Potential of physician assistants to support primary care

Evaluating their introduction at 6 primary care and family medicine sites

Sarah Bowen MSc PhD Ingrid Botting PhD Lori-Anne Huebner MEd Brock Wright MBA FRCPC MD Beth Beaupre LLB
Sheldon Permack MD CCFP Ian Jones MPAS Ainslie Mihlachuk MD CCFP Jeanette Edwards MHA Chris Rhule MHSc

Abstract

Objective To determine effective strategies for introducing physician assistants (PAs) in primary care settings and provide guidance to support ongoing provincial planning for PA roles in primary care.

Design Time-series research design using multiple qualitative methods.

Setting Manitoba.

Participants Physician assistants, supervising family physicians, clinic staff, members of the Introducing Physician Assistants into Primary Care Steering Committee, and patients receiving care from PAs.

Methods The PA role was evaluated at 6 health care sites between 2012 and 2014; sites varied in size, funding models, geographic locations (urban or rural), specifics of the PA role, and setting type (clinic or hospital). Semistructured interviews and focus groups were conducted; patient feedback on quality improvement was retrieved; observational methods were employed; and documents were reviewed. A baseline assessment was conducted before PA placement. In 2013, there was a series of interviews and focus groups about the introduction of PAs at the 3 initial sites; in 2014 interviews and focus groups included all 6 sites.

Main findings The concerns that were expressed during baseline interviews about the introduction of PAs (eg, community and patient acceptance) informed planning. Most concerns that were identified did not materialize. Supervising family physicians, site staff, and patients were enthusiastic about the introduction of PAs. There were a few challenges experienced at the site level (eg, front-desk scheduling), but they were perceived as manageable. Unanticipated challenges at the provincial level were identified (eg, diagnostic test ordering). Increased attachment and improved access—the goals of introducing PAs to primary care—were only some of the positive effects that were reported.

Conclusion This first systematic multisite evaluation of PAs in primary care in Canada demonstrated that with appropriate collaborative planning, PAs can effectively integrate into primary care settings in a short period of time, with high acceptance from stakeholders. Further research is required to measure the effects of introducing PAs to health care centres and to provide direction for future outcome assessments.

EDITOR'S KEY POINTS

- The physician assistant (PA) profession is relatively unknown in Canada. This article describes an evaluation of the introduction of PAs at 6 sites in Manitoba, a leading province in the training, education, and employment of PAs since 1999.
- Many of the challenges at the site (eg, front-desk scheduling) and individual (eg, supervision time) levels were perceived as manageable. However, the challenges that proved more difficult to address were PAs ordering diagnostic tests and receiving the test results in a primary care setting, other health professionals accepting the PA role, and the ability to track how the introduction of a PA affected work flow and broader system functioning.
- With appropriate provincial planning (eg, early participation of stakeholders), site preparation (eg, development of supportive culture), and characteristics of the PA-physician team, PA roles can be successfully introduced to primary care settings. The most critical factor for success was identified as a good relationship and "fit" between the PA and the supervising family physician.

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Contribution potentielle des assistants médicaux aux soins de première ligne

Évaluation de leur intégration dans 6 sites de soins primaires et de médecine familiale

Sarah Bowen MSc PhD **Ingrid Botting** PhD **Lori-Anne Huebner** MEd **Brock Wright** MBA FRCPC MD **Beth Beaupre** LLB
Sheldon Permack MD CCFP **Ian Jones** MPAS **Ainslie Mihlachuk** MD CCFP **Jeanette Edwards** MHA **Chris Rhule** MHSc

Résumé

Objectif Déterminer des stratégies efficaces pour que des assistants médicaux (AM) puissent travailler dans un milieu de soins primaires; également, suggérer des façons de poursuivre la planification provinciale visant à définir les rôles des AM.

Type d'étude Un type de recherche par séries temporelles utilisant différentes méthodes quantitatives.

Contexte Le Manitoba.

Participants Assistants médicaux, médecins de famille superviseurs, membres du personnel clinique, membres du Introducing Physician Assistants into Primary Care Steering Committee et patients soignés par des AM.

Méthodes Le rôle des AM a été évalué entre 2012 et 2014 dans 6 établissements offrant des soins de santé; ces sites variaient en termes de taille, de mode de financement, de localisation géographique (urbaine ou rurale), des rôles particuliers des AM; et du contexte de travail (clinique ou hôpital). On a effectué des entrevues semi-structurées et tenu des groupes de discussion; on a obtenu le feedback des patients concernant l'amélioration éventuelle de la qualité; on a utilisé des méthodes observationnelles; et des documents ont été passés en revue. Une évaluation initiale a été faite avant l'intégration des AM. En 2013, on a tenu une série d'entrevues et de groupes de discussion au sujet du recrutement des AM dans les 3 premiers sites; en 2014, les entrevues et les groupes de discussion incluaient les 6 sites.

