New Brunswick EMR Excelleris Laboratory Report Delivery

Business View

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1. INTRODUCTION

1.1 Purpose

This document describes how to EMR Offering(s) interact with New Brunswick's Laboratory Services and retrieve laboratory reports (lab reports) from the New Brunswick Lab Delivery Service (Excelleris)

The document is organized into the following sections:

- **Business View**: describes the business context and benefits of connecting EMR Offerings to the Provincial service.
- **System View**: provides a high-level overview of the systems involved in accessing the services.

1.2 Version History

VERSION	DATE UPDATED	DESCRIPTION OF CHANGE
1.0	2023-04-20	Initial release of Specification

2. BUSINESS VIEW

2.1 Overview

Primary care clinics traditionally receive patient lab reports via fax or other manual processes.

Clinics that integrate with New Brunswick's Laboratory Service will benefit as follows:

- The process is more efficient and faster than traditional methods of receiving lab reports.
- Lab reports are automatically filed by an EMR to the appropriate patient and practitioner, which helps to streamline clinical workflows.
- Lab reports received electronically are more standardized for review and consumption.

3. SYSTEM VIEW

3.1 EMR – Excelleris Workflow/Interaction

New Brunswick's Laboratory Service collects, normalizes and distributes the lab reports to various clinical systems. The distribution of the lab reports to EMRs is performed by New Brunswick's Laboratory Delivery Service (Excelleris) on behalf of the Government of New Brunswick's (GNB) Department of Health (DOH).

The EMR Offering interfaces with Excelleris to authenticate, connect, and retrieve lab reports for the practitioners (physicians and nurse practitioners) that are set up as "recipients" for the clinic (EMR Offering) in Excelleris. Practitioners working in multiple clinics are set up to receive their lab reports in a single clinic.

Lab reports delivered by Excelleris are compliant with HL7 v2 format messaging (pipe delimiter) and Logical Observation Identifiers Names and Codes (LOINC).

The following diagram identifies the workflow within the EMR Offering to interact with Excelleris and process the HL7 batch lab messages retrieved from Excelleris.

Figure 1 - Excelleris Logic Flow within the EMR Offering

3.2 EMR – Lab Reports Views

The following diagrams illustrate the distinction between the different Views that the EMR Offering is required to provide when displaying lab reports (HL7 batch lab messages) retrieved from Excelleris. These examples contain fictitious patient data and are intended for illustrative purposes only. Implementation of these Views may vary in different EMR Offerings.

Note: The data elements displayed in the illustrations below may not accurately reflect the minimum data elements required to be displayed in each View; refer to the relevant requirements for the list of data elements to display.

3.2.1 Grouped View – Practitioner Work Queue

Lab Reports – Grouped View [Practitioner Work Queue | Patient & ORC & OBR]

FILTERS: Patient Name | Status | SIGN-OFF

Expands all OBRs For the patient

Excelleris Patient data

Patient manually match FLAG

Patient un-match FLAG

* at least one of the LabResults is flagged as "abnormal" for the patient

SIGN-OFF all OBR(s) for the patient

FN1 MN1 LNx [DOB | Gender | HCN] Version # : 1 | 2				STATUS *		LabName - A [MSH.004.02]			Received DT [Jan 28, 2023]	
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [ORC.003]	SIGN-OFF	
#1	Jan 5, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH820:21095951	SIGN-OFF	
#2	Jan 5, 2023	GTTG^GTT GEST. 2H		P-Preliminary	Jan 27, 2023	phyA	phyB / phyC	MOH820:21095951	SIGN-OFF	
#3	Jan 5, 2023	ZWG2^GLU GEST 2h				phyA	phyB / phyC	MOH820:21095951		

FN2 MN2 LN2 [DOB | Gender | HCN] Version # : 1				STATUS *		LabName - B [MSH.004.02]			Received DT [Jan 27, 2023]	
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [ORC.003]		
#1	Jan 17, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH829:21095951		

FN2 MN2 LN2 [DOB | Gender | HCN] Version # : 1				STATUS *		LabName - B [MSH.004.02]			Received DT [Jan 27, 2023]	
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [ORC.003]	SIGN-OFF	
#1	Jan 17, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH829:21095951	SIGN-OFF	
#2	Jan 17, 2023	GTTG^GTT GEST. 2H							SIGN-OFF	

Expands individual OBR for patient

Access to previous instances

Practitioner manually match FLAG

Excelleris Practitioner data

SIGN-OFF selected OBR

Figure 2 – An example of a Lab Report Grouped View in a practitioner work queue is shown above, with annotated descriptions of the different fields.

