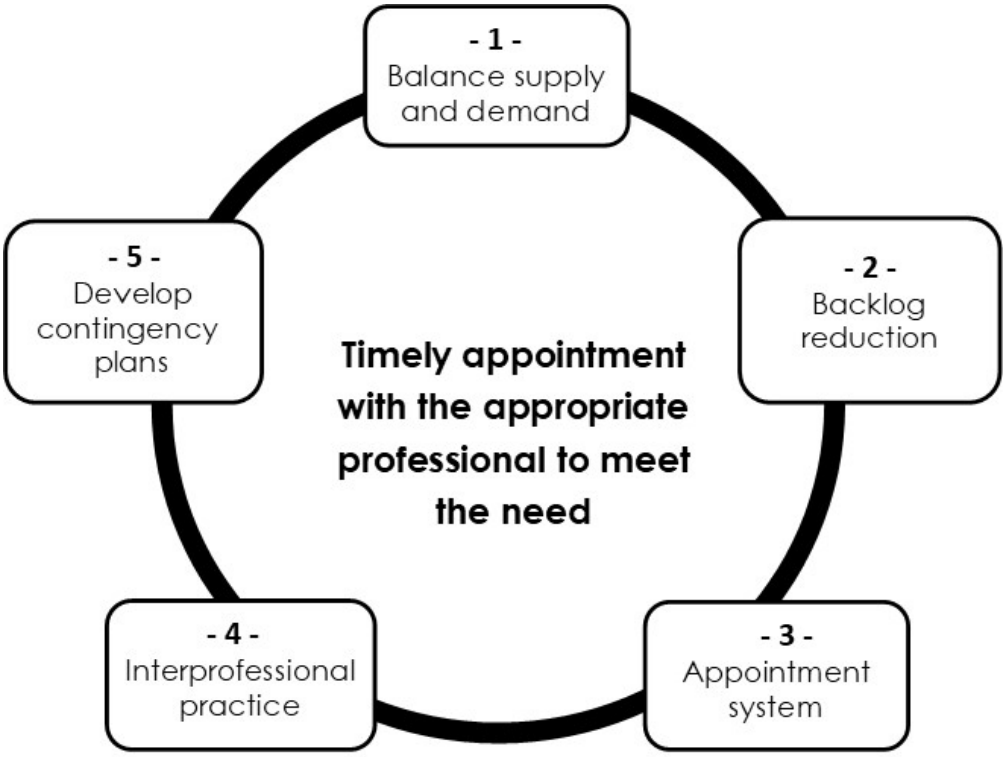

Figure 1. The five pillars of advanced access

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Development of a self-reported reflective tool on advanced access to support primary healthcare providers: Study protocol of a mixed method using a e-Delphi survey

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ABSTRACT

Introduction

Timely access is one of the cornerstones of strong primary healthcare (PHC). New models to increase timely access have emerged across the world, including advanced access (AA). Recently in Quebec, Canada, the AA model has spread widely across the province. The model has largely been implemented by PHC professionals with important variations; however, a tool to assess their practice improvement within AA is lacking. The general objective of this study is to develop a self-reported online reflective tool that will guide PHC professionals' reflection on their individual AA practice and formulation of recommendations for improvement. Specific objectives are: 1) Operationalization of the pillars and sub-pillars of AA; 2) Development of a self-reported questionnaire; and 3) Evaluation of the psychometrics.

Methods and analysis

The pillars composing Murray's model of AA will first be reviewed in collaboration with PHC professional and stakeholders, patients, and researchers in a face-to-face meeting, with the goal to establish consensus on the pillars and sub-pillars of AA. Leading from these definitions, items will be identified for evaluation through an e-Delphi consultation. Three rounds are planned in 2020-21 with a group of 20-25 experts. A repository of recommendations on how to improve one's AA practice will be populated based on the literature and enriched by our experts

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throughout the consultation. Median and measures of dispersions will be used to evaluate agreement. The resulting tool will then be evaluated by PHC professionals for psychometrics in 2021-22.

Ethics and dissemination

The Centre Intégré de Santé et de Services Sociaux de la Montérégie-Centre Scientific Research Committee approved the protocol, and the Research Ethics Board provided ethics approval (2020-441, CP 980475). Dissemination plan is a mix of community diffusion through and for our partners and to the scientific community including peer-reviewed publications and conference presentations.

Keywords: Advanced Access, Reflective tool, Primary healthcare, Timely access, Self-reported, Delphi consultation

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Provides a rigorously-developed up-to-date tool on advanced access based on the literature and on the experiences of various primary healthcare stakeholders in response to their expressed needs.
- Involves the participation of multiple stakeholders with different roles and attached to diverse organisation originating from multiple environments including urban, rural and remote regions.
- The Delphi method allows the experts to express their thoughts independently, while encouraging pragmatism, honesty and creativity.
- The developed tool may not be transferable without cultural adaptation to other settings where the principles of AA are implemented.

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INTRODUCTION

Advanced Access model

Timely access is widely recognized as a cornerstone of effective primary healthcare (PHC). The Advanced Access (AA) model, developed to increase timely access, has been promoted and adopted in primary care settings in various countries. It is the most commonly used organizational model to reduce wait times for primary care appointments.[1] Timely access is one of the guiding principles of the Patient-centered Medical Home (PCMH).[2] The pillars of AA complement the PCMH model (timely access, comprehensiveness, continuity, interprofessional collaboration) and emphasize organizational components. AA has been defined according to five pillars:[3,4] 1) Balance supply and demand; 2) Reduce the backlog of previously scheduled appointments; 3) Review the appointment system; 4) Integrate inter-professional practice; and 5) Develop contingency plans (see Figure 1). The AA model was developed in the United States in 2001 and implemented in North America and Europe, with many studies in the USA, the United Kingdom and Canada and its effectiveness demonstrated in various healthcare systems.[5–9] Benefits of AA include reduced wait times,[5,6,9–11] fewer missed appointments,[5,10] and improved professional and [8,12] patient satisfaction,[5] and provider productivity.[9]

The AA model aligns with the organizational guiding principles for a high-quality-high-performance primary care organization as put forward by the College of Family Physicians of Canada.[13,14] That said, even if the concept of AA developed more than 20 years ago by Murray et al. remains current, it needs to be adapted to the contemporary context. This study contributes to refine AA based on more interdisciplinary-based team and the need to improve PHC practice with a quality improvement approach.