Principales observations Les préoccupations exprimées au cours des entrevues initiales à propos de l'intégration des AM (p. ex. leur acceptation par la communauté et par les patients) ont servi à planifier la suite. La plupart des inquiétudes mentionnées ne se sont pas matérialisées. Les médecins de famille superviseurs, le personnel des établissements et les patients étaient tous enchantés de l'arrivée des AM. Il y a eu quelques problèmes à certains établissements (p. ex. la prise de rendez-vous à la réception), mais on a estimé qu'ils pouvaient éventuellement être réglés. Au niveau provincial, toutefois, on a observé certains problèmes qui n'avaient pas été prévus (p. ex. la prescription d'examens diagnostiques). Quant aux buts poursuivis en intégrant le AM aux soins de première ligne, c.-à-d. favoriser leur accès et leur permanence, ils ne constituent que quelques-uns des avantages mentionnés.

Conclusion Cette première évaluation systématique de l'intégration d'AM dans plusieurs établissements canadiens de soins de première ligne a montré qu'avec une planification appropriée et une bonne collaboration, les AM peuvent effectivement être intégrés à des établissements de soins primaires dans un court laps de temps, tout en étant très bien accueillis par les personnes concernées. D'autres études seront nécessaires pour vérifier les effets de l'intégration des AM aux établissements de soins primaires et pour orienter les futures évaluations des résultats.

POINTS DE REPÈRE DU RÉDACTEUR

- La profession d'assistant médical (AM) est peu connue au Canada. Cet article présente une évaluation de l'intégration d'AM dans 6 cliniques du Manitoba, une province qui est à l'avant-garde dans le domaine de la formation théorique et pratique et du recrutement d'AM depuis 1999.
- On a jugé que plusieurs problèmes rencontrés à cette clinique, comme la prise de rendez-vous à la réception et certains cas particuliers, pourraient être réglés. D'autres cas, toutefois, se sont avérés plus difficiles à gérer, p. ex. la prescription d'examens diagnostiques par des AM dont ils recevaient les résultats dans un contexte de soins primaires, l'acceptation du rôle des AM par les autres professionnels de la santé et la capacité de vérifier en quoi le recrutement d'un AM affectait le déroulement du travail et le fonctionnement général du système.
- Avec une planification provinciale appropriée (p. ex. une participation précoce des personnes impliquées), une bonne préparation du personnel (p. ex. le développement d'une culture d'entraide) et certaines caractéristiques de l'équipe médecin-AM, on peut réussir à intégrer le rôle des AM dans un milieu de soins primaires.

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Provision of effective primary care is an important strategy in addressing the critical challenges facing Canada's health care system. Primary care, the foundation of any health care system, refers to first-contact and ongoing care and is where most health problems are treated. Primary care physicians form the backbone of primary care provision; however, recent initiatives are promoting greater team-based care to address the challenge Canadians experience in finding family physicians, as well as to respond to the growing complexity of care needs[1] across the health care spectrum. Interprofessional teams include a range of health care providers who work interdependently in a collaborative partnership to deliver primary health care services. There is growing evidence that collaborative primary care teams can improve patient health and quality of life, as well as contribute to overall system functioning.[2]

A potential strategy that has not yet been systematically explored in Canada is having physician assistants (PAs) as part of primary care teams. Physician assistants are medically educated clinicians who practise within a formalized relationship with physicians. The role of PAs in the practice of medicine includes diagnosing, obtaining medical histories, performing physical examinations, ordering and interpreting diagnostic studies, providing therapeutic procedures, prescribing medications, and educating and counseling patients. Although educated and qualified as medical generalists, PAs receive additional education and experience on the job and can work in various practice settings. Unlike nurse practitioners, PAs are not independent practitioners; rather, they work under the licence of supervising physicians, through a formal practice contract or agreement.[3] Physician assistants can *substitute* for a physician or *complement* the physician role (by taking over existing services or offering new ones).[4,5] While PAs are widely used in the United States and also in parts of Europe, Australasia, and Africa,[4] their profession is relatively unknown in Canada. Introduced in the Canadian Armed Forces in the 1950s, PAs now practise in 4 Canadian provinces. The Canadian Association of Physician Assistants reported having 457 members in 2014, 149 of whom were students; Ontario had the most members (276) and Manitoba was in second place with 75 members.[6] A 2012 study of 217 PAs determined that 42 of them reported working in primary care or family medicine settings.[7]

International research has demonstrated that PAs perform comparably to physicians on measures of quality and patient satisfaction, make positive contributions to productivity, and, in settings where they have been evaluated, provide cost benefits owing to their ability to substitute for physician services at lower cost.[4,5,8-11] However, the literature is US-centric, with only preliminary evaluation of PAs in the Canadian context, and there are few studies from other jurisdictions.[4]

In Canada, Manitoba has been a leader in training, education, and employment of PAs since it passed enabling legislation to allow PA practice in 1999.[7,12,13] The Faculty of Medicine at the University of Manitoba in Winnipeg provides the first and only graduate-level education program for PAs (a 2-year course of study) in Canada (**www.Umanitoba.ca/physicianassistant**). Although the first PA was hired in 2003,[7,12,13] only 2 civilian PAs were working in primary care or family medicine settings in Manitoba before 2011, when Manitoba Health initiated introduction of PAs into primary care as part of its efforts to support primary care renewal. The Introducing Physician Assistants into Primary Care (IPAPC) initiative was directed by a steering committee, which included senior representatives from Manitoba Health, Healthy Living and Seniors; the Winnipeg Regional Health Authority; the University of Manitoba; and the family medicine physician community.

