



Physician Office System Program

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Specialists' EMR Requirements Project

Abridged Final Report

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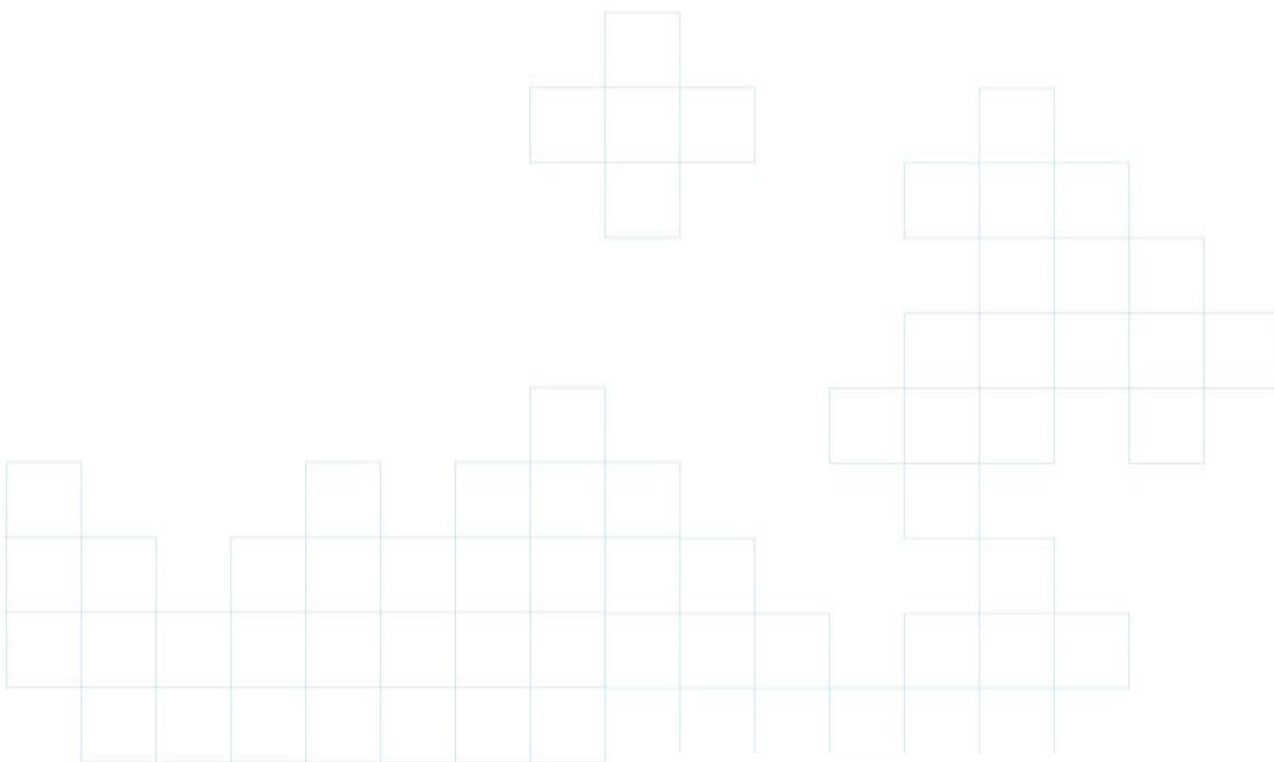


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Executive Summary

Purpose and Objectives

The Physician Office System Program's (POSP's) Specialists' EMR Requirements Project set out to identify the distinct electronic medical record (EMR) needs of specialists in Alberta and to gain a better understanding of how project stakeholders may use and apply specialists' EMR requirements once defined.

Project objectives include speaking directly with specialists to:

- Identify Alberta-specific specialty practice characteristics requiring EMR support.
- Document specialists EMR capabilities that have not been satisfied through Vendor Conformance and Usability Requirements (VCUR 2008).
- Record and prioritize a comprehensive set of specialists' EMR requirements.

Background

The Alberta specialist community has noted that the current qualified service provider (QSP) EMR solutions do not optimally support specialists' unique workflows and specific practice requirements.

To better support future initiatives that enable wider adoption of EMRs in Alberta by specialists, a greater understanding of the specialist domain is necessary. In early 2013, a Specialists Requirements Study was undertaken to document additional EMR functionality and associated specific high-level requirements considered important by specialists.

The QSP vendors were also engaged regarding their specialty focus and near-term EMR development road maps. All claimed to be committed to the specialist market and support specialists with various specific EMR functionalities. However, a comprehensive analysis was not possible due to risks to the QSP's existing or potential competitive advantage in this market.

In response to study findings, the following next steps are recommended:

1. Facilitate workshops with specialists to validate report findings and establish a formal set of specialists' EMR requirements.
2. Organize workshops with EMR vendors to review the specialist specific requirements.

The current Specialists' EMR Requirements project charter was designed to follow on the specialists' EMR work previously initiated. The project charter was finalized and approved January 15, 2013, and the Specialists' EMR Requirements Project - Requirements Deliverable (Final Report) was submitted on May 31, 2013.

Project Highlights

Specialists' EMR needs were identified and documented through interviews with a representative sample of specialists by the project team. The following components were noted as key specialist-specific EMR needs:

- Automatic notifications sent from EMR to patient to prevent missed patient appointments
- A comprehensive document management solution integrated with the EMR
- The ability for users to create and modify chart notes and required forms, requisitions and templates from Alberta Health, Alberta Health Services (AHS) or the Workers Compensation Board (WCB)
- The ability to collect a patient's past and present medical history as a by-product of the patient encounter
- Innovative, customizable task management and messaging
- Internal EMR integration of billing, scheduling and patient encounter modules
- Automation of predictable, repetitive processes using EMR features
- Customization of user interfaces, data entry functions, and EMR work flow processes

Specialty practices virtually always span acute or continuing care environments in community and AHS facilities. Hence the requirement to interact with multiple information technology (IT) systems within the current Alberta healthcare environment was emphasized.

The following 13 interoperability features and functions are high-priority specialist EMR needs:

1. Integration of EMR systems with a central registration repository for access to patient and provider demographic data.
2. Password management solutions to assist with streamlined access to the many provincial health IT systems, including Netcare.
3. Electronic delivery of test and investigation results with a view to enhanced digital data transfer of images and specialized investigation results.
4. Interoperable scheduling for surgeries, diagnostic tests/investigations and ambulatory clinics.
5. Ability to use the EMR in an AHS IT environment.
6. Business rules pre-check capability for Alberta Health billing submissions.
7. Fully integrated WCB billing and report submission capabilities.
8. Select use of patient portal features and functions.
9. Ability to directly upload data from specialized medical devices via machine-to-machine interfaces.
10. Ability to receive and accept electronic referrals.
11. Interoperable electronic ordering systems for coordinating assessment and treatment interventions.
12. Ability to integrate with Pharmaceutical Information Network (PIN) via ePrescribe.
13. Integration with AHS clinical information systems.

Recommendations

*Recommendations were generated following analysis of the project results:

- A. Continued involvement of specialists in EMR requirements identification and confirmation activities.
- B. Use available project data to prioritize activities related to optimizing specialists' effective use of EMRs. This includes use of project data in EMR program planning and delivery, provincial EMR policy planning, implementation and operational support, EMR software development, and, most importantly, optimization of EMR use by specialists
- C. Engage vendors who have preferentially met specialists' EMR requirements as reflected in their successful penetration and capture of the specialist market in Alberta to date. This can be accomplished by using collected project metadata.
- D. Conduct further analysis to determine if specified requirements are applicable to all EMR users, all specialists or only specific specialist practices. It is anticipated this could provide a valuable starting point for further delineation of individual specialty-specific EMR needs.
- E. Contrast the documented specialists' EMR requirements with VCUR 2008 EMR functional offerings. Any functional requirements already in use could be highlighted by enhanced training and awareness, and net new requirements slated for EMR enhancement planning.
- F. Include knowledge of non-functional requirements issues such as organizational readiness, change management planning, workflow assessment, implementation and deployment, and vendor support in EMR program and policy planning.
- G. Use the data collected in the **Complete Interview Data - Anonymous** spreadsheet to enhance understanding of specialists' EMR needs as they relate to their workflow.
- H. Continue involvement of specialists in provincial IT initiatives where specialist EMR functions and features may benefit from enhanced interoperability with provincial health IT systems.

