

EMR Digital Health Immunization Repository (DHIR) 1.1

Requirements

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1. INTRODUCTION

1.1 Overview

This document defines EMR requirements and provides guidance to implement the provincial Digital Health Immunizations Repository (DHIR) EHR Service functionality in an EMR Offering. The intended audience of this document include business and technical implementers interested in integrating functionality within an EMR Offering to access and submit immunization records to the DHIR EHR Service.

1.2 Version History

VERSION	REVISION DATE	REVISION NOTES
1.0	2019-12-13	a) Initial Draft for Comment release
2.0	2020-07-13	a) Re-aligned and re-numbered REQ IDs. b) Updated reference to Digital Health Immunizations Repository (DHIR) – Point of Care Systems Access - HL7 FHIR Implementation Guide to point to the public link which is now available publicly. c) Updated DHIR02.01 and DHIR02.06 to add awareness to CVC “backup” option, for future consideration. d) Updated DHIR02.03 to check for CVC updates daily (instead of weekly) e) Updated DHIR02.04 for more clarity and added some restrictions on manual CVC updates. f) Added DHIR02.05 to include new parameters to interact with CVC. g) Updated DHIR02.06 for more clarity and added some restrictions on manual CVC updates. h) Added new section 2.2.2 new optional requirements DHIR03.01 through DHIR03.06) to define failback option where CVC is unavailable. i) Updated DHIR03.02 to clarify the need to record immunizations in the EMR that supports submitting to the DHIR EHR Service. j) Updated DHIR03.06: Updated text to display. k) Added DHIR03.14 to clarify that existing immunization module functionality should still exist. l) Updated DHIR04.03 for clarity on patient metadata m) Updated DHIR04.04 to reflect date range options for immunizations n) Retired DHIR04.07 o) Updated DHIR05.04 and DHIR05.05 with updated FHIR elements p) Retired DHIR07.02, merged with DHIR07.01. q) Updated DHIR09.01 as a result of further clarification in functionality from MOH.

1.3 Scope

1.3.1 In Scope

- Retrieval of a patient's immunization events from the DHIR EHR Service for display in the EMR Offering
- Retrieval of a patient's immunization forecast information from the DHIR EHR Service for display in the EMR Offering
- Submission of a patient's immunization events from the EMR Offering to the DHIR EHR Service
- Submission of ISPA and non-ISPA immunizations to the DHIR EHR Service for patients of any age
- Connectivity to and use of the Canadian Vaccine Catalogue (CVC) to ensure immunization data sent to DHIR EHR Service conforms to the data terminology required by the DHIR EHR Service

1.3.2 Out of Scope

- Reconciliation of immunization records between the EMR Offering and the DHIR EHR Service
- Submission of historical immunization records that pre-exist in the EMR Offering to the DHIR EHR Service prior to implementing EMR DHIR requirements in this document.

1.4 Assumptions

- Readers have a general understanding of EMRs and clinical workflows.
- Readers have a level of understanding of Health Level Seven (HL7) Fast Health Care Interoperability Resources (FHIR).
- Readers have a level of understanding of RESTful APIs

1.5 Dependencies

- The following EMR EHR Connectivity requirements apply to the DHIR EHR Service:
 - Context Management
 - Federation ID and SSO
 - ONE Access Gateway

1.6 Related Documents, References and Sources

ID	NAME	VERSION	DATE
1	Canadian Vaccine Catalogue Implementation Guide (CANImmunize, 2019) https://cvc.canimmunize.ca/en/integrate	2.0.1	2019-09-13
2	Digital Health Immunizations Repository (DHIR) – Point of Care Systems Access - HL7 FHIR Implementation Guide (Ministry of Health, 2019) https://www.ehealthontario.on.ca/en/standards/view/digital-health-immunization-repository-specification-fhir-release-4	4.0.3	2019-11-20
3	EMR EHR Connectivity Specification (OntarioMD, 2017) https://www.ontariomd.ca/emr-certification/emr-specification/library	2.0	2019-12-20

2. EMR REQUIREMENTS

This section consists of the EMR functional requirements to interact with the DHIR EHR Service.

Support:

M = Mandatory. EMR offerings certified for this specification **MUST** support this requirement

O = Optional. EMR vendors **MAY** choose to support this requirement in their certified EMR offering

Status:

N = New requirement for this EMR Specification version

P = Previous requirement

U = Updated requirement from the previous EMR Specification version

R = Retired requirement from the previous EMR Specification version

OMD #:

A unique identifier that identifies each requirement within OntarioMD's EMR Requirements Repository

CONFORMANCE LANGUAGE

The following definitions of the conformance verbs are used in this document:

- **SHALL/MUST** – Required/Mandatory
- **SHOULD** – Best Practice/Recommendation
- **MAY** – Acceptable/Permitted

The tables that follow contain column headings named: 1) "Requirement," which generally contains a high-level requirement statement; and 2) "Guidelines," which contains additional instructions or detail about the high-level requirement. The text in both columns is considered requirement statements.