Please insert figure 1 here

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Evolution of AA and state of research in the province of Quebec

In Quebec, AA was first introduced in 2012, and since then it has been widely promoted by the Quebec College of Family Physicians, as well as by the Ministry of Health and Social Services.[15] Family physicians are strongly encouraged to implement an AA model based on the five pillars proposed by Murray et al.[3] Over the past six years, the majority of PHC family physicians in Quebec have introduced AA in their organizations at varying levels of implementation.[15, 4]

An expressed need for a reflective tool

Several guides have been developed in Canada,[16–18] the United States[19–21] and Europe[22] to assist PHC professionals and/or organizations to plan and implement AA. These guides offer recommendations to plan supply, reduce demand, and organize appointment management in order to achieve and maintain a balance between supply and demand, thus enabling timely responses to patient requests. The guides generally present principles of AA, along with how to implement initial changes and some measurement tools. They also offer strategies to support the introduction of AA, but lack information and guidance to improve and sustain AA or to troubleshoot issues over time.

There is no tool even to evaluate the status of AA in a professional's practice, let alone to guide its continuous improvement and sustainability. Inspired by the principles of the Model for Improvement, [23] such a tool could be used to align metrics across multiple PHC providers, while operationalizing the complex process of providing access to care in a daily practice. One could use the developed tool to reflect upon one's practice and plan for modifications to improve patient access. This project was therefore developed in response to a clearly expressed ministerial desire to meet the needs of PHC professionals to be supported in the clinical integration and improvement of AA in PHC settings. This study will provide an online reflective tool that will be used as requested by primary healthcare professionals seeking to improve their AA practice.

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Self-reported tools are useful reflective strategies to support quality improvement as they are easily accessible and available when needed, regardless of location. These tools also provide an effective way to promote self-reflection and identification of strengths and areas in need.[24] Some tools available online, provide diagnosis, document or assess a level of practice or alignment with goals such as those of the tool developed by the College of Family Physicians in Canada to assess the Patient-centered Medical Home[25] or the Universal Health Coverage Primary Health Care Self-Assessment Tool.[26] Online tools may also offer a reflective perspective to provide actionable advice,[25] or immediate results and guidance.[27]

There is a need to develop a self-reported online reflective tool to support AA implementation and improvement by PHC providers. To achieve this objective, it is important to ensure that there is consensus on the underlying model. Differences in definition or interpretation of the pillars of AA could lead to operationalization difficulties, that can and should be avoided.

OBJECTIVES

The main objective of this study is to develop a self-reported reflective tool to support PHC providers to improve their AA practice.

The specific objectives are to:

1) Operationalize the pillars and sub-pillars of the AA model;

2) Develop a self-reported questionnaire on their practice in AA,

    2.1 Develop a questionnaire to assess the level of implementation of the AA model

    2.2 Identify key recommendations to improve AA.

3) Evaluate the psychometrics of the tool.

The main deliverable of our study will be a self-reported reflective tool on AA that will be

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combined with a repository of recommendations to improve AA, available on an electronic platform easily accessible to PHC providers and teams. This includes: physicians, nurses and nurse practitioners, social workers, pharmacists, nutritionists, psychologists, etc. Users will receive, in one place, an evaluation of their AA practice and personalized recommendations to support improvement.

METHODS

Study design overview

A modified Delphi methodology will be used, to develop a reflective tool and identity strategies to improve AA. A literature review and analysis of selected articles will be used to identify conceptual constructs, followed by an iterative consensus achievement process among key experts including a face-to-face meeting and an online survey tool (e-Delphi).[28] Using an iterative process, a Delphi consultation is an effective technique designed to obtain the most reliable consensus within a group of experts regardless of their geographical spread.[29–31] A group of experts from the province of Québec will include diverse providers such as family physicians, nurse practitioners, nurses, front-desk and administrative staff and policymakers. Grounding the initial Delphi round in concepts derived from literature and based on initial experts' input during the face-to-face meeting will both be efficient, and will stimulate participation in the following steps of the tool development.

The process entails three sequential phases, with phase 1 being qualitative, while phases 2 and 3 being including quantitation. Table 1 briefly presents all three phases with their specific objectives. Phase 1 consists of a face-to-face meeting. This pre e-Delphi consultation aims to establish common bases in the operationalization of a revised AA model (objective 1). Phase 2 will consist of a three-round consultation to identify the content of the self-reported reflective tool.

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AA Reflective tool development

Phase 3 will follow to assess the developed reflective tool and its applicability to different PHC professionals and in different PHC environments.

The self-reported reflective tool aims to evaluate the processes associated with each AA pillar while allowing its users to grasp their strengths and weaknesses with respect to their level of implementation.

Table 1: The AA reflective tool development in brief

Phase 1 **Pre-Delphi consultation** Establishing common bases – Operationalize the AA model	- Research team identifies AA pillars and definitions from the literature - Identification and recruitment of AA experts - Consensus building on pillars and brainstorming about sub-pillars of AA through a facilitated face-to-face meeting
Phase 2 **e-Delphi consultation** Creation of the AA reflective tool (List of essential items to be assessed in the reflective tool by PHC practitioners/clinicians)	**1st round of consultation** - Panel expert agreements scores (from 1 to 9) on sub-pillars and definitions - Suggestions/comments for modification or addition to sub-pillars
	2nd round of consultation - Global and individual feedback report from round 1 (Level of consensus achieved, global and individual expert panel scores) - Panel expert agreement scores (from 1 to 9) on new propositions and modification emerging from round 1 - Panel expert agreement scores (from 1 to 5) on the importance of each sub-pillar and the list of items to measure their level of implementation - Panel expert agreement (yes/no) on suggested response scales - Suggestions/comments for modification or addition of items
	3rd round of consultation - Global and individual feedback report from round 2 (Level of consensus achieved, global and individual expert panel scores) - Consensus building on items by pillar and sub-pillar Suggestions for practical recommendations by item to provide to clinicians to improve their AA practice
Phase 3 **Piloting, adjustment and development of a repository of recommendations**	- Questionnaire completion by PHC clinicians in different PHC settings - Psychometric properties analyses

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AA Reflective tool development

To assess the tool and its applicability in different PHC environments	- Focus groups to receive feedback and improvement tips - Final adjustments - Development of a repository of recommendations with actionable guidance

Study management

The research team includes researchers with AA and methodological expertise, and PHC professionals including family physicians and nurses. The team will oversee the development and ongoing processes of the study, as well as major decisions regarding the selection of AA experts to invite to the face-to-face meeting (Phase 1) and to the e-Delphi consultation (Phase 2). They will also be involved in piloting material and instruments ahead of consultations.