*Recommendations provide a series of approaches and options for expanding the work accomplished by the project team.

Key Findings

This section provides a discussion to provide context and highlight significant project team observations and key findings. For comprehensive documentation, see **Appendix A: Requirements Table** in the full version of the final report.

Specialists consistently commented that EMRs designed first to serve general practitioner needs were difficult to adapt to specialist needs. The most important specialist specific EMR requirements include the following:

- The need for streamlined referral management and patient registration processes.
- Because specialists' work routinely spans the acute, community continuing care sectors and usually in multiple locations and roles – EMR features and functions need to consider the impact of external agency IT infrastructure, software, privacy and security access processes and connectivity readiness or work around requirements on the specialist's practice.
- Specialists provide expert level medical services usually involving specialized diagnostic tests and/or therapeutic procedures which mandate the need for specific care coordination EMR features.
- A specialist's consult and follow up care letters are often the critical internal and external output provided by the specialist.
- Specialists may require unique or specialized templates, forms or features developed for their practice to facilitate concise clear and meaningful communication.
- Specialists are often involved in individual patient care for brief periods, carrying out specialized care in a limited number of encounters as opposed to caring for individual patients over an extended period as is the case in family medicine/primary care. Many EMRs are not developed or optimized for short patient interactions and lack the ability to strike this balance of historical and recent information.

A. Important EMR Features and Functions

1. Triage

While none of the project participants used a standardized triage score to determine the urgency and needs of referred patients, it is acknowledged that most specialists triage their referrals. Enhanced EMR functionality to customize and automate common specialty/practitioner specific referral information requirements for publication or distribution to referring physicians and internal triage of referrals would be desirable.

2. Waitlist Management

In speaking with project participants, only a handful of specialist clinics use the waitlist capabilities of their EMRs. For those specialists who use waitlist management, important features include:

- Tracking patient status on the waitlist
- Updating patient's status using status parameters defined by the user
- Linking patient notes and documents to those patients waiting on the waitlist

- Customizing the waitlist columns to include as many or as few status parameters as desired
- Calculating wait times based on different wait time events (for example, receipt of referral, date appointment scheduled, date of appointment and date patient seen by specialist).
- Calculating the number of patients on the waitlist based on different wait time events

3. Automatic Notifications

Specialists only see patients who are referred to them by other physicians. For this reason, when patients do not attend appointments there is a significant impact on the specialist's practice. Another patient waiting for specialist consultation could have filled the spot; instead they must remain on the waitlist as the 'no-show' patient must be rescheduled. To decrease the incidence of 'no-shows' in their practice, specialists are willing to consider use of automated notifications such as faxes and emails which can be used securely as long as no pertinent, personal information is included in the notification. Specialists would consider the following EMR options if they were available for appointment notifications:

- Once a patient appointment is scheduled, the EMR would automatically fax/notify the referring provider/patient of the patient's scheduled appointment
- Use of automated secure email notifications and confirmation would be desirable if enabled
- Use of automated phone messages and confirmation requests regarding upcoming appointments
- Use of a third party notification service (via email or phone) that notifies the patient and requests confirmation via an secure internet link
- Use of an integrated patient portal where patients could look up their appointment date, time and location and revise as necessary

4. Document Management Solution

Specialists note a need for an integrated document management solution. They receive a large volume of referrals by fax. As soon as a document is received via electronic fax it needs to be imported to a preview area in the EMR.

In the preview area, metadata regarding the document can be added and a document title can be assigned. The document can be saved in the appropriate file format in the appropriate EMR location. The document management solution can also be used for searching and retrieving documents via the assigned metadata.

In addition, outgoing electronic faxes can take advantage of integrated document management solutions. Documents can be collated into PDF fax packages, providing the recipient with only one document containing all pertinent information as opposed to multiple documents and faxes. This collated fax package is both complete and easily consumed by the receiving provider.

Other uses of a document management solution include ingesting PDF or other static file formats from medical devices. Many EMRs are not currently capable of machine-to-machine

interfaces with medical devices but a workaround can be effectively managed using a document management solution to collect available outputs.

5. Forms and Templates

Specialists use EMR forms and templates on a regular basis. What follows is an ideal description of forms and templates based on the cumulative comments of the project participants.

Forms are described by specialists as electronic representations of paper forms required by government and private facilities for ordering diagnostic tests, prescriptions or allied health service provider-related assessments or services with the following features:

- Forms must be set up in the specialist's EMR to look like the original paper form when printed out. Given the current inability to communicate or request electronically by system-to-system messaging, the latter functionality needs to be developed and supported to optimize EMR use.
- Forms can be configured to include auto-populating information such as patient demographics or recent lab test results. They can be configured to include data entry fields or pre-populated phrases such as test instructions. Data entry fields can include free text fields, tick boxes, radio buttons, phrase lists and drop down menus. Auto-populated or pre-populated information can be modified or deleted prior to printing the form.
- The complete form can be printed or saved as a PDF file in the patient's chart. For standardized assessment forms, formulas and algorithms can be calculated and results can be captured.

Templates (which can be a customized screen in the EMR patient chart) are described by specialists as data entry charting tools designed to capture patient data obtained during a patient encounter or non-visit encounter. Templates can then be saved in the patient file as the record of the patient visit. This is important as specialists have medical-legal standards for documentation with which they must comply.

Templates are used to collect patient data to generate consult letters. This is an EMR feature that is predominantly used by specialists. Specialists' consult letter needs include the following:

- Consult letter can be viewed prior to printing or faxing
- Once the letter is generated, styles and formatting can be assigned and completed using word processing features and functions
- Clinic logos or diagrams can be added to the consult letter template

The standardization of letters, forms and requisitions as templates is a time-saving element in an EMR. A central template repository that can be distributed widely to various specialties or users of an EMR is the end result that specialists require. This would provide enhanced efficiencies for the electronic health record (EHR) system in general and would include specialists' office and facilities outside the physician's offices. The need for specialists to develop unique templates should be minimized.

6. Past and Present Medical History

EMR functionality that supports a succinct version of a patient's pertinent medical history is an important feature for specialists. Primary care practitioner EMRs often include more comprehensive and detailed information collected over time. Many specialists only require a summary of salient past and/or recent history with available diagnostic test results.

Some EMRs come equipped with very extensive past medical histories, problem lists and mandatory general system review template features that specialists note are often time consuming to complete and not necessarily relevant to their involvement in the patient's care

Specialists would like to have a central repository they could access seamlessly from their EMR that includes medical history, allergies, social history, problems, surgical history and medication that can be incorporated into the EMR as required, as opposed to having to be manually entered each time. This would require standardized templates and secure system-to-system messaging among and between provincially approved and conformed EMR solutions.

7. Medication Management

Depending on the type of practice, some specialists are heavily involved in prescribing and managing medications for their patient population while others have very little involvement in these activities. Active medication lists, documented allergies and a relevant previous history of drug-related problems are most pertinent and necessary to provide appropriate safe patient care.

8. Customization

The project team observed that specialists who had invested a significant amount of time customizing the EMR platform with their vendor and continued to invest time and effort training themselves and their staff were the most satisfied with their EMR and found it the most effective. It was evident that some EMR products are more difficult to customize than others and certain vendors appear to have captured the specialist market as a result of their focus on specialist requirements.

