HealthSMART Design Authority

health

IHI Pre-Implementation Project

Patient Detailed IHI Functional Design

State Government Victoria

nehta

Authorised by the Victoria Government, Melbourne.

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1. Preface

1.1 Document Purpose

The purpose of the document is to define the functional design for the integration of the Individual Health Identifier (IHI) into a typical patient administration system, such that it can be reviewed by stakeholders.

1.2 Intended Audience

The intended audience of this document includes:

- Victorian Department of Health Project Sponsor;
- Victorian Department of Health Project Staff;
- Victorian IHI Workshop attendees;
- Victorian health services;
- Other jurisdictional Health Departments;
- Health services in other States and Territories;
- Vendors of health IT systems; and
- NEHTA staff.

1.3 References and Related Documents

- NEHTA HI Service Concept of Operations v 1.0 FINAL Nov 2009
- NEHTA Individual Healthcare Identifiers Business Requirements v 1.0 FINAL Nov 2009
- NEHTA HI Security and Access framework v 1.0 FINAL Nov 2009
- NEHTA HI Business Use Case Catalogue v 1.0 FINAL Nov 2009
- NEHTA HI Service Catalogue v 1.0 Final Nov 2009
- NEHTA HI Service Glossary v 1.0 DRAFT Nov 2009
- Vic IHI Integration Functional Design
- Vic IHI Integration Business Requirements Specification
- Medicare Australia HI Service - Technical Services Catalogue R3A v3.0.2.doc
- Medicare Australia TECH.SIS.HI.01 - SIS - Common Document for SIS v3.0.2.doc
- Medicare Australia TECH.SIS.HI.02- SIS - Common field processing reference document for SIS v3.0.2.doc
- Medicare Australia TECH.SIS.HI.03 - Update Provisional IHI via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.04 - Search for HPI-I via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.05 - Update IHI via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.06 - IHI Inquiry Search via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.07 - Search for HPI-O via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.08 - Resolve Provisional IHI- Merge Records via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.09 - Resolve Provisional IHI- Create Unverified IHI via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.10 - Create Provisional IHI via B2B v3.0.2.doc

- Medicare Australia TECH.SIS.HI.11 - Create Unverified IHI via B2B v3.0.2.doc
- Medicare Australia TECH.SIS.HI.12 - IHI Batch Searching v3.0.2.doc
- Medicare Australia HI Service - IHI Searching Guide v0.3 Draft.doc
- FR.SVI.SPEC.01.232 Notify Duplicate Replica IHI via_B2B v3.25 (R3b).doc
- Healthcare Identifiers Act 2010

2. Introduction

2.1 Background

The Victorian IHI Pre-Implementation Project is responsible for identifying and documenting processes that will enable the rollout of IHIs to all Victorians with patient records in HealthSMART health services, and all operational processes that support the use and maintenance of the IHI over time.

Victorian health services operate largely independently, due to the nature of the enabling legislation, with each health service owning and maintaining a dedicated patient register. Victorian HealthSMART health services collectively store over 50 million individual patient records.

A key element of the IHI integration design for the IHI Pre Implementation Project is to understand each "problem" and requirement, so that effective and workable solutions can be defined. The deliverables for the IHI Pre-Implementation Project include a Best Practice Guide for health services capturing and utilising the IHI. For the initial load of IHI data, given the Victorian data volumes, a reasonably high match ratio is essential to overall success.

While the focus of the project is upon HealthSMART health services, this deliverable is intended to be used by all health services, Health departments, and vendors looking to integrate the IHI into their systems and processes.

2.2 Aims and Objectives

The aim of the project is to produce artefacts that will support successful implementation of IHI, including a Solution Architecture Design, Business Requirements, Business practice Guides and a sample Business Case. See the Project Brief for more details.

It will achieve these aims through meeting the following objectives:

- Define and incorporate reference solution designs and principles for the integration of Individual Healthcare Identifiers into the HealthSMART solution architecture.
- Defining an architecture, or architectures, that supports other models for patient administration, eg EMPI based.
- Use the reference solution design & principles to identify requirements and validate enhancements to Victorian Health IT environments and applications utilising NEHTA services (both HealthSMART and non-HealthSMART):
- Document requirements, functional specifications and technical specifications for IHI integration with a nominated and agreed PAS product.
- Based on this experience and knowledge gained recommend any proposed changes to the national IHI implementation approach in consultation with other jurisdictions and NEHTA reference groups.
- Leverage the NEHTA architecture and engagement teams capabilities to best use in the Victorian implementation/s, etc.