3.2.2 Grouped View – Patient Chart

Figure 3 – An example of a Lab Report Grouped View in a patient chart is shown above, with annotated descriptions of the different fields.

3.2.3 Expanded View – Practitioner Work Queue

Lab Reports – Expanded View [Practitioner Work Queue | Patient & ORC & OBR + OBX]

FILTERS: Patient Name | STATUS | SIGNED-OFF

Expands individual OBR

Collapses individual OBR

Expanded OBR

FN1 MN1 LN1 [DOB | Gender | HCN] Version # : 1 | 2				STATUS *		LabName [MSH.004.02]			Received DT [Jan 28, 2023]	
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [ORC.003]	SIGN-OFF	
#1	Jan 5, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH820:21095951	SIGN-OFF	
#2	Jan 5, 2023	GTTG^GTT GEST. 2H		P-Preliminary	Jan 27, 2023	phyA	phyB / phyC	MOH820:21095951	SIGN-OFF	
#3	Jan 5, 2023	FSC^FSC^^^FSC		F-Final		phyA	phyB / phyC	MOH820:21095951	SIGN-OFF	

	LabResult Name [OBX,003]	LabResult Value & UM [OBX.005 & OBX.007]	LabResult Ref Range [OBX.007]	Result Status [OBX.008]	Result-Additional INFO [OBX-NTE]	Observation Status [OBX.011]
	Erythrocytes	4.00 x10*12/L	140-180	L -Low	???	F-Final
	Hemoglobin	190 g/L	140-180	H -High	???	F-Final
	Hematocrit	0.45 L/L	0.42-0.52	N-Normal	???	F-Final

Expanded OBX

FN2 MN2 LN1 [DOB | Gender | HCN] Version # : 1				STATUS *		LabName [MSH.004.02]			Received DT [Jan 27, 2023]	
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [ORC.003]		
#1	Jan 17, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH829:21095951	SIGN-OFF	
#2	Jan 17, 2023	GTTG^GTT GEST. 2H							SIGN-OFF	

Figure 4 – An example is shown above of a Lab Report Expanded View in a practitioner work queue, identifying the collapsed groups of lab reports.

3.2.4 Expanded View – Patient chart

Lab Reports – Expanded View [Patient Chart | Patient & ORC & OBR + OBX]

EMR Patient: FN1/MN1/LN1, Gender , DOB , HCN

FILTERS: LabResult Name | STATUS | LabReport

Expands individual OBR

Collapses individual OBR

Expanded OBR

FN1 MN1 LN1 [DOB | Gender | HCN] Version # : 1 | 2				STATUS *		LabName [MSH.004.02]			Received DT [Jan 28, 2023]
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [OBR.003]	SIGN-OFF
#1	Jan 5, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH820:21095951	SIGN-OFF
#2	Jan 5, 2023	GTTG^GTT GEST. 2H		P-Preliminary	Jan 27, 2023	phyA	phyB / phyC	MOH820:21095952	SIGN-OFF
#3	Jan 5, 2023	FSC^FSC^^^FSC		F-Final		phyA	phyB / phyC	MOH820:21095953	SIGN-OFF

	LabResult Name [OBX,003]	LabResult Value & UM [ONX.005 & OBX.007]	LabResult Ref Range [OBX.007]	LabResult Status [OBX.008]	Result-Additional INFO [OBX-NTE]	Observation Status [OBX.011]
	Erythrocytes	4.00 x10*12/L	140-180	L -Low	???	F-Final
	Hemoglobin	145 g/L	140-180			F-Final
	Hematocrit	0.45 L/L	0.42-0.52	N-Normal		F-Final

Expanded OBX

FN2 MN2 LN1 [DOB | Gender | HCN] Version # : 1				STATUS *		LabName [MSH.004.02]			Received DT [Jan 222, 2023]
#	Collection Date [OBR.007]	Lab Report [OBR.004]	Report Additional Info [OBR-NTE]	LabReport Status [OBR.025]	LabReport Status Change [OBR.022]	Ordering [OBR.016]	CCed [OBR.028]	Accession # [OBR.003]	SIGNED OFF
#1	Jan 17, 2023	ZGRA^Microscopic		F-Final	Jan 27, 2023	phyA	phyB / phyC	MOH829:21095951	Jan 22, 2023 /phyA Jan 23, 2023 / phyB
#2	Jan 17, 2023	GTTG^GTT GEST. 2H							Jan 23, 2023 / phyA

Figure 5 - An example is shown above of a Lab Report Expanded View in a patient chart, identifying the collapsed groups of lab reports.