This article describes an evaluation of the first 6 sites in Manitoba with a provincially funded PA role to help support the spectrum of primary care, with the priority of increasing physician panel size while improving access to care. Characteristics of the 6 sites are summarized in **Table 1**. Evaluation sites varied based on funding model (alternate-funded or fee-for-service model), size, geographic location (urban or rural), practice setting (clinic or hospital), and specific functions of the PA. The sites funded in 2013 had specific deliverables attached to funding (eg, attachment of new patients).

The purpose of the evaluation reported here was to determine effective strategies for implementing PA roles in primary care settings, and to provide timely guidance to inform ongoing provincial planning.

Evaluation planning

Evaluation planning to clarify the evaluation approach and identify questions began in May 2012, well before the first PA was placed in an evaluation site. A half-day workshop comprising IPAPC Steering Committee members, staff at the first site selected to introduce the PA role, and an evaluation consultant (S.B.) identified several evaluation research questions about introducing PAs to primary care. While the ultimate goal was to assess the contribution that PAs could make to primary care renewal, it was recognized that the first step was to evaluate implementation of the initiative. Only if an innovation is implemented as intended can outcomes be accurately assessed.[13] Canada's lack of experience in introducing PAs in primary care settings highlighted the importance of this initial focus.

Activities were funded by the Manitoba Patient Access Network. Research questions for this phase of the evaluation were as follows.

Table 1. Characteristics of evaluation sites

SITE	DESCRIPTION	PA START DATE	SUMMARY OF PA ROLE
1	Regional direct-funded primary care site (alternative-funded physicians)	January 2013	• Has a clinic-based primary care role (eg, providing primary care to patients with mental health concerns or patients who take methadone; providing home visits) • Carries responsibility for assigned patients
2	Community hospital	December 2012	• Has in-hospital family medicine role • Supports in-hospital care of 1 family medicine physician (community-based and in-patient practice) • Provides care for unassigned patients accepted by this physician under "Doc-of-the-day" program
3	Well established solo physician practice	November 2012	• Provides support for full-service family practice, including home care, long-term care, and hospital visits
4	Large independent rural physician practice (family medicine and other specialists)*	October 2013	• Provides support for practices of a team of 3 physicians—mainly clinic based
5	Large multidisciplinary practice (family medicine and other specialists)*	November 2013	• Provides clinic-based support for 2 supervising physicians • Focuses on facilitating access, providing vacation coverage
6	Primary care network (fee-for-service community practices)	November 2013	• Provides both clinic-based (full range of family medicine practice services) and hospital-based care; there is 1 main supervising clinic physician • Provides in-hospital care to patients of 3 additional physicians from 2 clinics

PA—physician assistant.
*Funded through the Interprofessional Team Development Initiative, which had built-in attachment incentives.

- What challenges can be anticipated to successfully introducing the PA role? What strategies can be put in place during the pre-introduction phase to minimize these challenges?
- What resources are needed to support the introduction and effective integration of PA roles in an interprofessional primary care setting? What characteristics and strategies are associated with successful implementation of this initiative?
- What challenges or barriers are experienced when introducing the PA role in primary care? How can they best be addressed?

In addition, in order to prepare for eventual outcome evaluation, including providing guidance on the development of data collection systems, this evaluation phase explored the following question.

- From the perspective of patients and providers, what are the effects of including the PA role in an interprofessional primary care team?

The IPAPC Steering Committee members committed to a collaborative evaluation approach (ie, active participation of all key stakeholders in determining evaluation purpose, approach, and questions, as well as in interpreting data). The team determined that the evaluation purpose should be *developmental* and the approach should be *utilization focused.* A developmental evaluation integrates evaluation with ongoing program or organizational development, providing timely information in a rapidly evolving context.[14] A utilization-focused approach adopts strategies to make the evaluation relevant to decision makers and encourage use of findings.[13]

METHODS

An evaluation plan based on questions generated during the initial workshop was developed and circulated to the IPAPC Steering Committee members for additional input. The plan employed multiple qualitative methods (individual semistructured interviews, focus groups, document review, observational methods, and incorporation of data from patient quality improvement interviews) within a time-series design. Ethics approval was obtained from the University of Manitoba Health Research Ethics Board, and from the Winnipeg Regional Health Authority Research Review Committee.

Qualitative methods are most appropriate for exploring areas of emerging research and in cases where all the effects of an intervention have not been identified. They are also useful for obtaining the perspectives of various stakeholders and for identifying unintended and unanticipated consequences of planned interventions—all objectives of this evaluation. In addition, qualitative methods can generate preliminary data on questions for which quantitative data are not available (eg, outcomes of this intervention).[15] While individual interviews provided both the needed confidentiality required for the PAs and supervising physicians to

participate safely in the evaluation, focus groups conducted with affected staff provided a cost- and time-effective method that offered 2 things: the potential for enhanced data quality generated through participant interaction, and an assessment of the extent to which perspectives of various stakeholders were similar or divergent.[15,16] Participant observation methods allowed perspectives stated informally and in public to be compared with data collected through more formal research processes.[17]

Consistent with collaborative evaluation practice, interview and focus group guides were developed by the evaluator in collaboration with the steering committee for each of the 3 evaluation phases. Interviews and focus groups were conducted before the first PA placement, several months after placement of PAs at the first 3 selected sites, and several months after PAs began working at the other 3 sites.