The aim of this deliverable is to present a simplified view of the functional design for integration of the IHI into health services' systems and processes. A more detailed deliverable is also available, though this will primarily be of interest to implementers (IT vendors).

The goal of the functional design is to ensure that it caters for all HI Service functions relating to the IHI, and associated exception handling, even though Victorian HealthSMART health services may not make active use of some functions.

2.3 Approach to Functional Design

This document comprises Business Processes and Use Cases. Requirements are documented separately, and should be read in conjunction with this document. The documented Business Processes define end-to-end processes, comprising automated steps that are defined further as Use Cases. Most of the Use Cases identified within the Business Processes are defined within this document. If they are not, they are typically PAS-specific use cases that will differ amongst the different PAS applications and not in scope for definition here.

Use Cases are documented according to the UML 2.0 standard, with the Use Case process, with alternate flows, below the description table.

The Functional Design is supported by Technical Design and Architecture deliverables.

The remainder of this document has been automatically generated by the Blueprint Requirements Center 2010 tool.

3. Use Cases

3.1 Use Case List

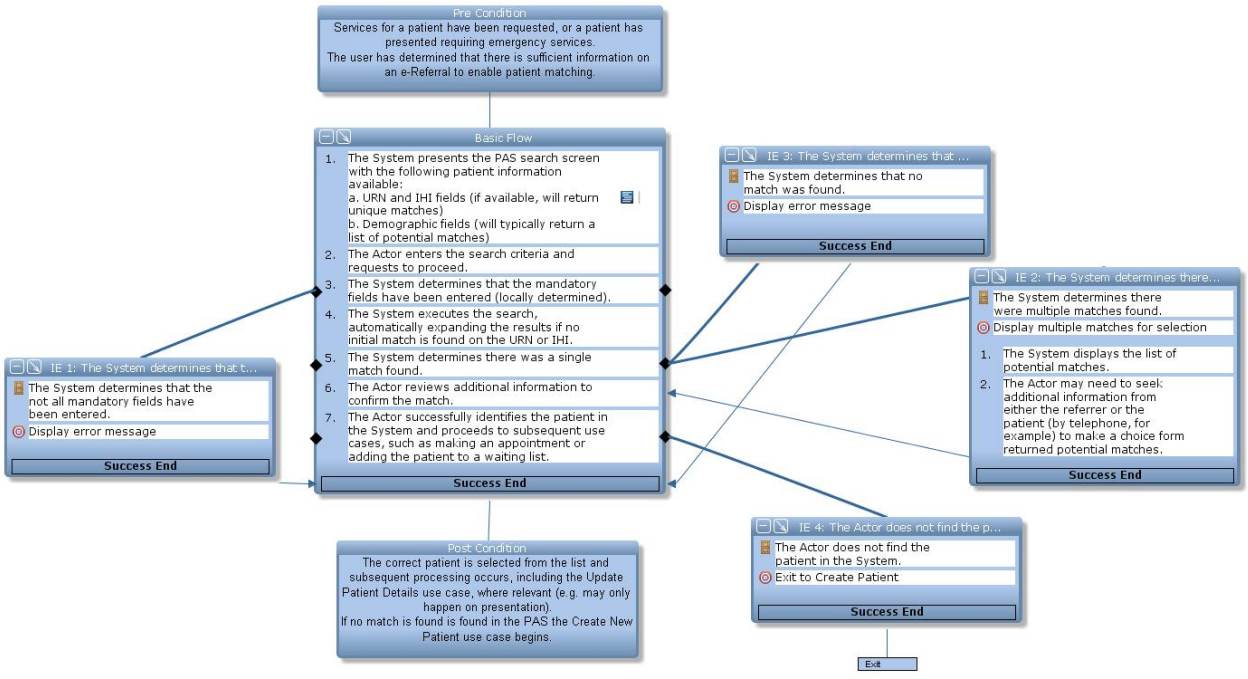
3.2 Actor(s):

The following table identifies the relevant Actors for the System. System implementers should consider the mapping between Actors and Use Cases as a guideline for role based access at an agency level.