2.1 EHR Service

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR01.01	The EMR Offering MUST be able to interface with the DHIR EHR Service.	The EMR Offering MUST support HL7 Fast Healthcare Interoperability Resources (FHIR) messages in accordance with the “DHIR – Point of Care Systems Access – HL7 FHIR Implementation Guide” to interface with the DHIR EHR Service.	M	P
DHIR01.02	The target endpoint to connect to the DHIR EHR Service MUST be configurable in the EMR interface.	The ability to configure the endpoint value MUST be restricted to only specific roles within the EMR Offering (e.g. administrators).	M	P

2.2 CVC Functionality

2.2.1 CVC Update Functionality Using FHIR APIs

The following requirements apply to connecting to the CVC target endpoint that supports FHIR API(s).

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR02.01	The target endpoint to connect to the CVC MUST be configurable within the EMR Offering.	<p>The CVC target endpoint configuration MUST apply clinic-wide.</p> <p>The EMR Offering MUST restrict the ability to configure this value to only specific EMR administrative role(s) and/or EMR users.</p> <p>Refer to the “Download CVC Bundle” section in the CVC Implementation Guide for the target CVC endpoint.</p>	M	U

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>The EMR Offering MUST populate the “x-app-desc” HTTP header parameter with the same One Access Gateway (OAG) Client ID value that is assigned to each EMR.</p> <p>Refer to “x-app-desc” in the “Download CVC Bundle” section of the CVC Implementation Guide for details for populating this parameter.</p> <p>Note: The Client ID value is assigned by Ontario Health Digital Services (OHDS) to connect to the OAG. For more information about the OAG Client ID, Refer to “client_id” in the ONE ID OAuth2/OpenID Specification document for more information about the OAG Client ID value.</p>		
DHIR02.02	The EMR Offering MUST have the functionality to retrieve CVC data.	<p>The EMR Offering MUST be able to retrieve CVC data from the DHDR EHR Service to be used for the submission of immunization events.</p> <p>Refer to the “Download CVC Bundle section of the CVC Implementation Guide for information on how to retrieve CVC data.</p>	M	P
DHIR02.03	The EMR Offering MUST have the functionality to automatically check for updates to CVC data.	<p>Refer to the “If-Modified-Since” message header in the CVC Implementation Guide for information about how to check when CVC data was last changed.</p> <p>The EMR Offering SHOULD have a means to temporarily suspend the functionality to automatically check for and apply CVC updates.</p>	M	U
DHIR02.04	The EMR Offering MUST have the functionality to automatically apply CVC updates to the EMR Offering.	<p>The EMR Offering MUST ensure that any immunization events submitted to the DHIR EHR Service uses CVC data that is current to within one business day.</p> <p>For example, this can be accomplished by one or more of the following options:</p>	M	U

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<ul style="list-style-type: none"> a) A scheduled daily task (regardless of who is logged into the EMR Offering) b) A triggered event (e.g., a user logging into the EMR Offering who has access to submit immunization events) 		
DHIR02.05	The EMR Offering MUST be resilient to CVC data update failures.	<p>The EMR Offering MUST have the functionality to prevent the CVC data if an update fails to successfully retrieve CVC data.</p> <p>A failure to retrieve CVC data includes:</p> <ul style="list-style-type: none"> a) An inability to connect to the CVC (e.g., due to network failures, or the CVC being unavailable) b) An interrupted or incomplete retrieval of CVC data c) Malformed CVC data <p>The EMR Offering MUST log and provide notification of such failures.</p>	M	N
DHIR02.06	The EMR Offering MUST have the functionality to allow the EMR user to manually initiate a check for updates to CVC data.	<p>The EMR Offering MUST have the functionality to allow the EMR user to manually initiate a check for CVC updates.</p> <p>Where a CVC update is available, the EMR Offering MUST automatically apply the CVC update without requiring EMR user intervention.</p> <p>Manually initiating a check for CVC updates MUST NOT affect the functionality of the automated checks.</p> <p>It is not acceptable to require the EMR User to need administrative access in order to manually initiate checking for CVC updates.</p>	M	P

2.2.2 CVC Update Functionality Using Alternative Method

The following requirements apply to connecting to the CVC using the alternative method which is intended for a fallback option should the primary method be unavailable. Reference to the primary method refers to the FHIR APIs describe in the preceding section. At this time, the proposed alternative method involves downloading of a CSV flat file from an HTTP URL which contains equivalent data that is available using the primary method.

Important Note: More information and implementation details relating to alternative method(s) to be made available by the MOH.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR03.01	The target endpoint to connect to the CVC MUST be configurable within the EMR Offering.	The CVC target endpoint configuration MUST apply clinic-wide. The EMR Offering MUST restrict the ability to configure this value to only specific EMR administrative role(s) and/or EMR users.	O	N
DHIR03.02	The EMR Offering MUST have the functionality to retrieve CVC data.	The EMR Offering MUST be able to retrieve CVC data from the DHDR EHR Service to be used for the submission of immunization events.	O	N
DHIR03.03	The EMR Offering MUST be able to automatically leverage the alternative method to retrieve CVC data where the primary method is unavailable.	The EMR Offering MUST be able to automatically attempt to connect using the alternative method to retrieve CVC data in the event that the EMR Offering is not able to connect to the CVC using the primary method.	O	N
DHIR03.04	The EMR Offering MUST have the functionality to automatically check for updates to CVC data.	The EMR Offering MUST be able to automatically attempt to connect using the alternative method to retrieve CVC data in the event that the EMR Offering is not able to connect to the CVC using the primary method. The EMR Offering SHOULD have a means to temporarily suspend the functionality to automatically check for and apply CVC updates.	O	N