The expert panel

To maximise the acceptability and usefulness of the reflective tool in Quebec's contemporary context, the research team will establish an AA expert panel comprised of provincial and local decision-makers, family physicians, practitioner and clinical nurses, continuous quality improvement officers, front desk, and administrative staff, as well as patients and researchers working in the field of AA. We will seek to bring together experts with diverse expertise based on their role in their own organization as well as at the local, regional or provincial level. Purposive and snowball sampling techniques will be used to identify eligible participants. Forty potential participants will first be approached and invited by the principal investigators by email to join the expert panel and to be part of the pre-Delphi meeting with the hope of recruiting and maintaining a sample of 20-25 experts across all 3 e-Delphi rounds. This is above the target of 10 to 18 individuals, to ensure the development of productive group dynamics and to maximize chances of reaching consensus among experts.[28] Participants will be considered for the panel if they are working in PHC or belong to an organization working closely with PHC professionals, and have an

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extensive experience with AA (5 years+) as a practitioner or manager. Practitioners and managers who were involved in the development of the training sessions provided by the Quebec College of Family Physicians will also be invited. [32] Strategies to maximize the retention rate include personalized reminders from one of the principal investigators, with the goal of not losing more than 30% of the participants over the 3 expected rounds. [28,33]

Phase 1: Operationalization of the AA model

Building a consensus around the AA model will first entail agreeing on the pillars and sub-pillars that are essential to integrate in an AA practice in PHC. The starting point will be the conceptual framework of the five guiding principles of AA developed by Murray and Berwick in 2003:[3] 1) Balance supply and demand; 2) Reduce the backlog of previously scheduled appointments; 3) Review the appointment system; 4) Integrate inter-professional practice; and 5) Develop contingency plans (see Figure 1).

Phase 1 will consist of a literature review to conceptualize a revised AA model. Search terms such as “advanced access,” “open-access,” “same-day scheduling,” “timely access” and “AA implementation” will be used. The literature review will include scientific studies and grey literature reports at local, national, and international levels. This scan will allow us to delineate the pillars and sub-pillars as defined in models of AA in the contemporary literature, as well as constructs that need to be measured within each sub-pillar.

Following revision by the research team, the revised AA model will be submitted to the AA expert panel in a face-to-face meeting for discussions to build consensus while refining the pillars and definitions. This in-person meeting will be highly interactive and use facilitation techniques for group consultations, to encourage everyone’s participation. The meeting will be organized in two steps. First, a variation of a “World Café” will be used to initiate and lead a collective reflection around the AA pillars and definition identified by the research team. A World Café is a simple yet

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powerful method to enable meaningful conversations driven by participants and the topics that are relevant and important to them,[33,34] to lay the groundwork for common understandings. Building on the results of the World Café, a "carousel brainstorming" technique will be used with AA experts to brainstorm on important components to be included in each pillar. A Carousel Activity is a communicative and interactive opportunity for participants to get up and move around a room in a circular fashion, stopping intermittingly to comment, discuss, or respond in writing to probing headings/questions/topics/themes posted by a facilitator.[35] This technique allows for small group discussion, followed by whole-group collective reflection.[36] Facilitation techniques ensure that everyone is able to participate equally and is able to express his/her viewpoint freely, while ignoring hierarchical concerns.[37] The results of this meeting will be analyzed by the research team to come to a consensus on the conceptual model of AA including the name, number of pillars, and definition of each identified pillar. This will serve as groundwork for the e-Delphi consultation.

Phase 2: Creation of the AA reflective tool through e-Delphi consultation

Phase 2 will be conducted on an online survey tool (Survey Monkey platform). After each round, a personalized report will be sent to each AA expert providing an overall view of responses as well as their own, in an anonymized format. A list of processes to operationalize the various pillars and sub-pillars developed during Phase 1 will be reviewed and adapted by the research team before submission to the expert panel. The mandate of the panel will be to set the importance of the suggested processes for each of the sub-pillars and to achieve a consensus on a final list of processes, considered to be very important or essential for assessment of an AA practice. Experts will also be surveyed regarding the adequacy of suggested response scales for each item of the reflective AA tool.

Round 1

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An individualized link to a personalized questionnaire will be sent to each AA expert. The first round of consultation will propose sub-pillars that have emerged from Phase 1. For each of the proposed sub-pillars, AA experts will be asked to rate their level of agreement (on a scale of 1 to 9) regarding the relevance of this sub-pillar to the concept of AA. The median as well as measures of dispersion will be used as indicators of the level of consensus. There is no commonly defined rule to determine achievement of consensus, so a pre-hoc decision was made to consider 75% agreement to be consensus. Based on applied methods to determine consensus in a Delphi, [38, 39] we define the following three zones: a median between 7 and 9 indicates high relevance, a median between 1 and 3 indicates low relevance, and a middle zone relevance of a median between 4 and 6 where the relevance is uncertain. These sub-pillars will be retained for a second round of consultation. A 9-point evaluation scale was chosen for this phase to allow participants to express their perception of relevance of a sub-pillar using a wide range of possibilities. Experts will also be asked to provide their definition, to comment on the sub-pillar, to indicate if this sub-pillar is associated with the appropriate pillar, and to add any sub-pillars they think are missing along with suggested definitions.

Round 2 and 3 surveys

A feedback report from the previous round will accompany each new round of questionnaires, including the level of consensus achieved along with global and individual relevance scores for each item. In rounds 2 and 3 (and further if needed) the importance of the suggested items will be rated using 5-point Likert scale. The specification of each element of the response scale (1=Not important at all, 2=Little important, 3=Somewhat important, 4=Very important and 5=Essential) is intended to simplify the respondents' burden of response while adding clarity to the responses obtained. Consensus will be attained if 75% of respondents rate an item “Very important” or “Essential.” More specifically, consensus will be reached with a median rating of 4 or more, with

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an interquartile range (IQR) of less than 1. If an item is rated below 4 by more than 25% of respondents, this be interpreted to be non-consensus. AA experts will be given the opportunity to modify their initial response in light of the answers provided from the group, so as to facilitate the group evolution towards consensus. [31,40] They will also be asked to score new propositions and modifications emerging from the previous round. The process will continue with further rounds until a consensus on the importance of each item is reached - or not.[31,40] The e-Delphi rounds will cease when an acceptable degree of consensus is reached.[41,42] Particular attention will be given following each round to assess whether consensus has been reached over a particular round, or rather evolved throughout the process, and whether the group's opinion has changed over the rounds.[43] Phase 2 will result in the creation of the online reflective tool based on the list of items for which consensus was achieved, to rigorously assess the processes required in an AA practice.

Phase 3: Assessment and applicability of the newly developed AA reflective tool and development of a repository of recommendations

A sub-group of 5 to 10 AA experts who participated in phases 1 and/or 2 will be consulted to formulate and prioritize recommendations for an optimal AA practice.

AA reflective tool refinement

Survey completion sessions will be organized with PHC professionals and staff from five different PHC clinics, who will not have been involved in the previous phases of the study. These survey completion sessions will include feedback discussions on the completion of the tool, and will be led by the research team. Following cognitive testing techniques[44], these sessions are intended to identify items that are not clear or need to be reformulated, as well as any difficulties encountered during completion of the questionnaire. Following this piloting and development

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period, the AA reflective tool will be considered to be final, and ready to be evaluated by a larger number of potential users.