ID	Name	Aliases
AC2	PAS User	PAS Clerk, Clinician, Nurse, Ancillary Workers, Interpreters, ED User, Intake Manager
AC3	PAS Clerk	Registration Clerk, Admissions Clerk, Ward Clerk, HIM
AC4	Patient	Client
AC5	Clinical System User	Administrative User, Clinician
AC6	The PAS System	The PAS System
AC7	PAS Administrator	
AC8	System Administrator	

3.3 UC1 : Search for Patient

Actors	PAS User
Overview	To search for a patient in the master PAS, to determine if they are already registered in the system, and to locate their electronic patient record.
Pre Condition	Services for a patient have been requested, or a patient has presented requiring emergency services. The user has determined that there is sufficient information on an e-Referral to enable patient matching.
Post Condition	The correct patient is selected from the list and subsequent processing occurs, including the Update Patient Details use case, where relevant (e.g. may only happen on presentation). If no match is found is found in the PAS the Create New Patient use case begins.
Circumstances of Use	• Registering an incoming referral, and creating a subsequent appointment or adding them to a waiting list. • Admitting a patient • Reviewing or updating patient information • Generating reports for a patient • Generating orders for the patient • Preparing a discharge summary
Included In (Other Use Cases)	None
Business Processes	BP1: Patient Registration from a Referral BP6: Patient Flow BP2: Unreferred Patient Presentation



BASIC FLOW:

#	Description	Requirement/ Include
1	The System presents the PAS search screen with the following patient information available: a. URN and IHI fields (if available, will return unique matches) b. Demographic fields (will typically return a list of potential matches)	RU503
2	The Actor enters the search criteria and requests to proceed.	
3	The System determines that the mandatory fields have been entered (locally determined).	

ALTERNATE FLOW(S):

Condition	Link	Return Step
The System determines that the not all mandatory fields have been entered.	IE 1	

4	The System executes the search, automatically expanding the results if no initial match is found on the URN or IHI.	
5	The System determines there was a single match found.	

ALTERNATE FLOW(S):

Condition	Link	Return Step
The System determines there were multiple matches found.	IE 2	6
The System determines that no match was found.	IE 3	

6	The Actor reviews additional information to confirm the match.	
7	The Actor successfully identifies the patient in the System and proceeds to subsequent use cases, such as making an appointment or adding the patient to a waiting list.	

ALTERNATE FLOW(S):

Condition	Link	Return Step
The Actor does not find the patient in the System.	IE 4	

Internal Extension (Alternate Flow) IE 1

Condition: The System determines that the not all mandatory fields have been entered.
Goal: Display error message
Requirements:
Next Step: BF: Basic Flow SUCCESS_END

Internal Extension (Alternate Flow) IE 2

Condition: The System determines there were multiple matches found.
Goal: Display multiple matches for selection
Requirements:

#	Description	Requirement/ Include
1	The System displays the list of potential matches.	

2	The Actor may need to seek additional information from either the referrer or the patient (by telephone, for example) to make a choice form returned potential matches.

Next Step:	BF: Basic Flow	6. The Actor reviews additional information to confirm the match.

Internal Extension (Alternate Flow) IE 3

Condition:	The System determines that no match was found.	
Goal:	Display error message	
Requirements:		
Next Step:	BF: Basic Flow	SUCCESS_END

Internal Extension (Alternate Flow) IE 4

Condition:	The Actor does not find the patient in the System.	
Goal:	Exit to Create Patient	
Requirements:		
Next Step:	BF: Basic Flow	EXIT

BUSINESS RULES:

ID	Business Rule
RU514	The System must retain a full history of IHI changes, allowing for each instance of an IHI to be searchable.
RU503	The information available for use in searching may vary between different PAS implementations, however the following are expected to be available (in order of precedence in terms of search relevance): 1. UR number 2. IHI 3. Medicare card number, or DVA file number 4. Family name 5. Given name 6. Alias(es) 7. Date of birth 8. Sex 9. Street Address 10. Suburb 11. State 12. Postcode If the patient's IHI is available, this information should be added by the user (mandatory if available).

