



Ontario’s Digital Health Connectivity Requirements for Point-of-Service Procurements

October 2020  
Version 2.2

Approval History

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Revision History

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| 1.1 | 2015-07-24 | Update per MOHLTC request July 16, 2015 | eHealth Ontario |
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| 1.3 | 2016-11-22 | Added CIHI requirements. Modified security requirements and updated the POS definition for the Provincial Provider Registry specification. | eHealth Ontario |
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| 1.5 | 2017-09-29 | Added DHDR, DHIR, reconcile XDS/CDA/CDR requirements, updated asset inventory reference material, updated security requirements, updated intro with Elements of the EHR, updated SSO spec link to point to 1.5. | eHealth Ontario |
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# Introduction

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| https://static.thenounproject.com/png/1665890-200.png | Ontario is **modernizing** its health care system to be more integrated, innovative and patient-centred. This modernization will be supported by **digital technologies** that allow patients to connect virtually with their care providers and will put the right health information into the hands of patients, caregivers and health care providers at the right time. |

## Purpose

This document describes the current state of provincial electronic health record (EHR) connectivity requirements that may be used by health care stakeholders in the procurement of point-of-service (POS) systems. It provides guidance to support the evaluation of promising innovations, to enable the spread and scale of proven and successful digital health systems and to reduce the fragmentation and information silos caused by making decisions and purchases without consideration of meaningful data access and sharing requirements.

The modernization of Ontario’s health care system will require Health Service Providers (HSPs) to re-think how their **digital services and related infrastructure** are organized. This may include the purchase of new and/or updated health information systems, applications and communication technologies.

When a decision is made to upgrade or purchase a new health information system, it is important to ensure that the acquisition meets the needs of Ontario Health Teams (OHTs) and HSPs, and leverages economies of scale when appropriate to improve value for money. These tools should support provincial strategic objectives and requirements, while improving the patient and provider experience.

## Background

A POS system is an application used by health care providers for viewing or managing personal health information (PHI). This includes, but is not limited to, hospital information systems (HIS), community and ambulatory health information systems, and provincial/regional EHR viewers. Primary care Electronic Medical Record (EMR) systems are out of scope for this document. EHR Connectivity Requirements for primary care EMRs are defined by EMR Specifications, managed by OntarioMD.

POS systems meeting the requirements listed below will be strategically positioned to integrate with key provincial EHR assets and support the province-wide exchange of clinical information. The scope included in Ontario’s Digital Health Connectivity Requirements for Point-of-Service Procurements extends beyond the registries and repositories owned by Ontario Health and includes clinical and administrative data that is shared in the provision of care or to assist with the provision of care in Ontario. Conformance to specific requirements (i.e., HL7 FHIR®, SNOMED CT®) enables streamlined clinician access to province-wide systems, including:

* **EHR services** from Ontario Health;
* **Client Health and Related Information System (CHRIS), via Health Partner Gateway (HPG),** from Ontario Health;
* **Ontario Telemedicine Network (OTN)** from Ontario Health;
* **Cancer Care Ontario (CCO)** from Ontario Health.

Each POS system has different requirements for connectivity: lab systems need to be integrated with OLIS, while community-care information systems may need to be integrated with OLIS, DHDR and DHIR. When putting together an RFP/RFS, stakeholders can pick and choose from the various requirements below based on the system’s integration requirements. It is up to stakeholders to determine if a requirement needs to be included, based on the business requirements.

Although standards and conformance will improve the potential for interoperability and greater access, the POS systems in use and being procured will have different features, functions and levels of maturity that will continue to change over time. The provincial EHR assets will also change and have different capabilities and functions that can influence the level of integration and information access.

## Why Connect to the Provincial Electronic Health Record (EHR)?

POS systems are designed to support integrated access to health care information, at any time and from any location. Providers need a comprehensive, up-to-date view of their patients’ PHI from all health care providers and organizations involved in their care. This view should include information such as medication history, test results, allergies, immunizations, hospital reports, office and ambulatory consultations, encounter history, diagnostic results and assessments. This information may also need to be shared with other providers supporting the patient. There may be some providers without access to provincial EHR assets and with limited bi-directional information flow. As systems continue to be added, updated and additional health care providers are provided access, the number of systems and providers with access should increase and improve the provider and patient experience. These changes will only be possible through effective planning and implementation of digital health solutions that support collaborative communication and workflow, with the potential to evolve and seamlessly integrate as the needs of patients and providers change.

In order for POS systems to support integrated access to, and sharing of, health care information, they must be **interoperable** with Ontario’s EHR assets. Interoperability enables systems to connect to, exchange with, and process complex clinical and administrative data from other systems so information sent from one system can be understood by another. Key interoperability objectives include:

* More easily aggregate and release patient data for providers and patients in provincial and local repositories;
* Accurately represent and preserve the meaning of clinical and administrative data;
* Ensure the privacy and security of patient data (with the support of EHR privacy and security policies and standards).

The procurement of, and attention to, interoperability for POS systems extends beyond the initial implementation, since standards and solutions change. Any procurement of POS systems and integration with provincial EHR assets also requires planning, monitoring and maintenance of solutions locally and provincially. Special attention and documentation of your solution and implementation decisions will be valuable to you as your solutions evolve over time and require adjustments with updates to your local and integration solutions. This is very important for achieving and sustaining interoperability so Health Information Custodians (HICs), vendors and government organizations should all plan, manage and budget for initial and future requirements throughout the solution and information lifecycles.