9. Voice Recognition

Numerous specialists use voice recognition software within their EMR for navigation, documentation and letter generation while others have not been successful. The challenge has often been using voice recognition software in an ASP environment. Key considerations for specialists deciding to use voice dictation software include the following:

- Install the most up-to-date versions of voice recognition software
- Set aside adequate time to train physicians and clinic staff on the software
- Ensure adequate hardware is available to support the software as it is reportedly 'resource-heavy' and cannot be used with thin client workstations
- Run the software locally to prevent slow speeds experienced with web-based versions
- Be prepared to correct the final product
- Be prepared to slow your speech if you normally speak quickly

B. Interoperability – Current State

Key findings in this section relate to specialists' needs for interacting with multiple IT systems within the current Alberta healthcare environment. This includes some of the current business and clinical needs noted by specialists as well as the current IT capabilities of all involved stakeholders. While many specialist interoperability needs can be identified, the current IT capabilities of involved stakeholders may not fully support electronic communication between specialists' EMRs and all pertinent healthcare IT systems.

The section entitled **C. Interoperability – Future State** on page 12 notes some enhanced interoperability capabilities that are anticipated to further impact specialists' communication with external healthcare IT systems.

1. Central Registration Repository

Specialists see a large number of new patients annually who must be registered in their EMR system. Project participants note that registration processes are largely manual despite the existence of multiple electronic patient demographic data registries within the Alberta Health care domain, and current state functionality does not allow electronic transfer of registration data. Depending on the set up of the specialist's EMR registration module and the amount of documentation accompanying a referral, clinics estimate patient registration can take anywhere from 10 minutes to 1 hour. In addition to patient demographics, clinic staff:

- Enter diagnoses
- Transcribe results of investigations previously completed
- Obtain PDF files of patient information from Netcare
- Obtain information about the referring provider including their fax number, address and practitioner identification number

Most of this information is currently stored electronically in Alberta Health and AHS registries or private provider registries but cannot be accessed or transferred electronically to specialist EMRs.

Specialists would like their EMR to have access to a central registry for both patient and provider demographic information. This access should ideally be real-time or updated at monthly intervals. While specialists recognize that some errors could still be present in the information obtained from a central source, for many registration processes it would enhance clinic efficiency. Once the patient has been correctly identified and the accuracy of the information confirmed, the available information could auto-populate appropriate EMR data fields and save valuable clinic time.

Specialists also expressed interest in the use of smart cards or biometric solutions for obtaining quick access to accurate patient data. These solutions would require a supporting provincial infrastructure.

2. Scheduling Surgeries and Clinics

Many specialists provide services to patients at a number of AHS locations. They may have to book space and resources (human, technical and material) for AHS operating rooms, specialized investigations or clinics. Currently, there is no integration between AHS and EMR schedulers.

3. Working in an AHS IT Environment

Specialists who provide consultative, investigative or surgical services in an AHS facility experience a number of IT and process-related barriers to effective use of their EMR.

Depending on how a specialist's EMR is set up, participants working in AHS environments report slight IT-related inconveniences (need to login to AHS network and then into EMR) to major IT-related barriers (unable to access EMR due to AHS firewall). Specialists working in both community and facility settings require access to their EMRs from within the AHS IT environment. Process-related barriers include the need to document patient care provided as per AHS procedures (e.g., paper file, dictated note or completion of clinical information system documentation).

Recording patient information obtained in an AHS environment into the EMR is completed by specialists at varying levels of detail using a number of methods including uploading or scanning records and/or billing information into the EMR upon return to their office.

Specialists note that an integrated solution for transferring patient information between AHS clinical environments and their EMR is required. While full integration is not presently possible as many AHS facilities do not yet use clinical information systems, a secure method for transferring patient data would save specialists time and improve access to patient information regardless of the location where the patient is receiving specialist services. Specialists did not offer any specific solutions to this problem at present.

Those most satisfied with the current information transfer used dictation services at facilities that, once completed, are electronically faxed to their EMR. It was noted, however, that some facility transcription services took several weeks to complete specialists' dictation and introduced another process barrier to the transfer of information.

4. Machine-to-Machine Interfaces

A few participants expressed interest in machine-to-machine interfaces between medical devices and their EMRs. At present, it may not be feasible to design interfaces for the many different devices available in the marketplace. However, specialists are willing to consider other methods of obtaining static patient information from medical devices. For devices that produce static outputs such as a PDF file type, specialists would like to integrate these PDF outputs with their EMR's document management solution. The packaged results from the device could be downloaded in the EMR and used for patient care management activities (e.g., PDF of an ECG report could be uploaded into patient's EMR file). See the key finding entitled **Document Management Solution** on page 7 for more information.

5. Patient Portals

Specialists note that patient portals are being introduced in a number of jurisdictions including Alberta. At present, specialists can see a limited need for interoperability between their EMR and a patient portal. A number of specialists remarked they had no need to communicate with patients via email or secure messaging systems. A few participants stated that a patient portal may be helpful in assisting patients to access their appointment time or maybe even schedule themselves in for an appointment. However, the latter would only be successful if the EMR could be set up with some fail-safe mechanisms to prevent patients from booking too much/too little time or booking at the wrong location.

Interoperability – Current State Findings

These findings represent the needs of the project participants at this point in time. While some workarounds have been successful in meeting specialist needs, significant barriers to effective EMR use remain.

Stakeholders can use these findings to increase their understanding of specialists' EMR needs within the current provincial healthcare environment. As increased capabilities are recognized in all stakeholders' IT systems and applications, specialist needs for information sharing and data transfer require constant assessment and re-evaluation.

By aligning these emerging capabilities with EMR enhancements, improved interoperability can be attained, eliminating some of the redundancies and inefficiencies faced by specialists today.

C. Interoperability – Future State

Specialists need to communicate electronically and seamlessly from their EMRs with IT systems throughout the Alberta healthcare environment, including anticipated business and clinical needs. Specialist interoperability needs are already well established but are not being met or facilitated in the current environment. All provincial stakeholders require and would benefit from enhanced alignment and development of a robust health information exchange platform to make secure system-to-system messaging a reality.

1. Electronic Referrals

Current EMRs have developed functionality that enables electronic referrals, complete with patient demographic and pertinent clinical information between physicians on the same EMRs. Efforts have been made between vendors to develop standard messaging to enable this capability between platforms.

As there are a number of EMR vendor products in Alberta, it would be important for any electronic referral solution to provide extensive integration services that allow for transfer of information from one EMR to another. In order to support this transfer of information, numerous security and privacy requirements must be satisfied. Specialists and IT experts must agree upon the data points required and messaging standards for electronic referral to become a reality.

2. Coordinating Assessment and Treatment Interventions

A number of specialists noted the need for coordinating patient care while the patient is waiting for additional tests, investigations, procedures, interventions, surgeries or consultations.

Specialists express an interest in tracking patient assessment and treatment interventions using a community-wide tracking or ordering system. Any additional diagnostic, therapeutic intervention or additional specialty consultation would ideally be ordered using an integrated order system. The patient's status could then be tracked throughout their journey. Much like electronic referrals, this type of provincial solution requires alignment between human and business process elements along with an enabling IT infrastructure and software solution.

In the absence of a community-wide tracking or ordering system, some specialists have customized task management functions or waitlist functions to track patient assessment and treatment interventions within their EMRs. This workaround assists specialists to manage the patient's journey through the health system but is currently not something that can be shared with other interested stakeholders, patients or immediate care providers.

3. ePrescribe

The electronic prescription initiative underway in Alberta is known as ePrescribe. Several project participants anticipate improved EMR prescription and medication management functionality following implementation of ePrescribe capabilities via the Pharmaceutical Information Network (PIN). ePrescribe should facilitate specialists to easily retrieve relevant past and current medication histories.

