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BEST ADVICE

Adopting EMRs in a Patient's Medical Home

JULY 2015

BEST ADVICE – EMR USE IN A PATIENT’S MEDICAL HOME

The discipline of medicine is ever-changing, as new evidence reshapes existing methods and expands our knowledge base. Available tools evolve; new ones develop; and our health care systems undergo transformations that improve access, the quality of care, efficiency, and the patient’s experience.

As information technology advances, more potential uses for it within health care emerge, including the storing and accessing of patient information in an electronic format within a practice. The shift from paper-based patient records to electronic medical records (EMRs) is now recognized as integral to the evolution of the delivery of care in family medicine.¹ As EMR tools are further developed, new possibilities for their application come to light: for example, data collected through EMRs can guide system-wide decisions and inform research.

The objective of this paper is to provide guidance to family physicians on implementing EMRs in family practice settings, by answering three questions:

- **What is an EMR?**
- **What are the benefits of adopting an EMR system?**
- **What are the factors to consider when adopting an EMR system?**

While this paper is presented for consideration by all in family practice, the use of EMRs is a key pillar of the CFPC’s Patient’s Medical Home model (patientsmedicalhome.ca).

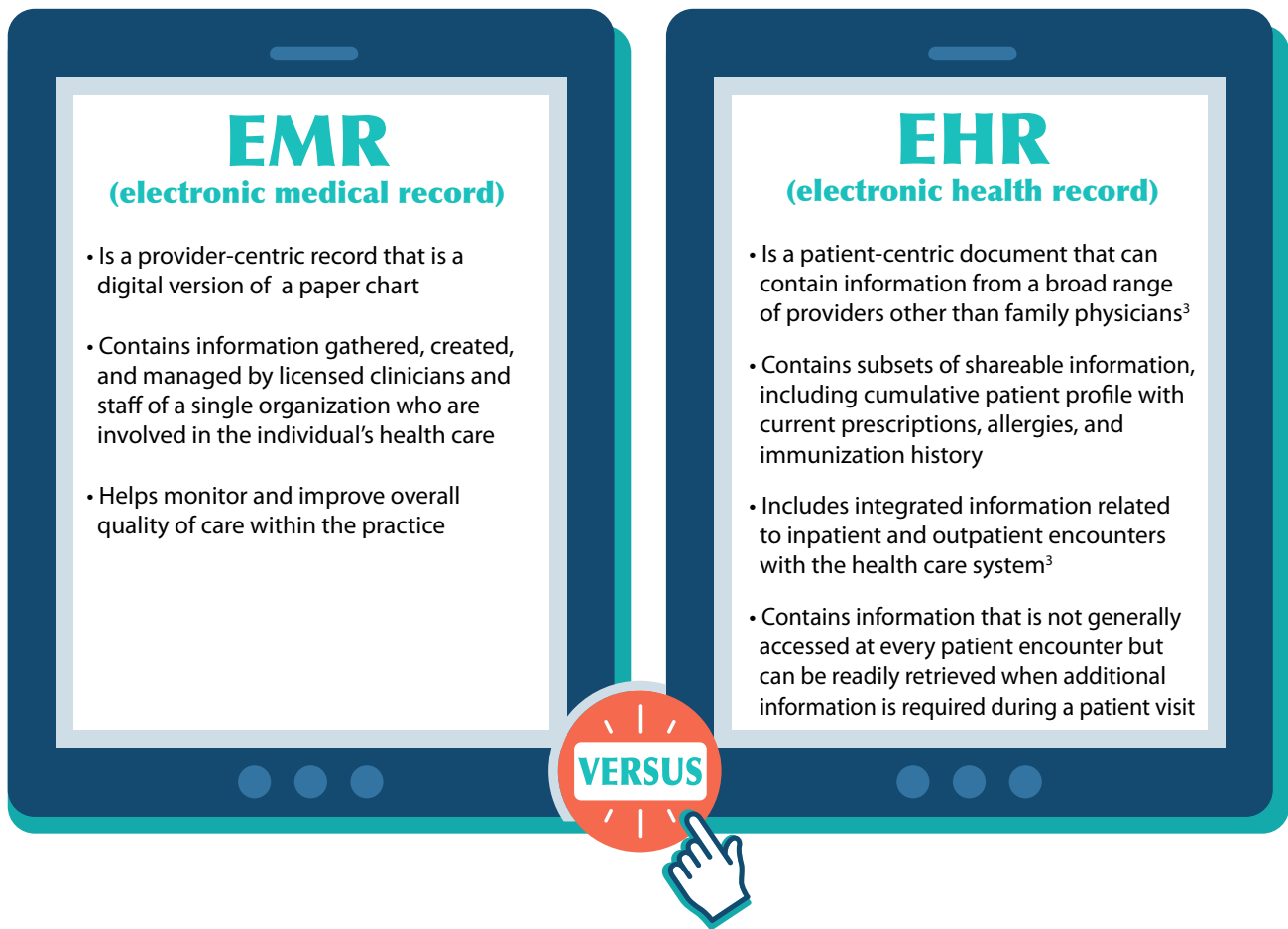
This guide will focus on the basic advantages of EMRs and the adoption of new technology. Future guides will build on this foundation to explore EMRs’ use and their potential in more depth and detail.

