

Family physicians' perspectives on personal health records

Qualitative study

Gary L. Yau Andrew S. Williams Judith Belle Brown PhD

Abstract

Objective To explore FPs' perspectives on the value of personal health records (PHRs) in primary care and the implementation and adoption of PHRs in Canada.

Design A qualitative design using semistructured interviews.

Setting Southwestern Ontario.

Participants Ten FPs.

Methods The 10 FPs participated in semistructured interviews, which were audiotaped and transcribed verbatim. An iterative approach using immersion and crystallization was employed for analysis.

Main findings Participants were generally positive about PHRs, and were attracted to their portability and potential to engage patients in health care. Their concerns focused on 3 main themes: data management, practice management, and the patient-physician relationship. Subthemes included security, privacy, reliability of data, workload, remuneration, physician obligations, patient misinterpretation of medical information, and electronic communication displacing face-to-face visits. Participants identified 3 key facilitators for adoption of PHR systems: integration with existing electronic health record systems, ease of use without being a burden on either time or money, and offering a demonstrated added value to family practice.

Conclusion This study replicates previously published literature about FP concerns and opinions, and it further identifies remuneration as a potential barrier in Canadian fee-for-service payment models. Participants identified 3 key facilitators, which were suggested for implementation and adoption of PHRs, providing a basis for future research and development of these systems for use in Canadian family practice.

EDITOR'S KEY POINTS

- Most studies examining the issues with regard to the implementation of personal health records (PHRs) into practice have been based in the United States.
- This study aimed to understand FPs' opinions about the implementation and adoption of PHRs in Canadian practice.
- Family physicians identified 3 main facilitators to the implementation and adoption of PHRs: regulated and controlled integration with electronic health record technology, ease of use without being a burden on cost or time, and demonstrated added value to the practice of medicine.

This article has been peer reviewed.
Can Fam Physician 2011;57:e178-84

Opinion des médecins de famille sur les dossiers de santé personnels

Étude qualitative

Gary L. Yau Andrew S. Williams Judith Belle Brown PhD

Résumé

Objectif Vérifier l'opinion des MF sur la valeur des dossiers de santé personnels (DSP) en médecine de première ligne et sur la mise en place et l'adoption des DSP au Canada.

Type d'étude Étude qualitative à l'aide d'entrevues semi-structurées.

Contexte Ontario du sud-ouest.

Participants Dix MF.

Méthodes Les 10 MF ont pris part à des entrevues semi-structurées, qui ont été enregistrées sur bande magnétique et transcrites mot à mot. Une approche itérative utilisant des techniques d'immersion et de cristallisation a servi à l'analyse.

Principales observations Les participants étaient généralement favorables aux DSP et ils étaient intéressés par leur facilité de transfert et par le fait qu'ils pouvaient inciter les patients à s'occuper activement de leur santé. Leurs inquiétudes portaient sur 3 points principaux : gestion des données, gestion de la clinique et relation médecin-patient. Parmi les sous-thèmes, mentionnons : sécurité, privauté, fiabilité des données, charge de travail, rémunération, obligations du médecin, interprétation erronée de l'information médicale par les patients et crainte que la communication électronique remplace les visites en personne. Les participants ont identifié 3 facteurs clés pouvant faciliter l'adoption d'un système de DSP : compatibilité avec les systèmes électroniques de dossiers de santé existants, facilité d'utilisation sans constituer une surcharge de temps ou d'argent et choix de DSP connus pour améliorer la pratique familiale.

Conclusion En plus de corroborer les publications antérieures sur les inquiétudes et opinions des MF, cette étude signale que la rémunération pourrait être un obstacle dans le modèle canadien de rémunération à l'acte. Les participants ont suggéré 3 éléments susceptibles de faciliter la mise en place et l'adoption des DSP, fournissant ainsi une base pour les recherches futures et le développement de ce type de système dans les cliniques de médecine familiale canadiennes.

POINTS DE REPÈRE DU RÉDACTEUR

- La plupart des études sur les problèmes associés à l'instauration des dossiers de santé personnels (DSP) proviennent des États-Unis.
- Cette étude voulait connaître l'opinion des MF au sujet de la mise en place et de l'adoption des DSP en milieu canadien.
- Les médecins de famille ont identifiés 3 facteurs principaux susceptibles de faciliter la mise en place et l'adoption des DSP : intégration contrôlée de la technologie reliée aux dossiers de santé électroniques, facilité d'utilisation sans exiger trop de temps ou d'argent, et démonstration d'une amélioration de la pratique de la médecine.