Development of a repository of recommendations

A repository of recommendations aligned with the different components of the revised AA model will be created, in relation to the result obtained after the completion of the tool. This repository of recommendations will be made available through the electronic platform, upon completion of the evaluation using the AA reflective tool. Recommendations will be personalized according to the professional "portrait" based on their score on each pillar, providing them with actionable avenues. Such an approach was inspired by the primary care quality improvement tool of the College of Family Physicians of Canada.[25]

The repository of recommendations will be inspired by systematic collation of best practices, by reviewing the literature related to each of the components of AA (e.g., improving interprofessional collaboration, optimization of telephone reception, managing escalation of emergencies) and using feedback generated by the expert panel on the final e-Delphi round. Implementation guides as well as locally developed help-tools will serve as sources of recommendations for the repository and will be expanded with experiences of AA experts and their close collaborators. The repository will be expanded and refined during the third round of the e-Delphi and during the survey completion sessions. If discussion of recommendations cannot be addressed in the 3rd round of the e-Delphi, we will bring the discussion to experts in an additional face-to-face or virtual meeting."

Assessing the psychometric properties of the Reflective tool

The final step of development of the tool will consist of the evaluation of some of its psychometric properties. To do so, we plan to recruit a minimum of 150 to 200 PHC professionals in at least 10

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PHC clinics that have not been involved in the development of the tool.[45] The family physicians, nurses and other professionals working in those PHC clinics will be asked to complete the newly developed tool and comment on its content. Following qualitative feedback, the first analysis will be at the item level: after excluding items with more than 4% missing values, we will do an item discrimination analysis to learn how well an item can discriminate between high and low AA performers. Items with a lack of variation in responses – i.e., that are either too easy to or too difficult to attain – will be reviewed for content and adequacy of the response scale. Other properties tested will be the tool's reliability (repeatability, and intra- and inter-reliability in different contexts or between different types of healthcare professionals), and validity (construct validity with a confirmatory factor analysis). Finally, internal consistency will be analyzed for each pillar and sub-pillar.

Patient and public involvement

At least two patients will be invited to the face-to-face meeting in phase 1 as well as the e-Delphi survey. We also intend to consult the patient partners' group related to our research infrastructure at the end of the tool development to discuss issues that may have arisen and could require a patient point of view. This group is composed of 5 patients partners involved in different research project on AA.

Ethics and dissemination

Ethics and consent for participation will be sought at each phase of the study. Participation in a meeting or completion of an electronic survey will be considered to be consent for participation and use of anonymized data; as in focus groups or individual interviews, a written consent will be sought.

The results dissemination plan includes communications through the PHC community including

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our partner organizations, and to the scientific community via the peer-reviewed literature and conferences. We will attempt to reach many PHC professionals to let them know of our findings through professional organisations and by organising a symposium that will bring together our expert participants as well as colleagues from their organisations or from other organisations and PHC clinics. As so, elements and lessons learned from this study will be shared through multiple community media resources, including presentations and webinars, newsletters, and a symposium on AA initiated by the research team.

DISCUSSION

Scientific articles on the foundations of AA have been published over the past 20 years. During this time interdisciplinary collaborative practice has evolved within PHC family practices, with several healthcare professionals now being part of the PHC team. This study will help to redefine the foundations of the AA model by integrating an interdisciplinary team-based focus, while considering changes that have been put in place in PHC practices. The inclusion of various PHC stakeholders in the tool development process will allow the tool and its content to reflect realities experienced in the field. Participation of AA champions in the overall development process of the AA reflective tool will benefit the community's acceptance of the tool.

This study will provide a rigorously developed up-to-date AA reflective tool based on the literature and on the experiences of various PHC stakeholders, while providing a response to their expressed needs for a reflective tool. The newly developed reflective tool will be helpful as the Ministry of Health and Social Services and professional medical organisations are currently promoting AA in PHC settings and other professional associations across Canada. Timely access is a key pillar of PCMH, a well-known model to guide the developed of PHC around the world. The reflective tool on AA developed in this study will be available for use and adaptation in different countries.

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The repository of recommendations developed in parallel with the tool will provide the AA tool users with advice in relation with their own AA evaluation, and provide pragmatic and personalized recommendations to improve their AA practice. This will all be conveniently available online.

List of abbreviations

AA: Advanced access

PHC: Primary healthcare

PCMH: Patient-centered medical home

IQR: Interquartile range

Figures

Figure 1. The five pillars of advanced access. The figure shows the Advanced access model with the original five pillars and guiding principles. This is used as a starting point for this proposal.

DECLARATIONS

Ethics approval and consent to participate

The protocol for this study has been reviewed and approved by the Scientific Research Committee and ethics provided by the Research Ethics Board of the Centre Intégré de Santé et de Services Sociaux de la Montérégie-Centre (CISSS MC) (2020-441, CP 980475).

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AA Reflective tool development

Consent for publication

Not applicable

Availability of data and material

Not applicable

Authors' contributions

MB and IG led the conceptualization and design of the study, but all authors were involved. MB, IG and CB will lead the coordination of the study. MB, IG and CB wrote the first draft and MS, SAM, CH, IR, LM, AD, NDS and JH critically reviewed it and provided comments to improve the first draft and the revised version of the manuscript. All authors (MB, IG, CB, MS, SAM, CH, IR, LM, AD, NDS and JH) read and approved the final version.

Competing interests

The authors declare that they have no competing interests.

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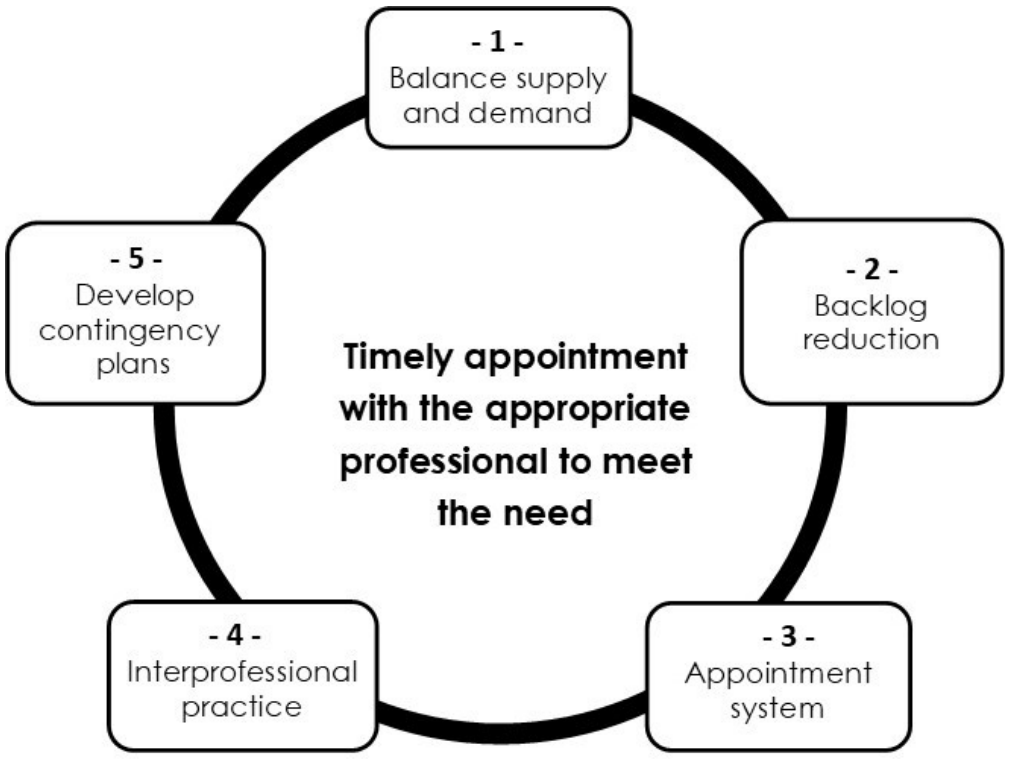