3.2.5 Lab Results View – Patient Chart

Lab Results View (Tabular) **[Patient Chart | Patient & OBX]**

EMR Patient: FN1/MN1/LN1, Gender , DOB , HCN

FILTERS: LabResult Name | LabResult Status | Collection Date

Patient Match FLAG	Collection Date	LabResult Name [OBX,003]	LabResult Value & UM [ONX.005 & OBX.007]	LabResult Ref Range [OBX.007]	LabResult Status [OBX.008]	Result-Additional INFO [OBR-NTE] & [OBX-NTE]	Observation Status [OBX.011]	Ordering Practitioner	CCed Practitioner	Accession #	LabName	Received DT
	Feb 17, 2023	Erythrocytes	4.00 x10*12/L	140-180	L -Low	???	F-Final	phyA	phyB phyC	MOH820:21095951	Lab- A	Mar 5, 2023
	Feb 17, 2023	Hemoglobin	145 g/L	140-180	N-Normal	???	F-Final	phyA	phyB phyC	MOH820:21095951	Lab-A	Mar 5, 2023
	Feb 28, 2023	Hematocrit	0.45 L/L	0.42-0.52	N-Normal	???	C-Corrected	phyC	phyA	MOH829:21095959	Lab-B	Mar 3, 2023
	Feb 28, 2023	Erythrocytes					P-Pending	phyC	phyA	MOH829:21095959	Lab-B	Mar 3, 2023

Patient manually match FLAG

Figure 6 - An example is shown above of a Lab Results View in a patient chart, identifying the results manually matched to this patient.

4. APPENDIX A: GLOSSARY

The following definitions reflect how these terms are used within this Specification.

GLOSSARY	DESCRIPTION
ACK and NACK messages	The response message the EMR sends to Excelleris after attempting to parse the HL7 batch lab message received: • ACK: positive acknowledgement message sent by the EMR indicating a successfully parsed HL7 batch lab message • NACK: negative acknowledgement message sent by the EMR indicating a failed HL7 batch lab message
Cumulative lab reports	Refers to all instances of the same lab report (ORC segment) for a patient. Each instance of the lab report (OBR segment) contains all the required test results (OBX segments) regardless of whether there is a test result value or not. The EMR Offering must display the most recent lab report instance with access to previous lab report instances.
Duplicate Lab reports	Two or more lab reports where the MSH.010 is the same value
EMR patient data	The patient data including the first name, last name, date of birth (DOB), gender and health card number (HCN) recorded in the EMR Offering.
EMR practitioner data	The practitioner, including the first name, last name, license entity and license value data recorded in the EMR.
Excelleris	The GNB Lab Delivery Service that distributes lab reports to practitioners (e.g., physicians and nurse practitioners) who have registered to receive lab reports in their designated clinic. Note: Practitioners working in multiple clinics will receive all their digital Lab reports in a single designated clinic.
Excelleris patient data	The patient data (FN/LN, DOB, Gender, HCN) included in the "HL7 lab batch message" retrieved from Excelleris and saved in the EMR.
Excelleris practitioner data	The practitioner data including the first name, last name, license entity and license value included in the HL7 lab batch message retrieved from Excelleris.
HL7 batch lab message	An HL7 message retrieved by the EMR Offering from Excelleris that contains one or more MSH segments which may be for multiple patients.
HL7 message	HL7 (Health Level Seven) is a standard format for exchanging health information between medical systems. Lab reports delivered by Excelleris are compliant with HL7 v2 format messaging (pipe delimiter) and LOINC.
Lab event	Any “HL7 batch lab message” received from Excelleris that contains at least one MSH segment. A lab event may also be referenced as a laboratory event.
Lab report	The information retrieved from Excelleris in the OBR segment. Each lab report may contain one or more lab results. A lab report may also be referenced as a laboratory report.
Lab result	The information retrieved from Excelleris in the OBX segment. Lab results can be numeric or non-numeric values. A lab result may also be referenced as a laboratory result.
LOINC	Logical Observation Identifiers, Names, and Codes - the standard used to identify and exchange laboratory orders and results between various medical systems
Parsing HL7 message	The functionality implemented in the EMR Offering to verify that the “HL7 batch lab message” received from Excelleris is compliant with rules defined in the NB EMR Interface Guide (e.g., well-formed, maxLen for fields, mandatory fields)

GLOSSARY	DESCRIPTION
Processing HL7 message	The functionality implemented in the EMR Offering to parse and manage and render the “HL7 batch lab message”.
Recipient	A clinic's practitioners (e.g., physicians and nurse practitioners) are set up in Excelleris to receive lab reports.
Transaction	Any message sent to and received from Excelleris by an EMR Offering.