Cet article a fait l'objet d'une révision par des pairs.
Can Fam Physician 2011;57:e178-84

A personal health record (PHR) is an Internet-based tool that allows the user to input information about his or her lifelong medical history. Personal health records are maintained by users, and they have control over who can access their records.¹ Specific tools available through PHRs can include functions to input daily measurements (eg, blood pressure, body weight, blood glucose), access provider-endorsed websites, or communicate directly with health care providers by electronic means.² Another possibility within the scope of PHR technology is integration with provider-maintained electronic health records (EHRs), allowing patients access to their full medical records.³

Considering the potential market for PHR technologies, it is not surprising that multinational companies are already testing their versions of PHRs at large health centres, such as the Cleveland Clinic,⁴ which uses Google's Google Health, and Beth Israel Deaconess Medical Center,⁵ which uses Microsoft's HealthVault. In Canada, Sunnybrook Health Sciences Centre in Toronto, Ont, currently offers PHRs to its patients,⁶ and the Canadian Medical Association has commissioned mydoctor.ca, a free PHR, to encourage use by Canadian physicians.

Most studies examining the issues with implementation of PHRs into practice have been based in the United States. This is in large part owing to the Markle Foundation,^{1,7} which conducted an important survey targeted at US physicians and citizens. Responses to this survey have formed the basis for the formal definition and preferred attributes of PHRs. All the major prototypes have been developed by US companies and trialed in US institutions. With the recent push by the US government to implement EHRs across the country within a decade,⁸ the increasing accessibility of PHR platforms, and the willingness expressed by patients to use them,⁷ PHRs are a highly relevant and timely topic of discussion.

Kaelber et al⁹ developed a research agenda for PHRs based on a review of all existing PHR-specific literature. One of the 4 main directions for further research was evaluating the adoption of PHRs and the attitudes of health care providers and patients toward PHRs. Previous studies have documented patients' perspectives on PHRs^{7,10}; however, Kaelber and colleagues state there is a paucity of data on provider attitudes to technology. An understanding of this view can lead to information that will help alleviate barriers to adopting PHRs.

The purpose of this study was to explore FPs' ideas about and views on the implementation and adoption of PHRs.

METHODS

Participant recruitment

Ten FPs from southwestern Ontario were recruited between January 2009 and November 2009 in a fashion

consistent with the iterative nature of our analysis. Physicians were selected to satisfy a maximum variation sample, including sex, age, years in practice, location of practice (urban or rural), use of EHRs in daily practice, and whether emergency or walk-in clinic care was a component of their practices. Physicians providing emergency or walk-in clinic care were included to identify opinions from those involved in the acute care of unfamiliar patients.

Data collection

To explore FPs' perspectives, a semistructured interview guide was developed to draw on relevant topics and address the following: participants' overall impressions of PHRs, potential changes to physician practice, effects of PHR use on patient health, implications of allowing patients to have immediate and full access to their medical records, and the facilitators and barriers to PHR implementation. The interview began with questions such as "What is your initial impression of this technology?" and "In what ways do you think this could change your practice?" For more specific topics, open-ended questions were also used: "With an integrated personal health record–electronic health record system, it would make the complete medical record much more accessible to the patient. What do you think about this?" The interview guide was revised several times and reviewed by various health care professionals for clarity before the first interview.

At the beginning of each interview a general introduction, including a brief description of PHR technology, was read to the participant. After written informed consent was obtained, the semistructured interview was conducted, audiotaped, and later transcribed verbatim by 1 of the 2 interviewers (G.L.Y. and A.S.W.).

Credibility and trustworthiness of the raw data were enhanced by the following means: interviews were transcribed verbatim, with field notes taken during the interview to supplement accuracy of data interpretation, and all 3 researchers read and analyzed the data independently before meeting together for team analysis.

Researchers

Interpreters included 2 third-year medical students with no previous involvement in PHRs, one of whom (A.S.W.) has 5 years' experience using a hospital EHR system in a clinical context. The third interpreter was a doctoral researcher with an extensive background in qualitative research, including medical informatics.