Figure 1. The five pillars of advanced access. The figure shows the Advanced Access model with the original five pillars and guiding principles. This is used as a starting point for this proposal.access initial development.

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Development of a self-reported reflective tool on advanced access to support primary healthcare providers: Study protocol of a mixed method research design using an e-Delphi survey

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Development of a self-reported reflective tool on advanced access to support primary healthcare providers: Study protocol of a mixed method research design using an e-Delphi survey

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ABSTRACT

Introduction

Timely access is one of the cornerstones of strong primary healthcare (PHC). New models to increase timely access have emerged across the world, including advanced access (AA). Recently in Quebec, Canada, the AA model has spread widely across the province. The model has largely been implemented by PHC professionals with important variations; however, a tool to assess their practice improvement within AA is lacking. The general objective of this study is to develop a self-reported online reflective tool that will guide PHC professionals' reflection on their individual AA practice and formulation of recommendations for improvement. Specific objectives are: 1) Operationalization of the pillars and sub-pillars of AA; 2) Development of a self-reported questionnaire; and 3) Evaluation of the psychometrics.

Methods and analysis

The pillars composing Murray's model of AA will first be reviewed in collaboration with PHC professional and stakeholders, patients, and researchers in a face-to-face meeting, with the goal to establish consensus on the pillars and sub-pillars of AA. Leading from these definitions, items will be identified for evaluation through an e-Delphi consultation. Three rounds are planned in 2020-21 with a group of 20-25 experts. A repository of recommendations on how to improve one's AA practice will be populated based on the literature and enriched by our experts

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throughout the consultation. Median and measures of dispersions will be used to evaluate agreement. The resulting tool will then be evaluated by PHC professionals for psychometrics in 2021-22.

Ethics and dissemination

The Centre Intégré de Santé et de Services Sociaux de la Montérégie-Centre Scientific Research Committee approved the protocol, and the Research Ethics Board provided ethics approval (2020-441, CP 980475). Dissemination plan is a mix of community diffusion through and for our partners and to the scientific community including peer-reviewed publications and conference presentations.

Keywords: Advanced Access, Reflective tool, Primary healthcare, Timely access, Self-reported, Delphi consultation

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Provides a revisited and operationalization of the pillars and sub-pillars of the advanced access model developed 25 years ago.
- Provides a rigorously-developed up-to-date tool on advanced access based on the literature and on the experiences of various primary healthcare stakeholders in response to their expressed needs.
- Involves the participation of multiple stakeholders with different roles and attached to diverse organisation originating from multiple environments including urban, rural and remote regions.
- The Delphi method allows the experts to express their thoughts independently, while encouraging pragmatism, honesty and creativity.
- The developed tool may not be transferable without cultural adaptation to other settings where the principles of AA are implemented.

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INTRODUCTION

Advanced Access model

Timely access is widely recognized as a cornerstone of effective primary healthcare (PHC). The Advanced Access (AA) model, developed to increase timely access, has been promoted and adopted in primary care settings in various countries. It is the most commonly used organizational model to reduce wait times for primary care appointments.[1] Timely access is one of the guiding principles of the Patient-centered Medical Home (PCMH).[2] The pillars of AA complement the PCMH model (timely access, comprehensiveness, continuity, interprofessional collaboration) and emphasize organizational components. AA has been defined according to five pillars:[3,4] 1) Balance supply and demand; 2) Reduce the backlog of previously scheduled appointments; 3) Review the appointment system; 4) Integrate inter-professional practice; and 5) Develop contingency plans (see Figure 1). The AA model was developed in the United States in 2001 and implemented in North America and Europe, with many studies in the USA, the United Kingdom and Canada and its effectiveness demonstrated in various healthcare systems.[5–9] Benefits of AA include reduced wait times,[5,6,9–11] fewer missed appointments,[5,10] and improved professional and [8,12] patient satisfaction,[5] and provider productivity.[9]

The AA model aligns with the organizational guiding principles for a high-quality-high-performance primary care organization as put forward by the College of Family Physicians of Canada.[13,14] That said, even if the concept of AA developed more than 20 years ago by Murray et al. remains current, it needs to be adapted to the contemporary context.[15] This study contributes to refine AA based on more interdisciplinary-based team and the need to improve PHC practice with a quality improvement approach.

Please insert figure 1 here

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AA Reflective tool development

Evolution of AA and state of research in the province of Quebec

In Quebec, AA was first introduced in 2012, and since then it has been widely promoted by the Quebec College of Family Physicians, as well as by the Ministry of Health and Social Services.[16,17] Family physicians are strongly encouraged to implement an AA model based on the five pillars proposed by Murray et al.[3] Over the past six years, the majority of PHC family physicians in Quebec have introduced AA in their organizations at varying levels of implementation. [4,18]

An expressed need for a reflective tool

Several guides have been developed in Canada,[18–20] the United States[21–23] and Europe[24] to assist PHC professionals and/or organizations to plan and implement AA. These guides offer recommendations to plan supply, reduce demand, and organize appointment management in order to achieve and maintain a balance between supply and demand, thus enabling timely responses to patient requests. The guides generally present principles of AA, along with how to implement initial changes and some measurement tools. They also offer strategies to support the introduction of AA, but lack information and guidance to improve and sustain AA or to troubleshoot issues over time.

There is no tool even to evaluate the status of AA in a professional's practice, let alone to guide its continuous improvement and sustainability. Inspired by the principles of the Model for Improvement, [25] such a tool could be used to align metrics across multiple PHC providers, while operationalizing the complex process of providing access to care in a daily practice. One could use the developed tool to reflect upon one's practice and plan for modifications to improve patient access. This project was therefore developed in response to a clearly expressed ministerial desire to meet the needs of PHC professionals to be supported in the clinical integration and improvement of AA in PHC settings. This study will provide an online reflective tool that will be

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used as requested by primary healthcare professionals seeking to improve their AA practice.