Participant observation activities (eg, planning and steering committee meetings) throughout the evaluation were recorded with field notes. **Table 2** provides a summary of interview and focus group topics. Health professional telephone interviews were conducted by the evaluation consultant (S.B.), who also conducted all but 2 of the focus groups with the assistance of a program specialist from the Winnipeg Regional Health Authority (L.A.H.). Two of the focus groups were conducted by the program specialist alone. Interviews and focus groups were audiotaped. The focus groups in the second evaluation phase (2013) were held concurrently with individual interviews; the 2014 interviews (during the third evaluation phase) preceded and informed development of the focus group topics.

Participants and sample

All 6 sites approved for funding by Manitoba Health between November 2012 and November 2013 were included in the evaluation. All IPAPC Steering Committee members and all supervising physicians and PAs from the 6 sites were invited to participate in interviews. Purposeful selection of staff to participate in focus groups was made in collaboration with the Primary Care–Family Medicine Program team, the PA, the supervising physician, and the office manager at each site. Several participants from the initial 3 evaluation sites participated in both 2013 and 2014 focus groups. As part of a quality improvement activity, 10 patients from each of 5 sites were selected from 5 of the 6 sites based on the following inclusion criteria: they were attached to the practice for a minimum of 3 years, had had a minimum of 2 PA visits, were older than 18 years of age, and were able to participate in English. Exclusion criteria included those with a recent serious illness or terminal diagnosis, or those who lacked the cognitive ability to give consent and participate. **Table 3** describes which participants (PAs, supervising family physicians, etc) were involved in each phase of the evaluation.

Analysis

A general inductive approach, as described by Thomas,[18] was used for analysis. This approach is a systemic procedure for analyzing qualitative data where the analysis is likely to be guided by specific evaluation objectives, and where timeliness is of importance. The evaluator (S.B.) reviewed all audiotapes, in conjunction with field notes, to identify emerging categories[19]; this was followed by partial transcription of textual segments addressing identified categories or emerging themes in order to facilitate more in-depth analysis. Analysis was undertaken first by question, focusing on perspectives of each of the 5 participating groups (ie, physicians, PAs, steering committee members, patients, and site managers or staff) separately to facilitate comparison of responses. Additional specific categories were derived from intensive and multiple reviews of the transcripts, allowing identification of additional themes. In this inductive process, codes are identified, combined into categories, and then developed into themes.[15] Triangulation of sources (5 participant perspectives) and methods (observation, documentation review, individual and focus group interviews) combined with collaborative review (stakeholder checking) of draft reports by IPAPC Steering Committee members helped ensure data quality and credibility.[17]

Three reports were produced: a baseline report (November 2012) that documented initial perspectives and implementation suggestions; a phase 2 report that documented findings from introducing PAs at the first 3 sites (August 2013); and a final implementation evaluation report (June 2014).

FINDINGS

The following 5 themes emerged from our data: anticipated challenges to the introduction of PAs; overall response to PA introduction; factors associated with the successful introduction of PAs; challenges experienced; and initial reported effects of introducing PAs.

Anticipated challenges to the introduction of PAs. While participants voiced strong general support for the planned innovation, they also highlighted a number of concerns during baseline interviews. These concerns can be categorized as the following: potential for unrealistic expectations of PA introduction; issues related to planning, management, and resourcing; specific functions of the PA role; community or patient acceptance; health provider acceptance; and the potential risks to the sponsoring organizations, and to the PA profession itself, of introducing a new

role of which many had very high expectations. Many feared that the PAs, who were expected to be new graduates, would require 6 to 12 months of orientation and experience before benefits of their introduction would be achieved. Physicians expressed concern about the supervision time needed, as this was not compensated. There was also concern about whether the PA education program adequately prepared graduates for primary care roles. As one steering committee member stated: "I'm quite worried about what they come with ... feel there is a big chunk missing." (IPAPC Steering Committee member, 09)

There was also concern about whether PA roles would be accepted by patients and other providers. These findings, along with identified best practices from the interprofessional literature, informed implementation planning and resourcing of this initiative.

