# Rendering Guide for Systems Consuming & Displaying Laboratory Reports

## Document Contents

## Purpose

This rendering guide intends to inform Clinical systems that consume lab results the minimum requirements to safely represent a laboratory result. This will assure that the accuracy and quality of electronic lab results being processed by a Clinical Information System, by a Results Repository or by an Electronic health record will represent a view similar to paper reports for presentation.

The data elements are described, categorized as mandatory, recommended or optional to allow developers to create programs and style sheets that will meet the requirements.

## Validation Criteria

The integration delivery team requests, on behalf of the laboratory, that outputs for conformance validation are provided in a manner that supports the comparison of laboratory output and consuming system output. It is acknowledged that the viewing results in/via a display may not align completely with the laboratory report. If the printed result provided by the clinic is missing required information then another source (screen print, help text, etc.) can be used to show the information is available.

## Conformance Process

The conformance process will ensure that source systems and consuming systems have the necessary documents to ensure the valid display of results.

1. Rendering Guide (inform of display requirements)
2. Specifications (as needed)
    a. LTRD (Lab test result delivery) – to map data elements in the HL7 message to the required items
    b. CDA (Clinical Document Architecture, includes example style sheet) – to map CDA elements to required items
3. Source system output reports for comparison purpose

## Consumers/Systems

This guide is intended to provide all necessary information to a broad group of developers, including

- Physician Office Electronic Medical Records
- Lab Data Repositories viewed via Alberta Netcare Portal
- Clinical Systems
- CDA developers

# Components of a Laboratory Report

The following data elements must be present on the clinic's system report and match the laboratory charts or the message in the validation file in order to pass validation.

## *Patient Demographics*

Patient demographics are the foundation to the identification of the person and ensuring that a result becomes part of the correct record. Matching criteria of a report to a patient or encounter must include 2 elements to ensure data integrity of the record. The Personal Health Number (PHN), Medical Record Number (MRN), or Unique Lifetime Identifier (ULI). Patient demographic information may be rendered from the Lab result message or from the consuming system patient record, but must be displayed as part of a screen or printed report as outlined below. The fields, both required and optional, will have a label stating what the content of the field is. The elements must be displayed in a manner that is readable. It may be displayed in rows or columns.

**Required:**

Last Name
First Name
PHN or Personal Identification Number (e.g. Federal, Military, RCMP, etc.) or Clinic assigned number.

**Optional:**

Gender
Date of Birth
Patient Age: may be age at time of result or time of print.
Lab specific Chart Id
MRN (Medical Record Number)
ACB (Alberta Cancer Board)
Telephone
Location

## *Physician Information*

Information regarding the ordering, consulting, family, referral or copy-to physician, clinician, clinic or location is important as part of ensuring that a report is delivered to the correct location of a patient's chart.

**Required:**

Ordering Provider: Name (as sent in the validation file or as exists in the clinic)
Copy to Provider(s): Names (as sent in the validation file or as exists in the clinic).

**Optional:**

Attending Doctor

## *Order Information*

Laboratory orders may originate in the Lab information system (entered from requisitions) or from clinical information systems interfaced with LIS'. Consuming systems who display orders will have the following requirements:

**Order Result Elements:**

**Required:**

Ordered test name (single test or battery)
Date and time ordered
Order status

**Optional:**

Ordering physician
Date and time for collection request

## *Result Information*

Laboratory results, by nature of the specimen, testing and reporting, have various report types. Reports can be generally described as:

1. Discrete, numeric results may include some textual interpretive information
2. Combination of discrete and text such as microbiology
3. Textual results such as pathology

Examples follow below as per links above.

