BEST ADVICE

Advanced and Meaningful Use of EMRs

MODULE 2

Using EMRs to Connect with Other Care Settings and Providers

NOVEMBER 2018

The information gathered in an electronic medical record (EMR) can be valuable when it is shared with other members of a health care team.

By transmitting health care data securely and electronically to and from an EMR, family physicians can have a positive impact on their patients' health and facilitate care in environments where conventional services face challenges.

How family physicians use EMRs to interact with other health care providers varies considerably. EMR features that connect them to other systems continue to evolve, and depend on initiatives specific to their province or territory.

Interoperability "describes the extent to which systems and devices can exchange data,"[1] securely between authorized members of a patient's health care team, potentially located in different care settings.

CONNECTING TO EHR SYSTEMS

Each province and territory has a set of core databases or repositories that comprise that jurisdiction's electronic health records (EHRs). An EHR is made up of databases such as the Drug Information System (DIS; medications), the Laboratory Information System (LIS; lab results), and so on. The Resources section at the end of the module contains information about provincial and territorial EHR options.

A province's DIS may allow family physicians and other health care professionals to view a list of a patient's medications, drug allergies, and adverse reactions. Depending on the jurisdiction, family physicians may access the DIS and other EHR data through their office EMR, and may even be able to update a patient's medication profile.

For example, the DIS in Nova Scotia is one part of the province's EHR—the Secure Health Access Record (SHARE)—that allows providers access to hospital lab reports, emergency reports, discharge summaries, and outpatient notes. The SHARE portal also enables access to diagnostic imaging stored in the province's Picture Archiving Communication System (PACS), providing electronic access to investigations such as X-rays, MRIs, ultrasounds, etcetera.[2] Through SHARE, public health professionals can review and revise immunization records. Family physicians can then see if a patient's immunizations are up to date, avoiding duplications. Other authorized health care professionals (including dentists, midwives, dental hygienists, nurses, nurse practitioners, and authorized support staff) may also access the EHR.[3]

## ELECTRONIC PRESCRIBING AND COMMUNICATION WITH PHARMACIES

Electronic prescribing, or e-prescribing, is one EMR function that benefits from secure information transfer. True e-prescribing requires that prescribers generate and send a prescription without paper or fax.

The Canadian Medical Association and the Canadian Pharmacist's Association produced a consensus definition of e-prescribing in 2012:

> "e-Prescribing is the secure electronic creation and transmission of a prescription between an authorized prescriber and a patient's pharmacy of choice, using clinical Electronic Medical Record (EMR) and pharmacy management software."[4]

Currently, most family physicians use EMRs to print or fax prescriptions, and communication with the pharmacy is typically by fax or phone (i.e., not truly electronic).