WHAT IS AN EMR?

An *electronic medical record (EMR)* is a digital medical record that clinicians maintain for each of their own patients and that details demographics, medical and drug history, and diagnostic information such as laboratory results and findings from diagnostic imaging.² The EMR software is often integrated with other software that manages activities such as billing and scheduling.² EMRs are typically found in clinicians’ offices. *Electronic*

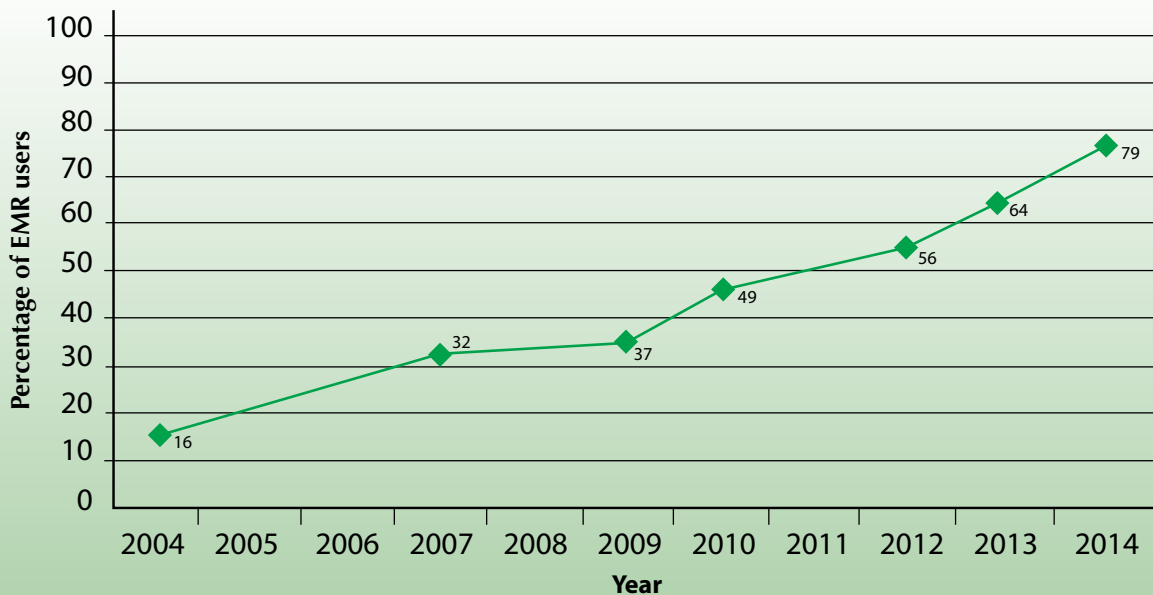
health record (EHR) is another common term used in health technology. Although EHRs and EMRs have some similar components, they are two different system types. An example of a functioning EHR is [Alberta’s Netcare](#), which contains a digital record of patients’ encounters with the health care system across the province.





