

Automated Referral Process

High Level Requirements

Prepared for:
Medical Access to Service Project

Dated: June 15, 2009

Table of Contents

1. Introduction -----	3
1.1. Scope -----	
2. Assumptions and Constraints -----	4
2.1. Assumptions -----	
2.2. Constraints -----	
3. Process Functionality Described -----	4
4. Benefits of Improved Process -----	6
5. Roadmap for Development -----	7
6. Foundational Elements -----	9
7. Summary -----	11
8. Appendices -----	
8.1 Acronyms -----	12
8.2 Participating Clinics -----	12
8.3 Functional Requirements -----	13
8.4 Workflow Diagrams -----	22
Figure 1: Standard Central Access Referral Process - High Level -----	3
Figure 2: Provider Community -----	4
Figure 3: Roadmap for Development -----	8
Table 1: Functional Requirements for the Referral Process -----	5
Table 2: Benefits from Improvements -----	6
Table 3: Foundational Elements for an Automated Referral Process -----	9

1. Introduction

In keeping with the new Alberta Health Services strategy to provide services that are responsive to patients and physicians, improve access to quality health care services, decrease wait times and eliminate waste, this project is working to enhance the referral process. Healthcare providers in the Department of Medicine (DOM), Family Medicine, Cardiac Sciences, Rural Medicine, Psychiatry, Surgical Services and The Tom Baker Cancer Centre were engaged to contribute to the design of a transparent referral process.

The major features of the re-designed process are a standard referral form, clinical information requirements defined for each service, and a central access for receiving and managing referrals. Over a year ago, about a dozen clinics implemented this Standard Central Access Referral Process and the number of clinics continues to increase as word of its success spreads. Referring providers, referred to providers and those managing the process are enthusiastic about the resulting improvements. Performance metrics indicate a decrease in urgent referral wait times, increased accuracy and completeness of referral information, and improved communication and collaboration between referring physician and specialist.

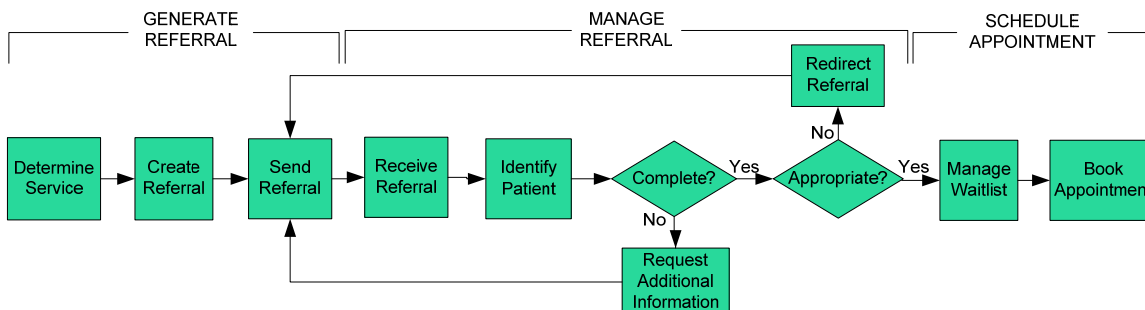
Participating clinics now have mature business processes ready for automation. However, to maximize the value from automation, improvements and additions to technical infrastructure are required. This document proposes how to breach the gap and identifies the resulting benefits. It outlines the required functionality, foundational elements and connectivity required to create the optimum flow of appropriate and complete information for accessing health care services. Change is to be incremental and scalable.

Currently, there are many ongoing initiatives to improve the referral process. Some models are similar to this project (e.g. Alberta Bone & Joint Institute Hip & Knee, Alberta Breast Cancer). Other projects have a broader and/or different perspective (e.g. Alberta Referral Directory, North Edmonton PCN, Gold Standard Patient Experience). Collaboration and consultation with these projects is essential in order to align our efforts and create a sustainable process that is 'Fit for the Future'.

1.1. Scope

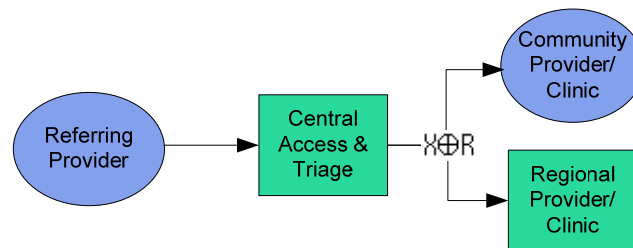
For this project, the referral process is defined as beginning when a referring provider determines that he needs to initiate a request for service. The process ends when the outcome of the initial appointment is known.

Figure 1: Standard Central Access Referral Process - High Level



The community of providers includes those practicing in regional facilities and private clinics. It includes services that are individual (eg. Rheumatology specialist) and group based (e.g. Living Well).

Figure 2: Provider Community



2. Assumptions and Constraints

2.1. Assumptions

- 2.1.1. The process to be automated is the Standard Central Access Referral Process developed and implemented by this project.
- 2.1.2. The scope of the process and participants is the same as for the paper based Standard Central Access Referral Process
- 2.1.3. All required reporting can be generated from the automated process.

2.2. Constraints

- 2.2.1. Only those clinics that have implemented the Standard Central Access Referral Process have mature business processes ready for automation.
- 2.2.2. Referring providers not using a clinical information system will not receive the same benefit from automation of the Standard Central Access Referral Process as those with a clinical information system.

3. Process Functionality Described

The five major processes that comprise the Standard Central Access Referral Process are: generate referral, manage referral, schedule appointment, track referral progress and co-manage patient care. Currently the tools and systems to perform these processes include phone, fax, paper, spreadsheet, Access database, and disparate electronic systems. Table 1 on the following page describes the high level functional requirements to automate each major process – the next step towards streamlining the referral service.