Stakeholders should keep the needs of specialists in mind as ePrescribe is deployed. While some EMRs have features designed to improve data entry processes and lessen the data entry burden, specialists are mostly interested in documenting relevant current medications, drug reactions, allergies and details of the medications that they prescribe.

4. Electronic Delivery of Test and Investigation Results

Several specialists noted that electronic delivery of diagnostic test and specialized investigation reports directly into the EMR would be beneficial. At present, EMRs are limited in their ability to accept some digital files related to the file format or the file size. The advantages of being able to receive digital files in their intended file formats include the ability to see images with enhanced accuracy and clarity as well as the ability to work with raw data obtained from the investigation within the EMR. The eDelivery functionality proposed as part of the provincial Health Information Exchange (pHIE) suite of services needs to be further developed and EMRs must support links to the data feeds to optimize functionality and effective EMR use by specialists.

This type of feature and functionality would be especially beneficial for clinical specialists that are heavily reliant on complex data sets to make clinical decisions.

Specialists rely on historical data from tests and investigations to identify trends and patterns in patient signs and symptoms. They would like to be able to electronically download relevant patient data from Netcare directly into their EMR. While Netcare is not designed for this purpose, this request was heard frequently. The work flows associated with downloading, printing and subsequently scanning into general fields in physician's EMR are inefficient and prone to human errors such as misidentification or misfiling in generic fields which can complicate document retrieval.

Specialists also express a desire to publish some of their EMR clinical data to Netcare. Again, while Netcare is not currently designed for this purpose, future plans related to data sharing need to include specialists' perspectives regarding this functionality.

5. Machine-to-Machine Interfaces

As available technology and associated industry standards related to machine-to-machine interfaces mature, specialists would like to make use of bi-directional transfer of patient data into and out of their EMRs. Advantages include access to real time data for immediate analysis and for use in treatment algorithms and advanced clinical analytic functions.

6. Integration with AHS Clinical Information Systems

As noted in the section entitled **Working in an AHS IT Environment** on page 11, a number of IT and process-related barriers currently affect specialists working in AHS facilities. As more clinical information systems are deployed in AHS, the sharing of patient data between clinical information systems and specialists' EMRs needs to be discussed and, if possible, facilitated. There are many data sharing options to consider as future IT capabilities emerge.

Specialists will need to be involved in discussions related to any potential solutions including but not limited to:

- System integration initiatives for select patient populations or specific patient data sets
- Shared health records
- Secure methods for transferring patient data
- Use of clinical document architecture standards
- Use of Integrating the Health Enterprise (IHE) standards

7. ICD-10

Several project participants use ICD-10 codes within their EMR. At present, ICD-9 codes are used for Alberta billing processes. These specialists included ICD-10 as their preferred coding system due to its enhanced accuracy and precision. While they still use ICD-9 for billing purposes, they use ICD-10 for clinical and practice management activities (e.g., analyzing patient diagnoses and outcomes). EMRs may need to accommodate both ICD-9 and ICD-10 coding for specialists with this type of practice management needs.

8. Patient Portals

Specialists currently speak of using patient portals to access scheduling modules and static patient education materials. Additional patient features including access to test and investigation results, health history sections for input to EMRs, and access to specialists via secure electronic communication methods will need to be discussed with both specialists and patients to achieve a balanced perspective.

Non-functional Requirements Issues Analysis

While a set of specialists' EMR software requirements is the main output of this deliverable, many participants, stakeholders and expert sources note that software requirements alone are not capable of increasing the effective use of EMRs by specialists.

Organizational change management issues including those associated with organizational readiness, change management planning, workflow assessment, implementation/deployment and vendor support influence whether or not an EMR solution will result in practice and business benefits for specialists who choose to adopt. In addition, technical issues related to integration with external IT systems and solutions influence the effectiveness of an EMR solution deployed in a specialist's practice.

This section discusses some of the main concerns and issues but is not an exhaustive representation of all non-functional requirements issues facing specialists.

Making the Most of an EMR

Specialists who have not maximized the use of their EMR would like to spend more time learning how to make templates and forms, adjusting the user interface or building in automated processes. The demands of a busy medical practice present a significant barrier to this being possible. Specialists value alternate methods for enhancing use of their EMRs through activities such as:

- Participation in POSP peer to peer or vendor sponsored advanced training sessions.
- Delegating EMR development and process change management activities to other clinic staff. Clinic managers play a key role in these activities, especially in larger clinics.
- Hiring a third party IT company to manage EMR assets (e.g., hardware and network). This frees clinic staff to focus on other EMR activities related to clinic and business processes.

Project participants enrolled in POSP noted that resources such as portfolio coordinators and change management advisors have been invaluable for implementation and deployment of their EMRs. However, they note additional organizational change management support is required following the completion of POSP formal milestones.

Specialists would like to see additional expert resources provided by POSP or similar provincial programs. This includes knowledgeable individuals who would assess the clinic's current status and form a plan with them to expand their use of the EMR through training, development of available EMR features, and changes to clinical and business processes.

POSP Support

For the most part, specialists taking part in the project valued the support received from POSP. The following suggestions were brought forward to further improve such support:

1. Continued financial and organizational change management to support and optimize the use of specialists' EMRs.

2. Enhanced advocacy on behalf of specialists related to POSP contract negotiations with vendors (i.e., ensure public money being spent in a responsible manner and ensure that the physicians are treated fairly in the marketplace).
3. Providing specialists with the ability to choose an appropriate EMR product for their needs rather than having to choose from a list of the three approved EMR products that are generally perceived as not optimized for specialty practice.
4. Consider consolidation into one provincial EMR and have everyone use that product. This could potentially enhance interoperability and focus provincial efforts on appropriate EMR development for all patients, physicians and health care providers in Alberta.
5. Accessibility to POSP or a similar EMR funding program for advanced training without lengthy applications and reporting procedures related to the funding received.
6. Work with EMR vendors and ancillary EMR support vendors to speed up enhancements related to interoperability and integration (e.g., work with Dragon to enhance voice recognition capabilities for approved EMR products).

Connectivity

As many EMR products are reliant on the internet for their responsiveness and reliability, specialists suggest enhanced attention be paid to internet provider services and offerings. Without a reliable, fast internet connection, a specialist's web-based EMR cannot perform as intended. While two to three second delays in responsiveness may not seem inconvenient once in a while, this significantly affects a clinic's productivity if it becomes a commonplace problem. When EMRs are negatively affected by the internet connectivity provided as part of their EMR service, specialist use of the EMR is impeded. Some specialists develop paper-based procedures to compensate for the slow speed or abandon certain EMR features completely as they cannot match the speed required in the specialist's workflow.

Downtime related to internet outages is also a major concern for web-based EMRs. Some surgeons prefer server-based EMRs as they require patient information 24-hours per day, 7 days a week. If they are unable to access their EMR, patient safety could be at risk. Specialists suggest that service level agreements related to connectivity, reliability, downtime, business continuity and responsiveness be considered when working with vendors to secure a comprehensive web-based EMR solution.

Economics

Specialist clinics represent both a medical service and a business. When considering adoption of an EMR, the specialist needs to consider both clinical practice and business requirements. If the EMR cannot effectively meet the needs of the specialist's workflow, any economic benefits related to a partially or completely funded EMR may be outweighed.

Appendix A: Project Participants

A total of 46 participants took part in the Specialists' EMR Requirements Project. Participants include 8 clinic managers, 3 POSP peer leaders (1 clinic administrator and 2 specialists) and 35 specialists. The following diagram depicts the percentage of total interview hours contributed by each interview group.