Overall response to PA introduction. Acceptance of the PA role by supervising family physicians, patients, and

Table 2. Topics of discussion during interviews and focus groups

PHASE	TOPICS OF DISCUSSION DURING INTERVIEWS AND FOCUS GROUPS
1 (baseline interviews)	• Suggested sources of evidence for planning • Perspectives on roles of PAs in primary care • Perspectives on needed characteristics and qualifications of PAs working in primary care • Desired effects of including PAs in primary care • Potential challenges and risks associated with introduction of PAs • Advice for implementing this initiative • Perspectives on the evaluation
2 (introduction of PAs at the 3 initial sites)	• Initial expectations of PA introduction • What has worked well with implementing this initiative • Facilitators of positive introduction • Challenges to implementation of this initiative • Strategies to avoid and address challenges • Changes resulting from PA introduction • Advice for future implementation of this initiative
3 (introduction of PAs at the 3 remaining evaluation sites)	Previous evaluation participants: health professionals and steering committee members • Response to evaluation findings to date • Extent to which initial challenges have been addressed • Identification of any new challenges • Additional or ongoing supports that are needed • How the PA role changed or evolved • Overall evaluation of experience with the implementation of this initiative (probe specifics) • Overall evaluation of the effects of introducing PAs (probe specifics) • Unique aspects of the PA role • Advice for Manitoba Health, Healthy Living and Seniors; health regions; and the University of Manitoba New evaluation participants: health professionals and steering committee members • Initial expectations • What is working well in implementation • Challenges to implementation of this initiative • Supports needed • Changes experienced as a result of PA role at site • Overall evaluation of the experience with implementation of this initiative (probe specifics) • Overall evaluation of the effects of introducing PAs (probe specifics) • Unique aspects of PA role • Advice for Manitoba Health, Healthy Living and Seniors; health regions; and the University of Manitoba Patient interviews • Satisfaction with care at the clinic or site • Satisfaction with physician care • Satisfaction with PA care • How the experience has changed with introduction of PAs to the site • Specific probes (varied by hospital or clinic focus): effects on access, care, time, etc • Advice on PA use for Manitoba Health, Healthy Living and Seniors and regions

PA—physician assistant.

Table 3. Summary of evaluation phases

PHASE	METHODS	INCLUDED IN THE EVALUATION
1 (2012)	Individual semistructured interviews	16 participants • 12 IPAPC Steering Committee members • 4 site representatives
2 (2013)	Individual semistructured interviews Focus groups (3 sites)	24 participants • 3 PAs • 3 supervising physicians at 3 sites • 18 staff members affected by the introduction of PAs
3 (2014)	Individual semistructured interviews Focus groups (6 sites)	74 participants • 6 PAs • 6 supervising physicians at 6 sites (3 original sites and 3 new sites) • 7 IPAPC Steering Committee members • 26 staff members affected by the introduction of PAs • 29 patients
All phases	Participant observation Document review	• IPAPC Steering Committee • Implementation and evaluation subcommittee meetings • Provincial PA symposium • Data collection working group meetings • Meeting minutes, data collection forms, other relevant documents

IPAPC—Introducing Physician Assistants into Primary Care, PA—physician assistant.

site staff was enthusiastic; a vast majority believed that earlier identified concerns were unfounded. The feared interprofessional "turf war politics" were not reported. Sites reported a shorter "ramp up" time and experienced benefits earlier than expected. There were no important differences in experience or level of support reported among the groups. Examples of statements about the introduction of PAs include the following.

> An answer to our prayers. (Health provider, focus group, site 3)

> Patients absolutely adore [PA name]. (Clinic staff, focus group, site 1)

> When [physician's name] is away, the patients I see smile when they see me, a familiar face even though it is in the hospital. (PA, 017)

No concerns about patient acceptance or quality of care were identified. Several participants gave specific examples of improved quality of care. While both physicians and PAs identified some gaps in PA education for primary care (eg, addressing community care or social determinants of health issues; communicating with families), these were not experienced as insurmountable.

Factors associated with the successful introduction of PAs. Factors associated with the successful introduction of PAs were identified at the provincial, site, and team levels (**Table 4**). Contributing factors included provincial planning, appropriate site preparation, and characteristics of the PA-physician team. The enabling factors were found to be similar across sites. The most critical factor in successful PA placements was identified as a good relationship and "fit" between the PA and the supervising physician.

Challenges experienced. Challenges at the provincial, site, and individual levels were also identified (**Table 4**). In general, challenges at the site level (eg, front-desk scheduling, attempts to offload less-desirable appointments to the PA) were perceived as manageable and to be expected with any system change. It was noted that in some cases these challenges promoted reexamination of established procedures. For example, one physician noted that introduction of a PA to the practice promoted "self-reflection on why you do things the way you do, it pushes you to update … [it] gives you ability to operationalize innovations." (Supervising family physician, 07)

Issues related to the PA-physician dyad, such as supervision time, were also not perceived to be serious challenges. Some physicians described the initial supervision of PAs as similar to supervising medical residents, and reported similar processes for increasing independence as competence was demonstrated. Both PAs and physicians emphasized the importance of "fit," good communication, and mutual confidence.

However, several challenges to PA implementation at the provincial (ie, system) level were identified.