The use of EMRs in Canada has been rising steadily for the past decade (**Figure 1**).^{4,5} In 2004, only 16 per cent⁶ of family physicians reported using EMRs; by 2014, almost 80 per cent were using them.⁷

Figure 1. Family physicians using EMR systems in Canada, 2004–2014



Data from National Physician Surveys⁴ and Shoen et al.⁵

In 2012, nine out of 10 family medicine residents expected to use EMRs in practice.⁸ The CFPC's Triple C Competency-Based Curriculum is a family medicine postgraduate program that provides the relevant learning contexts and strategies needed to enable residents to integrate competencies so that they are prepared to begin practice in the specialty of family medicine.⁹ As part of the Triple C family medicine curriculum, the use of information technology, such as EMRs, is encouraged, as an evolving professional competency.⁹ Similarly, competencies in communication and documentation using digital technology are included in CanMEDS 2015 Series IV, the latest draft of the CanMEDS Physician Competency Framework.¹⁰

Despite making significant gains, Canada is still behind many countries in its uptake of EMRs. According to the 2012 Commonwealth Fund survey, Canada currently has one of the lowest reported rates of EMR use by physicians. The Netherlands, Norway, Australia, New Zealand, and the United Kingdom all report EMR use greater than 90 per cent.⁵

While significant efforts toward the adoption of EMRs across Canada have been set by governments and Canada Health Infoway, CFPC advocates for more progressive and measurable targets, with the goal of achieving a near-complete switch to the electronic format by the year 2022.¹¹ Canada Health Infoway works with the provinces and territories to co-fund digital health projects throughout Canada.

GUIDING PRINCIPLES OF EMR USE IN THE PATIENT'S MEDICAL HOME

Within the Patient's Medical Home, these principles guide the practice of using EMRs for its patients:

1. By 2022, all family physicians in Canada will have integrated EMRs in their practices.
2. System supports, including funding to support the transition from paper records, must be in place to enable every Patient's Medical Home to introduce and maintain EMRs.
3. EMR products for use in Patients' Medical Homes should be identified and approved by a centralized process that includes family physicians and other health professionals. Each practice should be allowed to select its EMR product and service providers from a list of provincially, territorially, or regionally approved vendors.
4. EMRs approved for family practices or Patients' Medical Homes must include:
 - Appropriate standards for recording and following patient care in a primary care setting
 - Electronic prescribing capacity
 - Incorporated clinical decision support programs
 - Electronic referral and consultation tools
 - Advanced-access electronic scheduling programs

- Systems that support teaching, research, evaluation
 - Continuous quality improvement in the practice
5. EMR and EHR systems must be interconnected, user-friendly, and interoperable.
 6. There should be a pan-Canadian electronic health care communication and information infrastructure that ensures secure access to medical records and the privacy and confidentiality of communications for all citizens and their medical and health care providers.

WHAT ARE THE POTENTIAL BENEFITS OF ADOPTING AN EMR SYSTEM?

In addition to supporting the health care system, EMRs can help to improve the delivery of care in community-based practices by enhancing productivity and processes. The therapeutic relationship's integral components—compassion, care, and trust—can be fostered through EMRs' facilitation of better information capture and improved communication between physician and patient.

As discussed in the [Best Advice guide Patient-Centred Care in a Patient's Medical Home](#), considering the needs and wants of a patient is important to ensuring he or she receives the best possible care.¹² The use of EMRs will not only help improve the overall quality of patients' health but also allow patients to become more engaged in the decisions concerning their health.

BETTER TEAM COLLABORATION

EMRs support improvement in the quality of care by fostering a collaborative environment with interprofessional teams. Physicians indicated that they are better able to share patient information with members of their team, whether onsite or remotely, when comprehensive, legible, and accurate patient histories are available.¹ For example, a multidisciplinary practice in Prince George, British Columbia, uses its EMR as a communication tool at weekly team meetings, so that the patient file is visible to all team members while they are discussing the care plans.¹³

IMPROVED CONTINUITY OF CARE

Continuity of care between providers also improves within a practice on a temporary basis (eg, when a team member is on vacation), and in real time, as office staff can communicate with each other during a patient encounter. Findings from an Ontario survey reported that from 2008 to 2010, nearly seven in 10 physicians felt that EMRs helped improve the continuity of care and level of safety provided to patients.¹⁴