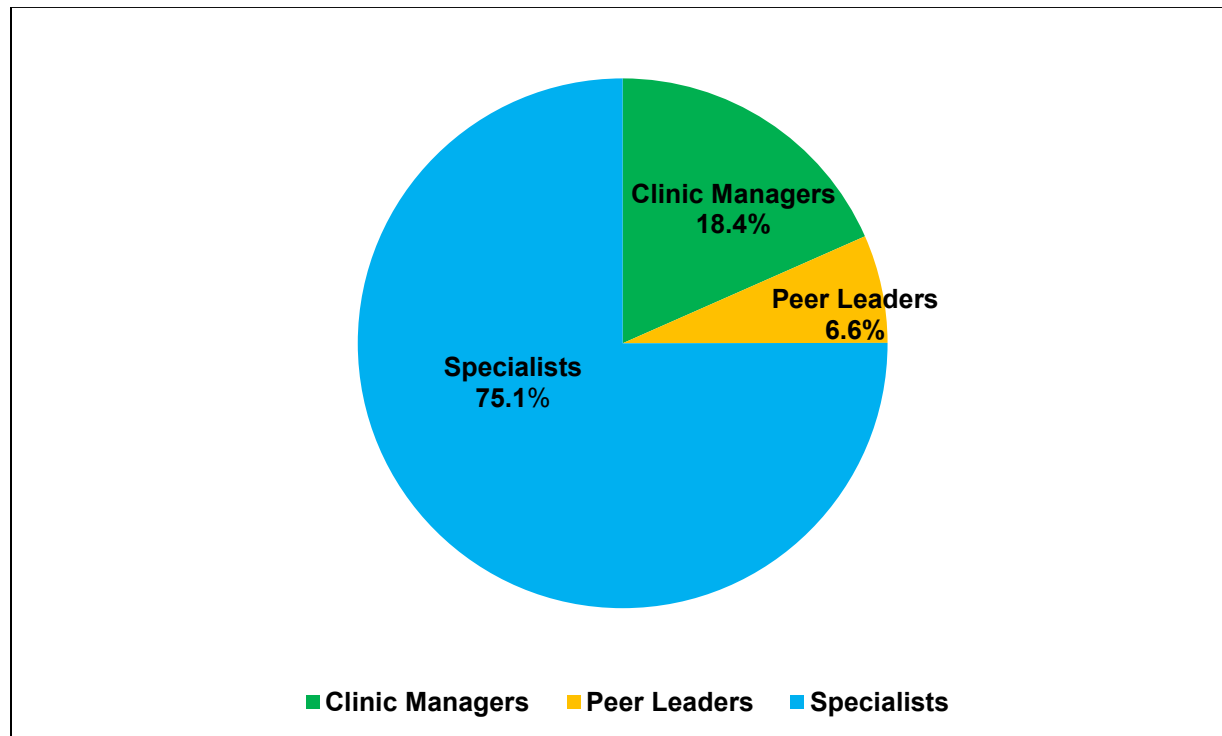


Diagram 1

Eighteen different specialists were engaged in the project. The following specialties were represented in the interview sample:

- Cardiology (1 specialist)
- Child Psychiatry (2 specialists)
- Dermatology (2 specialists)
- Endocrinology (1 specialist)
- General Surgery (3 specialists)
- Internal Medicine (3 specialists, 1 clinic manager,)
- Neurology (3 specialists)
- Obstetrics/Gynecology (4 specialists, 1 clinic manager)
- Ophthalmology (1 specialist)
- Orthopedic Surgery (1 clinic manager)
- Otolaryngology (3 specialists, 1 clinic manager)
- Pediatrics (3 specialists, 1 clinic manager)
- Pediatric Urology (1 specialist)
- Plastic Surgery (1 specialist)
- Psychiatry (2 specialists)
- Rheumatology (1 specialist)
- Thoracic Surgery (1 specialist)
- Urology (3 specialists, 1 clinic manager)

Interview participants used a variety of EMRs (includes the percentage and number of project participants using that EMR):

- Accuro Optimed - 15% (7)
- Healthquest - 17% (8)
- Jonoke - .02% (1)
- Med Access - 30% (14)
- TELUS Health Solutions PS Suite - 11% (5)
- TELUS Health Solutions Wolf EMR - 24% (11)

Appendix B: Project Results

Participants were asked to provide a description of their practice as part of the interview. The following characteristics further describe the interview sample:

- 48% performed surgical procedures (22/46)
- 22% had offices that were based out of an AHS facility (10/46)
- 55% were solo-practitioners (25/46)
- 30% were part of large practices (greater than 5 physicians) (14/46)
- 15% were part of medium-sized practices (between 2–5 physicians) (7/46)
- Average time using current EMR was 4.6 years
- Average time using an EMR was 7.8 years
- 65% of participants used a QSP solution (30/46)

The total number of participant hours engaged in interviews as related to their EMR vendor is shown in Diagram 2:

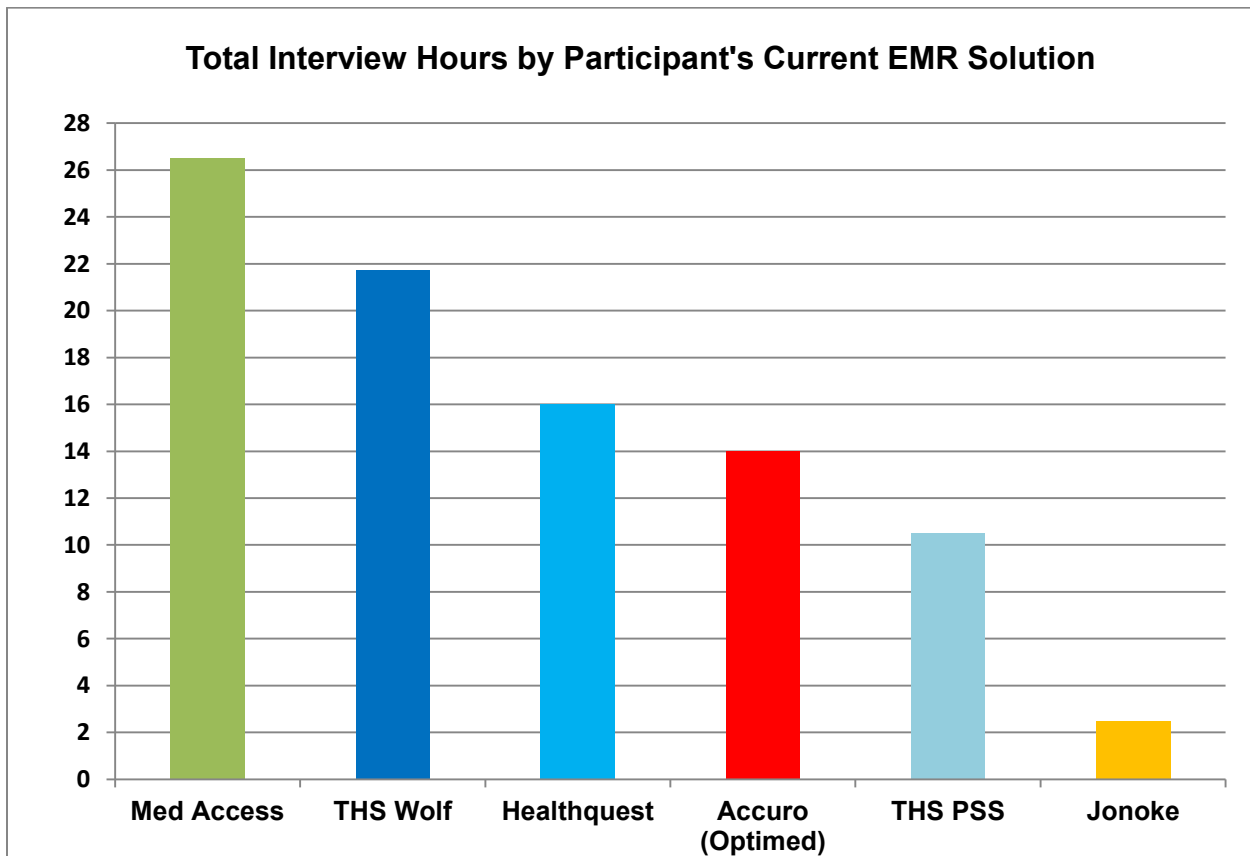


Diagram 2

Breakdown of Participant Comments

The findings from each participant’s interview were reviewed and participant comments that represented or described EMR-related needs were identified. The comments were categorized as being related to EMR needs (met and unmet), workflow preferences or non-functional requirements issues.