Data analysis

The first phase of analysis was performed independently by the 3 investigators through review and identification of the key concepts found in the first

2 transcripts. The independent analyses were reviewed as a team and a consensus was formed regarding the emerging themes, which formed the basis for a coding template. The coding template was used for independent coding of future transcripts, and the team met regularly to review the themes and adapt both the coding template and the interview guide as new themes emerged.

Immersion and crystallization were used as investigators immersed themselves in the transcripts to gain a better appreciation and understanding of the content, and main themes crystallized as a result of this interpretation.¹¹ With this iterative approach, the researchers believed saturation of themes was achieved at 8 interviews and were confident after a further 2 interviews revealed no new themes or disconfirming data.

Final sample

The final sample comprised 10 FPs from southwestern Ontario. Two participants were recruited from the same academic family medicine clinic; the other participants were from separate family practice sites. Practices were self-identified as urban (n=5) or rural (n=5). Six of the participants used EHR technology in their day-to-day practices. Participants ranged in age from 33 to 61 years and their total years in practice ranged from 4 to 32. Half of the participants were men and half were women. Half of participants also had at least some emergency department work in their practices and half did not. Four participants had full-time academic appointments in the Department of Family Medicine at the University of Western Ontario (UWO) in London and the remaining 6 participants held adjunct appointments at the UWO.

Ethics approval was obtained by the Health Sciences Research Ethics Board of the UWO.

FINDINGS

Overall, participants viewed the adoption of PHRs as inevitable. Generally, they perceived PHRs as a step in the right direction and had a positive outlook on the future for this technology. Our data did not reveal a difference in opinion based on age or years in practice. Especially prominent during the discussion of future PHR use were the ideas of portability and patient engagement: "I think it is useful for the patient[s] to be more active in their care ... patients are wanting to be more involved in their health and access physicians in new and novel ways. I think it will provide that."

However, participants consistently raised concerns about data management, changes to the patient-physician relationship, and practice management issues. These concerns were the 3 key barriers to the implementation and adoption of PHRs.

Data management

Participants expressed strong concerns about security and privacy when using PHR technology. "I don't think there is anything on the Internet that people couldn't hack into. Security issues. That would worry me."

The concept of guardianship was identified by participants who indicated the PHR would effectively end physician guardianship of medical information. "Once I give you your chart, I am not responsible once it is up on the Net. I cannot be held responsible. Guardianship falls apart at that stage, but that is an individual's right if they don't want to worry about that."

Extending from the lack of guardianship, privacy was a specific issue that participants described as particularly problematic. "How do you explain to a mother that [she] cannot look at [her] 12-year-old's health record and how do you ensure that, at home, Mom isn't pressuring to get access?"

Some participants also believed that patients having electronic access to full medical records would lead to less information being recorded on charts. "I am trying to imagine ... whether we become much more defensive in how we write our medical records and [whether we are] going to avoid writing certain things because of fear that there is this endless access."

Furthermore, several participants expressed caution about the quality of the information contained on PHRs and indicated that this would limit their use clinically. "If [patients] are entering information, it may not be accurate for what's going on ... it may be their interpretation of the layman's description that is given to them."

Patient-physician relationship

Participants questioned whether the integration of the PHR with the EHR would alter the patient-physician relationship. With full and independent access to the EHR, patients would not have the medical information transmitted to them by their physicians. In the absence of this traditional framing of medical information, patients might experience unnecessary anxiety as they attempt to interpret the complex medical information stored in their charts.

If they are not able to interpret [the medical record], you should not be populating. For the same reason that they are not able to interpret what you are telling them, then you need to find another way of telling them If you're going to make [PHRs] worthwhile, you need to ensure they are able to interpret the information they are receiving, able to interpret it properly, and able to do something useful with it, otherwise you are going to create chaos.

One participant described how, owing to the unique language used in medical records, even something as

benign as a normal test result might generate anxiety for the patient: "Things like [computed tomography] reports are 2 pages of medical mumbo jumbo that [patients] don't quite understand and might try to make leaps, but are sitting at home with nobody able to explain it to them."

Extending beyond misinterpretation of medical data, most participants also believed that offering online medical record access to patients with psychiatric conditions could be problematic:

The hardest areas are going to be ones where what I am thinking is different from what the patient is thinking. I might be thinking they are anxious and they may not be thinking that. I might be thinking they have a personality disorder or traits that will affect the way I have to interact with them. For them to hear that may give them a very different viewpoint on what had actually been said [during that encounter].