IMPROVED ACCESSIBILITY

The use of EMRs is also correlated with decreased wait times. Physicians using EMRs reported shorter wait times and improved access to primary care. Among physicians using EMRs, 75 per cent were able to see an urgent patient within a day or less, versus 62 per cent of physicians who did not use EMRs. In addition, the same study found that wait times for both urgent and non-urgent appointments were shorter for physicians using EMRs, with the average wait for an urgent appointment being 1.0 day for physicians using EMRs versus 1.7 days for physicians not using EMRs.¹⁵

ABILITY TO TRACK DATA OVER TIME

EMRs can be an effective tool to help track data over time, identify patients who are due for preventive visits and screenings, monitor how patients measure up to certain baseline parameters (such as vaccinations and blood pressure readings), and improve overall quality of care in a practice.¹¹ EMRs can enhance the capacity of every practice to store and recall medical information on each patient and on the practice population as a whole. Among other benefits, they facilitate the sharing of information needed in the referral and consultation process, and for the purposes of teaching, carrying out practice-based research, and evaluating the effectiveness of the practice as part of a commitment to continuous quality improvement.¹¹

According to the self-reported measures from the 2014 National Physician Survey, 70 per cent of respondents found that since implementing EMRs the quality of patient care was better or much better.⁷ As well, over 45 per cent of family physicians noticed that productivity increased or greatly increased since they implemented EMRs.⁷ The longer physicians had been using electronic records, the greater their reported perceived quality of care and productivity.

A 2013 PricewaterhouseCoopers study commissioned by Canada Health Infoway found that between 2006 and 2012 the use of EMRs resulted in benefits valued at \$1.3 billion (**Table 1**).¹

Table 1. Current and emerging benefits of EMR use in Canada*

Benefit	Description
Workflow efficiencies in community-based practices	Reduces staff time spent on paper-based administrative tasks
	Gives a positive return on investment
Health system level benefits	Reduces number of duplicate diagnostic tests ordered
	Improves patient safety through reduced adverse drug events
	Results in more appropriate use of diagnostic tests [†]
Improved health outcomes and patient safety	Has the potential to improve chronic disease management [†]
	Supports preventive care [†]
	Improves immunization rates [†]
	Facilitates faster responses to changes in care and treatment guidelines [†]
Improved interaction and communication among care team members and between providers and patients	Supports improvement of team-based care and continuity of care [†]
	Facilitates improvements in overall patient experience [†]
	Improves patient-provider encounter quality [†]

*Adapted with permission from a PricewaterhouseCoopers study commissioned by Canada Health Infoway¹
[†]Area of emerging benefit

While it is important for Canada to continue to facilitate the implementation of EMRs, there must be safeguards in place to protect patient privacy.¹¹ Privacy, security, and confidentiality of patient information are vital to successful EMR implementation. Family practices should also have an understanding of the potential benefits and limitations such systems might have on their practice. It is important that family physicians are aware of local privacy legislation or regulations and ensure that they complete privacy impact assessments or other requirements before they implement their EMR system.

WHAT ARE THE FACTORS TO CONSIDER WHEN ADOPTING AN EMR SYSTEM?

Selecting an EMR system is an important decision that requires a lot of planning. There are many different EMR products currently on the market from different vendors. Choosing a system that is a good fit for the practice and its team members is essential in order to realize the system's potential and to encourage adoption to its fullest capacity. The system needs to be intuitive and user-friendly. There are many differences between products. EMRs will vary with respect to cost, features, what kinds of reports they can generate, hardware systems, and the overall user-friendliness.¹⁶ To find a good fit, begin by defining the practice's specific needs.

Are you considering making the move to EMRs in your practice? Visit the [Canada Health Infoway website for a pre-implementation checklist.](#)

1. DEFINING PRACTICE NEEDS

Understanding what the practice requires from an EMR system is an important step. Many needs are common across practices, but individual family physicians might identify some needs unique to their practice. Physicians can consider how they manage day-to-day clinic activities and factors, such as clinic team composition and location, to help define their needs. All practice processes—from patient registration, scheduling, and file or records management to recall, reporting, referrals, and communicating with other providers on the health team—can be considered as potential areas that might benefit from the implementation of technology or a change in how any current technology is used.