3.4 UC25 : Match Patient

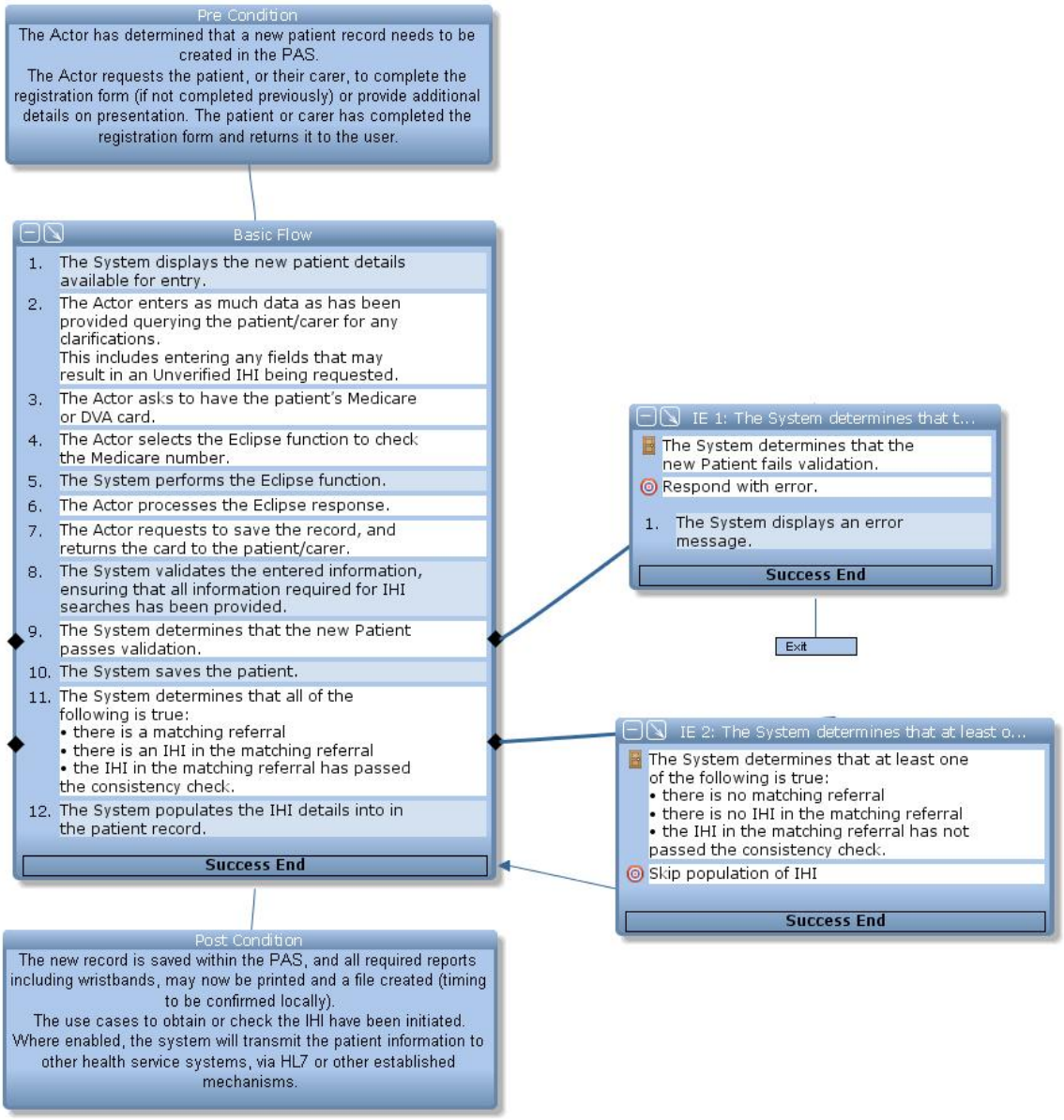
Actors	The PAS System
Overview	This Use Case attempts to locate a matching patient record for the incoming referral.
Pre Condition	A referral has been received, and has passed the initial check (services requested are provided by the health service, and the practitioner being referred to works within the organisation). Sufficient patient details are included on the referral to enable an effective patient search in the PAS to be conducted. If an IHI is included in the referral, the IHI has been checked for accuracy (see UC21: Process IHI in Referral).
Post Condition	A matching patient is located in the PAS. No matching patient record is located, in which case the Patient Registration use case is initiated.
Circumstances of Use	The match patient will be used on many occasions within the health service environment, including: Processing of a received referral Locating a patient on presentation (IP, OP, ED) Locating a patient for other reasons, eg for creating an appointment, patient records management, etc.
Included In (Other Use Cases)	None
Business Processes	BP1: Patient Registration from a Referral