Self-reported tools are useful reflective strategies to support quality improvement as they are easily accessible and available when needed, regardless of location. These tools also provide an effective way to promote self-reflection and identification of strengths and areas in need.[26] Some tools available online, provide diagnosis, document or assess a level of practice or alignment with goals such as those of the tool developed by the College of Family Physicians in Canada to assess the Patient-centered Medical Home[27] or the Universal Health Coverage Primary Health Care Self-Assessment Tool.[28] Online tools may also offer a reflective perspective to provide actionable advice,[27] or immediate results and guidance.[29]

There is a need to develop a self-reported online reflective tool to support AA implementation and improvement by PHC providers. To achieve this objective, it is important to ensure that there is consensus on the underlying model. Differences in definition or interpretation of the pillars of AA could lead to operationalization difficulties, that can and should be avoided.

OBJECTIVES

The main objective of this study is to develop a self-reported reflective tool to support PHC providers to improve their AA practice.

The specific objectives are to:

1) Operationalize the pillars and sub-pillars of the AA model;

2) Develop a self-reported questionnaire on their practice in AA,

    2.1 Develop a questionnaire to assess the level of implementation of the AA model

    2.2 Identify key recommendations to improve AA.

3) Evaluate the psychometrics of the tool.

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AA Reflective tool development

The main deliverable of our study will be a self-reported reflective tool on AA that will be combined with a repository of recommendations to improve AA, available on an electronic platform easily accessible to PHC providers and teams. This includes: physicians, nurses and nurse practitioners, social workers, pharmacists, nutritionists, psychologists, etc. Users will receive, in one place, an evaluation of their AA practice and personalized recommendations to support improvement.

METHODS

Study design overview

A modified Delphi methodology will be used, to develop a reflective tool and identity strategies to improve AA. A literature review and analysis of selected articles will be used to identify conceptual constructs, followed by an iterative consensus achievement process among key experts including a face-to-face meeting and an online survey tool (e-Delphi).[30] Using an iterative process, a Delphi consultation is an effective technique designed to obtain the most reliable consensus within a group of experts regardless of their geographical spread.[31–33] A group of experts from the province of Québec will include diverse providers such as family physicians, nurse practitioners, nurses, front-desk and administrative staff and policymakers. Grounding the initial Delphi round in concepts derived from literature and based on initial experts' input during the face-to-face meeting will both be efficient, and will stimulate participation in the following steps of the tool development.

The process entails three sequential phases, with phase 1 being qualitative, while phases 2 and 3 being including quantitation. Table 1 briefly presents all three phases with their specific objectives. Phase 1 consists of a face-to-face meeting. This pre e-Delphi consultation aims to establish common bases in the operationalization of a revised AA model (objective 1). Phase 2 will

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consist of a three-round consultation to identify the content of the self-reported reflective tool. Phase 3 will follow to assess the developed reflective tool and its applicability to different PHC professionals and in different PHC environments.

The self-reported reflective tool aims to evaluate the processes associated with each AA pillar while allowing its users to grasp their strengths and weaknesses with respect to their level of implementation.

Table 1: The AA reflective tool development in brief

Phase 1 **Pre-Delphi consultation** Establishing common bases – Operationalize the AA model	- Research team identifies AA pillars and definitions from the literature - Identification and recruitment of AA experts - Consensus building on pillars and brainstorming about sub-pillars of AA through a facilitated face-to-face meeting
Phase 2 **e-Delphi consultation** Creation of the AA reflective tool (List of essential items to be assessed in the reflective tool by PHC practitioners/clinicians)	**1st round of consultation** - Panel expert agreements scores (from 1 to 9) on sub-pillars and definitions - Suggestions/comments for modification or addition to sub-pillars
	2nd round of consultation - Global and individual feedback report from round 1 (Level of consensus achieved, global and individual expert panel scores) - Panel expert agreement scores (from 1 to 9) on new propositions and modification emerging from round 1 - Panel expert agreement scores (from 1 to 5) on the importance of each sub-pillar and the list of items to measure their level of implementation - Panel expert agreement (yes/no) on suggested response scales - Suggestions/comments for modification or addition of items
	3rd round of consultation - Global and individual feedback report from round 2 (Level of consensus achieved, global and individual expert panel scores) - Consensus building on items by pillar and sub-pillar Suggestions for practical recommendations by item to provide to clinicians to improve their AA practice

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Phase 3 **Piloting, adjustment and development of a repository of recommendations** To assess the tool and its applicability in different PHC environments	- Questionnaire completion by PHC clinicians in different PHC settings - Psychometric properties analyses - Focus groups to receive feedback and improvement tips - Final adjustments - Development of a repository of recommendations with actionable guidance

Study management

The research team includes researchers with AA and methodological expertise, and PHC professionals including family physicians and nurses. The team will oversee the development and ongoing processes of the study, as well as major decisions regarding the selection of AA experts to invite to the face-to-face meeting (Phase 1) and to the e-Delphi consultation (Phase 2). They will also be involved in piloting material and instruments ahead of consultations.

The expert panel

To maximise the acceptability and usefulness of the reflective tool in Quebec's contemporary context, the research team will establish an AA expert panel comprised of provincial and local decision-makers, family physicians, practitioner and clinical nurses, continuous quality improvement officers, front desk, and administrative staff, as well as patients and researchers working in the field of AA. We will seek to bring together experts with diverse expertise based on their role in their own organization as well as at the local, regional or provincial level. Purposive and snowball sampling techniques will be used to identify eligible participants. Forty potential participants will first be approached and invited by the principal investigators by email to join the expert panel and to be part of the pre-Delphi meeting with the hope of recruiting and maintaining a sample of 20-25 experts across all 3 e-Delphi rounds. This is above the target of 10 to 18 individuals, to ensure the development of productive group dynamics and to maximize chances of reaching consensus among experts.[30] Participants will be considered for the panel if they are

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working in PHC or belong to an organization working closely with PHC professionals, and have an extensive experience with AA (5 years+) as a practitioner or manager. Practitioners and managers who were involved in the development of the training sessions provided by the Quebec College of Family Physicians will also be invited. [34] Strategies to maximize the retention rate include personalized reminders from one of the principal investigators, with the goal of not losing more than 30% of the participants over the 3 expected rounds. [30]

Phase 1: Operationalization of the AA model

Building a consensus around the AA model will first entail agreeing on the pillars and sub-pillars that are essential to integrate in an AA practice in PHC. The starting point will be the conceptual framework of the five guiding principles of AA developed by Murray and Berwick in 2003:[3] 1) Balance supply and demand; 2) Reduce the backlog of previously scheduled appointments; 3) Review the appointment system; 4) Integrate inter-professional practice; and 5) Develop contingency plans (see Figure 1).