E-prescribing is a natural extension of several pillars of the Patient's Medical Home (PMH) vision.[5] It has the potential to augment a family physician's EMR-based prescribing processes to the benefit of patients. However, in order to do so, family physicians must also focus on improving the quality of their EMR-based prescribing to facilitate true e-prescriptions.
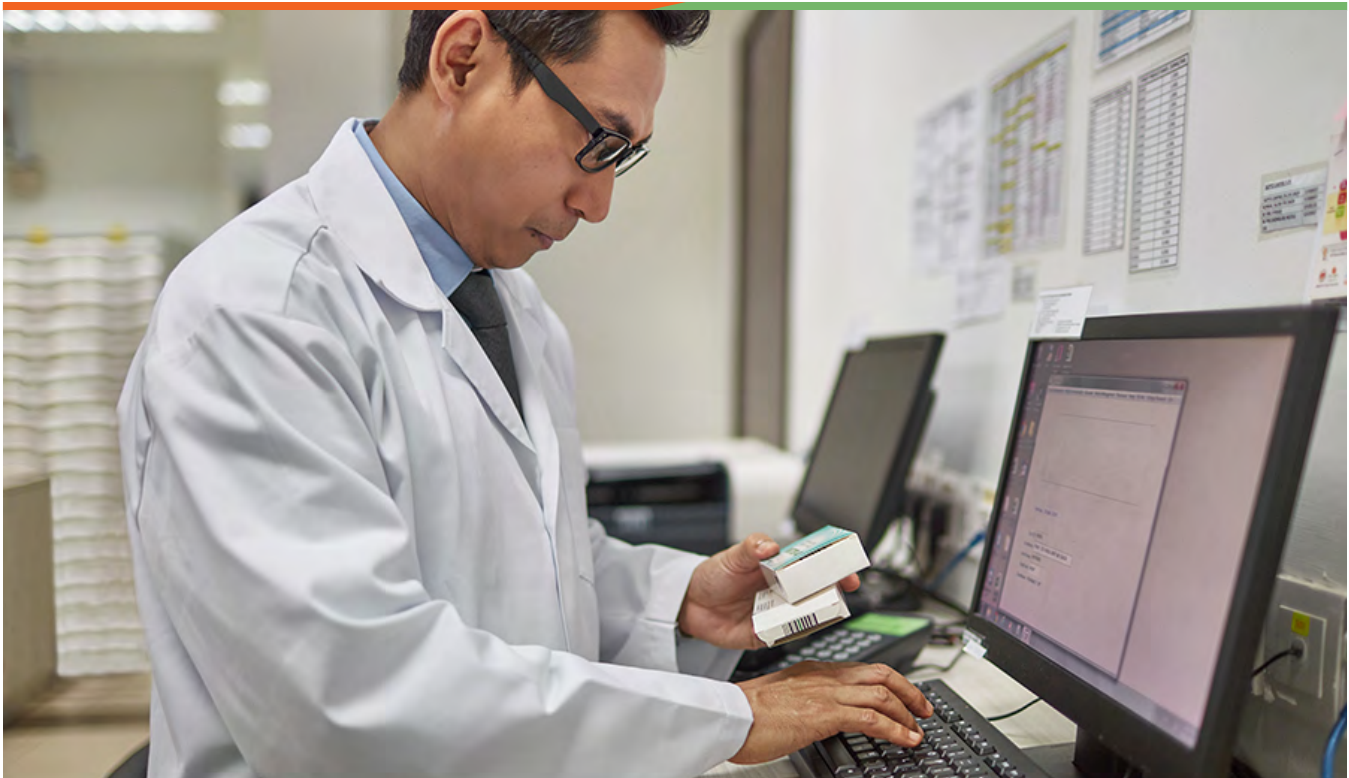
HOW TO PREPARE FOR E-PRESCRIBING

The fundamental information transferred in an e-prescription is easily understood. The secure electronic message contains prescriber information, patient information (such as date of birth and health number), as well as the drug name and dispensing instructions.

A result of the secure electronic transfer of discrete data elements of a prescription is fewer transcription errors. Information entered in a standard format in an EMR (e.g., the drug name, dose, and duration), can pre-populate matching fields in a pharmacist's pharmacy management system.

Physicians can prepare for true e-prescribing by using the discrete data elements described above when creating prescriptions in an EMR. The key is to avoid using free text when generating the core prescription information.

E-prescribing is one goal of connectivity. Many connections now exist, delivering information from hospitals and labs to an EMR. However, there are few examples of data flowing the other way, into the health care system.

True e-prescribing takes prescribing to the next level, by offering several potential benefits to patients, prescribers, and the health care system:

- Prescriptions are more secure, as diverting or forging them is more difficult when they are transmitted electronically
- Transcription errors are minimized, as a result of the secure electronic transmission of discrete prescription data from the EMR to the pharmacist's system
- Genuine two-way, secure electronic communication occurs between the family physician and pharmacist, while the provider has ready access to patient's information (through the EMR)
- This updated communication process eliminates fax and phone, and may allow:
  - ▸ Potential concerns about the prescription to be flagged and communicated efficiently to the prescribing physician (e.g., drug interactions; concerns about dosage, availability, and use of controlled drugs)
  - ▸ Notifications to prescribers about whether or not a patient's health insurance covers a particular drug

A national drug list—Did you know?

Health Canada and Canada Health Infoway have developed the Canadian Clinical Drug Data Set (CCDD), a clinically oriented drug terminology that supports digital health solutions such as e-prescribing in Canada.

- Access to information about drug coverage through provincial drug formularies, at the point of prescribing
- Timely confirmation of the electronic receipt of a prescription
- Timely notification to a family physician if, or when, a prescription has been dispensed by the pharmacy

NATIONAL E-PRESCRIBING INITIATIVE

Canada Health Infoway is developing a national not-for-profit electronic prescribing service, PrescribeIT. It will allow family physicians and other prescribers to send prescriptions electronically from their EMRs through the secure service, to a pharmacy of the patient's choice. The service will also provide secure communication between the pharmacist and the prescriber.