The proposed changes would be implemented incrementally and performance evaluated at each stage. They would also be scalable so that they could eventually be deployed provincially.

Table 1: Functional Requirements for the Referral Process

1. Generate Referral requires a way for the Referring Provider to:

- Access the service options from within the electronic medical record.
- Find out what the requirements are for a referral to a selected service.
- Assimilate, organise and present referral information in an easily reviewed and editable format.
- Send the information securely, privately and efficiently.

2. Manage Referral requires a way for the Central Access Staff to:

- Be notified that a referral is received.
- View a referral record in a single location/screen.
- Confirm the patient as identified on the referral.
- Access and notify the appropriate person that the referral has been received.
- Review and document the completeness and appropriateness of referral information.
- Send a request to the referring provider for additional information and send an answer to the requesting service.
- Order tests and have the results relayed back to the requesting service.
- Send a redirected referral to the selected service or forward it to the referring provider for redirection.
- Record any or all of the above tasks on the patient record and in such a way that data standards are met.
- Generate referral status reports to assist in managing referrals and measuring performance.

3. Schedule Appointment requires a way for the Scheduling Staff to:

- View available appointments.
- If appointments cannot be immediately scheduled, manage patients and their changing health condition.
- Contact the patient, discuss appointment options and confirm a selected date and time.
- Document the confirmed appointment and update the referral record.
- Notify assigned provider of appointment and send patient's relevant referral information.
- Generate clinic scheduling reports.

4. Track Referral Progress requires a way for the Referring Provider and Patient to:

- Access referral status.

5. Co-manage Patient Care requires a way for Referring and Referred To Providers to:

- Communicate securely and privately between clinical information systems.

4. Benefits of Improved Process

The benefits to the Standard Central Access Referral Process will occur incrementally as changes are implemented. Which benefit is realised when will depend on other project timelines, the development of foundational elements, and the priority and funding allotted to improvement of the referral process.

Table 2: Benefits from Improvements

Process	Major Change	Benefit
Generate Referral	Referral created electronically	GPs/FPs: No duplicate entry
	Referral information validated for completeness	Minimise requests for additional tests and/or information - One Patient, One Record
Manage Referral	Transfer of referral information from referrer to selected service electronically	Accuracy ensured
	Patient and provider identification occurs within RMS; all lab/DI results accessible	<i>'Right Patient, Right Place, in Real Time'</i>
Schedule Appointment	Message patient, provider, appointment details to and from RMS and Scheduler	Enables complete referral record - from initial creation to appointment outcome; minimise errors; provide referral performance metrics
Track Referral	Access to monitor referral progress	Minimise interruptions for administrative details; self-care initiative
Co-manage Patient Care	Secure, private communication between providers	Save time trying to contact each other; facilitate co-management of patient care
Create Reports	Consistent referral reporting provincially	Performance management

5. Roadmap for Development

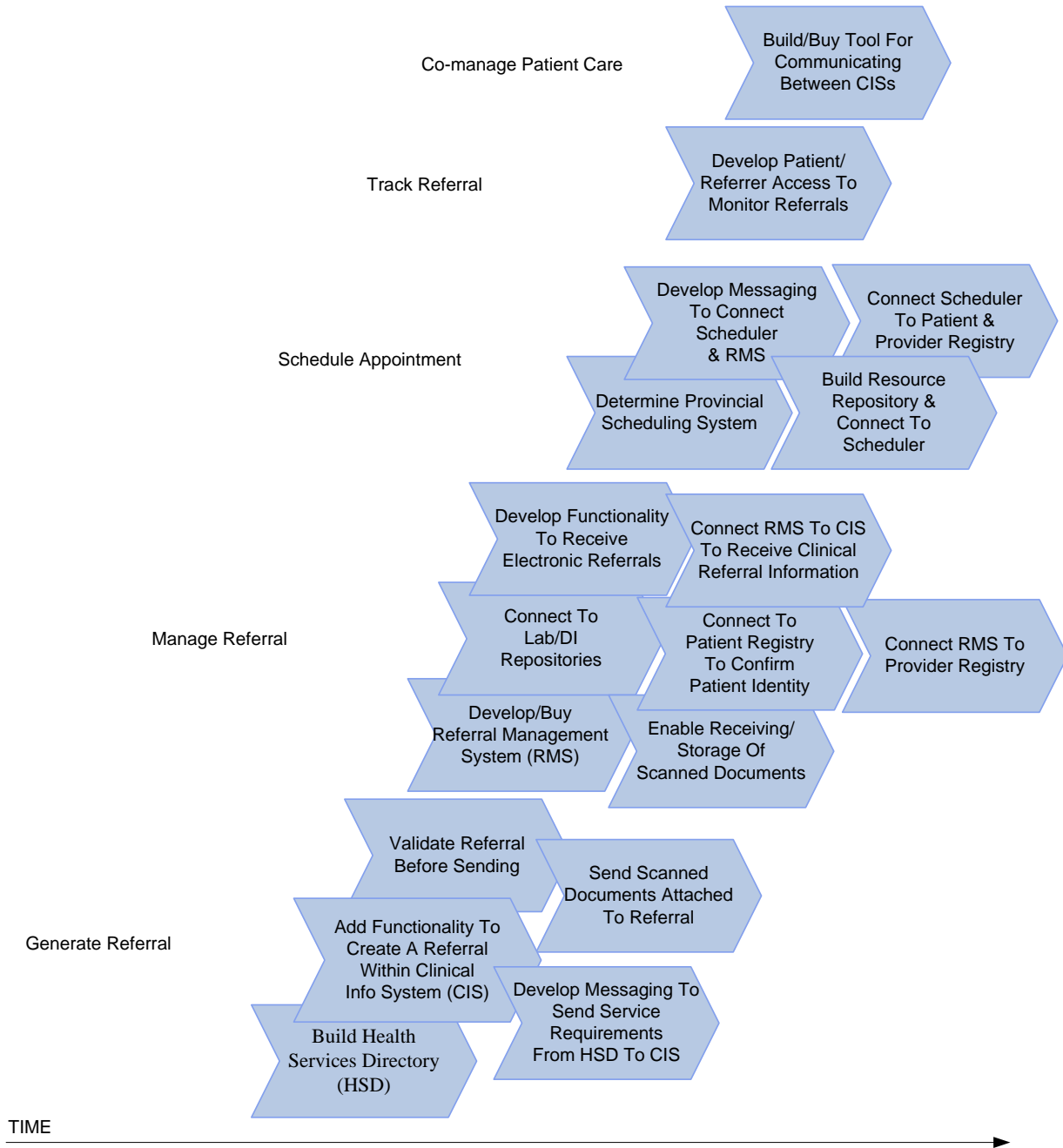
The Roadmap proposes a solution based on what we know now. Alignment with other referral work and the synergies of collaboration will contribute to the final design. The right people must be engaged to refine the requirements and determine the priority of each change. A planned evolution is proposed: changes would be incremental and foundational elements scalable.