Comments related to unmet EMR needs were further divided into internal needs that the EMR was currently incapable of providing or external needs that depended on further development of provincial IT infrastructure capabilities. All of the comments were recorded in a spreadsheet. The breakdown of the data obtained from the participant interviews is presented here.

A total of 3,348 participant comments were recorded. Diagram 3 depicts the number of comments collected in each workflow category with the number of unmet, met and workflow preference comments for each category.

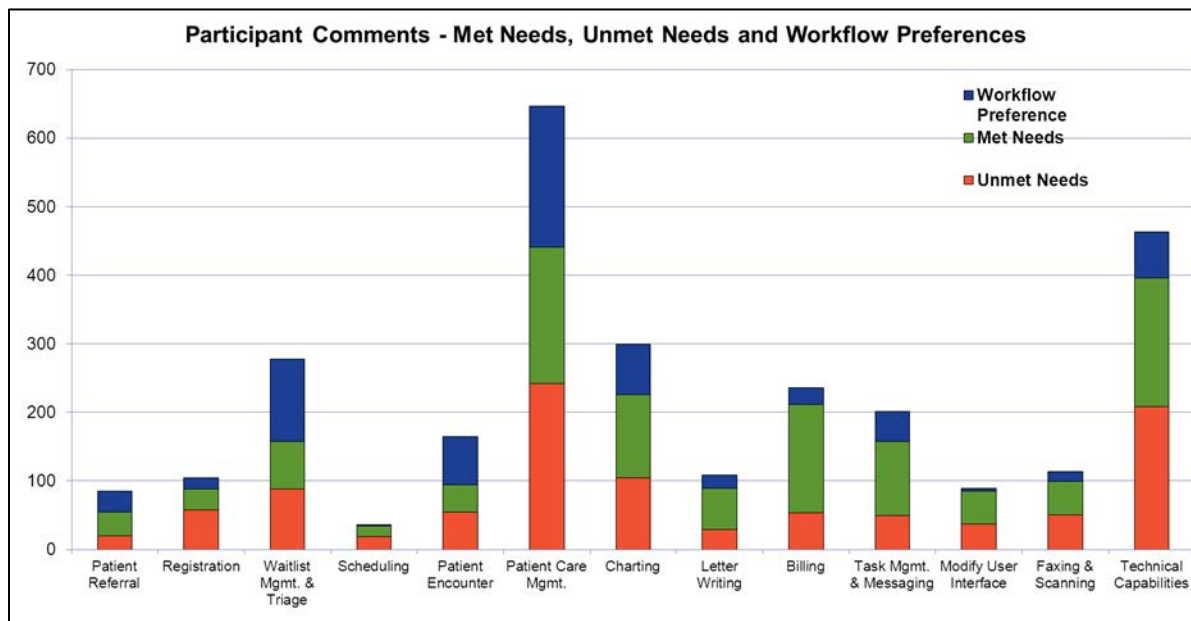


Diagram 3

It is important to note that while the participants noted some EMR needs to be currently unmet, there was no way to confirm the accuracy of their statements. For example, if a participant noted that they were unable to make notes on billing submissions, the project team would have no way to know if the participants EMR was actually incapable of this function and it would be possible for the participant to simply be unaware of their EMR’s capability in this area.

Workflow preferences were noted when participants commented that their EMR had the capability to perform a certain function but the participant did not make use of the function. Comments were also coded as workflow preferences if specialists indicated they had no interest in the capability being discussed as it didn’t suit their patient population or enhance their workflow.

The percentage of comments related to unmet needs, met needs and workflow preferences is illustrated in Diagram 4.

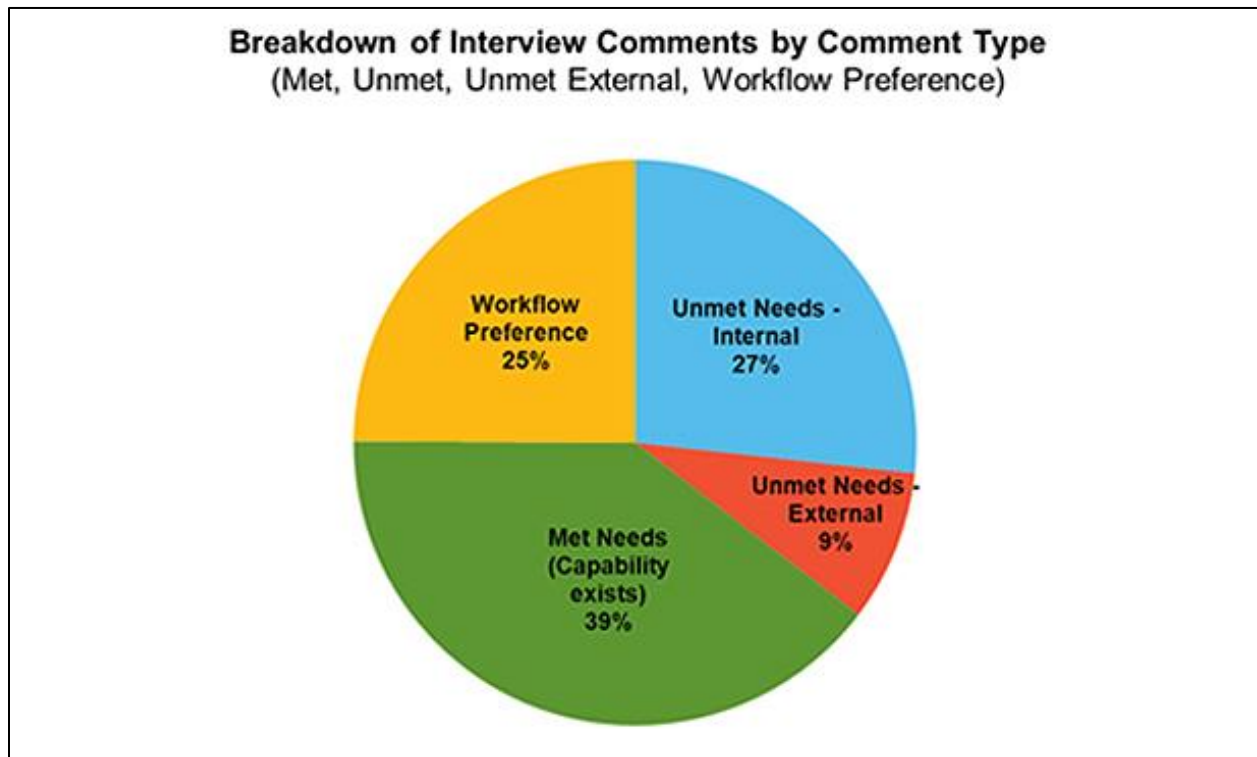


Diagram 4

Once the requirements were written, the project team also categorized the requirements noting if they were related to care coordination, efficiency (the user would be able to use the EMR or complete their workflow processes more quickly) or practice management (the EMR would allow for use of aggregate EMR data in quality management activities). The project team also noted requirements that had an external dependency (e.g., the EMR would need to integrate with a provincial IT initiative such as ePrescribe).