The Ministry of Health’s endorsement of system interoperability is critical to effectively managing health care resources and for the innovation, adoption and growth of digital health technology. This endorsement is demonstrated by the proposed regulation (329/04) made under the *Personal Health Information Protection Act*, under which HICs would be required to comply with interoperability specifications established by Ontario Health to modernize relevant digital health assets over time and to make use of certain Ontario Health resources. These include a future list of OH-certified digital health assets to guide digital health asset acquisition. Stakeholders are encouraged to monitor the progress with this proposed regulation, and to watch for future direction regarding digital health information exchange and interoperability in Ontario.

# Overview: POS System Requirements and Integration

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| [Pencil Icon 2310465](https://thenounproject.com/term/pencil/2310465) | To help POS system procurements achieve EHR interoperability, it is recommended that the **requirements** listed in this document be included in **procurement documentation**  (e.g., Requests for Information, Requests for Proposals, Business Cases, Contracts, etc.). |

The requirements supporting POS connectivity to provincial assets such as the Provider and Client Registries and the Acute and Community Clinical Data Repository (acCDR) are considered the core architectural considerations a new POS system should support.

A significant effort is required to integrate with any EHR service. Suggested priorities for the most gain for effort are:

1. **POS single sign-on (SSO) and federation with regional/provincial clinical viewers**: Providing increased access to client information, SSO means that once providers have logged on to their POS system, no subsequent logons are required. A ‘federated’ environment allows distinct systems from different organizations and/or lines of business to use single sign-on (SSO) which provides a user a seamless method for accessing multiple delivery channels using local credentials.

Context sharing means that once a provider has selected a client in the POS system, the provider does not have to select the patient again in an integrated system.

1. **Integration requirements that ensure use of client and provider identifiers**: Ensuring the use of common identifiers amongst other EHR services will help validate clients and providers, as well as improve data integrity.
2. **Direct integration to repository services**: Access to EHR provincial repository data (e.g. DHDR, DHIR, acCDR, OLIS, DICS) from a provider’s POS will simplify the workflow and lookup of patient data.

The following requirements for POS system interoperability with EHR assets are provided to guide organizations planning POS system procurement. Organizations still need to thoroughly vet candidate POS systems to ensure alignment of clinical requirements. Each POS procurement initiative must specify the business requirements for the type of interoperability it will require. Stakeholders should contact Ontario Health for help with the integration effort oh-ds\_architecture@ontariohealth.ca

# Provincial Registry Requirements

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| [crowd Icon 2383331](https://thenounproject.com/term/crowd/2383331) | The following requirements for POS **system interoperability** with **provincial registries** are provided as guidance to organizations planning POS system procurement. |

Topics in this section include:

* Provincial Provider Registry (PPR): Section 3.1;
* Provincial Client Registry (PCR): Section 3.2.

## Provincial Provider Registry (PPR)

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| **Description**  The POS solution will have the capability to **search provider persons** by name, profession, license, alternate identifiers, UPI, etc., and to receive accurate, up-to-date provider person-profile information generated from multiple authorized information sources. |  |
| The POS solution will also have the capability to search provider organizations by name, role (e.g. pharmacy, hospital, clinic, etc.), LHIN, alternate identifiers, UPI, etc., and to receive accurate, up-to-date provider organization profile information generated from multiple authorized information sources.  This integration can occur through conformance to the following specification: [Provincial Provider Registry – FHIR](https://www.ehealthontario.on.ca/en/standards/view/provincial-provider-registry-fhir). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with external provider registries in other jurisdictions. Experience with the listed specifications, and with leveraging common provider identifiers amongst other integrated systems, is preferred. | |
| **Rationale**  The Provider Registry is the authoritative source of information about providers and health care service delivery locations for use by EHR solutions. It facilitates the unique and accurate identification of any individual or organization providing health services in Ontario, or participating in the collection, use or disclosure of PHI across the continuum of care.  The registry assigns a unique provincial identifier to each provider, and maintains information about them, including professional accreditations (e.g. licenses, professions, specialties). It is fed by regulatory colleges, Ministry of Health databases, hospitals and other organizations. The Provider Registry:   * Positively identifies providers; * Provides information on providers, including credentials, status, documented restrictions of activity, work locations and relevant health care organization affiliations and local privileges; * Provides information on providers to enforce province-wide consent directives.   Examples of services provided by the registry include:   * Searching and resolving a provider’s identity; * Searching and getting provider organization data and locations; * Obtaining provider information (e.g. current status of professional accreditations).   A common Provider Registry is necessary for consistent, province-wide enforcement of patient consent directives and ehealth service authorization. POS solution access to this information improves the quality of provider information residing in the POS.  ***Note:*** *While a Provincial Provider Registry exists today, providing information on over 400,000 providers throughout Ontario, the ability to accept provider feeds from hospitals is forthcoming. Contact Ontario Health at*  [*oh-ds\_architecture@ontariohealth.ca*](mailto:oh-ds_architecture@ontariohealth.ca) *to enquire about the status of these specifications.* | |