Phase 1 will consist of a literature review to conceptualize a revised AA model. Search terms such as “advanced access,” “open-access,” “same-day scheduling,” “timely access” and “AA implementation” will be used. The literature review will include scientific studies and grey literature reports at local, national, and international levels. This scan will allow us to delineate the pillars and sub-pillars as defined in models of AA in the contemporary literature, as well as constructs that need to be measured within each sub-pillar.

Following revision by the research team, the revised AA model will be submitted to the AA expert panel in a face-to-face meeting for discussions to build consensus while refining the pillars and definitions. This in-person meeting will be highly interactive and use facilitation techniques for group consultations, to encourage everyone’s participation. The meeting will be organized in two steps. First, a variation of a “World Café” will be used to initiate and lead a collective reflection

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around the AA pillars and definition identified by the research team. A World Café is a simple yet powerful method to enable meaningful conversations driven by participants and the topics that are relevant and important to them,[35,36] to lay the groundwork for common understandings. Building on the results of the World Café, a "carousel brainstorming" technique will be used with AA experts to brainstorm on important components to be included in each pillar. A Carousel Activity is a communicative and interactive opportunity for participants to get up and move around a room in a circular fashion, stopping intermittingly to comment, discuss, or respond in writing to probing headings/questions/topics/themes posted by a facilitator.[37] This technique allows for small group discussion, followed by whole-group collective reflection.[38] Facilitation techniques ensure that everyone is able to participate equally and is able to express his/her viewpoint freely, while ignoring hierarchical concerns.[39] The results of this meeting will be analyzed by the research team to come to a consensus on the conceptual model of AA including the name, number of pillars, and definition of each identified pillar. This will serve as groundwork for the e-Delphi consultation.

Phase 2: Creation of the AA reflective tool through e-Delphi consultation

Phase 2 will be conducted on an online survey tool (Survey Monkey platform). After each round, a personalized report will be sent to each AA expert providing an overall view of responses as well as their own, in an anonymized format. A list of processes to operationalize the various pillars and sub-pillars developed during Phase 1 will be reviewed and adapted by the research team before submission to the expert panel. The mandate of the panel will be to set the importance of the suggested processes for each of the sub-pillars and to achieve a consensus on a final list of processes, considered to be very important or essential for assessment of an AA practice. Experts will also be surveyed regarding the adequacy of suggested response scales for each item of the reflective AA tool.

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Round 1

An individualized link to a personalized questionnaire will be sent to each AA expert. The first round of consultation will propose sub-pillars that have emerged from Phase 1. For each of the proposed sub-pillars, AA experts will be asked to rate their level of agreement (on a scale of 1 to 9) regarding the relevance of this sub-pillar to the concept of AA. The median as well as measures of dispersion will be used as indicators of the level of consensus. There is no commonly defined rule to determine achievement of consensus, so a pre-hoc decision was made to consider 75% agreement to be consensus. Based on applied methods to determine consensus in a Delphi, [40,41]we define the following three zones: a median between 7 and 9 indicates high relevance, a median between 1 and 3 indicates low relevance, and a middle zone relevance of a median between 4 and 6 where the relevance is uncertain. These sub-pillars will be retained for a second round of consultation. A 9-point evaluation scale was chosen for this phase to allow participants to express their perception of relevance of a sub-pillar using a wide range of possibilities. Experts will also be asked to provide their definition, to comment on the sub-pillar, to indicate if this sub-pillar is associated with the appropriate pillar, and to add any sub-pillars they think are missing along with suggested definitions.

Round 2 and 3 surveys

A feedback report from the previous round will accompany each new round of questionnaires, including the level of consensus achieved along with global and individual relevance scores for each item. In rounds 2 and 3 (and further if needed) the importance of the suggested items will be rated using 5-point Likert scale. The specification of each element of the response scale (1=Not important at all, 2=Little important, 3=Somewhat important, 4=Very important and 5=Essential) is intended to simplify the respondents' burden of response while adding clarity to the responses obtained. Consensus will be attained if 75% of respondents rate an item “Very important” or

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"Essential." More specifically, consensus will be reached with a median rating of 4 or more, with an interquartile range (IQR) of less than 1. If an item is rated below 4 by more than 25% of respondents, this be interpreted to be non-consensus. AA experts will be given the opportunity to modify their initial response in light of the answers provided from the group, so as to facilitate the group evolution towards consensus. [33,42] They will also be asked to score new propositions and modifications emerging from the previous round. The process will continue with further rounds until a consensus on the importance of each item is reached - or not.[33,42] The e-Delphi rounds will cease when an acceptable degree of consensus is reached.[43,44] Particular attention will be given following each round to assess whether consensus has been reached over a particular round, or rather evolved throughout the process, and whether the group's opinion has changed over the rounds.[45] Phase 2 will result in the creation of the online reflective tool based on the list of items for which consensus was achieved, to rigorously assess the processes required in an AA practice.

Phase 3: Assessment and applicability of the newly developed AA reflective tool and development of a repository of recommendations

A sub-group of 5 to 10 AA experts who participated in phases 1 and/or 2 will be consulted to formulate and prioritize recommendations for an optimal AA practice.

AA reflective tool refinement

Survey completion sessions will be organized with PHC professionals and staff from five different PHC clinics, who will not have been involved in the previous phases of the study. These survey completion sessions will include feedback discussions on the completion of the tool, and will be led by the research team. Following cognitive testing techniques[46], these sessions are intended to identify items that are not clear or need to be reformulated, as well as any difficulties

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encountered during completion of the questionnaire. Following this piloting and development period, the AA reflective tool will be considered to be final, and ready to be evaluated by a larger number of potential users.

Development of a repository of recommendations

A repository of recommendations aligned with the different components of the revised AA model will be created, in relation to the result obtained after the completion of the tool. This repository of recommendations will be made available through the electronic platform, upon completion of the evaluation using the AA reflective tool. Recommendations will be personalized according to the professional "portrait" based on their score on each pillar, providing them with actionable avenues. Such an approach was inspired by the primary care quality improvement tool of the College of Family Physicians of Canada.[27]

The repository of recommendations will be inspired by systematic collation of best practices, by reviewing the literature related to each of the components of AA (e.g., improving interprofessional collaboration, optimization of telephone reception, managing escalation of emergencies) and using feedback generated by the expert panel on the final e-Delphi round. Implementation guides as well as locally developed help-tools will serve as sources of recommendations for the repository and will be expanded with experiences of AA experts and their close collaborators. The repository will be expanded and refined during the third round of the e-Delphi and during the survey completion sessions. If discussion of recommendations cannot be addressed in the 3rd round of the e-Delphi, we will bring the discussion to experts in an additional face-to-face or virtual meeting."