**Required:**

**Test Result Elements:**

| Discrete Results | Formatting Requirement |
|---|---|
| Order Name – the test ordered, may be a battery/panel name | Bold |
| Test Name – the result test name, may be the same as the order | Bold |
| Test Result – value or interpretation | |
| Units of Measure (if present) | |
| Reference Range (if present) | |
| Abnormal Flag (if present) | |
| Corrected Flag (if present) | |
| Result Level Comments | |
| Order Level Comments | |
| Collected Date and Time | |
| Result Status | |
| Microbiology results | |
| Test | Bold |
| Specimen Type | |
| Specimen Source | |
| Accession | |
| Collected Date and Time | |
| Received Data and Time | |

| Pathology (text) Results | |
|---|---|
| Specimen Description | Heading - Bold |
| Clinical Information | Heading – Bold |
| Diagnosis | Heading – Bold |
| Gross Description | Heading – Bold |

**Notes:**

a) Spacing of the elements:
   Display spacing of elements must maintain readability, with a minimum of 5 spaces between elements

b) Sequence ordering of the elements must be:
   Test name, result (value), units of measure, reference range and abnormal flag (if present). These elements must be grouped together.
   These items would present in a single row per result item, with spacing to ensure readability

c) Order and Test and Name Variances:
   Result names can match either the names on the Laboratory chart or the names sent in the HL7 result message. Alternately the result names can be local.

d) Abnormal Flags:
   Abnormal flags must have a legend providing the meaning of the flag and the meaning must correspond to the intended meaning from the laboratory.
   This legend can be either in context or presented as an appendix

e) Result Status:
   The result status (Preliminary, Final, Corrected or Cancelled) is required.

**Optional:**

Laboratory Accession
Note: accession is useful when the clinic wants to contact a laboratory about a result.
Laboratory Department
Chart Request Id
Print Date/Time

## General Laboratory Discrete Report Example

| | | | | | |
|---|---|---|---|---|---|
| Collected Date | 2017/07/13 | | | | |
| Collected Time | 09:50 MDT | | | | |
| | **Units** | **Reference Range** | **Abnormality Flag** | **Result Status** | |
| Alanine Transaminase | 20 U/L | 1-60 | | Final | |

## Microbiology Report Example

TEST: Wound Culture
SPECIMEN TYPE: Swab
SPECIMEN SOURCE: Abdomen

COLLECTED: 2017/07/13 12:12 MDT
RECEIVED: 2017/07/13 12:37 MDT
MDT ACCESSION: WN-17-000027

FINAL REPORT Verified: 2017/07/13 12:39 MDT
**Heavy Staphylococcus aureus**

SUSCEPTIBILITY RESULTS ***

Staphylococcus aureus

**Interp**

**Cefazolin S**
**Clindamycin S**
**Erythromycin S**
**Cloxacillin S**
**Trimethoprim-sulfamethoxazole S**

**2017/07/13 12:39 MDT**
**Wound Culture:**
**Performed at Calgary**
**Lab Services**

# Pathology Report Example

**Surgical Pathology Report**

**Accession Number:** **SF-17-00NNNNN**
**Collected Date:** 2017-07-06 **Received Date/Time:** 2017-07-06 14:02 MDT
**Pathologist:** K. Anders M.D. (Office: 403-956-1359)

## Specimen Description

Ileocecal valve polyp x1, <1 cm.
Devitalization Time: 0925, placed in formalin 0930

## Clinical Information

FIT +, ave risk.

## Diagnosis

**Colon, Ileocecal Valve, Polypectomy:**
**- Tubular adenoma, negative for high-grade dysplasia**

Reported by: K. Anders M.D. (Office: 403-956-1359)

Electronically signed by: K. Anders M.D. (Office:403-956-1359)
Verified: 2017/07/13 9:59 AM
KA/RJS

## Gross Description

Received is a single specimen container. The requisition and specimen container are labelled with the patient's name, McKenzie, Robert William. The cassette and AP identifiers are labelled with the Surgical NumberSF17-17453.

The specimen is received in formalin and designated as "ileocecal valve". The specimen consists of one portion of tan tissue, 0.3 cm in maximum dimension. Totally submitted in cassette A1.

MEG/mrb

Cc:
Richard Alan Ward, MD

**Chart Request ID:** 154354108
**Print Date/Time:** 2017-07-13 10:39

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