## Provincial Client Registry (PCR)

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| **Description**  The POS solution will feed local health care client identification information to the Provincial Client Registry (data out) and integrate with the Provincial Client Registry to maintain the accuracy of the POS’ client information (data in). For details, see Ontario Health’s [Provincial Client Registry standards](http://www.ehealthontario.on.ca/en/standards/view/provincial-client-registry). |  |
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| This integration can occur through conformance to the following specifications:   * [Provincial Client Registry – HL7 FHIR Implementation Guide](https://ehealthontario.on.ca/en/standards/provincial-client-registry-hl7-fhir-implementation-guide); * [PCR Admission Discharge Transfer (ADT) HL7 v2 Update Interface Specification](https://www.ehealthontario.on.ca/en/standards/view/provincial-client-registry); * [Provincial Client Registry IHE PIX PDQ HL7 v2 Implementation Guide](https://www.ehealthontario.on.ca/en/standards/view/provincial-client-registry). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with external client registries in other jurisdictions. Experience with the listed specifications, and with leveraging common client identifiers among participating systems through both a data-out and data-in integration mechanism, is preferred. | |
| **Rationale**  Every person who receives care in Ontario, regardless of their eligibility for government-funded health services, is to be unambiguously identifiable by a unique identifier, used uniformly across the province. The Provincial Client Registry is the definitive source for a health care client’s identity, facilitating the unique, accurate and reliable identification of individual clients and others who receive care in Ontario.  The Provincial Client Registry is fed by a number of data sources, including the Registered Persons Database (RPDB) used by OHIP, systems that are used by hospitals to track admissions, discharges and transfers (admission, discharge, transfer systems) and other systems that participate in health care services. It includes the functionality of the Enterprise Master Patient Index (EMPI), a service that matches records from different sources referring to a single health care client.  Examples of services provided by the Provincial Client Registry include:   * Validating health care client identity information; * Searching and resolving information from multiple sources that refer to the same health care client identity; * Obtaining summary and detailed demographic information about a health care client; * Adding and updating a health care client record; * Merging and unmerging health care client records (because they either do, or do not, refer to the same individual); * Managing publish/subscribe notifications of adds, updates, merges and splits to downstream systems.   Without a common Client Registry, and common algorithm and data for linking and unlinking client identifiers, EHRs cannot be reliably associated with a specific person. A single Provincial Client Registry, one that is considered the provincial authoritative source of client identifiers by all EHR assets, is therefore essential to a provincial EHR. Hospital Information Systems (HIS) currently feed Ontario’s Provincial Client Registry and contribute local identifiers to help form single linked client records.  POS solutions can actively integrate and use the Provincial Client Registry to ensure the accuracy of client information that may have been collected through other points of interaction with the health care system. | |

# Clinical Data Repository Requirements

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| [medical chart Icon 612387](https://thenounproject.com/term/medical-chart/612387) | The following requirements for POS **system interoperability** with **EHR assets** are provided as guidance to organizations planning POS system procurement. Organizations still require thorough vetting to ensure alignment of clinical requirements. |

Clinical data repositories include:

* Acute and Community Care Clinical Data Repository Integration (acCDR): Section 4.1;
* Lab Results: Ontario Laboratories Information System (OLIS): Section 4.2;
* Digital Health Drug Repository (DHDR): Section 4.3;
* Digital Health Immunization Repository (DHIR): Section 4.4;
* Diagnostic Imaging Repository Integration (DI -CS): Section 4.5.

This document will be updated regularly to reflect progress and change as Ontario advances towards realizing the EHR blueprint. A robust standards-governance process ensures that new standards and updates to existing standards are aligned and backwards compatible to the greatest extent possible. To learn more about standards governance visit [eHealth Ontario’s website](http://www.ehealthontario.on.ca/en/architecture/standards).

## Acute and Community-Care Clinical Data Repository Integration (acCDR)

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| **Description**  The Acute and Community Care Clinical Data Repository provides access to patient information from hospitals and home and community care organizations across Ontario.  The POS solution will integrate and feed data to the Acute and Community Care CDR, which is accessible through the provincial HIAL. |  |
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| This integration can occur through conformance to the following specification: [Acute and Community Care CDR Input Standard](https://ehealthontario.on.ca/en/standards/acute-and-community-cdr-input-standard). | | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience implementing integration with the acCDR or other external clinical data repositories. | |
| **Rationale**  The Acute and Community Care Clinical Data Repository provides access to patient information from hospitals and home and community care organizations across Ontario. It includes information about patients’ hospital visits, emergency room reports, consultation reports and discharge summaries as well as long-term placement details, client risks, assessments and care plans. It helps providers make better informed, faster decisions when treating their patients with the following benefits:   * Improves efficiency of clinical decision-making with access to relevant and reliable patient data from multiple sources across the continuum of care; * Enables the ability to track and monitor patient health outcomes with access to a patient’s complete medical history as well as their current health information; * Improves workflow and reduces dependency on paper-based systems; * Supports transfer of accurate information as a patient moves between providers and care settings. | |

## Lab Results – Ontario Laboratories Information System (OLIS)

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| **Description**  The POS solution will be able to exchange lab orders, lab referrals and lab results with OLIS. Access to these services will be through the provincial HIAL. |  |
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| This integration can occur through conformance to the following specifications:   * [Ontario Laboratories Information System (OLIS) Standard](https://www.ehealthontario.on.ca/en/standards/view/ontario-laboratories-information-system-standard); * [OLIS HL7 FHIR® Implementation Guide Provider Query](https://www.ehealthontario.on.ca/en/standards/view/olis-hl7-fhir-implementation-guide-provider-query-overview); * [OLIS HL7 FHIR® Implementation Guide Consumer Query](https://www.ehealthontario.on.ca/en/standards/view/olis-hl7-fhir-implementation-guide-consumer-query-overview). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with OLIS in other deployments. Experience with the Pan-Canadian Laboratory Messaging and Nomenclature (pCLMN) specification would also be valuable. | |
| **Rationale**  The Ontario Laboratories Information System (OLIS) is a single provincial domain repository that allows all Ontario laboratory test order and result information to be exchanged electronically and securely between authorized practitioners and laboratory service providers. It also provides the Ministry of Health with de-identified program-management information.  The repository is responsible for managing and storing all laboratory test orders and reports, providing access that can be retrieved by POS systems. Data is currently transmitted to OLIS when lab technicians submit lab test results. In future, data will also be transmitted to OLIS when providers order lab tests. | |

