



Cancer Care Ontario (CCO) ISAAC Application

HL7 Report User Guide

**Version 1.0**

**Last Updated: May 2016**

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This package is intended to be available to Integration support personnel at facilities that have implemented the ISAAC application with the optional HL7 integration features. This guide provides detailed information on the CCO ISAAC web application’s HL7 Integration Report with respect to the features and functionality offered. Included is an overview of the following:

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# Introduction

## Overview

The ISAAC application includes HL7 integration features to automate transmission of patient enrollment information automatically into the ISAAC system as well as survey data transmission between ISAAC and hospitals in both directions. As these features are designed to work automatically, there is no human presence to guide and validate the data under normal circumstances. However, there should be ways to monitor the process to ensure it runs smoothly and to troubleshoot when errors occur. The ISAAC operations team does monitor interfaces for errors and can assist with troubleshooting as requested. However, for the sites that would like to troubleshoot independently or have a view themselves while troubleshooting, the ISAAC application now supports this process with the HL7 integration Report which this document outlines how to use effectively.

## Accessing the Report

The feature is available in the form of a report for users that have access to the **Reports** tab. From the tab, the report is located under the heading **Integration Reports** with the title **Real-Time HL7 Report**. The **View** button will open the report in a new tab of your internet browser.

Figure 1: The Report Tab



# Report Filtering

## Overview

There are 9 filters that can be used to tailor the results of the report in ways that are useful for each situation.

* Message Start Date
* Message End Date
* Message Type Direction
* Survey
* MRN
* Health Card Number
* Message ID
* Site
* Process Code

The filters will be applied once you have clicked the **View Report** button and the report will generate.

Figure 2: The Report Filter Fields



## Start and End Date

The **Start Date** and **End Date** fields use the date the HL7 message was processed to filter all messages for a user-defined date range. Default times are populated to display messages processed in the 2-hours leading up to when the report was loaded. When using this feature, be weary of larger date ranges as they may time out as the report attempts to retrieve too much information. These are required parameters and cannot be blank.

## Message Type and Direction

ISAAC’s current functionality allows patient assessment data to pass between ISAAC and hospital systems through an ORU (Observation Result) interface. When viewing interface messages for this survey information, you can filter the report to display only messages that are **ORU Inbound** to ISAAC from hospitals or **ORU Outbound** messages for survey information that are created from ISAAC and transmitted to hospitals.

ISAAC allows patient enrollment to be automated with an ADT (Admission, Discharge, and Transfer) interface. These are messages inbound into ISAAC from connected hospitals with information to enroll new patients or update existing patients. The two cases are defined as separate message types with individual codes: **A28 Inbound** for messages carrying new patient data that are not yet enrolled in ISAAC and **A31 Inbound** which are messages carrying patient update information for patients that have already been enrolled in ISAAC.

This is a required parameter. If you do not wish to filter your report by these options, you can use the default **ALL** value.

## Survey

The ISAAC ORU interface is supported for existing ISAAC surveys that are not a part of pilot or research projects. If you would like to filter the report by specific survey title, the **Survey** filter allows you to select from the support surveys: ESAS-r, PRFS, ECOG, and PPS. This filter is an optional parameter.

## Patient MRN and Health Card Number

If you would like to find messages for a specific patient the **MRN** and/or **Health Card Number** fields can be entered and the report will filter to only HL7 messages that have been transmitted for the matching patient. This includes ADT enrollment and updates as well as ORU survey transmission between CCO and hospitals. Both filters are optional parameters.

## Message ID, Site, and Process Code

The last 3 filters are based around managing the interface messages. If you are a site that routes multiple hospitals though your own interface engine, you can filter messages by one or all of those facilities with the **Site** filter.

Each message is assigned a MessageID either by ISAAC if the message is outbound or by sites’ interfaces if the message is inbound into ISAAC. If you are working with interface managing tools, the **MessageID** filter will be a unique identifier if you wish to trace the path of the message. If the message was resent, and has the same MessageID, ISAAC should accept the message and the report show all instances.

The **Process Code** filter allows you to filter messages that have the same process status, whether that is a specific error or for messages that are successful. This aids in grouping messages with the same errors to resolve data quality bugs or monitoring or errors. Process code definitions are outlined later in this guide in the [List of Message Process Code Statuses](#_List_of_Message) chapter.