When considering the implications of increased access to the full medical record, it was generally agreed that there would have to be an increase in patient-physician communication to explain the details of the record and this was interpreted as a mostly positive change. "Providing [PHRs] opens another opportunity to communicate with people. I don't think you can ever communicate too much." However, the potential for the electronically provided PHR to change the medium of communication from face-to-face interaction to e-mail exchanges or integrated PHR messaging was not supported by the participants. As one participant cautioned:

We have to remember that the art of medicine is not in the technology, the art is in the face-to-face contact and the patient-centred care that we deliver to patients and that's what heals them, that therapeutic relationship that we have with our patients; it's not the technology.

Practice management issues

Outside the realm of the patient-physician relationship, another set of concerns was identified as pertaining mainly to the business aspect of the physician's practice. Participants mentioned increases in workload, lack of remuneration in fee-for-service models, and uncertainties around physician obligations with respect to PHR use. Most participants were concerned about an increase in workload if use of PHRs became widespread, but they were hopeful that this increase might be offset by a decrease in patient visits. "It might take more time out of my personal time. On the other hand, it may save you time, because it may take less time than a direct patient interaction." If PHR use did lead to fewer visits and more out-of-office work, participants indicated that there would be remuneration concerns within certain

billing models. Participants anticipated that fee-for-service physicians without PHR-related billing codes would be most affected, whereas those within a capitation model would be relatively unaffected.

If you're in a capitation model, which is not fee-for-service, that is an incentive to keep your patients in good health and out of the clinic. You don't need to see them to bill, to make money. So if you're providing good care and doing it more efficiently, and can do it more efficiently with a PHR, then that would be a positive thing.

Another practice-related concern for participants was the current lack of clarity surrounding the physician's role and responsibilities with respect to PHRs and guardianship of patient data. In other countries, such as in the United States, PHRs might be owned and operated by hospitals or insurers who would normally have access to the patient's information for business purposes. However, in Canada, the only widely available PHR technology is owned and operated by private companies with no direct role in the patient's care. One participant called on the College of Physicians and Surgeons of Ontario to protect the right of the physician to refuse to be an active part of sharing data with privately owned PHR providers:

You know how comfortable [the younger generations] are with Google and Facebook Software becomes free and people get trusting. A lot of information gets put in there. So if patients start demanding that I fill that in, that's when we need to have some strict measures from our College.

Facilitators to implementation

After considering the facilitators and barriers related to PHRs, the participants provided 3 broad principles to guide the design and implementation of a feasible PHR system: First, the PHR must integrate with the EHR. Second, the PHR must be easy to use and not be a burden on either cost or time. "If it was really easy to integrate the two that would probably be the biggest facilitator because I wouldn't need to learn anything, and I wouldn't decrease my efficiency, and it wouldn't really cost me that much." Finally, the PHR must demonstrate that it offers an added value in the practice of medicine. "Physicians want to know what the value is. What about this next step is going to make my job easier or better, or my patients' outcomes better?"

DISCUSSION

This study provides an initial understanding of Canadian FPs' perspectives on the potential use of PHRs. The main attractive features of the PHR were portability of

the records and engagement of patients in their health care. The primary concerns were those regarding data management, changes to the patient-physician relationship, and practice management issues.

The primary concern with regard to data management was security and privacy, which have always been serious concerns with electronic health care applications.^{1,12-14} Personal health records introduce novel issues, stemming from the fact that personal health information would be accessible from the Internet and the potential for private interests developing the applications to govern that information. Halamka et al¹⁵ summarized the PHR experiences of 3 large institutions and their approach to several such issues. Each institution that was reviewed varied in the level of authentication required for access, the amount of information (medical lists, medications list) displayed, and the ability for family members to have access. Overall, the initial experience was positive for these institutions.

Concerns about the patient-physician relationship appeared after the possibility of an integrated EHR-PHR was explored. In particular, there were concerns that current documentation would make it difficult for patients to effectively understand and appropriately interpret the information. A literature review of papers¹⁶ discussing patients having access to their medical record found that most studies reported that most patients were not able to fully understand the content of medical records. However, contrary to participants' views in our study, this confusion did not often generate substantial anxiety or concern in patients. Ross and Lin¹⁶ also commented on the psychiatric population, suggesting that access to this sensitive information might lead to increased anxiety when compared with access to strictly medical information. This observation was supported by all participants in the current study who viewed full access to medical records as potentially detrimental to patients with psychiatric illnesses.