## Digital Health Drug Repository (DHDR)

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| **Description**  The POS solution will be able to retrieve medication dispensation information from the Digital Health Drug Repository (DHDR) through the provincial ONE Access Gateway. |  |
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| This integration can occur through conformance to the following specification: [Digital Health Drug Repository Specification –FHIR (Release 3)](https://www.ehealthontario.on.ca/en/standards/view/digital-health-drug-repository-specification-fhir-release-3). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with DHDR in other deployments. Experience with the international Fast Healthcare Interoperability Resources (FHIR®) standard would also be valuable. | |
| **Rationale**  Medication-related problems such as drug interactions and adverse drug events have been identified by health care providers as significant contributors to the patient’s well-being and their use of the health system. The DHDR solution provides a robust, standards-based and sustainable informational data-store environment (repository) and web services (access channels) for all Ontario Drug Benefits and Narcotic Monitoring System dispenses in Ontario. It will eventually contain all dispensed drug history (events) data for all Ontarians. | |

## Digital Health Immunization Repository (DHIR)

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| **Description**  The POS solution will be able to submit and retrieve immunization records to the Digital Health Immunization Repository (DHIR) through the provincial ONE Access Gateway. |  |
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| This integration can occur through conformance to the following specifications:   * [Digital Health Immunization Repository Consumer Access Specification – FHIR](https://www.ehealthontario.on.ca/en/standards/view/digital-health-immunization-repository-consumer-access-specification-fhir); * [Digital Health Immunization Repository Provider Specification – FHIR (Release 4)](https://www.ehealthontario.on.ca/en/standards/view/digital-health-immunization-repository-specification-fhir-release-4). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with DHIR in other deployments. Experience with the international Fast Healthcare Interoperability Resources (FHIR) standard would also be valuable. | |
| **Rationale**  DHIR is the current immunization repository for the province of Ontario. It contains public health immunization information and over 90 million standardized immunization records for over 6 million clients, with over 2,000 registered users.  To enable the vision of a provincial immunization system where individuals, health care providers and public health all have real-time access to the same immunization information, Ontario is taking a coordinated approach to facilitate easier collection of, and access to, complete, accurate and timely immunization records.  The goal is to improve health outcomes by making comprehensive immunization information accessible in real time to support health care providers in clinical practice and to engage the public as active partners in managing their health. Key to this approach is the provincial digital health immunization repository (DHIR) – a centralized repository of standardized electronic immunization data which forms the foundation of a broader interoperable ecosystem for immunization data in Ontario.  The DHIR primarily supports data sharing for public health purposes; Ontario’s public health units access the repository through Panorama. However, the public is also able to access and update their immunization records through a web-based tool called Immunization Connect Ontario/Digital Yellow Card (ICON/DYC). | |

## Diagnostic Imaging Repository Integration (Diagnostic Imaging- Common Services)

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| **Description**  The POS solution will be able to retrieve DI reports and image manifests from the provincial DI reports repository and integrate with DI Common Services. Access to these services will be through the provincial HIAL. |  |
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| This integration can occur through conformance to the following specification: [Diagnostic Imaging Common Service Standard (DI CS)](https://www.ehealthontario.on.ca/en/standards/view/diagnostic-imaging-common-service-standard-dinbspcs).  For additional details on how DI CS is implemented, see*:* [*IHE IT Infrastructure Technical Framework, Volume 1 (ITI TF-1)*](https://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol1.pdf)*: Integration Profiles 2.2.10 Cross-Enterprise Document Sharing (XDS).*  Image retrieval specifications include:   * Digital Imaging and Communications in Medicine (DICOM); * Web Access to DICOM Persistent Objects (WADO). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience with integrating DI Report repositories in other implementations and implementing with the above listed specifications. | |
| **Rationale**  Diagnostic imaging repositories contain healthcare client diagnostic imaging reports and digital images such as x-rays, magnetic resonance imaging (MRIs), and ultrasounds. There are four diagnostic imaging repositories in Ontario (known as DI-Rs), each serving a different geographical area in the province.  DI Common Services will provide a way of searching and exchanging diagnostic images and reports from across all the repositories. It will leverage common services, an XDS-I registry and repository, consent, and audit. POS solutions (e.g., HIS) may have to consider how this would complement their existing Radiology Information Systems (RIS). | |

# Secure Communication Requirements

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| [Communication Icon 1970152](https://thenounproject.com/term/communication/1970152) | The following requirements for **secure communication** with **EHR assets** are provided as guidance to organizations planning POS system procurement. |

Topics in this section include:

* HIAL and ONE Access Gateway Transport Interoperability: Section 5.1;
* EHR Security Policies and Standards: Section 5.2;
* Health Report Manager (HRM): Section 5.3;
* eNotifications to Home and Community Care & HRM: Section 5.4;
* eReferral to Home and Community Care: Section 5.5.