BASIC FLOW:

#	Description	Requirement/ Include
1	The System searches the local patient database, using the referral patient demographics and included IHI, to identify if the client/patient exists on their system. The search is based on the following: • Surname • Given Name • Date of Birth • Sex • Address • Medicare # (if present) • IHI (if present)	
2	Where no likely matches are found the system prompts the Actor to create a new client/patient.	

3.5 UC2 : Create new Patient

Actors	PAS User
Overview	To add a patient to the master PAS, using either the full registration or quick registration processes.
Pre Condition	The Actor has determined that a new patient record needs to be created in the PAS. The Actor requests the patient, or their carer, to complete the registration form (if not completed previously) or provide additional details on presentation. The patient or carer has completed the registration form and returns it to the user.
Post Condition	The new record is saved within the PAS, and all required reports including wristbands, may now be printed and a file created (timing to be confirmed locally). The use cases to obtain or check the IHI have been initiated. Where enabled, the system will transmit the patient information to other health service systems, via HL7 or other established mechanisms.
Circumstances of Use	• A patient search of the PAS has not returned an existing record. • A patient cannot be identified and has limited communication capability (for example an unconscious ED patient). • Registering an incoming referral and subsequently adding the patient to a waiting list or creating an appointment. • Registering a newborn. • Registering an interstate or foreign visitor (this use may change once a national register is in place). • Registering a patient who wishes to remain anonymous.
Included In (Other Use Cases)	None
Business Processes	BP1: Patient Registration from a Referral BP6: Patient Flow BP2: Unreferred Patient Presentation



BASIC FLOW:

#	Description	Requirement/ Include
1	The System displays the new patient details available for entry.	
2	The Actor enters as much data as has been provided querying the patient/carer for any clarifications. This includes entering any fields that may result in an Unverified IHI being requested.	
3	The Actor asks to have the patient's Medicare or DVA card.	
4	The Actor selects the Eclipse function to check the Medicare number.	
5	The System performs the Eclipse function.	
6	The Actor processes the Eclipse response.	
7	The Actor requests to save the record, and returns the card to the patient/carer.	
8	The System validates the entered information, ensuring that all information required for IHI searches has been provided.	
9	The System determines that the new Patient passes validation.	

ALTERNATE FLOW(S):

Condition	Link	Return Step
The System determines that the new Patient fails validation.	IE 1	

10	The System saves the patient.
11	The System determines that all of the following is true: • there is a matching referral • there is an IHI in the matching referral • the IHI in the matching referral has passed the consistency check.

ALTERNATE FLOW(S):

Condition	Link	Return Step
The System determines that at least one of the following is true: • there is no matching referral • there is no IHI in the matching referral • the IHI in the matching referral has not passed the consistency check.	IE 2	

12	The System populates the IHI details into in the patient record.

Internal Extension (Alternate Flow) IE 1

Condition: The System determines that the new Patient fails validation.
Goal: Respond with error.
Requirements:

#	Description	Requirement/Include
1	The System displays an error message.	

Next Step: BF: Basic Flow EXIT

Internal Extension (Alternate Flow) IE 2

Condition: The System determines that at least one of the following is true:
- there is no matching referral
- there is no IHI in the matching referral
- the IHI in the matching referral has not passed the consistency check.