# Report Columns and Output

## Report Columns

Figure 3: Table of Report Columns

| # | Column Name | Column Description |
| --- | --- | --- |
| 1 | Message Date | The datetime that a message was processed by the ISAAC application |
| 2 | Message Type | Message Type recorded in MSH-9 field of the HL7 message: *ADT^A28*, *ADT^A28*, or *ORU^R01* |
| 3 | Survey Name | For ORU messages the Survey Name is recorded in the OBR-4 field and will be one of the supported ISAAC surveys. If the message is an ADT message, this field will be blank |
| 4 | Message Direction | The direction of the message relative to ISAAC:*Inbound* - The transmitted direction will have been Hospital 🡪 ISAAC.*Outbound* - The transmitted direction will have been ISAAC 🡪 Hospital. |
| 5 | Master Number | The 4-digit MOLTC assigned master number of the facility ISAAC has transmitted the message between. This is taken from the MSH-4 field for inbound messages and the MSH-6.1 field for outbound messages. |
| 6 | Message ID | Unique identifier for the HL7 message recorded in MSH-10. |
| 7 | Person Name | The name of the patient recorded in PID-5.1 and PID-5.2 |
| 8 | DOB | The birthdate of the patient recorded in in PID-7 |
| 9 | HCN | The Health Card Number recorded in PID-3.1 where PID3.5 is HC |
| 10 | MRN | The Medical Record Number recorded in PID-3.1 where PID3.5 is PI |
| 11 | Process Status | The real-time state of the message recorded by the ISAAC application. This is based on the BizTalk interface [Process Codes](#_List_of_Message). If the status is one of the different error statuses, the report will provide the message exception details in the following row of the report. |

## Report Output

Figure 4: HL7 Report Output



# List of Message Process Code Statuses

The following chapter contains a list of error status codes that ISAAC will generate. When an error occurs, a pair of rows will be displayed in the HL7 report. The first row will populate the columns of the report and detail the message. The second row will provide the exception details:

Figure 5: HL7 Report Error Row Pair



## P000x = HL7 Process Codes

The following is a table of HL7 Process Codes generated by the CCO BizTalk Interface:

Figure 6: Table of HL7 Process Codes

| Code | Process Status | Description |
| --- | --- | --- |
| P0001 | Processed Successfully | Message processed successfully without error as expected. |
| P0002 | Message In Process | Message has been received and is being processed by the ISAAC system or is pending response for hospital system. |
| P0003 | Consuming External Service | Sent the survey to hospital and is waiting for ACK/NACK (for outgoing messages)BizTalk has processed the message and sent to the ISAAC application to process and is awaiting response.Once the response received the process code has to be changed to a different one: success/error. However, some unhandled errors may leave messages in this state and will fail to update. |
| P0004 | Message Processing Exception | Various errors may cause processing exceptions at the BizTalk interface level before the ISAAC application is able to process a message. Common examples are the following:***- Formatting***: unexpected values or missing required fields or value not matched in tables***- Authentication GUID:*** Site Authentication GUID and Site Number mismatch***- Connection Issues:*** Refused connection or message time outs |

The respective examples for the three errors above are the following:

Message Exception: General Isaac Exception.HL7 receive message invalid/unknown format; PID.8(1) - Table value not found.; DG1.1(1) - Required field is missing.;

Message Exception: There was a failure executing the receive pipeline: "ISAAC.Interface.BizTalk.Pipelines.ADTFixedItineraryReceive Passthrough, ISAAC.Interface.BizTalk.Pipelines, Reason: Authentication failed for site 9999 (expected: 78F731A186B262726EA17B5, received: 18F731A186B262726E817B5)

Message Exception: No connection could be made because the target machine actively refused it 18.241.140.98:9123

## SPOx = Site Patient Operation Status Codes

Site Patient Operation status codes are generated by the ISAAC application after completing initial processing by the BizTalk interface. The following table is a list of errors that can occur during the patient registration in ISAAC:

Figure 7: Table of ISAAC Site Patient Operation Status Codes

| Code | Process Status |
| --- | --- |
| SPO2 | Site Not Found |
| SPO3 | Site Too Many Found |
| SPO4 | Patient Not Found |
| SPO5 | Patient Too Many Found |
| SPO6 | Patient Chart Number Missing |
| SPO7 | Patient Enrolment Failed – *(one of the values below)*

| * Required Health Card Number
 | * Required First Name
 |
| --- | --- |
| * Invalid Health Card Number
 | * Invalid First Name
 |
| * Invalid Health Card Version
 | * Required Gender
 |
| * Required Chart Number
 | * Invalid Gender
 |
| * Invalid Chart Number
 | * Required Birth Date
 |
| * Char Number Exists
 | * Invalid Birth Date
 |
| * Required Surname
 | * Concurrency Error
 |
| * Invalid Surname
 | * Database Exception
 |

 |
| SPO8 | Patient Already Registered |

## AOSx = Assessment Operation Status Codes

Assessment Operation status codes are generated by the ISAAC application after completing initial processing by the BizTalk interface. The following table is a list of errors that can occur during the survey (ESAS, PPS, etc.) assessment creation in ISAAC:

Figure 8: Table of ISAAC Assessment Operation Status Codes

| Code | Process Status |
| --- | --- |
| AOS2 | Concurrency Error |
| AOS3 | Updated ESAS But Not Patient |
| AOS4 | Save Failure Invalid Data |
| AOS5 | Database Exception |
| AOS6 | Save Failure PPS Data Collision |
| AOS7 | Save Failure ESAS Data Collision |
| AOS8 | Invalid Assessment Date |
| AOS9 | Invalid ESAS Assessment Score |
| AOS10 | Invalid PPS Assessment Score |
| AOS11 | Required Assessment Date |
| AOS12 | Invalid ESAS Completed By |
| AOS13 | Invalid ECOG Assessment Grade |
| AOS14 | Save Failure ECOG Data Collision |
| AOS15 | Clinic Other Already Exists |
| AOS16 | Invalid Assessment Location |
| AOS17 | Invalid PRFS Assessment Rating |
| AOS18 | Invalid Assessment Date Range |

## POSx = Patient Operation Status Codes

The following is a table of Patient Operation Status codes generated by the ISAAC application after completing initial processing by the BizTalk interface:

Figure 9: Table of ISAAC Patient Operation Status Codes

| Code | Process Status |
| --- | --- |
| POS2 | Required Health Card Number |
| POS3 | Invalid Health Card Number |
| POS4 | Invalid Health Card Version |
| POS5 | Required Chart Number |
| POS6 | Invalid Chart Number |
| POS7 | Chart Number Exists |
| POS8 | Required Surname |
| POS9 | Invalid Surname |
| POS10 | Required First Name |
| POS11 | Invalid First Name |
| POS12 | Required Gender |
| POS13 | Invalid Gender |
| POS14 | Required Birth Date |
| POS15 | Invalid Birth Date |
| POS16 | Invalid Death Date |
| POS17 | Invalid Postal Code |
| POS18 | Required Nursing Agency |
| POS19 | Invalid Nursing Agency |
| POS20 | Required Enrollment Date |
| POS21 | Invalid Enrollment Date |
| POS22 | Required Patient Type |
| POS23 | Invalid Patient Type |
| POS24 | Required Patient Disposition |
| POS25 | Invalid Patient Disposition |
| POS28 | Concurrency Error |
| POS29 | Database Exception |
| POS30 | Required Password |
| POS31 | Required Year Of Birth |
| POS32 | Invalid Birth Date Range |

## ADT Status Codes

The following is a table of ADT Specific status codes generated by the ISAAC application after completing initial processing by the BizTalk interface:

Figure 10: Table of ISAAC ADT Error Codes

| Code | Process Status |
| --- | --- |
| REQF | ADT: Missing data for ADT processing |
| INVDOB | ADT: Invalid DOB format |
| RNGDOB | ADT: Invalid DOB range |
| INVDGDT | ADT: Invalid Diagnosis Date Time format |
| RNGDGDT | ADT: Invalid Diagnosis Date Time range |
| SCTNFD | ADT: Site Code Type Not Found |
| INVHCN | ADT: Invalid HCN |
| SNFD | ADT: Site Not Found |
| HCNU | ADT: HCN Is Not Unique |
| PSTS | ADT: Patient Existence Status Error |
| PCRT | ADT: Patient Create Error |
| PUPT1 | ADT: Patient Update (case #1) Error |
| PUPT2 | ADT: Patient Update (case #2) Error |
| PUPT3 | ADT: Patient Update (case #3) Error |
| PDUP2 | ADT: Patient exists (case #2), but MRN is duplicated |
| PNT3 | ADT: Patient exists (case #2), but not trusted |
| ADT1 | ADT: Patient exists (case #3), but not trusted |
| ADT2 | ADT: ADT31 received before patient create by ADT28 |

# Appendix A: Version History

## Document History

| Revision | Type | Revision Date | Revised By | Revision Details |
| --- | --- | --- | --- | --- |
| 0.1 | Draft | May 4, 2016 | Daniel Blekkenhorst | Initial Version |
| 1.0 | Final | May 4, 2016 | Daniel Blekkenhorst |  |

# Appendix B: List of Figures

Below is the list of each screenshot contained in the document. For reference, you can use the page number to find the figure or if you are using an electronic version of the guide, you can link directly from the line item below.

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