## HIAL and ONE Access Gateway Transport Interoperability

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| **Description**  The POS solution will support common Health Information Access Layer (HIAL) and ONE Access Gateway-based connectivity and integration for access to provincial and regional EHR assets (described in other requirements). |  |
| [transport Icon 1575497](https://thenounproject.com/term/transport/1575497) |
| This integration can occur through conformance to the following specifications:   * [HIAL Transport and Message Specification](https://www.ehealthontario.on.ca/en/standards/view/hial-transport-message-specification); * [ONE Access Gateway Transport Specification](https://www.ehealthontario.on.ca/en/standards/view/one-access-gateway-transport-specification). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate conformance to these specifications and provide descriptions of past implementations with other POS integration efforts. The SOAP and WS technical standards form a common set of interoperability specifications used by the HIAL, while OpenID Connect and the OAuth 2.0 protocol are used by the Gateway. | |
| **Rationale**  The Health Information Access Layer (HIAL) and ONE Access Gateway provide access to medical information, giving integration to EHR services, applying security and privacy controls, message validation, transformation, enrichment, orchestration, terminology as needed and auditing for all transactions. Security controls include the authentication and authorization of all transactions via the user registry and, as needed, anti-virus services, as well as privacy controls such as audit and consent management.  All provincial EHR assets are accessed through either the provincial HIAL or ONE Access Gateway. In time, it is expected that all access will be via the ONE Access Gateway using HL7 FHIR® and OIDC, but legacy interfaces are currently exposed via the HIAL with HL7 V2, V3, etc. interfaces and SOAP/SAML. | |

## EHR Security Policies and Standards

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| **Description**  The POS solution will align with the EHR Security Policies and Standards as developed under the governance framework of the Provincial Connecting Security Committee. These policies focus on the following roles:   * Data contributor; * Identity providers (SSO); * Viewing; * Program office / solution operator. |  |
| [Security Icon 2378378](https://thenounproject.com/term/security/2378378) |
| These policies are required to be followed by health information custodians (HICs) who are participating in the EHR. HICs are responsible for requiring their vendors to implement the policies and standards where they play a supporting role in their participation. These policies and standards are based on the ISO 27001 and ISO 27002 framework for Information Security and may be updated over time. | |
| The EHR Security Policies and Standards documents can be found on the Getting Connected page on the [eHealth Ontario website](https://ehealthontario.on.ca/en/support/article/security-toolkit-getting-connected/). (Navigate to the ‘As a federated or data contributing organization’ section; the policies and standards are found under Step 3.). As well, an [EHR Security Policies and Standards self-assessment tool](https://ehealthontario.on.ca/files/public/support/Security/Security_Toolkit/EHR_Security_Assessment_for_Federated_or_Data_Contribution_Organizations_EN.xlsm) is available to stakeholders to measure the compliance of their products and services with the EHR Policies and Standards. | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience implementing and supporting the EHR security policies and standards. | |
| **Rationale**  Making use of common EHR Security Policies and Standards builds a network of trust and confidence among stakeholders who are participating in the EHR, which allows data sharing to happen more easily. Additionally, a harmonized baseline of security provides confidence to patients who rely on the security of the EHR to protect their data. | |

## Health Report Manager (HRM)

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| **Description**  The POS solution will support HRM interfaces to enable sharing of clinical documents with clinician EMRs. | [manager Icon 2763554](https://thenounproject.com/term/manager/2763554) |
| HRM is a solution that enables clinicians using an OntarioMD-certified EMR offering to securely receive patient reports electronically from participating sending facilities such as hospitals and independent health facilities. HRM electronically delivers medical record reports (e.g. discharge summaries) and diagnostic imaging reports from sending facilities directly into a patient’s chart within the clinician's EMR.  This integration can occur through conformance to the following specification:   * [Acute and Community Care CDR Input Standard](https://ehealthontario.on.ca/en/standards/acute-and-community-cdr-input-standard); * [Health Report Manager (HRM) Input Specification](https://www.ontariomd.ca/emrcertification/health%20report%20manager%20fhir%20input%20specification_v1.1.0.pdf) | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating POS systems with HRM interfaces, while aligning with the listed standards. | |
| **Rationale**  Making use of common HRM interfaces greatly increases the ease with which community-based clinician report recipients gain access to clinical information, while satisfying HSP obligations pertaining to the delivery of results to requesting providers. Unlike the existing repository solutions, HRM automatically prompts recipient clinicians when a report is available. Further, by delivering a copy of that report into the recipient clinician’s EMR, the solution supports existing clinician workflows and annotation processes.  Note that organizations interested in integrating with HRM should contact OntarioMD. See <https://www.ontariomd.ca/emr-certification/emr-specification/library> for additional details. | |

## eNotification to Home and Community Care & HRM

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| **Description**  Provides real-time notification to Home and Community Care in CHRIS when patients present to an emergency department, are admitted or discharged from an acute care facility or are seen by EMS. | [manager Icon 2763554](https://thenounproject.com/term/manager/2763554) |
| Notifications are also forwarded by CHRIS through Health Report Manager (HRM) to the EMR of the patient’s family physician to inform him/her that his/her patient has been discharged from the hospital’s Emergency Department or admitted to, or discharged from, an in-patient unit. They are seamlessly integrated into the EMR and the physician’s workflow.  This integration can occur through conformance to the specifications available on request via email to [ESD-Technicians@hssontario.ca](mailto:ESD-Technicians@hssontario.ca). | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with HL7 Interfaces in other deployments. | |
| **Rationale**  eNotification services provide real-time alerts to health care teams on patient status and location, preventing missed home care visits. EMS notifications provide information if the patient was transported from home to a hospital, as well as alerting health care teams if an opioid or COVID-19 event has occurred. eNotifications contribute to faster follow-up care after a patient has been hospitalized. After receiving an eNotification, physicians know they will subsequently receive a discharge summary and/or other reports from the hospital after the hospital has prepared the report(s) for electronic transmission. | |