Goal: Skip population of IHI
Requirements:
Next Step: BF: Basic Flow SUCCESS_END

3.6 UC5 : Update Patient Details

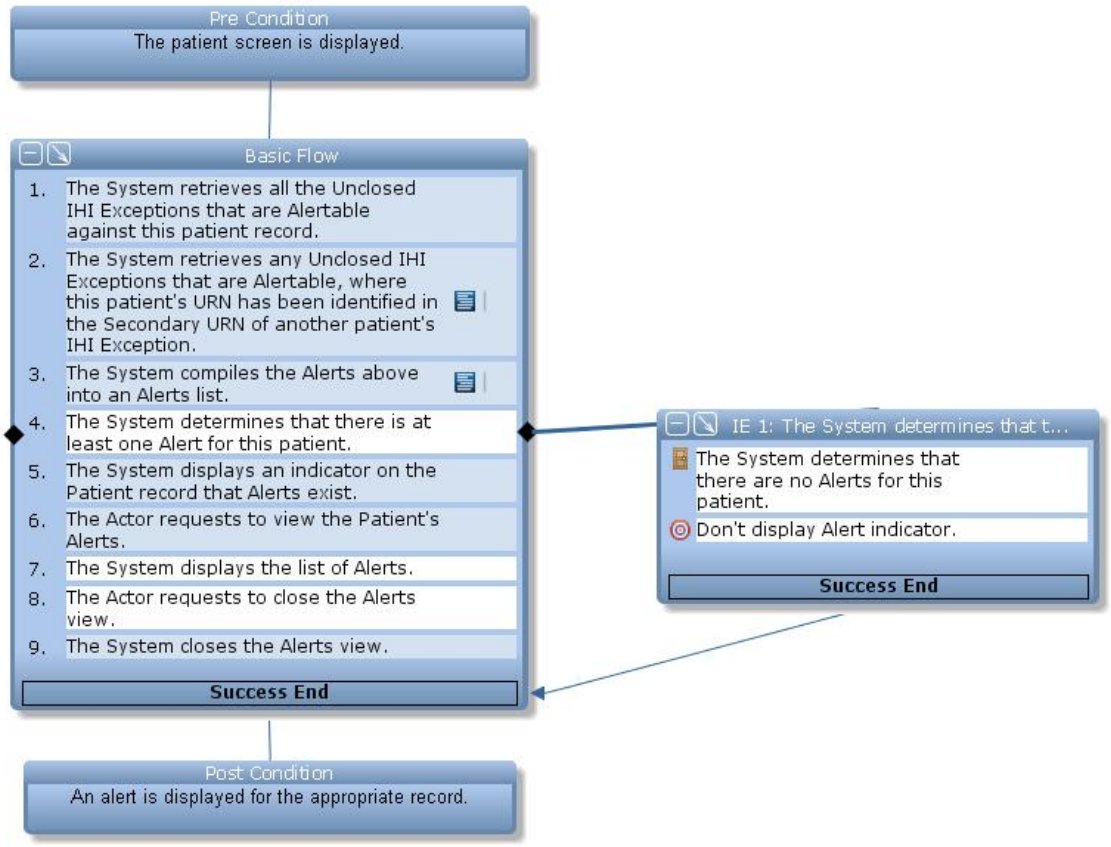
Actors	PAS User
Overview	Updates patient information based on new or additional information being available.
Pre Condition	New or updated information for an existing patient record has become available to a user. The user has searched for the patient and located and validated a matching record.
Post Condition	The updated record is saved within the PAS, and any required reports may be generated. The use case to obtain or check the IHI will be initiated, if required (depends upon information changed). Where enabled, the system will transmit the patient information to other health service systems, via HL7 or other established mechanisms.
Circumstances of Use	The Update Patient Details use case will be used when: • An update to the patient's details is required as part of another process, eg a referral received, patient presentation, or patient records management activities. • A patient's IHI has been retrieved by the system, or an updated status for an existing IHI has been obtained. Adding more details to a Quick Registration to effectively complete a full registration • Updating "Baby of …" data for a newborn with the registered (BDM) name information.
Included In (Other Use Cases)	None
Business Processes	BP1: Patient Registration from a Referral BP6: Patient Flow BP10: Resolve IHI Exception