Features and functions of EMRs that can address practice needs include:

- Patient registration
- Patient demographics management
- Prescription and medication lists management
- Patient medical history management
- Lab and test results management
- External clinical documents capture
- Patient care plans and guidelines presentation
- Chronic disease management
- Communication with other providers on health team (eg, secure online messaging)
- Communication with patients (eg, email appointment reminders)
- Referrals management

- Scheduling of appointments
- Potential for automating, structuring, and streamlining of administrative workflow
- Recording of data that can be analyzed for medical audits, research and quality assurance, epidemiological monitoring, and disease surveillance
- Billing
- Prescriptions written with alerts of drug-drug interactions and drug allergies

2. SELECTING AN EMR

Having defined their practice needs, physicians selecting an EMR should spend time researching and communicating with vendors, so as to have a clear understanding of what is included before making the purchase. If physicians are looking for a specific feature in an EMR that will benefit their practice, they should confirm that it is included in the EMR type before they buy it. Ideally, physicians will arrange to try out the EMR program first. Also, talking to other physicians who are using the model can be helpful. Asking about their experience of the system's functionality, data management, ease of use, and the vendor's responsibility and accountability can supply invaluable information.

Visit www.canadianemr.ca to compare EMR systems head-to-head or to read what other physicians have said about an EMR system. User reviews can provide first-hand information about the user-friendliness of the EMR software, system interoperability, and how easy it is to transfer information from paper to electronic records.

A physician must also choose between an application service provider (ASP)-hosted model or a locally hosted model. There are very few differences between them in the look and feel of the software itself; the distinguishing factor between the two system types is the method of delivery. In a locally hosted system, the physician loads a patient chart using a server from his or her own office. However, in an ASP-hosted system, the physician would use an Internet connection to load the patient chart into a common data centre, where each physician practice would have its own secured patient database. Essentially, the physician enters into a contract with the EMR vendor to store the records on the physician's behalf. Also, with a locally hosted model,

the physician has direct access to its practice's patient data and can bill directly from the local system, while with an ASP-hosted model, a third party, not the physician, performs the billing task. Again, talking to vendors offering these different models and to current EMR users can be very informative.

Physicians joining a practice will have their EMR licence added to the existing EMR system. Those with an existing practice population will need to work with the vendors from their existing and new EMRs to facilitate the transition and data migration.

Because selecting an EMR system is a major financial decision, it is also time well spent to make use of the various other resources available so as to allow an informed decision.

For example, there are province-specific resources that can be helpful with EMR selection and implementation.

- Canada Health Infoway: [Are you EMR ready?](#)¹⁷
- College of Physicians and Surgeons of British Columbia: [Professional Standards and Guidelines – Electronic Medical Records](#)¹⁸
- College of Physicians and Surgeons of Alberta: [Transition to EMRs](#)¹⁹
- Alberta Medical Association: [Selecting an EMR](#)²⁰
- Saskatchewan Medical Association: [Why an EMR?](#)²¹
- Manitoba eHealth: [Manitoba EMR Toolkit](#)²²
- College of Physicians and Surgeons of Ontario: [Policy Statement on EMRs](#)²³
- Association of Ontario Health Centres: [EMR Implementation Planning Guide](#)²⁴
- OntarioMD: [EMR Adoption Program](#)²⁵
- *Le Médecin du Québec*: [Dossier médical électronique. Comment le choisir? Comment le mettre en œuvre?](#)²⁶

*Please note that in accordance with Canada Health Infoway's mandate, EMRs that are supported in implementation programs, such as the **regional EMR programs**, need to be on the provincial partner's approved list of EMRs.*

3. RESOURCE REQUIREMENTS

There are several costs to consider when planning to set up a new EMR system for a family practice. When establishing a budget, physicians need to consider costs that might be incurred during the implementation of the project, as well as costs involved in supporting the ongoing operation of the EMR system.