## eReferral to Home and Community Care

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| **Description**  Supports Home and Community Care in receiving standardized referrals from hospitals and emergency medical services (EMS), streamlining intake and status update processes.  This integration can occur through conformance to the specifications available on request via email to [ESD-Technicians@hssontario.ca](mailto:ESD-Technicians@hssontario.ca). | [manager Icon 2763554](https://thenounproject.com/term/manager/2763554) |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience integrating with HL7 Interface in other deployments. | |
| **Rationale**  eReferral helps to address the challenge of fragmentation across a high number of disconnected systems that make it difficult to share patient information. Traditional referrals are also often lost, incomplete and provide little to no transparency for the referrer or patient.  Supports the planning and delivery of home care services by home care agencies and the reporting of service utilization for home and community care to the Ministry of Health. | |

# Secure Authentication and Access Requirements

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| [authentication Icon 3160355](https://thenounproject.com/term/authentication/3160355) | The following requirements for **secure authentication and access** are provided as guidance to organizations planning POS system procurement. |

Topics in this section include:

* Federated Single Sign-On (SSO) / Patient Context Using OAuth: Section 6.1;
* Federated Single Sign-On (SSO) / Patient Context Using SAML: Section 6.2;
* Launching Clinical Viewers: Section 6.3.

Single Sign-On (SSO) has been implemented in two ways: SAML based for older systems accessed through the HIAL, and OAuth based for newer systems accessed through the ONE Access Gateway.

## Federated Single Sign-On (SSO) / Patient Context using OAuth

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| **Description**  The POS solution will support single sign-on (SSO) and patient context sharing between federated health care solutions. The SSO solution is based on OpenID Connect, which is itself a simple identity layer on top of the OAuth 2.0 protocol.  The Ontario Context Management System (CMS) allows digital health applications, such as Electronic Medical Record (EMR) systems or Clinical Viewers to set and retrieve patient context information from the CMS for an established user session. The architecture and design of the CMS will ensure that it can be extended to other points of service and delivery channels that are members of the eHealth Ontario Federation.  This integration can occur through conformance to the following specifications:   * [ONE ID OpenID Connect Specification](https://www.ehealthontario.on.ca/en/standards/view/one-id-openid-connect-specification); * [Ontario Context Management System (CMS) - FHIR](https://www.ehealthontario.on.ca/en/standards/view/ontario-cms). |  |
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| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience participating in SSO with other systems, leveraging external identity providers and/or exchanging patient context, as well as the implementation of the above-listed specifications. | |
| **Rationale**  Single sign-on (SSO) is the process where a user logs on once to their POS system and is able to access a range of EHR applications through multiple channels without having to log on again during that session (e.g. a user with an account issued by a hospital can access Ontario Health’s clinical viewers, as well as Ontario Health’s Cancer Care Ontario and Ontario Telemedicine Network portals).  Benefits for health care providers:   * Users do not need to have, and remember, multiple user IDs and passwords; * Simplified and improved access to patient information and therefore improved patient outcomes; * Barriers to the number of health care providers (HCPs) who can access health care applications can be reduced.   Benefits for health service providers:   * Supports sharing of hospital and LHIN-based health care application solutions; * Enables organizations to leverage existing assets to improve total cost of ownership (TCO) and maximize return on investment (ROI); * Simplifies administration, business agreements and technical interaction between health care organizations; * Standardizes identity validation and authentication across the province.   With SSO initiated from a POS system, providers are able to obtain relatively seamless access to additional comprehensive, up-to-date and relevant patient data. | |

## Federated Single Sign-On (SSO) / Patient Context using SAML

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| **Description**  The POS solution will support SSO and patient context sharing between federated health care solutions. The SSO solution is based on OASIS SAML Specification Version 2. |  |
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| This integration can occur through conformance to the following specifications: [Single Sign On - Patient Context Sharing Standard](https://www.ehealthontario.on.ca/en/standards/view/single-sign-on-patient-context-sharing-standard) v1.4. | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience participating in SSO with other systems, leveraging external identity providers and/or exchanging patient context, as well as the implementation of the above-listed specifications. | |
| **Rationale**  Single sign-on (SSO) is the process where a user logs on once to their POS system and is able to access a range of EHR applications through multiple channels without having to log on again during that session (e.g. a user with an account issued by a hospital can access Ontario Health’s clinical viewers, as well as Ontario Health’s Cancer Care Ontario and Ontario Telemedicine Network portals).  Benefits for health care providers:   * Users do not need to have, and remember, multiple user IDs and passwords; * Simplified and improved access to patient information and therefore improved patient outcomes; * Number of health care providers (HCPs) who can access health care applications can be increased rapidly.   Benefits for health service providers:   * Supports sharing of hospital and LHIN-based health care application solutions; * Enables organizations to leverage existing assets to improve total cost of ownership (TCO) and maximize return on investment (ROI); * Simplifies administration, business agreements and technical interaction between health care organizations; * Standardizes identity validation and authentication across the province.   With SSO initiated from a POS system, providers are able to obtain relatively seamless access to additional comprehensive, up-to-date and relevant patient data. | |

## Launching Clinical Viewers

Clinical Viewers are web-based portals that access provincial EHR assets and make them available for organizations that do not have POS systems that can directly access the assets. The ability to launch these viewers using the secure authentication and access methods described above can be used where direct integration is not possible. Ontario Health supports three provincial clinical viewers, each of which presents a subset of provincial data. Depending on which data your users need, you may choose to launch any one of the viewers. ClinicalConnect has the largest data set; followed by ConnectingOntario and the eHealth Portal.