BASIC FLOW:

#	Description	Requirement/ Include
1	The System displays the patient details.	
2	The System retrieves any alerts for this patient using UC38: Display Alerts.	UC38: Display Alert(s)
3	The Actor changes the patient data requiring update.	
4	The System process the patient details update using UC51: Process Patient Details Update.	UC51: Process Patient Details Update

3.7 UC38 : Display Alert(s)

Actors	The PAS System
Overview	This use case supports the display of alerts against patient records or other IHI containers (e.g. referrals) within the system, such as patient records, referrals, etc.
Pre Condition	The patient screen is displayed.
Post Condition	An alert is displayed for the appropriate record.
Circumstances of Use	Alerts will be displayed in the following instances against a patient record: • Duplicate records found in the PAS, based on IHI search criteria • No IHI returned by the HI Service • Insufficient information on referral to search for an IHI • IHI on a referral fails the Check IHI process • IHI Check fails, etc.
Included In (Other Use Cases)	UC5: Update Patient Details
Business Processes	None – see "Included in" Use Case above.



BASIC FLOW:

#	Description	Requirement/ Include
1	The System retrieves all the Unclosed IHI Exceptions that are Alertable against this patient record.	
2	The System retrieves any Unclosed IHI Exceptions that are Alertable, where this patient's URN has been identified in the Secondary URN of another patient's IHI Exception.	RU611
3	The System compiles the Alerts above into an Alerts list.	AT574 AT575 AT576 AT616
4	The System determines that there is at least one Alert for this patient.	

ALTERNATE FLOW(S):

Condition	Link	Return Step
The System determines that there are no Alerts for this patient.	IE 1	

5	The System displays an indicator on the Patient record that Alerts exist.	
6	The Actor requests to view the Patient's Alerts.	
7	The System displays the list of Alerts.	
8	The Actor requests to close the Alerts view.	
9	The System closes the Alerts view.	

Internal Extension (Alternate Flow) IE 1

Condition: The System determines that there are no Alerts for this patient.
Goal: Don't display Alert indicator.
Requirements:
Next Step: BF: Basic Flow SUCCESS_END

BUSINESS RULES:

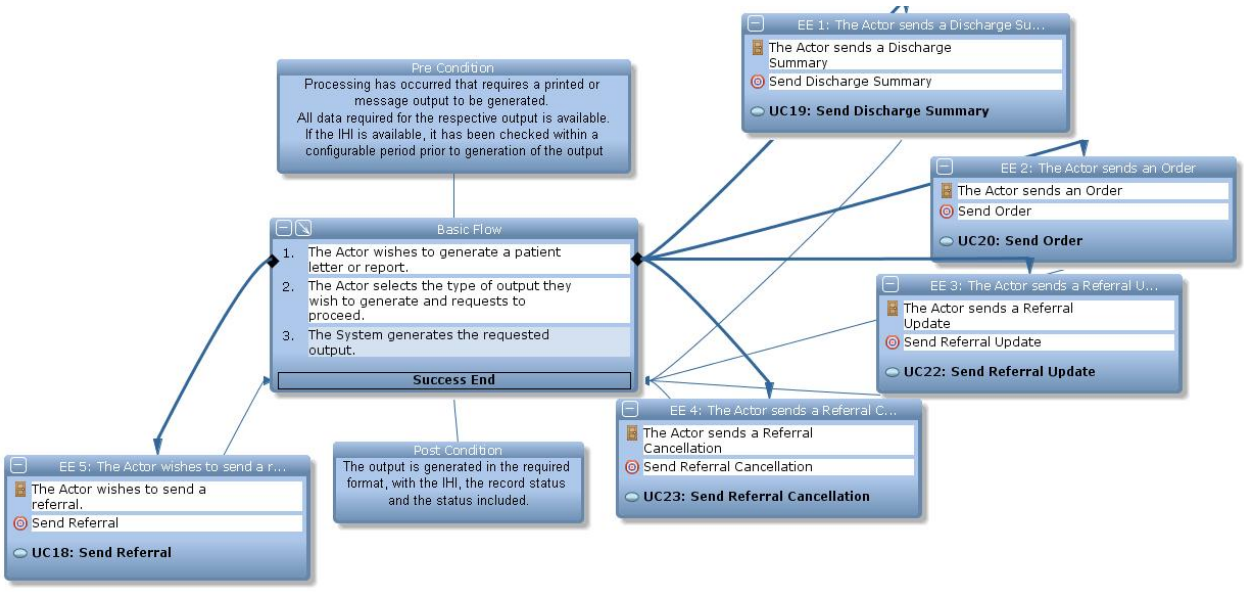
ID	Business Rule	Error #	Error Type
RU611	The following table identifies the Alerts that apply to each Exception Type:		N/A