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR03.05	The EMR Offering MUST have the functionality to automatically apply CVC updates to the EMR Offering.	<p>The EMR Offering MUST ensure that any immunization events submitted to the DHIR EHR Service uses CVC data that is current to within one business day.</p> <p>For example, this can be accomplished by one or more of the following options:</p> <ul style="list-style-type: none"> a) A scheduled daily task (regardless of who is logged into the EMR Offering) b) A triggered event (e.g., a user logging into the EMR Offering who has access to submit immunization events) 	O	N
DHIR03.06	The EMR Offering MUST be resilient to CVC data update failures.	<p>The EMR Offering MUST have the functionality to prevent the CVC data if an update fails to successfully retrieve CVC data.</p> <p>A failure to retrieve CVC data includes:</p> <ul style="list-style-type: none"> a) An inability to connect to the CVC (e.g., due to network failures, or the CVC being unavailable) b) An interrupted or incomplete retrieval of CVC data c) Malformed CVC data <p>The EMR Offering MUST log and provide notification of such failures.</p>	O	N
DHIR03.07	The EMR Offering MUST have the functionality to allow the EMR user to manually initiate a check for updates to CVC data.	<p>The EMR Offering MUST have the functionality to allow the EMR user to manually initiate a check for CVC updates.</p> <p>Where a CVC update is available, the EMR Offering MUST automatically apply the CVC update without requiring EMR user intervention.</p>	O	N

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>Manually initiating a check for CVC updates MUST NOT affect the functionality of the automated checks.</p> <p>It is not acceptable to require the EMR User to need administrative access in order to manually initiate checking for CVC updates.</p>		