As of 2016, only a small proportion of prescriptions in Canada (approximately 1 per cent) were transmitted electronically from a physician's EMR to a dispensing pharmacy.[6] However, the PrescribeIT initiative is generating momentum. As of August 2017, the service was being tested in at least two provinces, Ontario and Alberta, with other provinces and territories in discussion to adopt the technology.

Eventually, PrescribeIT will incorporate public drug formulary information, so family physicians can check for drug coverage and relative cost. This e-prescribing initiative will integrate with provincial/territorial DISs to update the patient's global medication record.[7]

There is potential for e-prescribing to have a positive impact in a number of areas:

- Improved patient satisfaction; correct prescriptions are transmitted to the pharmacy of their choice in a timely, secure manner
- Improved provider satisfaction; prescription accuracy is improved, and information is available in a more timely manner
- Modernized communication between physicians and pharmacists
- Enhanced medication adherence; patients are more likely to fill prescriptions that are electronically prescribed[8]

In the future family physicians will be able to spend less time entering new prescriptions, and spend more time in direct contact with patients.

ELECTRONIC FORMS

Forms can be built into most EMRs, to standardize certain communications with other providers in care settings outside the family physician's office. Frequently used forms include:

- Outpatient clinic referral
- Laboratory requisition
- Diagnostic imaging requisition
- Workers' compensation boards or similar[9]

Ideally, these forms are sent electronically, but this is not currently the norm.

E-REFERRAL

Sending standardized patient health information in an electronic form is the basis of electronic referrals (e-referrals).

E-referrals allow health care providers to send a referral electronically, increasing the efficiency of delivery, and creating the ability to track the status.[10,11] Patients may be able to track the e-referral as well.[12] In some cases, the e-referral service is integrated in the EMR, at no extra cost to the physician. In other cases, third party software companies develop the service as an add-on to the EMR, often at an additional cost to the physician.[13] Ideally, the

cost should be minimal and the e-referral forms and databases (e.g., lists of other specialists and services) should be up to date, to encourage their use.

The principle of e-referral is strongly aligned with the vision of the PMH, which allows patients convenient access to consulting specialists.

Family physicians are encouraged to explore e-referral options available in their local region, which may be linked to their EMR either directly or indirectly. Examples include Alberta's Netcare eReferral platform, and the System Coordinated Access (SCA) program in the Waterloo-Wellington Local Health Integration Network (WWLHIN) in Ontario.

E-CONSULT

An e-consult allows a family physician to receive a consulting specialist's opinion about their patient's clinical situation, through a secure electronic platform. E-consults are a modern version of the "hallway consultation" using information and communication technology. E-consults may also involve telephone technology, as the Rapid Access to Consultative Expertise (RACE) initiative in British Columbia (see Table 1).[14]

E-consults may decrease both the number of face-to-face consultations and unnecessary referrals, while providing medical care in a timely manner. E-consults can result in a decrease in costs to the health care system, an improved patient and provider experience, and most importantly, an improved population health.[15]

This technology represents a faster and more efficient way to transmit data about clinical questions between health care providers, which may include but is not limited to physicians, nurses, nurse practitioners, pharmacists, as well as patients.

E-consults are becoming a part of modern medicine. However, due to the challenges of funding and understanding by physicians, e-consult adoption has been slow in some provinces. The Canadian Foundation for Healthcare Improvement (CFHI) conducted a study on e-consults, based on concerns over prolonged wait times to see a consulting specialist. From the onset of a medical issue, the most difficult time to wait is at the start, when the diagnosis and plan is unknown. The study was able to show a shortened response time with 60 per cent fewer face-to-face consults and a 40 per cent decrease in unnecessary referrals.[14]

Table 1: Examples of provincial/territorial e-consult services and where to sign up

Province / territory	E-consult service	Features
British Columbia	Rapid Access to Consultative Expertise (RACE)	Phone service allowing primary care providers to receive telephone advice from other specialists.
Newfoundland and Labrador	Building Access to Specialists through eConsultation (BASE™) eConsult Demonstration Project NL BASE ▶ eConsult	Ability to submit non-urgent clinical questions to other specialists. Ability to attach relevant diagnostic testing, images, photos, letters, etc. Response typically within seven days.
Ontario	Ontario Telemedicine Network (OTN) eConsult program	Ability to submit non-urgent clinical questions to other specialists. Ability to attach relevant diagnostic testing, images, photos, letters, etc. Response typically within seven days.