Assessing the psychometric properties of the Reflective tool

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The final step of development of the tool will consist of the evaluation of some of its psychometric properties. To do so, we plan to recruit a minimum of 150 to 200 PHC professionals in at least 10 PHC clinics that have not been involved in the development of the tool.[47] The family physicians, nurses and other professionals working in those PHC clinics will be asked to complete the newly developed tool and comment on its content. Following qualitative feedback, the first analysis will be at the item level: after excluding items with more than 4% missing values, we will do an item discrimination analysis to learn how well an item can discriminate between high and low AA performers. Items with a lack of variation in responses – i.e., that are either too easy to or too difficult to attain – will be reviewed for content and adequacy of the response scale. Other properties tested will be the tool's reliability (repeatability, and intra- and inter-reliability in different contexts or between different types of healthcare professionals), and validity (construct validity with a confirmatory factor analysis). Finally, internal consistency will be analyzed for each pillar and sub-pillar.

Patient and public involvement

At least two patients will be invited to the face-to-face meeting in phase 1 as well as the e-Delphi survey. We also intend to consult the patient partners' group related to our research infrastructure at the end of the tool development to discuss issues that may have arisen and could require a patient point of view. This group is composed of 5 patients partners involved in different research project on AA.

Ethics and dissemination

Ethics and consent for participation will be sought at each phase of the study. Participation in a meeting or completion of an electronic survey will be considered to be consent for participation and use of anonymized data; as in focus groups or individual interviews, a written consent will be

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sought.

The results dissemination plan includes communications through the PHC community including our partner organizations, and to the scientific community via the peer-reviewed literature and conferences. We will attempt to reach many PHC professionals to let them know of our findings through professional organisations and by organising a symposium that will bring together our expert participants as well as colleagues from their organisations or from other organisations and PHC clinics. As so, elements and lessons learned from this study will be shared through multiple community media resources, including presentations and webinars, newsletters, and a symposium on AA initiated by the research team.

Discussion

Scientific articles on the foundations of AA have been published over the past 20 years. During this time interdisciplinary collaborative practice has evolved within PHC family practices, with several healthcare professionals now being part of the PHC team. This study will help to redefine the foundations of the AA model by integrating an interdisciplinary team-based focus, while considering changes that have been put in place in PHC practices. The inclusion of various PHC stakeholders in the tool development process will allow the tool and its content to reflect realities experienced in the field. Participation of AA champions in the overall development process of the AA reflective tool will benefit the community's acceptance of the tool.

This study will provide a rigorously developed up-to-date AA reflective tool based on the literature and on the experiences of various PHC stakeholders, while providing a response to their expressed needs for a reflective tool. The newly developed reflective tool will be helpful as the Ministry of Health and Social Services and professional medical organisations are currently promoting AA in PHC settings and other professional associations across Canada. Timely access is a key pillar of

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PCMH, a well-known model to guide the developed of PHC around the world. The reflective tool on AA developed in this study will be available for use and adaptation in different countries. The repository of recommendations developed in parallel with the tool will provide the AA tool users with advice in relation with their own AA evaluation, and provide pragmatic and personalized recommendations to improve their AA practice. This will all be conveniently available online.

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List of abbreviations

AA: Advanced access

PHC: Primary healthcare

PCMH: Patient-centered medical home

IQR: Interquartile range

Figures

Figure 1. The five pillars of advanced access. The figure shows the Advanced access model with the original five pillars and guiding principles. This is used as a starting point for this proposal.

DECLARATIONS

Ethics approval and consent to participate

The protocol for this study has been reviewed and approved by the Scientific Research Committee

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and ethics provided by the Research Ethics Board of the Centre Intégré de Santé et de Services Sociaux de la Montérégie-Centre (CISSS MC) (2020-441, CP 980475).

Consent for publication

Not applicable

Availability of data and material

Not applicable

Authors' contributions

MB and IG led the conceptualization and design of the study, but all authors were involved. MB, IG and CB will lead the coordination of the study. MB, IG and CB wrote the first draft and MS, SAM, CH, IR, LM, AD, NDS and JH critically reviewed it and provided comments to improve the first draft and the revised version of the manuscript. All authors (MB, IG, CB, MS, SAM, CH, IR, LM, AD, NDS and JH) read and approved the final version.

Competing interests

The authors declare that they have no competing interests.

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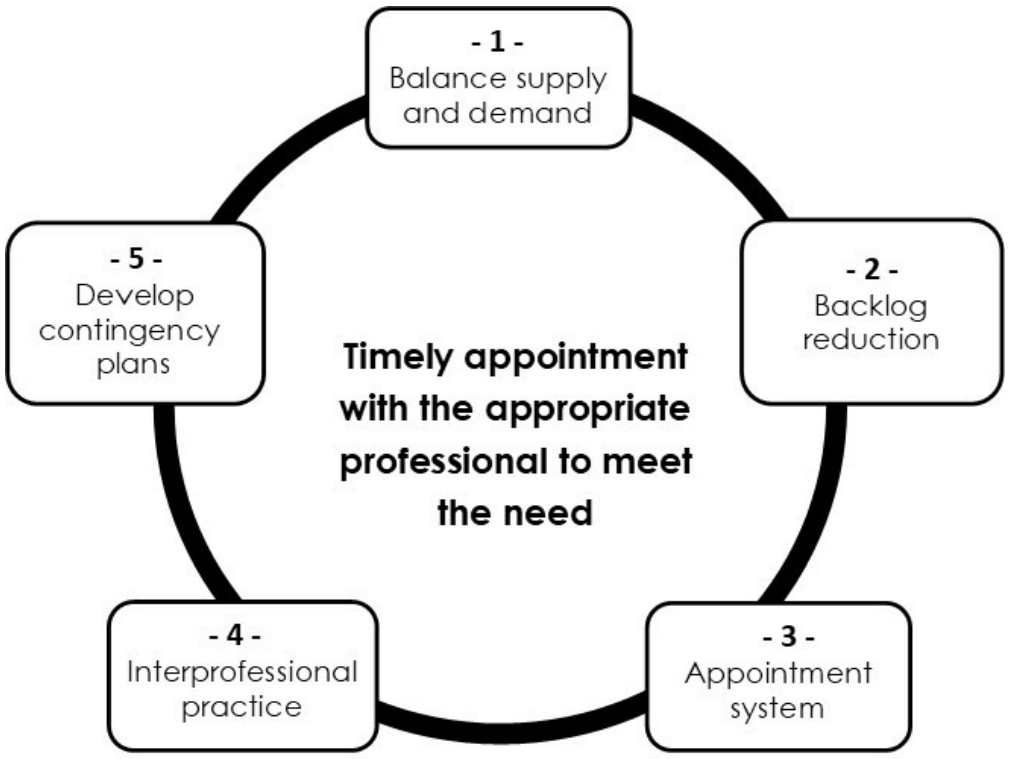

Figure 1. The five pillars of advanced access. The figure shows the Advanced Access model with the original five pillars and guiding principles. This is used as a starting point for this proposal.access initial development.

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