Start-up (one-time) costs include:

- Hardware (eg, computers, printers, scanners, servers, routers, etc.)
- Software and software licences (eg, EMR and office productivity software)
- Third-party software (eg, software required to use the EMR, such as database software)
- Training time for physician and staff (eg, basic computer skills, EMR features)
- Transfer of patient records (eg, costs related to data entry)
- Equipment installation

- Facilities upgrades (eg, cabling, power panels, office furniture)
- Project planning, contract negotiation, procurement

Operating (ongoing) costs include:

- Product support (eg, for the EMR software, hardware, and network)
- Maintenance (eg, hardware upgrade costs, backup costs, technical support)
- Equipment leases
- Training (eg, refresher training required to maximize EMR value over time, and training for new EMR software)
- Subscription costs for services such as Internet access and clinical-decision support and for data services such as drug formularies or other clinical reference tools
- If applicable, salaries for IT and assigned end-user staff

Although implementation costs might seem high at the beginning, costs are typically recouped within the first year. For example, a Canadian study found that on average, primary care physicians earned back their investment within 10 months.²⁷ The study also found that 14 of 17 primary care clinics had a positive return on their investments in EMRs, and for those the time to break-even ranged from one to 37 months.²⁷ Also, a study by Jaakkimainen and colleagues examined the billings and payments received before and after implementation of EMRs among primary care physicians in the province of Ontario.²⁸ The study found that physician billings remained stable from the date of EMR implementation over the 18-month follow-up period, and that there was no decline in overall physician office billings from the date of EMR implementation.²⁸

Canada Health Infoway also has [regional EMR programs](#) that help with the co-investing of EMRs provincially.²⁹ Funding for these programs is being used to a) support jurisdictions and community-based clinicians to implement, adopt, and use EMRs; b) upgrade and connect EMRs so they are interoperable with the jurisdiction's EHR system; and c) help clinicians achieve increased clinical value through the advanced use of EMRs, such as accessing medication profiles and immunization reports.³⁰ Physicians can consult with their regional assistance program to verify availability of support for their practice.



4. TRANSFERRING FROM PAPER CHARTS TO EMRS

There are several factors to consider for family practices in the process of switching from paper-based records to electronic ones. First, it is the physician's responsibility to ensure accurate and secure transition of information, regardless of the approach selected. The paper records can either be scanned into the system

as images, or their data can be re-entered manually into the EMRs. Retroactive data entry is resource-intensive and will have an impact on administrative resources. However, once all the data are inputted, this method can offer ease of use for looking up key words and be useful in establishing a consistent format for future inputs, advantages not offered by scanned documents. Scanning images, however, requires less of a time commitment, as it will not be necessary to input every word of a file.

Note that there are companies that specialize in offering one-time services to efficiently transfer all the materials for a practice. Although these services carry a cost, they might be worthwhile for individuals who do not have the resources to do the transfer on their own.

Regardless of the method used to transfer information, personal information of patients contained within the records must remain secure at all times. Privacy legislation outlines specific responsibilities that a practice must comply with. Understanding the practice's current privacy and security practices will help to determine its readiness to comply with privacy requirements related to EMRs. Physicians must ensure that their treatment of patient health information is consistent with any applicable provincial legislation. Please [visit the Office of the Privacy Commissioner of Canada website](#)³¹ for a list of existing provincial legislation on personal health information.

5. LEARNING HOW TO USE AN EMR

With information technology constantly evolving, it is important to stay up to date on how to effectively use an EMR system.

There are many courses available from a variety of sources, including EMR vendors, hospitals, and universities, which can help further the physician's and team's knowledge of tools to use within the EMR system in their practice. These learning courses are offered in a variety of formats to fit various needs, including live events and online modules. This learning can also earn credits necessary for maintenance of certification, so offers an excellent way to stay on

top of the best practices in using the new information technology tools while fulfilling the necessary requirements of the profession. For example, accredited EMR training is eligible for continuing professional development credits through CFPC's MAINPRO® program. Training can be provided by an EMR vendor or supplier, whether or not this person is a physician.

6. INCLUDING PATIENTS IN EMR USE

As discussed in the [PMH Best Advice guide on patient-centredness](#),¹² a range of technological options should be available to patients in Patient's Medical Homes. EMRs can be used to reinforce continuity of care, patient engagement, and improved communication among physicians, staff, and patients. For example, 93 per cent of physicians in Alberta's EMR program reported that access to a summarized patient history meant that patients could spend less time repeating the same information to care providers; and 97 per cent of the physicians surveyed also reported that using EMRs had provided their health team with more complete patient information (Alberta Physician Office System Program, *Benefits Survey First vs Second Response Analysis*, October 2012).