Many of our participants expressed hesitancy about the increase in electronic communication as a result of PHR use and, specifically, the effect it might have on the therapeutic nature of the patient-physician relationship. Their concerns focused on the potential replacement of office visits with electronic communication. The literature indicates that if electronic communication is used as a supplement, it can increase the ease and quality of face-to-face medical interactions.^{14,17} Our findings are consistent with the literature in that participants viewed an increase in communication as a positive outcome of PHRs as long as regular visits were not negated by this communication.

In terms of a change in workload, several participants anticipated that there would be a net increase, citing an increase in patient access to data facilitated by PHRs, which would lead to discussion and explanation

of this data. However, other studies have shown that the amount of work itself would not change, but the type of work might change.¹⁷⁻²⁰ One reason for this shift in work is that patients would have improved recall and understanding of medical information when given their medical data before visits. This would be facilitated through convenient access to information sources, such as the Internet.¹⁴ The current evidence on the effect of PHRs on physician workload is conflicting and further study is required to determine the actual effect of this technology.

Participants identified 3 main facilitators to implementation and adoption of PHRs: regulated and controlled integration with EHR technology, ease of use without being a burden on cost or time, and demonstrated added value to the practice of medicine. Of these, perhaps the greatest challenge is in providing clinical evidence to support the value of PHR use to the patient and clinician. Our participants voiced many hypothetical advantages to both parties, but there remains a lack of evidence supporting or refuting these benefits.^{14,21}

We aimed to explore the opinions of a select group on a topic with limited data.⁹ Based on this, a qualitative approach was most amenable to our study. This research method is superior to quantitative research for examining the experiences, attitudes, and behaviour of participants.²² Semistructured interviews with an iterative strategy allowed us to develop concepts, and give due emphasis to salient points generated by all the participants. As a result we were able to introduce several new topics to the literature.

The physician remuneration models available in Ontario were introduced for the first time as examples of Canadian considerations in the implementation of PHRs. Also, as the Canadian medical system lacks the billing complexities that motivate the payer-tethered PHRs seen in the United States and there is a deficiency of readily available institutionally tethered PHRs in Canada, the physician obligation to participate in privately owned and operated PHRs has been called to question. The foreseen alterations regarding the role of the physician in the stewardship of medical records demand strict regulations from the College of Physicians and Surgeons of Ontario.

Limitations

A key limitation of this study is that the participants were all from southwestern Ontario, and this factor might limit the transferability of the findings to other Canadian FPs. One variable common to all participants was that they all held academic appointments, either full time or adjunct, with the Department of Family Medicine at the Schulich School of Medicine & Dentistry at the UWO. Although all the participants were community-based FPs, their academic affiliation might have influenced their perspectives on PHRs in comparison with FPs

without academic appointments. Future studies involving non-academic physicians from various regions might offer differing perspectives.

Conclusion

The full and expeditious adoption and implementation of new technologies cannot be achieved with optimal efficiency in the absence of support from the consumer. As PHR technology rapidly advances, the consumers, both patients and health care providers, must be considered. This paper articulates the first voice of Canadian FPs in the literature on PHRs. These findings set the stage for further research into the opinions of FPs in their roles as both consumers of PHRs and as important stakeholders in the successful adoption of this technology in Canada.

Mr Yau and **Mr Williams** are fourth-year medical students in the Schulich School of Medicine & Dentistry at The University of Western Ontario in London. **Dr Brown** is Professor in the Department of Family Medicine at Schulich School of Medicine & Dentistry and at the School of Social Work at King's University College at The University of Western Ontario.

Acknowledgment

We thank the participants and **Cathy Thorpe**, Research Associate at the Centre for Studies in Family Medicine at The University of Western Ontario, for her guidance during the early development of this study and her review of the final draft of the manuscript.

Contributors

Mr Yau and **Mr Williams** were responsible for the acquisition of data. All authors contributed to the concept and design of the study; data analysis and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

Correspondence

Dr Judith Belle Brown, Centre for Studies in Family Medicine, 100 Collip Circle, Suite 245, University of Western Ontario Research Park, London, ON N6G 4X8; telephone 519 858-5028; e-mail jbbrown@uwo.ca

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