Figure 3, on the following page, is the order in which directories, repositories, systems and functionality could be implemented for each process: Generate Referral, Manage Referral, Schedule Appointment, Track Referral and Co-manage Patient Care. Development could be grouped into three phases, each one contributing significant value-added:

1. Generate an electronic referral that is validated and sent to Central Access.
2. Implement a referral management system and connect it to the scheduling system.
3. Enable messaging between referring providers and referred to providers and a tracking system for patients and referrers.

The Department of Medicine clinics have implemented the Standard Central Access Referral Process and therefore have the business process maturity to realise the full benefits of automation. The pilot clinics would be selected from these initial participants. (See Appendix 8.2, page 12.) A primary goal of all development would be to design and implement a process that would work for these clinics and could eventually be adopted by all provincial health care services. The aim is to *'Think Locally, Act Provincially'*.

Figure 3: Roadmap for Development



6. Foundational Elements

The following table describes the foundational elements required to automate the Standard Central Access Referral Process. This is not a proposed architecture; it is an initial attempt to identify the foundational elements that could provide the described functionality. More detail describing the functionality and its corresponding foundational elements is found in Appendix 8.3, page 13. A diagrammed representation of the workflow is presented in Appendix 8.4, page 22.

Table 3: Foundational Elements for an Automated Referral Process

Foundational Element	Description	Notes
Health Information Exchange (HIE)	A HIE that would enable the flow of information from referrer to service, between providers and to the referrer or patient.	Work funded by Canada Infoway is currently ongoing in the province.
Health Services Directory	A directory that contains the referral requirements for services and can send or receive messages to the HIE.	Initial limited repository exists in the form of the Medical Access to Service brochure or the DOM website.
Lab/DI Repository	A repository that contains all lab and DI results and can send or receive messages via the HIE.	Regional and provincial repositories and systems already exist.
Clinical Information System (CIS)	A CIS that can access the Health Services Directory, view information to be entered for a referral and extract clinical information already stored in its database to create an electronic referral. A CIS that can communicate securely and privately with another CIS.	The Physician Office System Program (POSP) plans to include the requirements for referrals in their next phase of enhancements.
Referral Management System	A system that manages the referral from receipt to appointment outcome.	The Access databases created for participating clinics are a first iteration of a referral management system.

Table 3 cont'd: Foundational Elements for an Automated Referral Process

Foundational Element	Description	Notes
Scheduler	A system that will manage and schedule resources required for the patient appointment and record booked appointments and their details.	Many scheduling systems are being used in the province. Capital is implementing Epic and Calgary Cerner.
Admission Discharge Transfer System (ADT)	Registers inpatients and outpatients being treated in a regional facility and tracks admission, discharge and transfer.	
Person Registry	This registry would record patient demographics including a unique identifier.	Currently, many registries exist within the province.
Provider Registry	This registry would record provider demographics including a unique identifier.	Currently, many registries exist within the province.
Resource Repository	This repository stores information on the availability of resources required for the patient visit.	This repository is fundamental to creating a schedule.
Clinical Document Repository	This repository would store documents that accompany referrals as attached files (.doc, .pdf, etc.).	Development of a provincial repository is underway.
Electronic Health Record (EHR)	A repository of electronic health records composed of shared data from physician electronic medical records.	As more records become electronic, this repository will be for shared health care information.

7. Summary

There are many projects with the goal of improving the referral process. Those that are adopting a standard referral form and central intake model are well-positioned to receive maximum benefits from the automation proposed in this document. Those that are refining the process from receipt of referral (rather than from determining service) could benefit from the referral generating phase of this process, as they would receive a complete and appropriate referral.

Participants in the Medical Access to Service Project (and other projects advocating a centralised model) now have standard business processes and are ready for automation. Taking a phased approach and implementing scalable foundational elements in those clinics will allow for further consultation and modification prior to finalising the design for broader use.

To maximize the value added from referral process improvements and to optimize operating costs, coordination among many projects and many stakeholders is critical. Appropriate governance is of primary importance to ensure that alignment continues throughout the project, during implementation and when operational. A suggested but not exhaustive list of participants would include members from the following projects and services: Alberta Bone & Joint Institute, Alberta Referral Directory, Ambulatory Care, Gold Standard Patient Experience, North Edmonton PCN, South Calgary Campus, South Calgary PCN, Physician Office System Program, Scheduling, Western Canada Wait List and projects formerly administered by the Wait Times Management Committee.