2.3 Recording and Submitting Immunizations

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR04.01	The EMR Offering MUST maintain existing functionality to record and store immunization data.	The EMR Offering MUST maintain existing EMR functionality to record and store immunization data within the EMR system, whether or not the immunization record is submitted to the EHR DHIR EHR Service.	M	P
DHIR04.02	The EMR Offering MUST have the functionality to allow the EMR user to submit an immunization record to the DHIR EHR Service from the patient chart.	<p>The EMR Offering MUST integrate the functionality to submit immunization records to the DHIR EHR Service with existing EMR functionality that supports recording patient immunizations in the EMR Offering.</p> <p>The EMR Offering MUST:</p> <ul style="list-style-type: none"> a) support the recording and submission of immunization records with minimal EMR user input b) visually indicate all mandatory data fields c) identify and prompt the EMR user to fill in the missing FHIR mandatory data elements d) only submit immunization records that contain all mandatory data 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>The EMR Offering SHOULD include any optional data to the immunization submission, where available.</p> <p>Note: It is acceptable but not required for the EMR Offering to be able to submit historical immunizations recorded prior to implementing EMR DHIR functionality.</p>		
DHIR04.03	EMR Offering MUST collect and record all immunization information needed to submit patient immunizations to the DHIR EHR Service.	<p>The EMR Offering MUST integrate existing immunization recording functionality to collect all mandatory immunization data to facilitate the submission of patient immunization record to the DHIR EHR Service.</p> <p>When recording immunization data in the EMR Offering, there MUST be functionality to:</p> <ul style="list-style-type: none"> a) support recording of immunizations with minimal EMR user input (i.e., auto-populating immunization data where possible). b) visually indicate all mandatory data elements c) identify and prompt the EMR user to populate mandatory data elements. <p>The EMR Offering MUST have the functionality to verify that all mandatory data elements needed to submit an immunization to the DHIR EHR Service are populated.</p> <p>Refer to the DHIR FHIR Implementation Guide to identify the mandatory data elements required for submission.</p>	M	P
DHIR04.04	The EMR Offering MUST support the recording and submission of immunizations with minimal EMR user input.	<p>The EMR Offering MUST automatically pre-populate the following:</p> <ul style="list-style-type: none"> a) patient metadata b) submitter metadata 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		c) organization metadata		
DHIR04.05	The EMR Offering MUST have the functionality to allow the EMR user to submit a recorded immunization event to the DHIR EHR Service from the patient chart.	<p>EMR Offering MUST integrate the functionality to submit recorded immunizations to the DHIR EHR Service with existing EMR functionalities that support recording patient immunizations in the EMR Offering.</p> <p>When recording an immunization event in the EMR Offering, there MUST be functionality to:</p> <ul style="list-style-type: none"> d) support recording and submission of immunizations with minimal EMR user input (i.e., auto-populating immunization data where possible). e) visually indicate all mandatory data elements f) Identify and prompt the EMR user to complete mandatory data elements. <p>The EMR Offering MUST have the functionality to verify that all mandatory data elements are populated before allowing the submission of an immunization event to the DHIR EHR Service.</p> <p>The Offering MUST visually identify any missing mandatory data elements if or before the EMR user attempts to submit an immunization event.</p> <p>The EMR Offering MUST allow the EMR user to populate any missing mandatory data elements to subsequently re-submit the immunization event.</p> <p>Note: It is beyond the scope of this requirement to submit immunization records that exist in the EMR Offering prior to implementing DHIR EMR requirements. It is, however, within scope</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>to be able to enter and submit a new immunization event that occurred in the past.</p> <p>Refer to the DHIR FHIR Implementation Guide to identify the mandatory data elements.</p>		
DHIR04.06	The EMR Offering MUST allow the EMR user to review the immunization information before it is submitted to the DHIR EHR Service.	<p>The EMR Offering MUST present the EMR user with a summary of the immunization information to review and accept prior to submission to the DHIR EHR Service.</p> <p>The EMR Offering MUST provide an opportunity for the EMR user to make changes or corrections to the information before it is submitted.</p>	M	P
DHIR04.07	The EMR Offering MUST provide the option to submit a vaccine either by its Trade Name or Generic Name.	<p>The EMR user MUST have the option to choose to submit a vaccine either by selecting the vaccine's Trade Name or it's Generic Name.</p> <p>The selection, either by the Trade Name or Generic Name, MUST minimize the need for manual user input (e.g., with the use of keyword searches, auto-complete, selection lists, or other similar mechanisms).</p> <p>Note: Refer to the Submission Immunization Profile section in the DHIR Implementation Guide for details to submit an immunization event.</p>	M	P
DHIR03.08	The EMR Offering MUST prompt the EMR user for required manual information for the submission of the immunization to the DHIR EHR Service.	<p>The elements which require an EMR user input in the UI are as follows:</p> <ul style="list-style-type: none"> a) Trade Name (keyword search, selection list, etc.) [Immunization.vaccineCode.coding.display] 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>b) Lot Number (filtered by selected Trade Name) [Immunization.lotNumber]</p> <p>c) Date and Time of Administration (auto-populated with the current date and time, modifiable by the user to a historical date) [Immunization.occurrenceDateTime]</p> <p>The above, and any other fields requiring manual user input MUST be prompted to the EMR user to populate. Any fields that can be pre-populated MUST NOT require the EMR user to input.</p> <p>The Date and Time of Administration MUST be able to accept a manually entered historical date by the EMR user.</p> <p>The format of the date and time to display SHOULD be consistent with the date and time format used by the EMR Offering, where possible.</p>		
DHIR04.09	The EMR Offering MUST prompt for patient consent to submit the immunization event to the DHIR EHR Service.	<p>The EMR user MUST be prompted to request the patient's consent before submitting the patient's immunization event to the DHIR EHR Service. The following choices MUST be available:</p> <p>a) Consent to submit immunization information has been PROVIDED by the patient (proceed with the submission)</p> <p>b) Consent to submit immunization information has been REFUSED by the patient (abort the submission)</p> <p>Patient consent to submit an immunization event MUST be prompted for each immunization event submitted (e.g., where a patient receives multiple immunizations).</p> <p>There MUST be no default selection provided to the EMR user.</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>The EMR MUST log the choice selected to capture whether consent was accepted or refused.</p> <p>The EMR Offering MUST ONLY proceed to submit the immunization event to the DHIR EHR Service where the option “Patient consent to submit immunization information has been PROVIDED” is selected by the EMR user.</p>		
DHIR04.10	The EMR Offering MUST display the provided message while prompting for patient consent to submit the immunization event to the DHIR EHR Service.	<p>The EMR Offering MUST display the following message with the choices to proceed with or cancel the submission:</p> <p><i>“I acknowledge that I have requested for, and received consent from the patient or their guardian to submit patient immunization information.”</i></p> <p>which indicates that by submitting an immunization event to the DHIR EHR Service the user is acknowledging that they have obtained consent from the patient.</p>	M	P
DHIR04.11	The EMR Offering MUST have the functionality to allow a completed immunization event to be saved to the EMR Offering without being submitted to the DHIR EHR Service.	<p>The EMR Offering MUST provide both the following options to the EMR user to save and/or submit an immunization event:</p> <ul style="list-style-type: none"> a) Save only to the EMR Offering (AND do not submit to the DHIR EHR Service) b) Save to the EMR Offering AND submit to the DHIR EHR Service 	M	P
DHIR04.12	The EMR Offering MUST allow the EMR user to correct invalid or incomplete immunization data before being submitted to the DHIR EHR Service.	<p>The EMR Offering MUST be able to identify any missing or invalid mandatory data element(s) required for submission to the DHIR EHR Service and prompt the EMR user to correct them before submitting the immunization event.</p> <p>Once the EMR user MUST be able to submit the immunization event after missing or invalid data element(s) have been addressed.</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR04.13	The EMR Offering MUST notify the EMR user of the status of the submission of an immunization event.	<p>The EMR Offering MUST notify the EMR user whether an immunization event was acknowledged as successfully accepted by the DHIR EHR Service, or if the submission failed.</p> <p>For failed submissions, the EMR Offering MUST notify the EMR user of the failure with sufficient error information to address the failure.</p> <p>Refer to the “Logging and Auditing” section for requirements to log immunization submissions.</p>	M	P
DHIR04.14	The EMR Offering MUST visually identify immunization events in the EMR Offering which have been successfully submitted to the DHIR EHR Service.	The EMR Offering MUST have the functionality to visually distinguish the immunization events which have been successfully submitted from the immunization events that have been saved in the EMR but NOT successfully submitted.	M	P
DHIR04.15	The EMR Offering MUST have the functionality to allow the EMR user to re-submit immunization events that had previously failed or successfully submitted.	<p>The EMR Offering MUST have the functionality to re-submit valid immunization events that were previously submitted, but not successfully acknowledged by the DHIR EHR Service (e.g., due to an Internet service outage, or DHIR EHR Service issue).</p> <p>At a minimum, the EMR Offering MUST have the functionality to allow the EMR user to manually re-submit a failed immunization event submission.</p> <p>The EMR Offering MAY additionally have the functionality to automatically re-submit failed immunizations for a finite number of attempts only while the user is logged in with their federated account (e.g., attempt to re-submit every one minute, up to three failed attempts).</p>	M	P
DHIR04.16	The EMR Offering MUST have the functionality to allow the EMR user to re-submit immunization events	The EMR Offering MUST have the functionality to allow for EMR users to re-submit valid immunization events that were previously submitted and successfully acknowledged by the DHIR EHR Service.	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
	that had previously been successfully re-submitted	<p>The EMR Offering MUST allow the EMR user to make changes or corrections to any mandatory and optional data elements before re-submission of the immunization event.</p> <p>The EMR Offering MUST notify the user of the successful re-submission of the immunization event.</p>		

