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Author: Ministry of Health Conformance and Integration Services

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1.0 Introduction

The Provincial Laboratory Information Solution (PLIS) is a province-wide repository of laboratory information that can be shared by authorized health care providers across the province.

PLIS contains approximately 95% of all laboratory test results performed by public and private community laboratories across BC.

Laboratory results are sent to PLIS in near to real time and are available for downloading into approved EMR systems.

PLIS provides physicians and other authorized health care providers the benefit of having:

- timely access to lab information for decision making at their point-of-service (POS);
- more comprehensive and complete lab test information;
- ability to populate a new patient's chart with historical lab information; and
- ability to see patient tests ordered by other health care providers and avoid duplicate testing.

From within the patient chart health care providers can:

- request patient lab information (for a specified date range);
- view/select the lab results to retrieve; and
- review the reports.

2.0 Business Rules

2.1 General

The following general business rules apply to applications used to access or exchange electronic health information with the PLIS data repository.

Table 1 General – Business Rules

#	Rule	Medical Practice (EMR)	HA CIS	Viewer	Distribution
PLIS1.1	**Lab Result Questions** Questions regarding laboratory results must be directed to the testing laboratory, which is the source of truth for the laboratory result.	✓	✓	✓	✓
PLIS1.2	**Clinical Interpretation** Clinical review and interpretation of laboratory results data must be done within the context of the primary lab report for medico legal purposes. **Note(s):** 1. Interpretive information or supplemental tests that are meant to be viewed in context of each other may be missed if a battery is viewed independently from the report. Refer to Appendix A: Lab Reporting Practices. 2. The primary lab report is an approved version of the source lab's report that ensures the integrity of the lab information for clinical interpretation/decision-making. 3. The POS application will render an approved display of the lab report information or provide the PLIS PDF Report.	✓	✓	✓	

2.2 Request Patient Lab Information

Based on a user's date range query, the POS application will present a Summary List of tests (batteries) for the patient not currently stored in the POS application. The Summary List does not contain the test result values. However, it does include sufficient information for the user to decide which records to import into the POS application.

2.2.1 Transactions

- Query Laboratory Test Result Summary - L2.6
- Get Laboratory Test Results Query (Detail Query) - L2.1

2.2.2 Associated Business Interactions

- Request patient lab information (for a specified date range)
- View/Select the Lab results to retrieve
- Review reports

Table 2 Request Patient Lab Information – Business Rules

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
PLIS2.1	**Date Range Required** A date range must be used to query a patient's lab information from the PLIS. **Note(s):** 1. The POS application may present a selection of pre-set date ranges to choose from (e.g., past week, past month, past year) and provide the ability to enter a date range. 2. Only valid dates will be accepted by the POS application. 3. Start date: a start date must be entered to receive batteries for that date and all those after the date. 4. End date: an end date must be entered to receive batteries for that date and all those prior to the date. 5. Start and end date: both a start and end date must be entered to receive all batteries between those dates.	✓	✓	✓
PLIS2.2	**Query Lab Data** The following are details you should be aware of when reviewing PLIS data. **Note(s):** 1. PLIS does not return reports or batteries that were previously flagged as confidential in accordance with the Public Health Act (e.g., Reportable tests collected prior to Jan 26, 2011 and Non Nominal HIV tests collected prior to May 31, 2012). 2. PLIS does not contain laboratory results for: • clinical trials where specific privacy or contractual agreements are in place; • research studies, as results often have not been validated for clinical use; • third party or self-pay tests processed by private laboratories;	✓	✓	✓

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
	• blood products and other transfused products; • laboratory test results conducted explicitly for forensic purpose; • patients in remand centers; • out of province testing that has not been entered into a lab information system; and • some specialized laboratory results. 3. PLIS does not consolidate results from different labs on a single report. • When samples are collected by one lab and referred to another lab for testing, only the performing lab will submit the result to PLIS. • Tests that have been referred to an out-of-province lab may appear if the collecting lab entered the information. • There will be no indication on the collecting lab's report when a test has been referred to another laboratory within the province. 4. The Summary List must be used for selecting laboratory results to be retrieved from PLIS.			
PLIS2.3	**Date Range "All"** The date range "all" must be used with discretion. **Note(s):** 1. The summary list will not include updates to stored PLIS data. 2. The summary list will include all the patient's results, including those already received by the provider.	✓	✓	✓