Enabling an automated transfer of referral information from one provider to another will provide users with a quality, sustainable referral process and further the goals of '*One Patient, One Record*'. Having a Referral Management System confirming patient identity and documenting referral progress will ensure '*Right Patient, Right Place, in Real Time*'.

8. Appendices

8.1 Acronyms

ADT: Admission, Discharge, Transfer System
AHS: Alberta Health Services
CAT: Central Access & Triage
CIS: Clinical Information System
CDR: Clinical Document Repository
DOM: Department of Medicine
EHR: Electronic Health Record
HIE: Health Information Exchange
HSD: Health Services Directory
RMS: Referral Management System

8.2 Participating Clinics

- Original Participating Clinics
 - Department of Medicine:
 - Endocrinology & Metabolism
 - Gastroenterology
 - General Internal Medicine
 - Hematology
 - Nephrology
 - Respiratory
 - Rheumatology
 - Senior's Health
 - Sleep Centre
 - Southern Alberta HIV
 - Cardiac Sciences: Cardiac Navigation Clinic
 - Neurosciences: Stroke Prevention
 - Department of Psychiatry: Access Mental Health
 - Chronic Disease Management: Living Well
- Additional Participating Clinics:
 - The Tom Baker Cancer Centre
 - Alberta Blood & Marrow Transplant
 - Tumour Groups (10)
 - Lymphedema
 - Surgery
 - Hepatopancreobiliary
- In development:
 - Paediatrics
 - Other surgical (i.e. hand & wrist)

8.3 Functional Requirements

This appendix describes the processes diagrammed in Appendix 8.4. It identifies the source or system, describes the functionality and notes any specifics about the sub-process.

No	Sub process	Foundational Element	Description of Functionality	Notes
1.0 Generate Referral				
1.1	Determine Service	Clinical Information System (CIS)	Once the provider has decided that a referral is required, the referral button is activated from within the electronic medical record (EMR). A screen displays and the user selects the appropriate service.	All services that are accessible via the electronic referral process will display.
		Health Services Directory	A screen displays the requirements to be fulfilled prior to submitting a referral. The referring physician initiates any required orders and ensures that all required documentation is available in the CIS or as a scanned document.	This project has developed the beginnings of a Health Services Repository. It outlines the referral information standard to all referrals and customised clinical tests and information for each service as per the project brochure. See DOM website for .pdf copy.

No	Sub process	Foundational Element	Description of Functionality	Notes
1.0 Generate Referral cont'd				
		Health Services Directory	Once all tests are completed and any paper documents retrieved and scanned, the referrer views the next screen. This screen captures referral information, for example, reason for referral, urgency, type, action requested, booking information, etc.	Once the Western Canada Wait List testing of questionnaires for determining urgency is complete, it will be included in the Health Services Directory.
		Lab/DI Repositories	Lab/DI results are extracted from repositories. The referrer is notified of any results not current, not meeting the threshold value for this service, not yet resulted or not yet performed.	Lab/DI results are already delivered electronically to physician EMRs, as well as being available in Netcare.
1.2	Gather Requirements	Clinical Information System	Required clinical information is defined by service and can be extracted from the referring provider's EMR	The simplest way to implement automation would be to extract active symptoms and co-morbidities from the patient record. A more sophisticated approach would be to create algorithms for each specialty to only extract those symptoms and co-morbidities required by the selected service. Further validation of appropriateness for a specified service would depend on the degree to which symptoms and co-morbidities can be qualified.
			All scanned documents are attached to the referral form	For some years to come the referral process will have to facilitate the attachment of scanned documents.

No.	Process	Foundational Element	Description of Functionality	Notes
1.0 Generate Referral cont'd				
1.3	Review/Edit Referral	Referral Form	<p>The referral form populates electronically and displays referral information entered, lab/DI results from the repositories, clinical information from the referring provider's EMR and the links to scanned documents.</p> <p>The system validates content (e.g. Are patient demographics complete?), formatting (eg. Are all phone numbers ten digits?), completeness (e.g. Have all tests been completed?) and appropriateness (e.g. Are the results of tests within the range appropriate for this service?).</p>	<p>The provider will be able to view and edit the electronic referral form before submitting.</p> <p>Once the form is validated it will submit to the selected service.</p>
1.4	Submit Referral	Health Information Exchange	All information contained in the referral is sent to the selected service.	Information would be sent from the referring provider's EMR to the Referral Management System.
2.0 Manage Referral				
2.1	Receive Referral	Health Information Exchange	The selected service receives a message that a new referral has arrived.	Information from the referral is passed from the referring provider's CIS to the exchange and then on to the selected service.
2.2	Identify Patient	Person Registry Referral Management System	<p>The EMPI runs an algorithm to confirm that the patient identification elements are valid.</p> <p>The confirmed patient identity is stored in the RMS.</p>	

No.	Process	Foundational Element	Description of Functionality	Notes
2.0 Manage Referral cont'd				
		Referral Management System (RMS)	Staff login to the referral system to triage received referrals and view patients' referral status. The system displays all information sent by the referring provider and records information for monitoring progress: dates (created, received, etc.), anecdotal information, information requested, assigned provider, etc.	In addition to the information sent by the referring physician, provider, lab, DI, document and electronic health record repositories could all provide information to the referral management system. The Access Database currently used by clinics participating in the Medical Access to Services project is the basis of a good referral management system.
		Person Registry	Patient demographics display on the referral.	
2.3	Review Referral	Provider Registry	Provider demographics display on the referral.	
		Lab/Di Repositories	Lab and DI results are displayed in the CIS or viewed in Netcare	Regional and provincial repositories and systems already exist.
		Clinical Information System	Clinical information accompanying the referral is viewed by activating a link that connects the RMS to the CIS storing the referral's clinical information.	
		Clinical Document Repository	Documents that are attached to the referral form are stored and linked to the patient's record in the referral management system.	Development of a provincial repository is underway.
		Electronic Health Record (EHR)	If additional clinical information is required, the patient's shared record in the EHR can be accessed from the referral management system.	As more records become electronic, this repository will be for shared health care information.