2.4 Search Immunizations

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR05.01	The EMR Offering MUST have the functionality to allow the EMR user to search the DHIR EHR Service from the patient chart.	<p>The functionality to search the DHIR EHR Service MUST be available where the patient's immunization management functionality exists from a screen or module within the EMR Offering that explicitly identifies the patient.</p> <p>Refer to the Primary Care EMR Baseline Requirements, Immunization Management section for additional information about the immunization management functionality.</p>	M	P
DHIR05.02	The EMR Offering MUST have the functionality to search and retrieve a patient's immunization history from the DHIR EHR Service using the patient's demographics.	<p>The following mandatory data MUST be included in the search request to the DHIR EHR Service:</p> <ul style="list-style-type: none"> a) HCN [Patient.identifier.value] b) DOB [Patient.birthDate] <p>Where the DHIR EHR Service is not able to identify the patient uniquely, then the EMR Offering MUST automatically re-submit the</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>request with the following additional patient information, if available:</p> <ul style="list-style-type: none"> c) Gender [Patient.gender] d) First name [Patient.name.given] e) Last name [Patient.name.family] <p>Refer to “Get Immunization” in the Supported Search Parameters section of the DHIR HL7 FHIR Implementation Guide for more information on the search parameters.</p> <p>Refer to the OperationOutcome Resource section of the DHIR HL7 FHIR Implementation Guide for possible error and warning messages returned by the DHIR Search function.</p>		
DHIR05.03	The EMR Offering MUST have the functionality to automatically populate the patient metadata when searching the DHIR EHR Service.	<p>The EMR Offering MUST:</p> <ul style="list-style-type: none"> a) visually display the patient data that was used to search b) ensure that DHIR search parameters are not editable <p>The EMR MUST NOT populate patient data parameters to search the DHIR EHR Service if that data is unavailable.</p>	M	U
DHIR05.04	The EMR Offering MUST have the functionality to search the DHIR EHR Service for the patient’s immunization history by date.	<p>At a minimum, the EMR Offering MUST have functionality to allow searching by all the following date range options:</p> <ul style="list-style-type: none"> a) A default date range of 10 years prior to the current date b) A date range manually entered by the EMR user c) The ability to search for all available events 	M	U

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		Refer to the DHIR FHIR - Implementation Guide, Supported Search Parameters for details on search parameters supported by the DHIR EHR Service.		
DHIR05.05	The search period MUST be displayed with all search results.	<p>Whenever a successful search for a patient's immunization history is performed (where zero or more immunization events are returned for the patient), the search period used MUST be displayed along with the search results.</p> <p>The search period format MUST be either:</p> <ul style="list-style-type: none"> a) in a date and time format consistent with the format used throughout the EMR Offering user interface, or b) in the same date and time format as provided by the DHIR EHR Service. <p>It is recommended to display date and time formats consistent with the format(s) used by the EMR Offering, where possible.</p>	M	P
DHIR05.06	The EMR Offering MUST inform the EMR user when a search to the DHIR EHR Service for the patient's immunization history returns no events results.	<p>Where there is a valid return of 0 (zero) results, Tthe following is a suggested message to display:</p> <p>"No events found for the specified search date/time period."</p> <p>The search period MUST be displayed along with the search results.</p> <p>Refer to the Error and Warning Management section for any errors or warnings returned by the DHIR EHR Service.</p> <p>The search period MUST be displayed along with the search results.</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		Note: No events being returned may be a result of the patient having no history, or no events existing for the period searched.		