> The concerns are not about the people trying to do the job … it's the overall system. I'm not seeing any system support of what we are trying to do. The work force issues and planning is still ad hoc. (IPAPC Steering Committee member, 05)

Table 4. Facilitating factors and challenges

LEVEL	FACILITATING FACTORS	POTENTIAL CHALLENGES
Provincial	• Structure to link stakeholders and provide discussion forum • Early participation of stakeholders in planning and evaluation • Careful selection of initial sites or supervising physicians • Provision of resources to support implementation (eg, implementation facilitator)	• Establishment of system for salary payment, computer access, etc • Communicating PA role and mandate to related services • Systemic barriers to PA test ordering or results • Confusion about deliverables • Dissatisfaction with physician compensation • Relationship with PA education program • Relationship with family physician community • Ability to track effects of PA introduction
Site	• Culture supportive of innovation and experimentation • "Fit" between PA and site culture, needs • Readiness and support of staff teams • Adequate preparation time, orientation for all involved • Clear communication of roles and processes • Mechanisms for early identification and resolution of problems	• Front-desk scheduling • Staff education • Clinic flow • Tracking diagnostic tests or results • Workload of administrative staff • Communicating PA role to associated services • Communicating PA role to patients • Space for additional staff
Individual	• "Fit" between PA and supervising physician • Physician willingness to invest time in PA orientation and training • Skills and attitudes of PA • Willingness of PA and physician to innovate and adapt	• Clarification of supervision processes • Adapting orientation or supervision to increasing PA independence • Development of communication processes • Number of physicians to whom PA is assigned • Workload management

PA—physician assistant.

Some of the identified challenges, such as arranging salary payment or provision of computer access, were experienced only by the initial 3 sites, indicating that these issues could be easily resolved. However, other challenges proved more difficult to address. These included issues related to PAs ordering diagnostic tests and receiving the test results; acceptance of the PA mandate by other health professionals such as pharmacists; and the ability to track how introducing a PA (or specific PA activities) affected the work flow at the site and broader system functioning.

There were some potential emerging challenges identified as well: determining the maximum or optimum number of physicians that could be supported by one PA, and maintaining a PA's energy or enthusiasm given potential workload.

Initial reported effects of introducing PAs. Although the effects of introducing PAs were not the primary focus of the evaluation, participants reported many positive effects (for patients, physicians, and the health care system) when PAs were included in their care. Contrary to expectations, positive effects were observed within a few months of PA hiring. These preliminary findings provide important guidance in developing comprehensive strategies for assessing the effects of PA introduction to primary care—an important challenge.

The effects most frequently reported related to patient quality of care and access. Introduction of a PA was reported to result in rapid improvement in patient access, even during initial training or orientation phases. Some site participants stated that increased access resulted in the following: decreased emergency department visits, walk-in clinic visits, and hospitalizations; increased responsiveness to provider or patient telephone calls; improved staff and patient satisfaction; and enhanced quality of care and patient safety due to timely care.

Some of the practices had reports of greater ability to accommodate new patients, including increased hospital coverage of unattached patients; there were also reports of enhanced patient flow, timeliness of follow-up (hospital and clinic), and improved communication and documentation.

> [Physician assistants] allow the doctor to take more patients, which we really need. I know the clinic has been able to take on many in my community who didn't have a doctor. Because they have a PA. (Patient, site 6)

Many participants made comments regarding perceptions of enhanced work-life satisfaction of physicians and other providers.

> Patients tell me [the doctor] seems less stressed. Now I can see how the profession can extend the life of a family practitioner. (PA, 017)

> A big difference in [doctor's name] ... seems less stressed and happier. It has made a world of difference for [the doctor]; I can tell. (Patient, site 1)

> Personally, professionally [it's] very valuable because of me having another focus ... demands on my time. It makes the situation more sustainable to me, each job more enjoyable. (Supervising family physician, 027)

Similar effects were observed among affected, particularly hospital-based, staff, who reported reduced frustration and workload, enhanced interprofessional communication, and greater confidence in the care the patients received.

All participant groups identified contributions to overall system functioning. For example, decreased interruptions to the physician's workday (reduced telephone calls or needed hospital visits) were reported, as were the benefits of enhanced documentation. Discussions during one focus group (focus group, site 3) included clinic staff statements such as "Phone calls during the day are cut by 90%," and "A PA does a lot of the recording, etc. It frees up the doctor to do more serious things, especially since there is a lack of family docs."

DISCUSSION

This study found that with appropriate planning and preparation, PA roles can be successfully introduced to primary care settings, achieving strong support from physicians, patients, and affected staff members in a relatively short period of time. It should also be noted that, even though the goals of the innovation were to focus on primary care in the community, PAs in the evaluation sites have supported an expanded role for family physicians in hospital and long-term care. Our findings suggest promising potential for PAs to help family physicians to continue to provide care in an increasingly demanding health care environment.[20]

Findings regarding the emphasis given to "fit," communication, and trust between the PA and the supervising physician highlight the importance of hiring and selection processes. They also emphasize the importance of identifying and addressing potential health system barriers to introducing PAs to primary care, rather than focusing preparation only on physicians and primary care sites. Barriers at the system (ie, provincial) level identified in this research are consistent with previous research indicating the need to address regulations to ensure more flexible professional roles, address fee-for-service compensation issues, and ensure clear policies.[21] Failure to appropriately evaluate interprofessional innovations has also been identified as a barrier to successful interprofessional initiatives.[22] This research demonstrates the benefits of evaluation to support emerging innovation, guide planning, build consensus among diverse partners, and maintain attention on the supports and adaptations needed to facilitate effective interventions. As one participant observed,