INTEROPERABILITY

The concept of One Patient, One Record (OPOR)[16] represents an ideal scenario in which EMRs seamlessly communicate with each other, as well as with the provincial/territorial EHR. Up-to-date information from laboratory or diagnostic imaging databases would flow between all health care providers involved in the patient's care. The patient would interact with their own health records and providers through a secure portal.

While we have not yet reached this ideal state of full interoperability, family physicians can use their EMRs along with EHR data to enhance the information available during patient consultations.

CONCLUSION

Family physicians can use EMRs to connect to many health care settings outside their own practices.

Ideally, EMRs should be able to communicate with other systems at hospitals, pharmacies, and other care settings, and access patient data from EHR databases (such as patient lab or diagnostic imaging records). This information sharing can help optimize patient care by providing family physicians with all the information they need at the point of care through their EMR. Slowly but surely, tools such as e-prescribing, e-referrals, and e-consults, as well as access to EHR data are becoming more accessible to family physicians. These elements of modern medicine enable unprecedented access to data sharing and support the key functions of care that form the heart of the PMH vision (i.e., to provide comprehensive care that is accessible, continuous, patient and family-centred, team-based, community oriented, and socially accountable).

Family physicians should check with their local health authorities and regional medical association to determine what services and tools are available or accessible through their EMRs. Ultimately, patients should know that a comprehensive view of their electronic record can be accessed by authorized health care providers and patients themselves, when it is needed.

When the EMR is optimized, the patient's health is optimized.

RESOURCES

This section contains information about some provincial/territorial EHR components and functionality currently available.

Note: EHR features accessible to clinicians at the point of care vary among provinces and territories. Regular updates to this table will be made available on the PMH website. Input about new resources and/or functionalities can be emailed to healthpolicy@cfpc.ca.

Province / territory	EHR name and website	EHR components and functionality

Alberta	Alberta Netcare EHR
	
	www.albertanetcare.ca
		• Intake Form used for Integration Coordination Centre and Netcare
		• Key patient health information, including immunizations, electrocardiogram (ECG), diagnostic images and reports, transcribed medical reports, laboratory test results, known allergies and intolerances, drug alerts, prescriptions and dispensed medications, and personal demographic information
		• Electronic record transfer
		• Health monitoring to support decision making (e.g., adverse reaction alerts for harmful allergy or drug interactions)
		• eReferral platform
		• In progress:
		  ▸ Community Information Integration (CII) project, uploaded information from the community physician's EMR, including patient demographics, provider information, clinic location, diagnosis and clinical observations, and treatment
		  ▸ PrescribeIT

British Columbia	CareConnect static1.squarespace.com	The Provincial eHealth Viewer (CareConnect) is a secure, view-only EHR that delivers patient-centred information to support health care providers in their delivery of care. It offers authorized care providers 24/7 access to an integrated, provincial view of clinical information. In progress: Interoperable Electronic Health Record (iEHR) project, building the infrastructure needed to make health care records interoperable province-wide. Functionality will include secure information exchange between clinicians, patient information systems, and repositories (diagnostic imaging, drug and lab information).
Manitoba	EChart www.echartmanitoba.ca	A viewable, printable, and searchable EHR system that pulls together information from many existing systems in Manitoba, including filled drug prescriptions, lab results, immunizations, and X-ray reports. How it works: The system depends on information from existing electronic systems that are updated at different times. Some are a continual live feed, where information is updated in real time (e.g., some lab results). Other information is updated less frequently (e.g., immunization information is updated once a day).

Province / territory	EHR name and website	EHR components and functionality
New Brunswick	One Patient One Record hpspub.gnb.ca/EHR/Pages/Overview.aspx?lang	The EHR started with the vision of One Patient, One Record. Clinical Viewer is a single point-of-access health portal available any time, anywhere, used to view integrated EHR information through various channels, including: • Client registry • Provider index/other registry indexes • Drug information system • Diagnostic imaging repository • Clinical data repository • Medicare • Vital statistics • Hospital information systems (laboratory, diagnostic imaging reports, cardiology, admissions, or emergency department visits) • Electronic medical record • Community pharmacies
Newfoundland and Labrador	Healthe NL www.nlchi.nl.ca	The Newfoundland and Labrador Centre for Health Information provides this provincial EHR system to support improved health care delivery, decision making, and policy. Components include: • The Pharmacy Network • Picture Archiving and Communications System (PACS) • The Client Registry • Labs
Nova Scotia	Secure Health Access Record (SHARE) novascotia.ca/dhw/ehealth/share	SHARE includes information from all of the provincial hospital systems, including: • Emergency reports, lab reports, admissions, discharge summaries, outpatient notes, and transfers • Diagnostic imaging (results of investigations such as X-rays, MRIs, and ultrasounds, as well as access to the images) • Drug information system Over time, information will be added from other parts of the health system, including pharmacies, public health services, primary health care, cancer care, and addiction services.
North West Territories	NWT HealthNet www.hss.gov.nt.ca/en/services/nwt-healthnet	NWT HealthNet consists of the following electronic systems: • HealthNet Viewer: an interoperable EHR that contains health history such as lab test/digital imaging results, specialist reports, and in-patient/outpatient information • Diagnostic imaging • Electronic medical record • Telehealth – clinical videoconferencing