2.5 DHIR EHR Views

A DHIR EHR View is defined as a display of the patient's immunization history. There are different DHIR EHR Views of the patient's immunization history the EMR Offering is required to support:

1. **Summary View** – provides a means to list the immunization history retrieved from the DHIR EHR Service for a given patient
2. **Comparative View** – displays the Summary View for a given patient alongside their immunization history maintained in the EMR Offering
3. **Forecast View** – displays the patient's immunization forecast information available from the DHIR EHR Service.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR06.01	The EMR Offering MUST have the functionality to display all immunization views.	<p>The EMR Offering MUST support the following DHIR EHR Views:</p> <ul style="list-style-type: none"> a) Summary View b) Comparative View c) Forecast View <p>EMR Offering MUST have the functionality to allow the EMR user to switch between DHIR EHR Views.</p>	M	P
DHIR06.02	When displaying data retrieved from the DHIR EHR Service, the patient MUST be identified.	<p>The following patient information, as maintained in the EMR Offering, MUST be displayed:</p> <ul style="list-style-type: none"> a) First and last name [Patient.name.given], [Patient.name.family] b) Health Card Number (HCN) [Patient.identifier.value] 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>c) Gender [Patient.gender]</p> <p>d) Date of birth, or age [Patient.birthDate]</p> <p>EMR Offering MUST visually identify any patient information that does not match between the EMR Offering and the DHIR EHR Service.</p> <p>Refer to the DHIR-FHIR Implementation Guide, “Retrieval Patient Profile” section for the full list of patient information.</p>		
DHIR06.03	The EMR Offering MUST include the disclaimer when displaying immunization event(s) retrieved from the DHIR EHR Service.	<p>The following disclaimer MUST be displayed whenever zero or more immunization event(s) retrieved from the DHIR EHR Service are displayed in a DHIR EHR View.</p> <p><i>“Warning: Limited to Immunization Information available in the Digital Health Immunization Repository (DHIR) EHR Service. To ensure a Best Possible Immunization History, please review this information with the patient/family and use other available sources of Immunization information in addition to the DHIR EHR Service.”</i></p> <p>The EMR Offering MUST have the functionality to allow the EMR user to temporarily suppress the disclaimer from subsequently displaying until they log out of the EMR Offering.</p> <p>The ability to temporarily suppress and restore this disclaimer MUST be independent of the ability to suppress and restore other disclaimers.</p> <p>The ability to suppress the disclaimer MUST be applied on an EMR user basis.</p> <p>Note: The disclaimer is subject to change by the MOH at any time.</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR06.04	The EMR Offering MUST indicate the total number of immunization events displayed in a DHIR EHR View.	<p>The EMR Offering MUST display a count indicating the total number of results returned by the DHIR Service.</p> <p>The Comparative View MUST also include a count indicating the total number of results from the EMR Offering.</p>	M	P
DHIR06.05	The EMR Offering MUST have the functionality to display all immunization events retrieved from the DHIR EHR Service.	<p>Where immunization events retrieved from the DHIR EHR Service cannot be displayed within one window, the EMR Offering MUST have the functionality to allow the EMR user to navigate through all retrieved immunization events.</p> <p>Additionally, the EMR Offering MUST indicate the total number of search results returned from a search.</p>	M	P
DHIR06.06	The EMR Offering MUST support the filtering of the immunization history retrieved from the DHIR EHR Service.	<p>The EMR Offering MUST indicate to the EMR user which elements are being actively filtered.</p> <p>At a minimum the EMR Offering MUST allow the EMR user to filter by the following data elements:</p> <ul style="list-style-type: none"> a) Immunization Date [Immunization.occurrenceDateTime] b) Immunization Type [Immunization.vaccineCode.coding[1].display] c) Brand Name (Trade Name) d) Administered By (Performer) <p>Any pre-existing filtering capabilities for the patient's immunization history maintained in the EMR Offering SHOULD be supported in the Comparative View.</p>	M	U

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR06.07	The EMR Offering MUST support the sorting of immunization events retrieved from the DHIR EHR Service.	<p>The EMR Offering MUST indicate to the EMR user which elements are sorted.</p> <p>At a minimum, the EMR Offering MUST allow the EMR user to sort by the following data elements:</p> <ul style="list-style-type: none"> a) Immunization Date [Immunization.occurrenceDateTime] b) Immunization Type [Immunization.vaccineCode.coding[1].display] c) Brand Name (Trade Name) d) Administered By (Performer) <p>Any pre-existing sorting capabilities for the patient's immunization history maintained in the EMR Offering SHOULD be supported in the Comparative View.</p>	M	U
DHIR06.08	EMR Offering MUST display date and time fields in DHIR EHR Views in a consistent format.	<p>The EMR Offering MUST maintain the same date format when displaying fields in any DHIR EHR View that contain dates.</p> <p>The EMR Offering MUST maintain the same time format when displaying fields in any DHIR EHR View containing times.</p> <p>It is recommended to follow the same date and time formats, if a standard is employed within an EMR Offering.</p>	M	P
DHIR06.09	The EMR Offering MUST display patient immunization records ordered by descending chronological order by default.	<p>The default sort order applies to:</p> <ul style="list-style-type: none"> a) Immunization events received from the DHIR EHR Service by "occurrenceDatetime" b) immunizations recorded in the EMR Offering by "Immunization Date" 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		Note: Descending chronological order lists the most recently administered immunization first.		