> Doing [the evaluation] assisted the implementation; it forced us to think through some of the issues .... It also gave more credibility with the funder and physicians themselves. (IPAPC Steering Committee member, 011)

Limitations

There are a number of limitations to this research. First, it was conducted in only one provincial jurisdiction. Second, as sites and providers were selected for their interest and readiness, the evaluation was conducted with highly motivated "early adopters" who were committed to interprofessional practice, had adopted electronic medical record systems, and were provided with additional implementation supports. It cannot be assumed that initial concerns about PA introduction were unfounded; the apparent ease of introducing PAs to primary care observed in our study is likely owing, in large part, to planning and resources provided to support the implementation of this initiative and address identified concerns. Caution is also required in interpreting preliminary findings related to effects, particularly as they rely only on stakeholder reports. The research required to confirm and quantify reported effects of PA introduction has not been conducted. However, the intent of this assessment was to provide guidance to future development of comprehensive data collections systems that would facilitate such patient and system outcome assessments. Reported benefits to physicians, patients, and the health system are also consistent with findings of another Canadian study.[23]

As is commonly found in evaluation research, time and cost implications did not allow for detailed transcription of entire audiotapes; rather partial transcription was undertaken following identification of themes from careful review of audiorecordings. This rapid approach, as described by Neal and colleagues,[19] brings the advantage of speedy but still detailed results. It would have been of benefit to have 2 researchers analyze individual interviews and focus group discussions. While participant desire for confidentiality, combined with resource limitations, did not allow for this, several strategies were used to address this limitation: involving all stakeholders in the review of early drafts of the evaluation report; including a question in follow-up interviews asking participants about their response to previous reports; and employing triangulation of data sources and methods.

It is unclear to what extent perceived benefits resulted from provision of an additional provider rather than introduction of a PA specifically. It should be noted, however, that most participants attributed results to the specific nature of the PA role. The fact that the PA does not work independently was described by many to lead to enhanced interprofessional communication between both the PA and physician, and the physician and other providers. This is consistent with the interprofessional literature highlighting constant opportunity for effective, frequent, informal shared communication as the most critical factor in achieving and sustaining effective interprofessional collaborative practice.[24]

Conclusion

With appropriate planning and supports, PAs can be effectively introduced into Canadian primary care settings, and their introduction to these settings can achieve the benefits identified in the international literature in a relatively short period of time. Provincial health departments health system stakeholders must work together to address identified barriers at the provincial level if optimal results are to be achieved. Further research is required to measure identified effects of PA introduction, and to determine the unique contributions of PA roles to primary care. Such research should be prioritized given the potential role of PAs in addressing the needs of unattached patients, providing greatly enhanced patient access, and supporting provision of high-quality care across the spectrum.

Dr Bowen is Adjunct Professor in the Department of Epidemiology and Community Medicine at the University of Ottawa in Ontario, and is an applied research and evaluation consultant. **Dr Botting** is Director of Health Services Integration for the Family Medicine–Primary Care Program at the Winnipeg Regional Health Authority in Manitoba and Assistant Professor in the Department of Community Health Sciences at the University of Manitoba. **Ms Huebner** is Benefits Evaluation Lead at the Centre for Family Medicine eHealth Centre of Excellence in Kitchener, Ont. **Dr Wright** is Chief Medical Officer and Senior Vice President of Clinical Services at the Winnipeg Regional Health Authority. **Ms Beaupre** is Assistant Deputy Minister at Manitoba Health Workforce. **Dr Permack** is Medical Director at the Winnipeg Regional Health Authority and a practising family physician in Winnipeg. **Mr Jones** is a Canadian-certified physician assistant and Director in the Office of Physician Assistant Studies at the University of Manitoba. **Dr Mihlachuk** is Chief Medical Officer at Concordia General Hospital and a practising family physician in Winnipeg. **Ms Edwards** is Regional Director of Primary Care and Chronic Disease at the Winnipeg Regional Health Authority. **Mr Rhule** is a physician assistant consultant and President of the Canadian Association of Physician Assistants.

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Contributors

Dr Bowen was the lead evaluator on the project who designed and conducted the research in collaboration with the Introducing Physician Assistants into Primary Care (IPAPC) Steering Committee. **Dr Botting** was responsible for the overall project and is identified as the principal investigator for all implementation and evaluation activities. **Ms Huebner** was the evaluation research coordinator who contributed to data collection, project coordination, and data analysis. The remaining authors are active members of the IPAPC Steering Committee who were involved, in this collaborative research project, in helping frame the evaluation plan and questions, interpret findings, and review and contribute to the final article. **Dr Wright** and **Ms Beaupre,** as co-leads of this provincial initiative, were responsible for designing the intervention, providing input into evaluation research planning, and interpreting and moving evaluation findings into action; they reviewed the article from a policy perspective. **Dr Permack** was the lead family physician on the project, integrally involved with project design. **Mr Jones** was the lead on the educational implications of evaluation findings. **Ms Edwards, Mr Rhule,** and **Dr Mihlachuk** are active in research and evaluation planning on behalf of the IPAPC Steering Committee; they also provided critical review of the article from the following perspectives: interprofessional initiatives in primary care, physician assistant roles in health services, and historical and current contexts.