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
PLIS2.4	**Summary List Selection** To retrieve PLIS data, the user must explicitly select each test from the Summary List. **Note(s):** 1. The Summary List does not contain test result values. However, it provides sufficient information to identify and select the records to retrieve and store. 2. The report containing all associated batteries will be retrieved from PLIS and automatically stored in the patient's chart. This may include batteries that were not specifically selected. 3. The Summary List will not display tests that match PLIS tests currently stored in the POS (i.e., only new tests that match the criteria and are not currently stored in the POS application will be displayed to the user). 4. The Summary List will not provide updates to previously stored data retrieve from PLIS.	✓	✓	✓
PLIS2.5	**Continue Retrieving Records** When the number of records received exceeds the maximum, the user must select the option to continue retrieving records or abort the request. **Note(s):** 1. The maximum page size returned from PLIS is 1000 records. 2. However, the POS application may be configured to retrieve a lower limit.	✓	✓	✓

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
PLIS2.6	**Potential Duplicate Records** To prevent duplicate lab records being stored in the POS application, the stored records must be compared to the results of the Summary List to determine which records may be duplicates. **Note(s):** 1. The Summary list will display all pertinent records from PLIS, which receives lab results from many different sources. 2. Consequently, some records in the Summary List may be duplicates of records from non-PLIS sources stored in the POS application.	✓	✓	✓

2.3 Disclosure Directive Keyword & Protected Data

Table 3 Disclosure Directive Keyword & Protected Data – Business Rules

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
PLIS3.1	**Disclosure Directive Keyword Entry** If a patient provides their Disclosure Directive keyword, the Disclosure Directive keyword must be entered to retrieve their PLIS data.		✓	✓
PLIS3.2	**Disclosure Directive Keyword Use** The Disclosure Directive keyword must not be stored or shared with others.		✓	✓
PLIS3.3	**Disclosure Directive Keyword Override Without Consent** If a patient is not able to provide their Disclosure Directive keyword and delay in accessing their PLIS data could result in harm to the patient, an authorized user may override the patient's Disclosure Directive keyword. An override without the patient's consent must only be used in the following situations: • The patient is unconscious or semi-conscious; or • The patient is apparently impaired by drugs or alcohol. There is a reason the patient is incapable of giving consent or is refusing to give consent.		✓	✓

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
PLIS3.5	**Disclosure Directive Protected Data** To retrieve the patient's Disclosure Directive protected data, the patient's Disclosure Directive keyword must be entered when prompted. **Note(s):** 1. Without the correct Disclosure Directive protective word, the user will be unable to retrieve data that is protected by the Disclosure Directive or retrieve updates to stored EHR data protected by a Disclosure Directive. 2. As with all summary list data, data protected by a Disclosure Directive retrieved and viewed in the Summary List is not stored in the POS application.	✓	✓	✓
PLIS3.6	**Storing Disclosure Directive Protective Word** The patient's consent must be received before their Disclosure Directive keyword can be stored in the POS application. If the patient gives consent to store the Disclosure Directive keyword it must only be stored in area of the POS application dedicated to its storage. The Disclosure Directive keyword must not be stored in any other way (e.g., written notes, paper chart, or text field). **Note(s):** The POS application will prompt the user to confirm that the user has received patient consent to store the Disclosure Directive keyword.	✓		
PLIS3.7	**Storing Patient Protected Data** If data protected by a Disclosure Directive keyword is stored in the POS application the patient must be asked if they want any of their data masked.	✓		

#	Rule	Medical Practice (EMR)	HA CIS	Viewer
PLIS3.8	**Using the Stored Disclosure Directive keyword** Use of the stored Disclosure Directive keyword must be explicitly verified (e.g., click the field) in the first transaction of a patient session. **Note(s):** 1. If the stored Disclosure Directive keyword is required to access PLIS, the POS application will automatically populate the protective word field in an encrypted state. 2. The user does not need to verify the use of the Disclosure Directive keyword in subsequent transactions during the same patient session.	✓		

2.4 Update Stored Lab Results

A user's request to update all stored records or a single record will trigger a detail query request from PLIS and return any updates or corrects to stored data that was retrieved from PLIS.

2.4.1 Transactions

- Get Laboratory Test Results Query (Detail Query) - L2.1

2.4.2 Associated Business Interactions

- Request updates to all PLIS stored records
- View/Select the stored PLIS lab results to retrieve

Table 4 Update Stored Lab Results – Business Rules

#	Rule	Medical Practice (EMR)
PLIS4.1	**Update Stored PLIS Lab Results** To receive updates and corrections to lab results previously retrieved from PLIS and stored in a patient's chart, the user must: 1. select the option to update all lab results from PLIS stored in the patient's chart; or 2. open a stored PLIS lab result to retrieve the results for that specific result. **Note(s):** 1. Reports will contain all available data at the time of the request. 2. Opening a stored PLIS lab record will automatically trigger a check for updates and provide the updated information for that record. 3. Updates to incomplete or pending lab results retrieved from the PLIS are not automatically distributed to the POS application.	✓

2.5 Review & Acknowledge Solicited Lab Results Data

The following business rules apply to POS applications receiving solicited lab results from PLIS.