EMRs can also be a useful tool to promote patients' active participation in clinical encounters by helping them engage in conversation with their family physician.³² Ongoing, planned interaction with patients by email, telephone, or other electronic communications can facilitate management of patients' care, and in particular, care for those with chronic diseases such as diabetes, hypertension, arthritis, and mental illness.³³ When patients have access to their personal health records, it allows them to be more engaged in their health care. These tools are also a great way for family doctors to utilize checklists, alerts, and predictive tools to help stay updated on a patient's progress.

Patients are encouraged to have access to their medical records, as agreed upon by them and their family physicians and PMH teams. Practices in some jurisdictions in Canada and internationally are beginning to develop and implement policies and protocols to support patient access to their EMRs. An example is Sunnybrook Health Sciences Centre's eHealth initiative called MyChart™, which includes protocols addressing patients' access to their records. MyChart™ considers the rights and needs of both patients and caregivers while also maintaining privacy and security related to certain kinds of information.³⁴

Physicians can consult with their EMR vendor to find out which features are available to them.

The implementation of EMRs will help a practice become more accessible, foster a collaborative environment, and lead to higher quality patient care. The CFPC will be releasing more guides about EMRs in the future, which will discuss in more detail how to utilize their "basic" and "advanced" components.

CHALLENGES

As implementing an EMR system requires a health team to be fully committed to the changes, it is important to identify possible barriers before getting started.

Financial concerns

The upfront and ongoing financial costs of implementing EMRs are seen as one of the primary barriers to EMR adoption. Although an initial investment is certainly required, especially during the transition from paper records, the financial risk is less noticeable for practices that can share the initial capital cost.¹ As noted in “Resource Requirements” above, one group of researchers found that of the primary care practices they studied in Canada, most were able to recover their investments in an average of 10 months and to realize a positive return on investment.²⁷

Overhead cost savings can be achieved with EMRs, in many areas: lower administrative costs (eg, chart pulls and filing, transcriptions, phone calls, photocopying charts, faxing medical information), reduced storage costs, and reduced costs from increased provider and staff efficiency.¹

Time constraints

Required time commitment is another factor physicians reported as a barrier to their adoption of EMRs. Some feel that time spent entering data or converting paper to electronic files can take away from patient care. However, when it comes to patient care, the more information a doctor has at his or her fingertips, the more complete the care the patient receives. Being able to easily pull up a patient’s medical history, look up lab and test results, or print out a prescription can help save time and effort. For example, over 46 per cent of family physicians reported that since implementing electronic records, the productivity of their practice had increased or greatly increased.⁷

Interpersonal communication

Some physicians are also concerned about the impact EMRs can have on interpersonal communication with their patients. Being focused on a computer screen can diminish the eye contact a physician shares with the patient. However, simple modifications to EMR and office workflow can help to ensure that interpersonal communication is not impacted.³⁵ For example, some practices have implemented a basic “triangle design” that puts the physician, patient, and computer screen at each of the three corners, allowing the doctor to look at both patient and computer screen without shifting his or her body.³⁶ This simple modification can help to keep the visit patient-centred, so as to reduce the risk that the patient will feel overlooked when the physician must refer to something on the screen.



EMRs also assist with real-time communication with patients, because physicians are able to get immediate access to patient information.³⁵ This ready access allows the physician to focus fully on the patient rather than on the search for information from paper records. Also, showing patients portions of their records could facilitate more engagement from them and encourage joint decision making.³⁵

Necessity of training

Technical competency and computer skill level is another barrier to physicians' adopting EMRs. As with learning any new skill, time and effort need to be put in to get the most out of a new experience. Technology is always evolving, and for those physicians and team members who may not be familiar with the new equipment, there are resources that can be used to become prepared. For example, those lacking in keyboarding skills can use voice dictation or recognition software to transcribe information. Physicians can discuss what training options are available with their vendor. Depending on the computer literacy level in the practice, more than the minimum sessions offered might be required to be well prepared to best use the new EMR system. Again, such training might be eligible for continuing professional development credits.

Being cognizant of these potential challenges will help ensure a smooth transition to implementing an EMR within one's practice.





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