Exception Type	Exception Status	Alert
No Match/No Match on Check IHI	Pending	AT574
	Closed	None
	Suspended	AT616
Incomplete Request Criteria	All	None
PAS Duplicate	Pending/Suspended	AT576
	Closed	None

ID	Business Rule			Error #	Error Type
	Status Integrity	All	None		
	System Failure	All	None		
	Provisional IHI	All	None		
	Other	All	None		
	Returned IHI PAS Duplicate	Pending/Suspended	AT576		
		Closed	None		
	Potential Deceased	Pending	AT575		
		Closed	None		
	Multiple Matches/Multiple Matches on Check IHI	Pending	AT574		
		Closed	None		
	None				
	Date Error	All	None		
	HI Duplicate Data	All	None		
	Unknown	All	None		
	Business Rule Violation	All	None		
	Multiple Matches	All	None		
	HI Merge Failure	All	None		
	No Provisional Match	All	None		
	Inconsistent Referral IHI	All	None		
	Current Patient IHI Anomaly	All	None		
	HI Service Processing	All	None		
	Potential Replica	All	None		

3.8 UC33 : Generate Output

Actors	The PAS System
Overview	This is a generic use case that covers all operational outputs that may include the IHI.
Pre Condition	Processing has occurred that requires a printed or message output to be generated. All data required for the respective output is available. If the IHI is available, it has been checked within a configurable period prior to generation of the output
Post Condition	The output is generated in the required format, with the IHI, the record status and the status included.
Circumstances of Use	The list provided here is indicative rather than exhaustive: • An outward referral (in any format, and for all delivery modes) • Waiting list letter to patient and/or referrer • Appointment letter to patient and/or referrer • Wristband • Ward notes (where template is pre-printed) • Pathology, Radiology, Diagnostic Imaging, orders, prescriptions • Discharge Summaries • Discharge letters • Patient reports • Referral update requests • Referral cancellations • Appointment reminder notifications From an HL7 messaging perspective, all messages that include the HL7 patient identification segment should also include the IHI, IHI Status and IHI Record Status. This will include messages: • All HL7 ADT (Admission, Discharge, Transfer) messaged excluding the Qry A19 message • All referral related HL7 ,messages (I12, I13, I14) • All SIU messages (scheduling and appointments) • The R01 message (observation)
Included In (Other Use Cases)	None
Business Processes	BP1: Patient Registration from a Referral BP11: Attend Appointment/Treatment



BASIC FLOW:

#	Description	Requirement/ Include
1	The Actor wishes to generate a patient letter or report.	

ALTERNATE FLOW(S):

Condition	Link	Return Step
The Actor sends a Discharge Summary	UC19: Send Discharge Summary	
The Actor sends an Order	UC20: Send Order	
The Actor sends a Referral Update	UC22: Send Referral Update	
The Actor sends a Referral Cancellation	UC23: Send Referral Cancellation	
The Actor wishes to send a referral.	UC18: Send Referral	

2	The Actor selects the type of output they wish to generate and requests to proceed.
3	The System generates the requested output.

4. Messages

4.1 Alerts

Alerts are created on individual patient records to alert the Actor to a certain condition that applies to that record. See the Best Practice Guide for procedures for each alert.

ID	Name	Message
AT574	Unstable IHI	The IHI is currently undergoing exception processing.
AT575	Deceased	The patient may be deceased.
AT576	Potential Duplicate	Duplicate record may exist: [Other URN].
AT616	Ineligible for Verified IHI	Ineligible for Verified IHI as at [date].