2.5.1 Transactions

- None

2.5.2 Associated Business Interactions

- Reportable communicable disease (RCD) information distributions
- Solicited lab results distributions

Table 5 Review & Acknowledge Solicited Lab Results Data – Business Rules

#	Rule	Distribution
PLIS5.1	**Review and Acknowledge Laboratory Results** The accountable provider must: • review the battery results in clinical context of the lab generated report or the lab requisition and acknowledge/signoff all solicited lab result data that has been reviewed. **Note(s):** 1. Interpretive information or supplemental tests that are meant to be viewed in context of each other may be missed if a battery is viewed independently from the report. (Refer to Appendix A: Lab Reporting Practices.) 2. Battery results will be available as they are completed. 3. All batteries reported on a lab generated report or lab requisition are displayed in context of each other.	✓

#	Rule	Distribution
PLIS5.2	**Review and Acknowledge Updates to Stored Records** The accountable provider must review and acknowledge/sign-off updates received records. **Note(s):** 1. Updates to stored solicited records are automatically distributed to the ordering provider. 2. Updated data is shown in the context of the lab generated report or lab requisition and are clearly distinguished from data on the same report that has not been updated since last viewed.	✓

2.6 Trend Tables & Graphing Displays

This section applies to POS applications providing functionality for tabular views of the patient's lab data or for graphing result trends over time.

Table 6 Trend Tables & Graphing Displays – Business Rules

#	Rule	Medical Practice (EMR)
PLIS6.1	**Select Test Names and Codes to Trend or Graph** The application must be able to recognize the applicable test names and codes from all sources (i.e., PLIS test names and codes as well as those stored from other sources. **Note(s):** 1. Display names from different source systems may be different. 2. If the POS application supports graphical displays using a relative to normal scale, it will graph observations with different units of measure or from different labs on a contiguous line.	✓
PLIS6.2	**Graphical Displays** Applicable tests from different source labs with different units of measure or reference ranges must not be not be displayed with a contiguous line unless the application supports relative graphical displays using a relative to normal scale. In all cases, performing lab, units of measure and Reference ranges must be available for all test result values (e.g., hover or in tabular format below the trend graph).	

3.0 Appendix A: Lab Reporting Practices

Table 7 Lab Reporting Practices – Business Rules

Description
1. Units of Measure PLIS may translate units of measure sent from LIS to the Uniform Coding of Units of Measure (e.g., giga/L has been changed to 10*9/L).
2. Abnormal Flags PLIS accepts and displays abnormal flag codes as sent by the LISs. Labs send abnormal flags for chemistry and hematology results, but not necessarily for microbiology cultures and never for pathology reports.
3. Corrected Flags Corrected flags are sent in the message when previously reported results have changed for chemistry, hematology and may be sent for microbiology tests by some, but not all, performing labs. Pathology amended/corrected reports are not flagged.
4. Specimen Description The following have not been standardized across laboratories and result in inconsistencies in Laboratory reports: • specimen description, • site description, and • specimen type terminology and usage. This is most prevalent in microbiology and pathology reporting.
5. Reference Ranges Reference ranges have not been standardized across reporting labs, therefore results reported by different laboratories are not directly comparable.

Description
6. Non-Standardized Terminology While the pCLOCD coding system has been adopted as the standard for PLIS, laboratories use a number of local codes such as XXX or XBC codes. The creation of local codes is necessary when the definition of the "test" does not meet the specifications required for LOINC. The use of local codes is in part due to LIS configuration limitations and the creation of "tests" that have been set up to ensure all relevant laboratory data is captured.
7. Battery and Specimen Comments In some cases, comments related to a specific battery result that should be sent as part of the result are sent as discrete batteries. Some LIS send comments at the specimen level, which will appear against every battery that is collected on that specimen. Specimen level comments on each battery may be duplicated if multiple tests were collected on a single specimen. Comments that may apply to a single battery will appear on all batteries for that specimen.
8. Standardized Presentation of Pathology Reports The clinical content of non-discrete lab data (i.e., text based laboratory reports such as pathology) appears as a string of text with line breaks. **Note(s):** 1. The presentation of pathology reports is adequate for interpretation by clinical end users. 2. However, it is not considered acceptable for consumption by non-healthcare professionals (e.g., patients).
9. Observation Annotation The reporting lab and the performing lab are the same unless otherwise noted in the 'observation annotation'. **Note(s):** The performing lab will be identified in the observation annotation when the reporting lab enters the contents from an out-of-province test into their LIS.