### ConnectingOntario ClinicalViewer

ConnectingOntario ClinicalViewer is a secure, web-based portal that provides real-time access to digital health records including dispensed medications, laboratory results, hospital visits, Local Health Integration Networks’ (LHIN) home and community care services, mental health and addictions care information and diagnostic imaging reports and images. The ConnectingOntario ClinicalViewer can be launched from a POS system using the SAML based single sign-on.

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1. ClinicalViewer

### ClinicalConnect

**ClinicalConnect** is a secure, web-based portal that gives health care providers real-time access to their patients’ electronic medical information from all acute care hospitals, Local Health Integration Networks' (LHIN) home and community care services and regional cancer programs in South West Ontario, in addition to various provincial clinical data repositories. ClinicalConnect can be launched from a POS system using the SAML-based SSO described in previous sections and supports the context-management system for launching the viewer with the correct patient results.

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1. ClinicalConnect

### eHealth Portal

eHealth Portal is a secure web-based viewer that offers health care providers that do not have access to one of the provincial clinical viewers, a single point of access to their patients’ digital health information. Eligible health care providers can access lab results, diagnostic images, drug data and other health-related information and applications, giving them a more complete picture of their patients’ health, which supports better decision-making and care. The eHealth Portal can be launched from a POS system using the SAML-based SSO described in previous sections. eHealth Portal does not support federated identities.

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1. eHealth Portal

# Health Information Requirements

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| [integration Icon 3266034](https://thenounproject.com/term/integration/3266034) | The following requirements for **health information standards** are provided as guidance to organizations planning POS system procurement. |

## Terminology Standards

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| **Description**  The POS solution will support multiple terminology standards to meet clinical, administrative and health analytics purposes. | [Content Optimization Icon 1857842](https://thenounproject.com/term/content-optimization/1857842) |
| The system capability for collecting, using, transmitting and storing terminology standards will determine how the terminology can be used. Some systems include terminology within an application; others support terminology knowledge bases with terminology data sets applied when the data is accessed. Decisions regarding terminology use should consider the purpose, the systems available to support the use, the terminology/code system rules and terminology-management guidance. Some vendors have arrangements with another vendor to provide the terminology standards content and maintenance of the terminology standards in use in the solution. Regardless of which vendor supplies the terminology standards, you want to make sure you have the opportunity to confirm what you are receiving for use in your system, whether it is licensed for use in Canada, how the terminology content will be applied in the solution and how it will be maintained over the lifecycle of your solution. As systems become more sophisticated in the use of terminology standards, and with the potential for more than one vendor solution in use with terminology standards content, such as natural language processing, machine learning or augmented or artificial intelligence, there is a risk that some solutions will use terminology standards that could become out of date or have conflicting maintenance practices that compromise semantic interoperability within or across health care organizations.  Maintenance practices for terminology standards are often more complex and time sensitive in contrast to other interoperability standards. Standards development organizations have established methods to process requests for terminology standards content and to manage updates to international and national terminology standards. All POS systems will require development of processes to address timely updates, and attention to detail to avoid error in definition and application of terminology standards within and across systems. Any terminology standards that can be leveraged from international and national standards reduce the burden of maintenance that comes with the local creation of terminology sets.  There are many terminology/value sets that have been created from the terminology standards and the more you can borrow, the easier it is to use without the added resource requirements and costs associated with developing and maintaining local terminology/value sets. All standards development organizations have a process for adding content to terminology standards and the examples below have websites where additional information can be found to assist with learning what is possible and how this applies to your particular requirements and solution.  There are many different methods available to apply terminology standards in solutions, and specifications include guidance as per the standards development and maintenance organization rules for use with the standards. With the variation in terminology standards and their application in solutions, the specifications are developed with the flexibility to support changes to the terminology standards over time. Detailed direction regarding presentation of the terminology standards in solutions are out of scope for the specifications provided for connectivity with provincial EHR assets, since POS solutions often have their own data models and design features that must be accommodated. Some examples are included in the specifications where appropriate to support clarity, and Ontario Health will add additional clarity to specifications on an as needed basis.  Terminology standards, also known as health or clinical terminology standards, are controlled vocabularies designed to be used in electronic health records and are often described as comprehensive and machine-readable terminologies designed for clinical/health system use. These complex terminology standards (e.g. SNOMED CT and LOINC) are used to enable consistent and detailed representation of clinical information across clinical specialties and between different providers. Alternatively, health classifications systems, such as ICD-10-CA and CCI, are used for statistical aggregation of health data for morbidity and mortality reporting, utilization management and to monitor the incidence and prevalence of diseases and other health concerns. The use of terminology standards will continue to advance as the demand for greater access to structured data becomes more important with clinical decision support and other means of automated machine enabled capture and use of clinical data. Below is a sampling of terminology standards with limited information about their use and is not intended to provide the necessary information to assist in the selection of a terminology standard. Anyone including the terminology standards in a procurement should assess the terminology standards available for use in Canada and align the standards included in the procurement with the intended purpose, considering today and future needs where known. | |
| Examples of terminology standards include:   * [SNOMED CT (Systematized Nomenclature of Medicine – Clinical Terms)](https://infocentral.infoway-inforoute.ca/en/standards/canadian/snomed-ct) (International clinical terms-controlled terminology standards)  (to access this page you need to create an account and log in to [InfoCentral](https://ic.infoway-inforoute.ca/?subject=Access%20to%20Standards))) * [LOINC (Logical Observation Identifiers Names and Codes)](http://loinc.org/) (International Lab and document ontology-controlled terminology standards) * [pCLOCD (Pan-Canadian LOINC Observation Code Database)](https://infocentral.infoway-inforoute.ca/en/standards/canadian/pclocd-loinc) (Canadian lab-controlled terminology standards) (to access this page you need to create an account and log in to [InfoCentral](https://ic.infoway-inforoute.ca/?subject=Access%20to%20Standards))) * [[HL7 FHIR Value Sets](https://www.hl7.org/fhir/terminologies-valuesets.html)](https://www.hl7.org/fhir/terminologies-valuesets.html) (value sets defined for use with HL7 FHIR; includes controlled terminology standards) * [Pan-Canadian Terminology Subsets](https://tgateway.infoway-inforoute.ca/) (CHI terminology sets published based on Canadian needs; includes controlled terminology standards based on international terminology standards) – (to access this page you need to create an account and log into InfoCentral and accept the terms of use of standards under CHI licensing agreements) * [ICD-10-CA (International Statistical Classification of Diseases and Related Health Problems, 10th Revision – Canadian Enhancement)](https://secure.cihi.ca/estore/productSeries.htm?locale=en&pc=PCC189) (requires licensing under CIHI) (International clinical disease classification system with Canadian extensions) * [CCI (Canadian Classification of Health Interventions](https://secure.cihi.ca/estore/productSeries.htm?locale=en&pc=PCC189)) (requires licensing under CIHI) (International clinical intervention classification system with Canadian extensions)   Terminology standards and terminology value sets/subsets will continue to evolve and be released by Ontario Health and other standards-development and supporting organizations. Ontario Health advises vendors and others participating in procurements to monitor the above websites for the most current version and related relevant historical versions to support current and historical analytics and use of the terminology standards, including information related to licensing and terms of use. The terminology value sets/subsets and associated implementation guidance included in our published standards address terminology-specific guidance, and there may be another source of more specific information to use in demonstration, testing or validation of systems’ use of terminology. Ontario Health uses international and national standards, and monitors the standards development and implementation activities for improved practices, terminology harmonization and opportunities to advance balanced standardization, while supporting innovation. | |
| **Expected Response from Vendor**  Preference will be given to responses that demonstrate previous experience implementing terminology standards in the system and within data exchange (e.g. HL7 messages), as well as those that demonstrate alignment and use of the standards, processes to implement, maintain and support the use of multiple terminology sets, terminology supporting applications and clinical knowledge bases and to vendors with appropriate membership/adherence to the terms-of-use agreements/licensing expectations for the specific terminologies. For example:   * Infoway: Standards Access:   + <https://infocentral.infoway-inforoute.ca/en/standards/standards-access> * Infoway: HL7 International Access as per applicable license requirements:   + <https://infocentral.infoway-inforoute.ca/en/standards/standards-access>   + Canadian Institute for Health Information recognized vendor | |
| **Rationale**  Making use of commonly used terminology standards originating from international and national standards development and maintenance organizations greatly increases the opportunity to interoperate with other EHR systems, lowers the cost of development and maintenance compared to local terminology sets and ensures both integration and semantic interoperability amongst participating systems. | |