Competing interests

None declared

Correspondence

Dr Sarah Bowen; e-mail **sarahbowen.parada@gmail.com**

References

1. Health Council of Canada. *Teams in action: primary health care teams for Canadians*. Toronto, ON: Health Council of Canada; 2009. Available from: **www.healthcouncilcanada.ca/tree/2.42-teamsinaction_1.pdf.** Accessed 2016 Apr 8.
2. Aggarwal M, Hutchison B. *Toward a primary care strategy for Canada*. Ottawa, ON: Canadian Foundation for Healthcare Improvement; 2012. Available from: **www.cfhi-fcass.ca/Libraries/Reports/Primary-Care-Strategy-EN.sflb.ashx.** Accessed 2016 Apr 8.
3. Canadian Medical Association, Canadian Association of Physician Assistants. *Physician assistant toolkit: a resource for Canadian physicians*. Ottawa, ON: Canadian Medical Association; 2012. Available from: **www.cma.ca/Assets/assets-library/document/en/advocacy/PA-Toolkit-e.pdf**. Accessed 2016 Apr 11.
4. Hooker RS, Everett CM. The contributions of physician assistants in primary care systems. *Health Soc Care Community* 2012;20(1):20-31.
5. Laurant M, Harmsen M, Wollersheim H, Grol R, Faber M, Sibbald B. The impact of nonphysician clinicians: do they improve the quality and cost-effectiveness of health care services? *Med Care Res Rev* 2009;66(6):36S-89.
6. Jones IW, St-Pierre N. Physician assistants in Canada. *JAAPA* 2014;27(3):11, 13.
7. Jones IW. Where the Canadian physician assistants are in 2012. *JAAPA* 2012;25(10):54.
8. Bapuji SB, Winters S, Metge CJ. *Physician assistants (PAs) in primary care: a rapid evidence scan*. Winnipeg, MB: Winnipeg Regional Health Authority; 2012.
9. Kreindler SA. *Non-physician practitioners in the Canadian context: background document*. Winnipeg, MB: Winnipeg Regional Health Authority; 2007.
10. Henry LR, Hooker RS, Yates KL. The role of physician assistants in rural health care: a systematic review of the literature. *J Rural Health* 2011;27(2):220-9.
11. Kurti L, Rudland S, Wilkinson R, Dewitt D, Zhang C. Physician's assistants: a workforce solution for Australia? *Aust J Prim Health* 2011;17(1):23-8.
12. Jones IW, Hooker RS. Physician assistants in Canada. Update on health policy initiatives. *Can Fam Physician* 2011;57:e83-8. Available from: **www.cfp.ca/content/57/3/e83.full.pdf+html.** Accessed 2016 Apr 8.
13. Patton MQ. *Utilization-focused evaluation: the new century text.* 3rd ed. Thousand Oaks, CA: Sage Publications; 1997.
14. Patton MQ. *Developmental evaluation. Applying complexity concepts to enhance innovation and use*. New York, NY: Guilford Press; 2011.
15. Patton MQ. *Qualitative research and evaluation methods.* 3rd ed. Thousand Oaks, CA: Sage Publications; 2002.
16. Krueger RA. *Focus groups: a practical guide for applied research*. Newberry Park, CA: Sage Publications; 1988.
17. Patton MQ. Enhancing the quality and credibility of qualitative analysis. *Health Serv Res* 1999;34(5 Pt 2):1189-208.
18. Thomas DR. A general inductive approach for evaluating qualitative evaluation data. *Am J Eval* 2006;27(2):237-46.
19. Neal JW, Neal ZP, VanDyke E, Kornbluh M. Expediting the analysis of qualitative data in evaluation: a procedure for the rapid identification of themes from audio recordings (RITA). *Am J Eval* 2015;36(1):118-32.
20. Dewa CS, Jacobs P, Thanh NX, Loong D. An estimate of the cost of burnout on early retirement and reduction in clinical hours of practicing physicians in Canada. *BMC Health Serv Res* 2014;14:254.
21. San Martín-Rodríguez L, Beaulieu MD, D'Amour D, Ferrada-Videla M. The determinants of successful collaboration: a review of theoretical and empirical studies. *J Interprof Care* 2005;19(Suppl 1):132-47.
22. Canadian Alliance for Sustainable Health Care. *Improving primary health care through collaboration. Briefing 2—barriers to successful interprofessional teams.* New York, NY: Conference Board of Canada; 2012. Available from: **www.wrha.mb.ca/professionals/collaborativecare/files/IPHCTC-Briefing2.pdf.** Accessed 2016 Apr 11.
23. Taylor MT, Taylor DW, Burrows K, Cunnington J, Lombardi A, Liou M. Qualitative study of employment of physician assistants by physicians. Benefits and barriers in the Ontario health care system. *Can Fam Physician* 2013;59:e507-13. Available from: **www.cfp.ca/content/59/11/e507.full.pdf+html.** Accessed 2016 Apr 11.
24. Morgan S, Pullon S, McKinlay E. Observation of interprofessional collaborative practice in primary care teams: an integrative literature review. *Int J Nurs Stud* 2015;52(7):1217-30.