2.5.1 Summary View

The following EMR requirements apply to EMR functionality that is specific to the Summary View for immunization events.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR07.01	The EMR Offering MUST have the functionality to display the Summary View for immunization events.	<p>The following information for each immunization event retrieved from the DHIR EHR Service MUST be displayed in the Summary View:</p> <p><u>Immunization Information</u></p> <ul style="list-style-type: none"> a) Date of immunization [Immunization.occurrenceDateTime] b) Valid flag [Immunization.extension[1].valueBoolean] c) Generic Name [Immunization.vaccineCode.coding[1].display] d) Trade Name [Immunization.vaccineCode.coding[2].display] e) Lot # [Immunization.lotNumber] f) Expiration Date [Immunization.expirationDate] g) Status [Immunization.status] h) Public Health Unit (supplier of Vaccine product) [Immunization.extension[2].valueString] <p><u>Administering Provider Information</u></p> <ul style="list-style-type: none"> a) Administering Provider First and Last Name [Practitioner.name.given], [Practitioner.name.family] 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>The EMR Offering MUST indicate if the date of immunization is an estimated value. See _occurrenceDateTime in the Retrieval Immunizations Profile.</p> <p>The information MUST be displayed exactly as it is received from the DHIR EHR Service.</p> <p>Refer to “Retrieval Immunizations Profile” in the FHIR Profiles for Immunizations Retrieval section of the Implementation Guide for information on how to retrieve the set of immunization information.</p> <p>Refer to “Retrieval Practitioner Profile” in the FHIR Profiles for Immunizations Retrieval section of the Implementation Guide for Administering Provider information.</p> <p>Note: The Practitioner information retrieved from the DHIR indicates the provider who performed the immunization and not necessarily the provider who submitted the immunization to the DHIR EHR Service.</p>		

2.5.2 Comparative View

The following EMR requirements apply to functionality specific to the Comparative View for immunization events.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR08.01	The EMR Offering MUST have the functionality to display the patient's immunization history received from the DHIR Service in a Comparative View.	<p>The comparative view MUST display both the EMR Offering and DHIR EHR Service histories on the same screen for a specific patient:</p> <ul style="list-style-type: none"> a) Section A: patient immunization events retrieved from DHIR Service (equivalent to the Summary View), and b) Section B: patient immunizations recorded in the EMR Offering <p>The Comparative View MUST display the ALL immunizations in a single screen/window. The following rules are applicable to both sections:</p> <ul style="list-style-type: none"> a) Immunization events from the DHIR EHR Service MUST be identified and distinguishable from the immunization information recorded in the EMR Offering b) Display immunizations in descending chronological order (the most recent on top) <p>Pagination is not acceptable.</p> <p>The following rules MUST apply to Section A:</p> <ul style="list-style-type: none"> a) ALL functionalities applicable to Summary View apply. <p>The following rules MUST apply to Section B:</p> <ul style="list-style-type: none"> a) Display ALL immunizations recorded in the EMR for the patient 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>You MAY allow editing or modification of the EMR immunization record in the comparative view.</p> <p>Refer to the following sections of the DHIR-FHIR Implementation Guide for information about immunization retrieval profiles:</p> <ul style="list-style-type: none"> a) Retrieval Immunization Profile b) Retrieval Patient Profile c) Retrieval Practitioner Profile <p>Note: This requirement does not require reconciliation functionality between the two sources of data (EMR Offering vs. DHIR EHR Service).</p>		

2.5.3 Forecast View

Immunization forecast information is returned from the DHIR EHR Service as part of the query for a patient's Immunization History.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR09.01	The EMR Offering MUST have the functionality to display the patient's immunization forecast received from the DHIR EHR Service in a Forecast View.	<p>The EMR Offering MUST have the functionality to allow the EMR user to switch between:</p> <ul style="list-style-type: none"> a) Generic Name [ImmunizationRecommendation.recommendation.vaccineCode.coding[1].display] b) Target Disease [ImmunizationRecommendation.recommendation.targetDisease.coding.display] 	M	U

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>For the Generic Name option, the EMR Offering MUST display the following information for Due and Overdue forecasts:</p> <ul style="list-style-type: none"> a) Generic Name b) Trade Name [ImmunizationRecommendation.recommendation.vaccineCode.coding[2].display] <p>For the Target Disease option, the EMR Offering MUST display the following information for Due and Overdue forecasts:</p> <ul style="list-style-type: none"> a) Target Disease <p>For Due and Overdue forecast options, the EMR Offering MUST display the following immunization forecast information:</p> <ul style="list-style-type: none"> a) Either Target Disease, or Generic Name and Trade Name b) Recommended date [ImmunizationRecommendation.recommendation.dateCriterion.value] <p>The immunization forecast MUST be grouped by the status Overdue and Due.</p>		

2.6 Printing and Reporting

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR10.01	The EMR Offering MUST have the functionality to print the patient's immunization history retrieved from DHIR EHR Service.	<p>The print functionality MUST support all following required views:</p> <ul style="list-style-type: none"> a) Print a Summary View b) Print a Comparative View <p>A printed document MUST contain:</p> <ul style="list-style-type: none"> a) A section with the patient's demographic information on each page printed (i.e. first and last name, health card number, date of birth, gender, age) b) Date and time printed on each page c) All data elements required for the View being printed d) All the events retrieved from a request (i.e. not just the events that fit on-screen at the time of printing) e) Be ordered in the filters and sorting that the EMR user has applied to the view f) Indicate the page number on each page printed and the total number of pages g) An event count to indicate the total number of events displayed <p>It is suggested that, if the EMR Offering maintains any applied filters and sorting criteria for the printed copy, that there is an indication that the information displayed is a filtered and/or sorted list of the original events retrieved from the DHIR EHR Service.</p>	M	P
DHIR10.02	The EMR Offering MUST have the functionality to print the	Refer to the Forecast View section in this document for details on the information which must be printed.	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
	immunization forecast for a given patient.			
DHIR10.03	The EMR Offering MUST include the disclaimer when printing the immunization history retrieved from the DHIR EHR Service.	<p>The following message MUST be included on each page for which immunization event(s) are printed:</p> <p><i>“Warning: Limited to Immunization Information available in the Digital Health Immunization Repository (DHIR) EHR Service. To ensure a Best Possible Immunization History (BPIH), please review this information with the patient/family and use other available sources of immunization information in addition to the DHIR EHR Service.”</i></p>	M	P
DHIR10.04	When printing the patient’s immunization history, the print functionality MUST include a confidentiality statement.	The confidentiality statement MUST be displayed on each page printed.	M	P