Table 1 notes the number and percentage of requirements that are related to care coordination, efficiency and practice management. These categories are not mutually exclusive (i.e., a requirement can support care coordination and efficiency at the same time). The table also provides a total of those requirements that had external dependencies.

Table 1

	Care Coordination	Efficiency	Practice Management	External Dependency
Number	101	262	58	38
Percentage	36%	93%	21%	13%

The following analysis notes the types of comments that contributed to the requirements in each workflow category. While Diagram 4 (above) depicts the comments made during the interviews, Diagram 5 (below) depicts the types of comments that contributed to writing the requirement.

This analysis is useful as it points out which categories have a high degree of unmet needs contributing to requirements statements. In other words, the categories with a lot of unmet needs could be the focus of further EMR development or, at least, additional investigation to determine what EMR features and functions are missing.

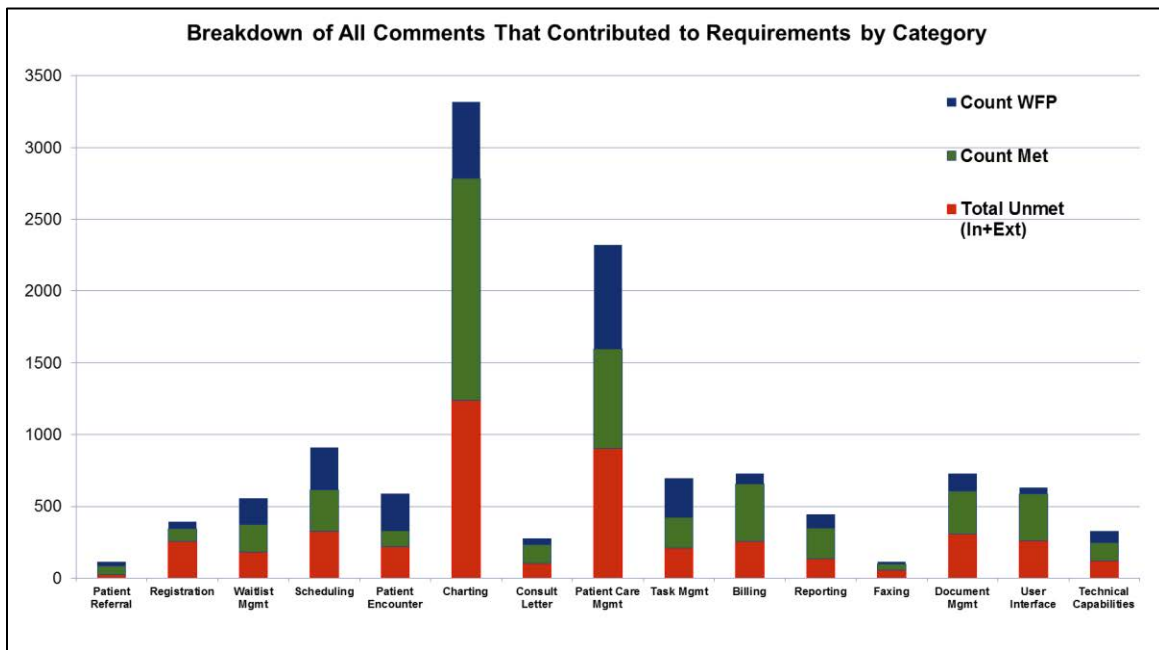


Diagram 5

The final analysis depicted in Diagram 6 shows an index developed to analyze which workflow categories had higher proportions of unmet to met needs. Any value less than 1.0 indicates that there are more unmet needs than met needs contributing to the requirements written in that category; the categories with the lowest index ratings could warrant further investigation to determine if EMR development or program efforts in those categories were perhaps more urgent than other workflow categories.

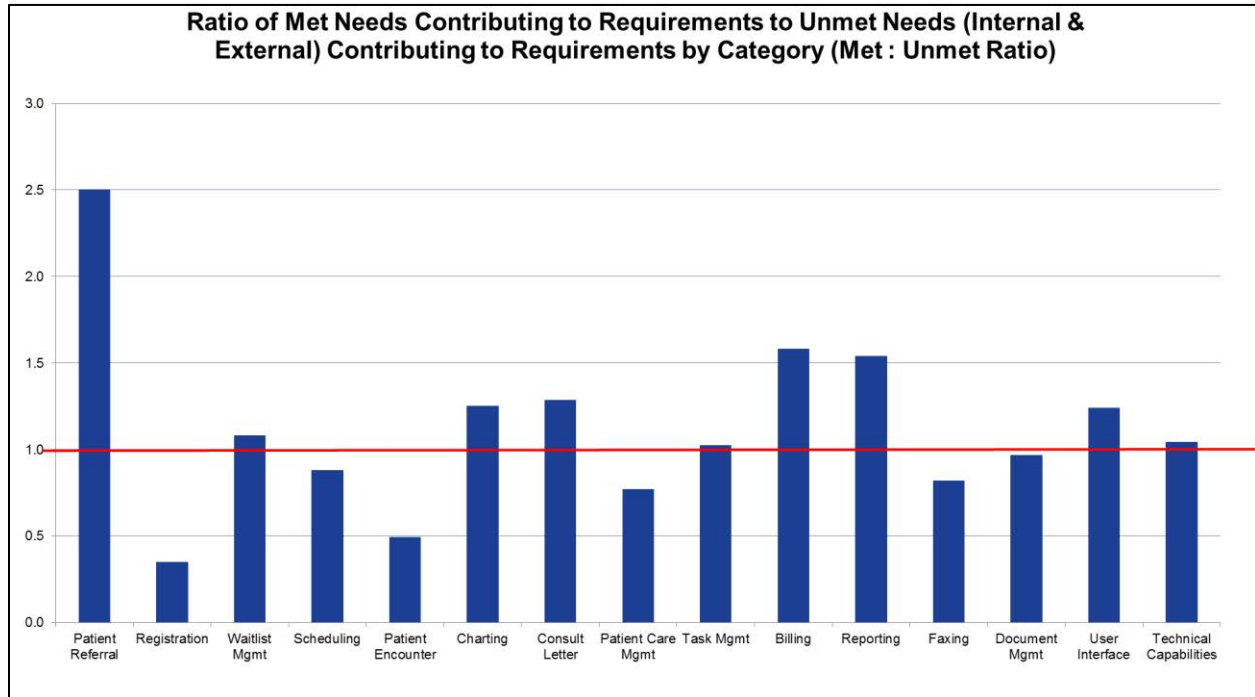


Diagram 6

Appendix C: High Level Specialist Workflow

A high level specialist workflow was designed to facilitate discussion about EMR needs in a way that was familiar to specialists. In Diagram 7, the red line represents the high level patient flow.

Each of the main workflow areas (Patient Referral, Patient Registration, Waitlist Management, Patient Encounter and Patient Care Management) note high level specialist work activities; some of these include sub-categories.

The areas at the bottom of the diagram represent EMR functions that may be required during any workflow activity (Messaging & Task Management, Modifiable User Interface, Faxing & Scanning). Some main EMR concerns noted by the working group included charting, letter writing and billing – these are represented on the diagram as well.