No.	Process	Foundational Element	Description of System Functionality	Notes
2.0 Manage Referral cont'd				
	Complete?	Referral Management System Clinical Information System Lab/DI Repositories Clinical Document Repository Electronic Health Record (EHR) Health Services Directory	Prior to submission, the referral is validated for completeness but only for required, defined data elements. At this stage the assessment is more one of degree (pain) or value (lab result). Any subjective information will have to be assessed by a clinician.	The more defined the referral information, the more the automated system can validate referral content for completeness prior to submission; and the more experiential the decision becomes at this stage.
2.4	Request Information	Referral Management System Health Information Exchange(HIE)	The Referral Management System generates a request for additional information and records the request and the date it is sent. The Health Information Exchange transmits the request.	In some cases, the referral may be accepted even though it requires another test or more information. The time to access a service can be diminished by having the wait times for a test and the appointment occur concurrently.
2.5	Order Tests	Clinical Information System Lab/DI Repositories	The RMS accesses the Clinical Information System where tests/investigations can be ordered. The user completes the order and sends it to the clinic where it will be performed and notifies the patient that it is required. Or the RMS sends a request (transmitted by the HIE) to the referring provider to have the patient complete the tests.	

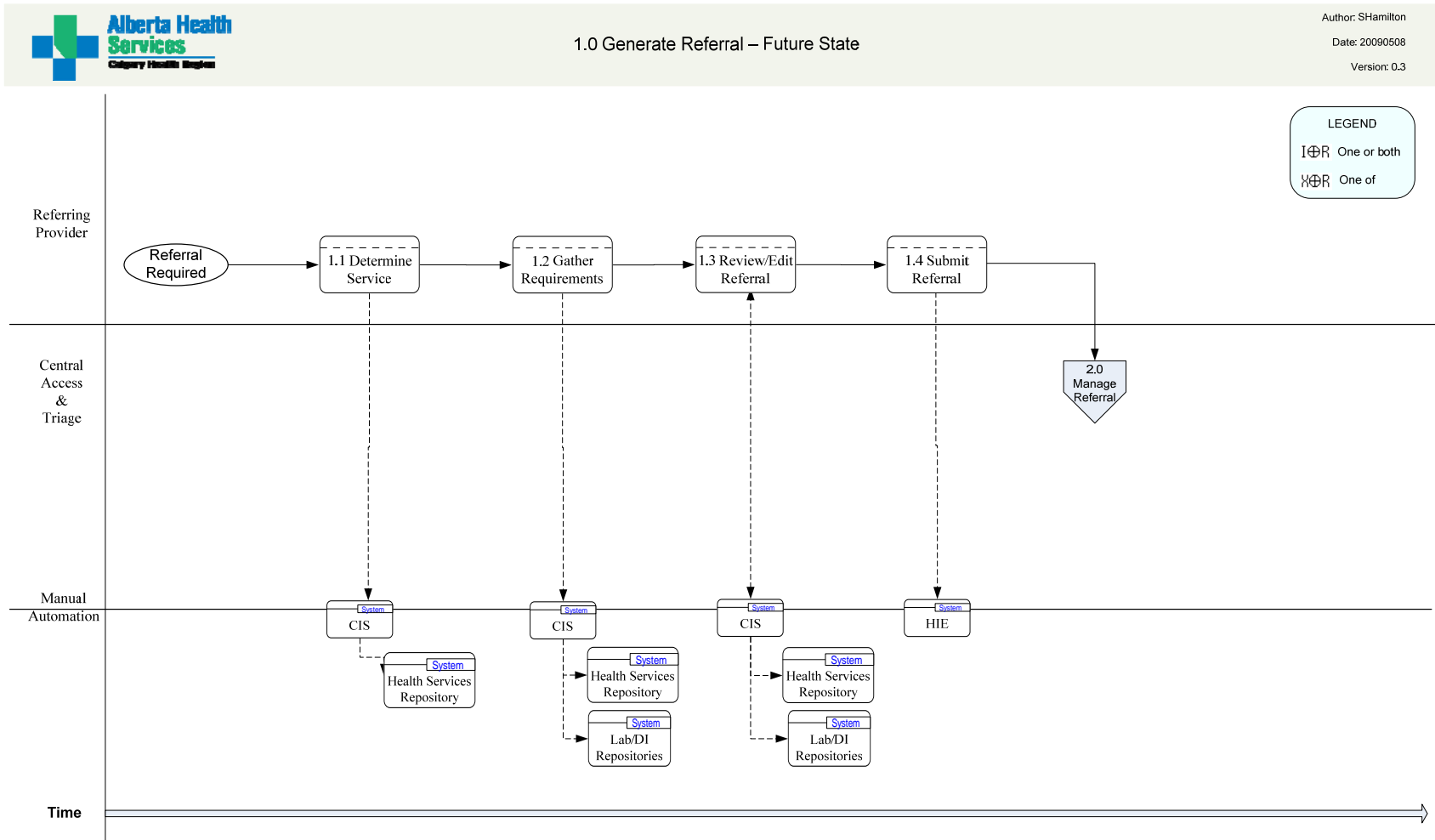
No	Process	Foundational Element	Description of Functionality	Notes
2.0 Manage Referral cont'd				
2.6	Complete Tests	Patient	Patient attends the clinic to have tests performed.	
2.7	Provide Information	Health Information Exchange	The referring provider receives a request to send additional information.	
		Clinical Information System	The referring provider extracts the requested information from his EMR and sends to the requesting service	
2.8	Review Test Results/Information	Health Information Exchange	This system sends the information from the referrer to the specialist.	
		Referral Management System	Triage staff are notified when the requested results and information are available in the Referral Management System	
		Clinical Information System	Clinical information is viewable to assist in decisions.	
Appropriate?		Lab/DI Repositories	Results are viewable to assist in decisions.	
		Referral Management System		
		Clinical Information System		
		Lab/DI Repositories	Should the patient be treated at this service or is there another one that is more appropriate?	If the data elements are well defined an administrator can make the decision; if not a clinician is required.
		Clinical Document Repository		
		Electronic Health Record (EHR)		
		Health Services Repository		