2.7 Error and Warning Management

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR11.01	The EMR Offering MUST be able to provide notification to the EMR user of errors received from the DHIR EHR Service.	<p>The EMR user MUST be notified of any error or warning messages received from the DHIR EHR Service at the time it occurs (or the lack of response from the DHIR EHR Service).</p> <p>At a minimum, the following data elements MUST be presented to the EMR user:</p> <ul style="list-style-type: none"> a) Error message received from the DHIR EHR Service b) The EMR Offering’s description of the error message 	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		c) Severity of the error as identified by the DHIR EHR Service d) Any additional information needed for troubleshooting Refer to the “HTTP Response Codes” section of the DHIR FHIR Implementation Guide for more details on error messages that can be returned by the DHIR EHR Service.		
DHIR11.02	The EMR Offering MUST notify the EMR user when a consent block directive is returned by the DHIR EHR Service.	When an attempted retrieval of the patient’s immunization history from the DHIR EHR Service identifies a consent block directive, the EMR Offering MUST notify the EMR user with the following message: <i>“Some information was not or may not have been returned due to business rules, consent or privacy rules, or access permission constraints. This information may be accessible through alternate processes.”</i> Refer to the consent Indicator in the OperationOutcome section and the DHIR HTTP Response Codes section in Appendix A of the DHIR FHIR Implementation Guide for further information on how to identify a consent block.	M	P

2.8 Logging and Auditing

EMR systems log various information and interactions and may contain private health information (PHI). As a result, consideration should be taken to log only what is necessary to avoid unintentionally saving or providing access to logged PHI and should be regarded with the same sensitivities as data containing PHI.

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
DHIR12.01	The EMR Offering MUST log all interactions with the DHIR EHR Service.	<p>At a minimum, the following data MUST be saved and stored for each interaction:</p> <ul style="list-style-type: none"> a) The interacting EHR Service (e.g., fixed as the “DHIR EHR Service”) b) A transaction identifier generated by the EMR Offering c) A transaction identifier generated by the DHIR EHR Service d) Date and time the transaction was initiated e) The EMR user (or system) that initiated the transaction f) The transaction type (e.g., submission, retrieval) g) The transaction status (e.g., success, failure) h) Any transaction return code and message from the DHIR EHR Service i) Resource IDs for both MessageHeader and Immunization (MessageHeader.id and Immunization.id, respectively) <p>The above information MUST be accessible from the EMR Offering interface.</p> <p>The EMR Offering SHOULD restrict access to logged information to specific privileged EMR users. Requiring the EMR user to search in a database or run reports to access transaction data does not satisfy the requirement. The EMR Offering MUST secure and restrict access to logged information if it contains any PHI or PI.</p> <p>Any additional information needed to facilitate troubleshooting and auditing MUST also be logged.</p>	M	P

OMD #	REQUIREMENT	GUIDELINES	M/O	STATUS
		<p>Log entries MUST be retained in accordance with regulations governed by The Medicine Act, 1991.</p> <p>Refer to the “Resource – Base Resource Definitions” section of the FHIR Implementation guide for information regarding Resource IDs.</p> <p>Refer to the “HTTP Response Codes” section of the DHIR FHIR Implementation Guide for more details on error messages that can be returned by the DHIR EHR Service.</p>		

3. APPENDIX A: ADDITIONAL REFERENCES

The following are supporting documentation and recommended reading.

ID	NAME	VERSION	DATE
1	HL7 FHIR Release 4 (Health Level Seven, 2019) https://hl7.org/fhir/	4.0.1	2019-11-01
2	Immunization Connect (ICON) (Toronto Public Health, 2018) https://tph.icon.ehealthontario.ca	2.2.63	2018-08-01
3	Immunization of School Pupils Act (Government of Ontario, 2017) https://www.ontario.ca/laws/statute/90i01	N/A	2017-09-01
4	Medicine Act, 1991 (Ministry of Health, 2009) https://www.ontario.ca/laws/statute/91m30	N/A	2009-12-15
5	ONE ID OAuth2/OpenID Specification (Ontario Health Digital Services, 2020) https://www.ehealthontario.on.ca/en/standards/view/one-id-openid-connect-specification	1.0	2020-01
6	Ontario's Publicly Funded Immunization Schedules (Ministry of Health, 2016) http://www.health.gov.on.ca/en/pro/programs/immunization/schedule.aspx	N/A	2019-06-04
7	Primary Care EMR Baseline Requirements (OntarioMD, 2019) https://www.ontariomd.ca/emr-certification/emr-specification/library	5.0	2019-10-10