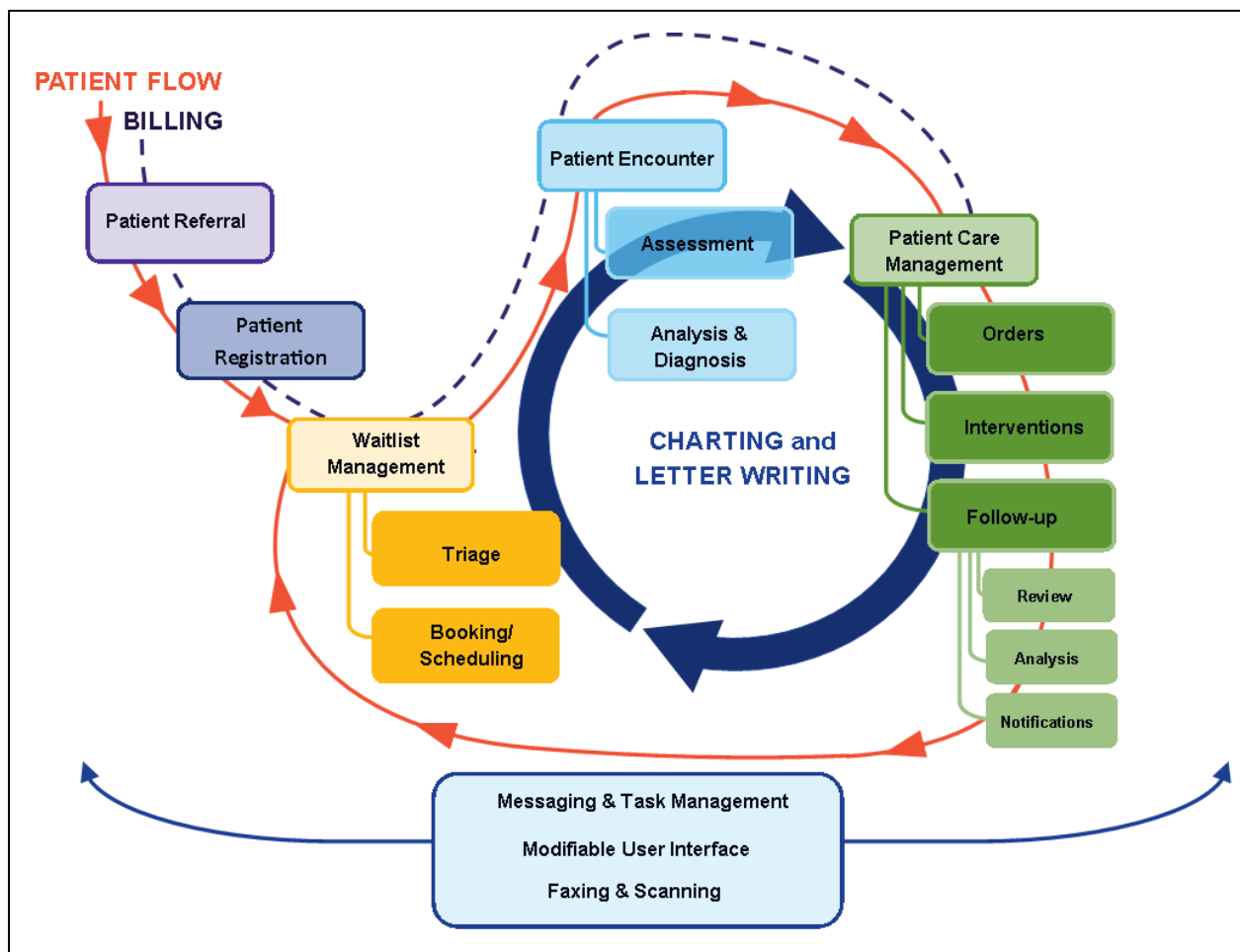


Diagram 7

Diagram 8 shows where the specialist and support staff may have differing responsibilities related to EMR activities. The pink shaded area represents EMR functions more likely to be completed by support staff and the blue shaded area represents EMR functions more likely to be completed by the specialist. There may be some areas of overlap – for example, the specialist may be involved in triage activities and the support staff may be involved in patient notifications during follow up activities.

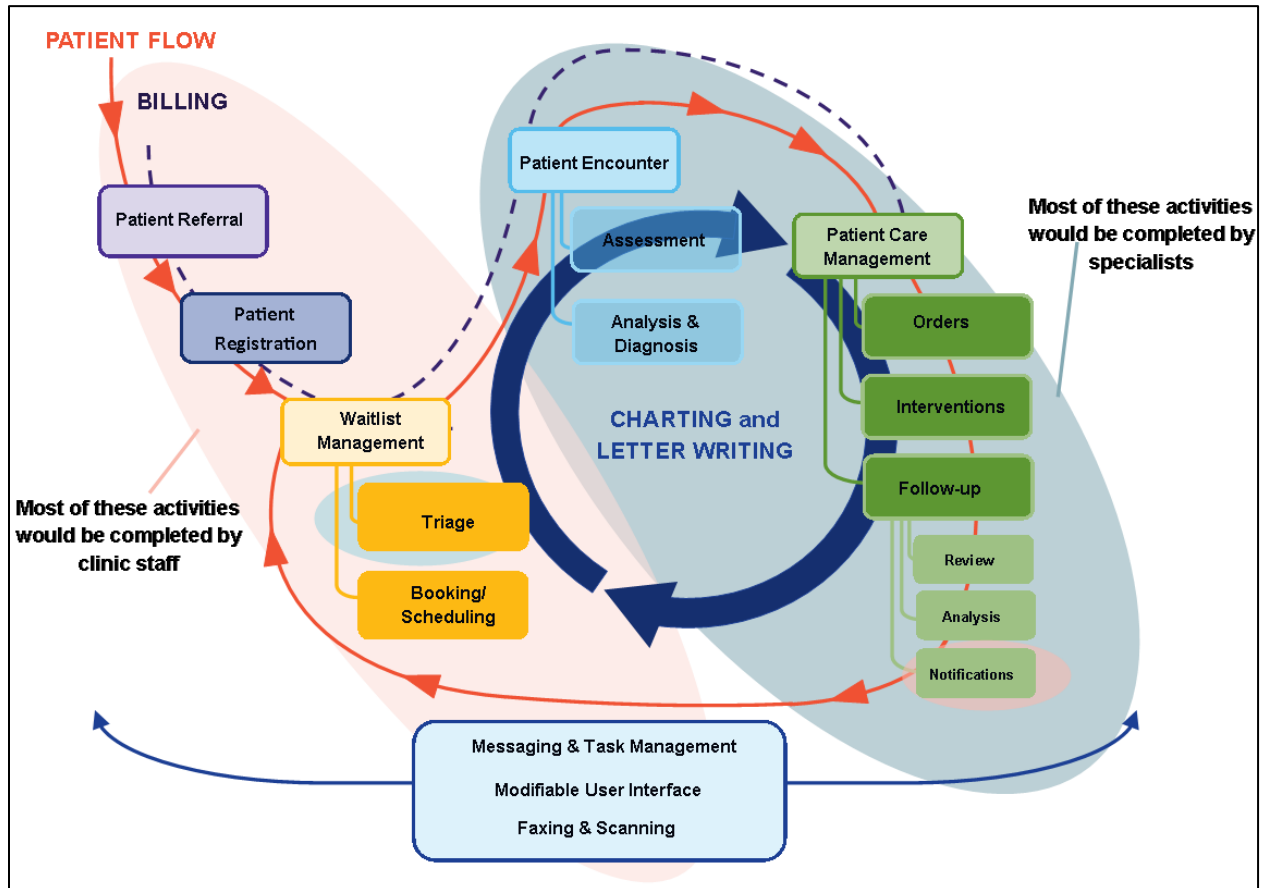


Diagram 8

Twelve workflow categories were identified and are listed here:

- | | |
|----------------------------|-----------------------------------|
| 1. Patient Registration | 7. Charting |
| 2. Patient Referral | 8. Modifiable User Interface |
| 3. Waitlist Management | 9. Billing |
| 4. Patient Encounter | 10. Task Management and Messaging |
| 5. Patient Care Management | 11. Faxing and Scanning |
| 6. Letter Writing | 12. Technical |