No	Process	Foundational Element	Description of Functionality	Notes
2.0 Manage Referral cont'd				
2.9	Redirect Referral	Provider Registry Referral Management System Health Information Exchange	The referral may be redirected to another service or forwarded to the referring provider for redirection.	
3.0 Schedule Appointment				
	Schedule?	Referral Management System	Does this referral require scheduling or is the referring provider asking for advice, a test, co-management, etc.	If the referral does not require scheduling an encounter is created so that care is documented.
3.1	Create Encounter	ADT System Referral Management System Person Registry Provider Registry	Patient and provider information are entered and an encounter created.	The encounter is generated by the ADT system and sent to the Referral Management System
3.2	Provide Advice	Clinical Information System Health Information Exchange	When the referral does not require an appointment advice is sent from the referred to provider's CIS to the referring provider's.	This same functionality could be used for communicating between specialist and referring provider when it is appropriate to co-manage care after an initial face-to-face visit.
3.3	Deliver Care	Health Information Exchange Clinical Information System	Care plan information is sent via the HIE to the referring provider's CIS.	Referring and referred to providers are asking for a tool that enables secure, private and timely messaging between CISs.
3.4	Receive Care	Telephone or Clinic Visit	Patient follows care plan as outlined by referring provider.	At some time in the future, patients will be able to access their health information/plan electronically.

No	Process	Foundational Element	Description of Functionality	Notes
3.0 Schedule Appointment cont'd				
3.5	Manage Waitlist	Referral Management System Clinical Information System Lab/DI Repositories Person Registry Provider Registry Resource Repository	Waitlist status will change with any changes in the patient's condition or on completion of a required test that changes the urgency of the referral. The change in status will be reflected in the scheduling and referral systems.	Waitlist reports will be generated to provide reliable information for timely appointment scheduling.
3.6	Select Appointment	Scheduler Resource Repository Person Registry Provider Registry	Available appointments are viewed in the scheduler and a date and time are offered to the patient.	
3.7	Confirm Appointment	Scheduler	The patient is called to confirm the date and time of the appointment.	
3.8	Book Appointment	Scheduler Referral Management System Person Registry Provider Registry Resource Repository	Once confirmed, the appointment is booked in the Scheduler and the RMS is updated.	
3.9	Create Encounter	ADT System Referral Management System Scheduler Person Registry Provider Registry Resource Repository	Once the appointment is scheduled, an encounter is created in the ADT system and a message is sent to the scheduling and referral systems to update the record.	

No	Process	Foundational Element	Description of Functionality	Notes
4.0 Track Referral				
4.1	Login to Tracking System	Interface, HIE and RMS	An interface for referring provider or patient to login.	
4.2	View Referral Status	Referral Management System	Display referral status for referring provider or patient to view.	This functionality would be similar to tracking systems used by parcel delivery companies (e.g. UPS).
4.3	Inform Patient	Referral Management System	If referring provider is viewing the status, communicate to patient.	
4.4	Receive Status Update	Referral Management System	The referring provider communicates (phones) the patient.	
5.0 Co-Manage Patient Care				
5.1	Communicate Care Plan	Clinical Information System Health Information Exchange	Sends care plan to referring provider.	Providers are asking for a secure, private form of communication to facilitate co-management of patient care for many reasons. Two important ones are:
5.2	Receive Care Plan	Clinical Information System Health Information Exchange	Reviews care plan.	
5.3	Discuss Care Plan	Clinical Information System Health Information Exchange	Providers discuss care plan.	1.) Time wasted trying to make contact by pager or phone 2.) Many follow up appointments could be handled by referring providers if there was a private and secure method of communication.
5.4	Attend Clinic	Clinical Information System	Patient arrives at clinic for treatment	
5.5	Deliver Care	Clinical Information System	Patient is treated and treatment is documented.	
5.6	Send Update	Clinical Information System Health Information Exchange	Referring provider sends update to referred to provider.	
5.7	Receive Update	Clinical Information System Health Information Exchange	Process repeats as long as patient being co-managed.	