Province / territory	EHR name and website	EHR components and functionality
Nunavut	iEHR-Teleradiology (Implementation in progress)	A Government of Nunavut project is under way with Canada Health Infoway to build and deploy the basic infrastructure for iEHR-teleradiology in a phased approach that supports health care delivery territory wide. Implementation phases include: • Develop a new, integrated, and comprehensive system for the Qikiqtani General Hospital (QGH) in Iqaluit, and roll out to the first four communities that are on the core business network and currently have adequate bandwidth • Deploy a common platform for exchanging images and diagnostic imaging reports between all Nunavut health care settings, including those located in the Southern jurisdictions • Consolidate and add new clinical domains, and extend access to more communities within Nunavut and more referral sites in southern jurisdictions
Ontario	Connecting Ontario www.ehealthontario. on.ca/en/for-healthcare-professionals/connectingontario	ConnectingOntario ClinicalViewer is a web-based portal that allows health care providers access to patients' digital health data, aggregated from a variety of sources, in real time. Key information includes: • Hospital visits • Laboratory results • Dispensed drugs • Diagnostic imaging • Local Health Integration Networks (LHINs), home and community care services, and mental health care The eReferral Provincial Reference Model aligns with Ontario's eHealth blueprint and EHR connectivity strategy, and leverages provincial EHR assets.

Province / territory	EHR name and website	EHR components and functionality
Prince Edward Island	One Island Health System www.princeedwardisland.ca/en/information/health-pei/electronic-health-records-ehrs	Components of the province's EHR installed to date are: • Clinical Information System (CIS) provides seamless, real-time exchange of information between all Island hospitals • Computerized Provider Order Entry (CPOE) is an order management system that allows clinicians to electronically process various types of orders province-wide (i.e., for laboratory, diagnostic imaging, and allied health consult) • Drug Information System (DIS) • Picture Archive and Communication System (PACS) enables the digital capture, storage, and distribution of medical images • Radiology Information System (RIS) manages all diagnostic imaging-related patient information across PEI • Client Registry (CR) serves as the definitive source of patient/client demographic and administrative information that is shared with other components of the EHR as needed Major EHR investments still to come include: • Selection and implementation of an integrated provincial electronic medical record solution • A way for Islanders to personally connect with their electronic health records
Quebec	Dossier Sante Quebec (DSQ) / Quebec Health Record Cristal-Net EHR www.canhealth.com/2016/01/06/quebec-moves-to-a-single-province-wide-ehr/	Cristal-Net has been selected as the single electronic health record system to be used to connect hospitals and health organizations across the province. It has been in use at the Centre hospitalier universitaire de Québec – Université Laval since 2003. Deployment of Cristal-Net across Quebec will lead to the completion of the 2019 Quebec Health Record (EHR), a database that will allow physicians and other health care professionals to access the results of examinations and laboratory tests, prescription drugs, vaccines, a summary of hospitalization, and information about allergies.
Saskatchewan	eHR Viewer www.ehealthsask.ca/services/ehr-viewer	Health care providers can access the following patient information, no matter where a patient presents for care: • Laboratory results • Medication information • Immunization information • Discharge summaries • Medical imaging reports • Hospital visits • Structured medical records • Chronic disease information The eHR viewer includes a patient preview that displays recent labs, diagnostic reports, clinical documents, hospital visits, demographic information, as well as a new Patient Timeline link that provides a patient's overall medical history using available encounters and documents.

Province / territory	EHR name and website	EHR components and functionality
Yukon	RAVEN www.ykhc.org archive.kyuk.org/ykhc-launches-raven	The Yukon Kuskokwim Health Corporation's Records and Verification Electronic Network (RAVEN) gives health care providers and health aides access to patients' health history and medications, and enables better communication between departments and sub-regional clinics across its health care delivery system.

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