## Deprecated Standards

Ontario has deprecated its existing HL7 V3 interfaces, which are only used by a small portion of the health care community. The use of HL7 V3 within Ontario is not encouraged. Ontario Health will continue to support our partners using this protocol and will be providing a migration plan for moving implementations to HL7 FHIR. Ontario Health is actively developing FHIR-based APIs that offer the same functionality as HL7 V3 interfaces. In 2012, the Infoway InfoCentral community released the Pan-Canadian HL7 v3 messaging standard.[[1]](#endnote-2)[i] In November 2017, the Canadian HL7 InfoCentral community determined that no further updates were required to Pan-Canadian HL7 v3 messages. MR02.06.01 and CeRx 4.4.2 (released in December 2012) are therefore the latest Pan-Canadian publications of these messages.[[2]](#endnote-3)[ii] In reality, the standard has not been well adopted and where it has been, various non-interoperable versions emerged.

**Glossary**

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| **Interoperability**  **Health Care Provider** | **The ability of different health information systems, devices and applications to access, exchange, integrate and cooperatively use data in a coordinated manner, within and across organizational and regional boundaries to provide timely and seamless portability of information and optimize the health of individuals and populations globally.**  **A person or an organization that provides health care or other health-related services or products.** | [**https://www.himss.org/what-interoperability**](https://www.himss.org/what-interoperability)  HL7 Electronic Health Record System Functional Model (EHR-S FM) [Draft Release 2.1] |

1. [i] Infoway Support for HL7 Version 3 Messages. [https://infocentral.infoway-inforoute.ca/en/resources/docs/1502-infoway-v3-hl7-release-status/view-document](https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Finfocentral.infoway-inforoute.ca%2Fen%2Fresources%2Fdocs%2F1502-infoway-v3-hl7-release-status%2Fview-document&data=02%7C01%7Cjanet.routliffe%40ontariohealth.ca%7C4ca57d09a4c646869c4108d856751780%7C4ef96c5cd83f466ba478816a5bb4af62%7C0%7C0%7C637354408187197727&sdata=ujoS3shVquekKog2t8%2FfBwleVBmDWNQNFRC7G4su%2B9o%3D&reserved=0) [↑](#endnote-ref-2)
2. [ii] HL7 Explorer - InfoCentral Home. <https://infocentral.infoway-inforoute.ca/en/tools/standards-tools/hl7-explorer> [↑](#endnote-ref-3)