8.4 Workflow Diagrams

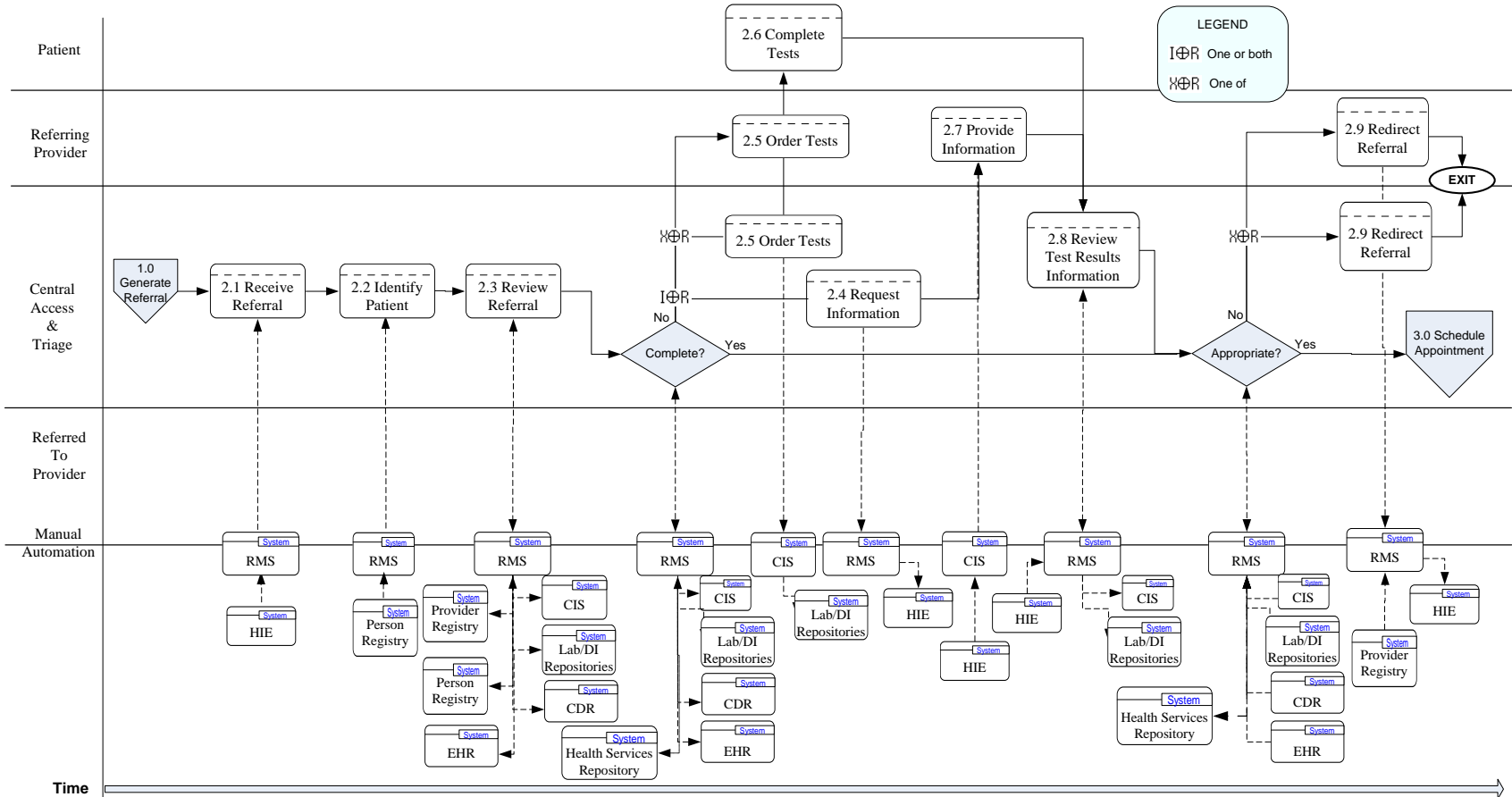


2.0 Manage Referral – Future State

Author: SHamilton

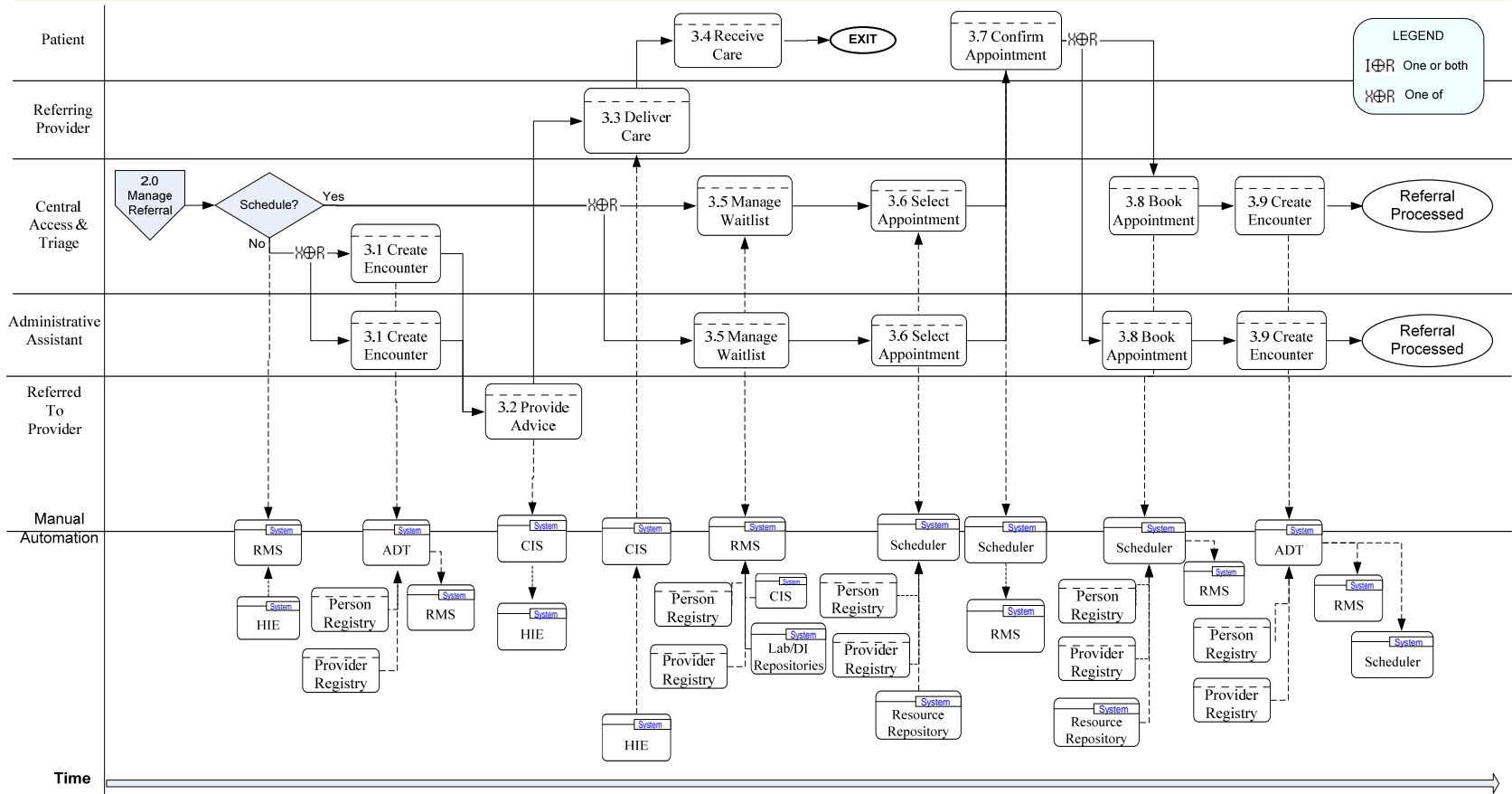
Date: 20090508

Version: 0.3



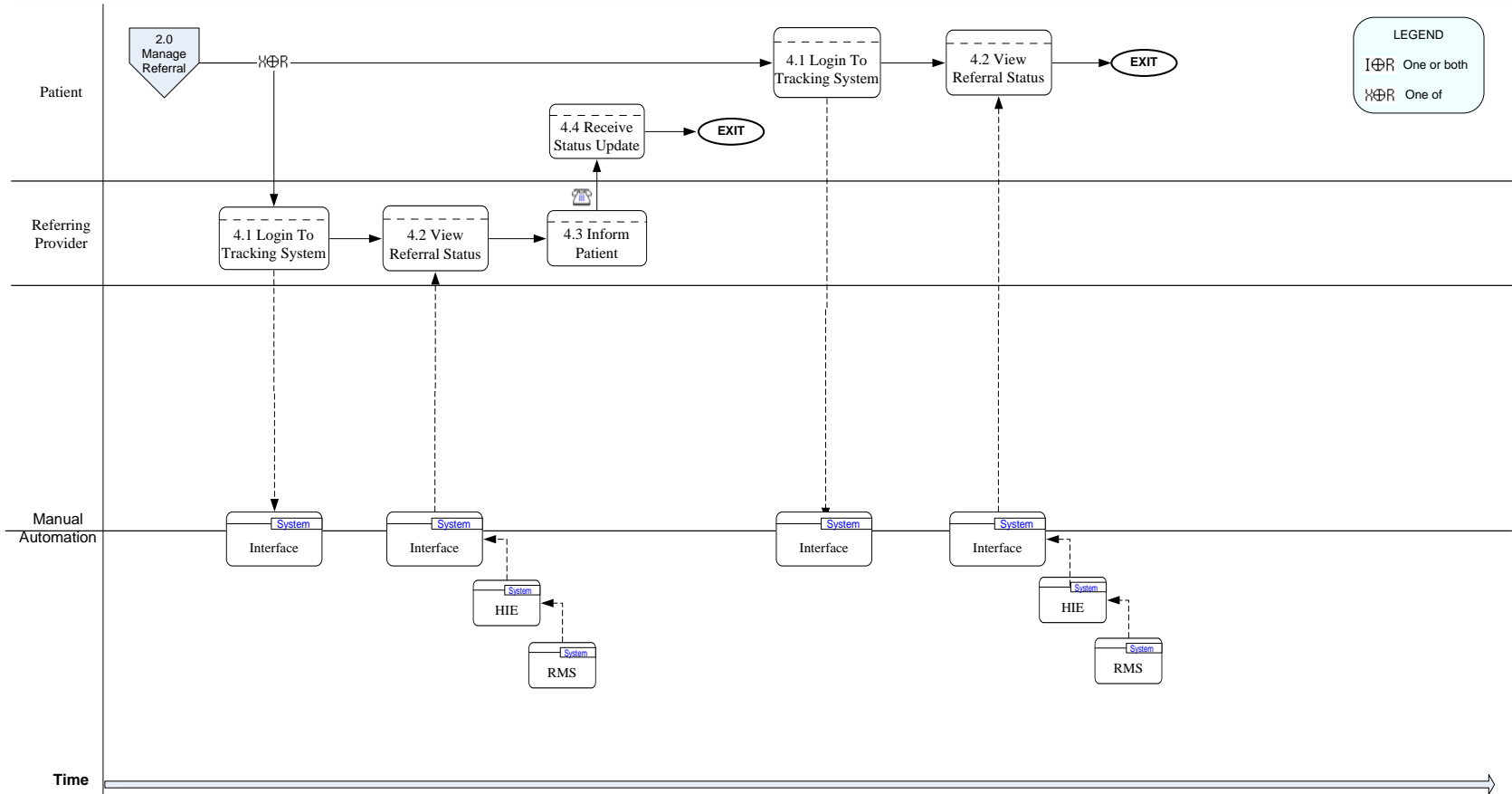
3.0 Schedule Appointment – Future State

Author: SHamilton
 Date: 20090508
 Version: 0.3



4.0 Track Referral – Future State

Author: SHamilton
Date: 20090508
Version: 0.3



5.0 Co-Manage Patient Care – Future State

Author: SHamilton

Date: 20090508

Version: 0.3

