



# **EHEALTH IN IRELAND FREQUENTLY ASKED QUESTIONS**

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## PART A ABOUT NATIONAL eHEALTH POLICY

This FAQ looks at the key strategic policies that shape eHealth in Ireland, and the national organisations with responsibility for implementing them. It explains core concepts of eHealth in Ireland, then looks at the concept of healthcare interoperability using a standards-based approach. It outlines that standards typically used internationally in such an approach and explained the international standards development organisations that develop them. Finally, it outlines the National Standards, Recommendations, and Guidance that inform the standards-based approach to eHealth in Ireland.

### Q1 | WHO ARE THE KEY NATIONAL ORGANISATIONS INVOLVED IN eHEALTH?

The following national organisations have responsibility for the implementation of eHealth in Ireland:

- **Department of Health** has overall responsibility for leadership and policy direction of the Irish health sector.<sup>(1)</sup> It has published a number of policy documents in the area of eHealth.
- **Health Service Executive (HSE)** is tasked with providing all of Ireland's public health services in hospitals and communities across the country.<sup>(2)</sup> It has set up a number of strategic programmes in the eHealth space.
- **eHealthIreland** is tasked with realising the eHealth strategy for Ireland and took over responsibility for the HSE strategic programmes in the eHealth space.<sup>(3)</sup>
- **Office of the Chief Information Officer (OCIO)** is responsible for delivering the technology to support and improve healthcare in Ireland.<sup>(3)</sup>
- **National Standards Authority of Ireland (NSAI)** is Ireland's official standards body, operating under the National Standards Authority of Ireland Act (1996) and the statutory interface with international standards organisations such as the Comité Européen de Normalisation (CEN), or the European Committee for Standardisation.<sup>(4)</sup>
- **Health Information and Quality Authority (HIQA)** has the remit to define National Standards for eHealth and to make Recommendations and provide Guidance to the Minister for Health, to support the implementation of national eHealth policy.<sup>(5)</sup>

## Q2 | WHAT ARE THE KEY STRATEGIC EHEALTH POLICIES?

The eHealth policy in Ireland has been shaped by a number of important strategic documents:

- **eHealth Strategy for Ireland (2013)**, published by the Department of Health, this policy was the first eHealth strategy for Ireland, covering key elements such as:
  1. patient summaries (summary care records)
  2. shared records
  3. electronic health records
  4. national health identifier
  5. electronic prescribing
  6. patient portals. <sup>(6)</sup>

It resulted in the establishment of eHealthIreland and of the Office of the Chief Information Officer.

- **Knowledge and Information Plan (2015)**, published by the Health Service Executive, outlined the proposed national architecture to realise the eHealth Strategy for Ireland, outlining the key elements listed above. <sup>(7)</sup>
- **National Electronic Health Record Business Case (2015)**, published by the Health Service Executive and approved by the Office of the Chief Information Officer, outlined the justification for the implementation of a national electronic health record. <sup>(3)</sup>
- **National Electronic Health Record: Vision and Direction (2015)**, published by the Office of the Chief Information Officer, outlines the vision for the delivery of integrated care through the implementation of a national electronic health record. <sup>(3)</sup>
- **eHealthIreland strategic national programmes** are twelve, high priority areas of focus, intended to act as catalysts for change in health technology in Ireland. <sup>(8)</sup> These programmes include:
  - **Electronic Health Record**, including National Shared Record, listed as 'a key capability requirement for the future delivery of healthcare'. <sup>(9)</sup>
  - **ePharmacy** provides digital solutions across different care settings to make the delivery of pharmacy safer and more efficient. <sup>(10)</sup>
  - **Individual Health Identifier**, which will be used to safely identify an individual and their health information when using a health service and is considered a key prerequisite for eHealth services. <sup>(11)</sup>
- **Slaintecare Report (2017)**, published by the Department of Health, this historic ten-year, cross-party programme outlined the transformation of health and social care services. <sup>(12)</sup>

- **Slaintecare Implementation Plan (2018)**, published by the Department of Health, outlined the four pillars by which the Slaintecare Vision could be realised, with eHealth as one pillar. The six elements outlined in the eHealth Strategy formed part of the Plan, with particular emphasis on a national electronic health records.<sup>(13)</sup>
- **EU Directive on the Cross-border exchange of health data (2011)** outlines Ireland's responsibilities as a member state to support the electronic exchange of ePrescriptions and patient summaries between participating EU member states.<sup>(14)</sup>
- **Terms of Agreement between the Department of Health, the Health Service Executive, and the Irish Medical Organisation regarding GP contractual reform and service development 2019 to 2022 (2019)** outlines the eHealth capabilities that are to be introduced by participating GPs, including patient summaries (summary care records), shared records, ePrescribing, national health identifiers, among others.<sup>(15)</sup>

## PART B ABOUT THE MAIN ELEMENTS OF eHEALTH POLICY

This section explains key elements of eHealth policy, outlined in the eHealth Strategy for Ireland (2013) and subsequent strategic policies.

### Q3 | WHAT IS A NATIONAL ELECTRONIC PATIENT SUMMARY (SUMMARY CARE RECORD)?

A national electronic patient summary is defined as a succinct document, usually containing a minimum set of the most relevant, up-to-date and useable clinical information that is fit for purpose and can help clinicians to make more informed clinical decisions at the point of patient care.<sup>(16)</sup>

A national electronic patient summary (or summary care record, as it is also known) has been implemented in a number of countries.

To learn more, see the [best practice review of summary care records](#).

Internationally, a national electronic patient summary has been shown to provide benefits for patients, health and social care providers and organisations, in particular improving medication safety and patient care in out-of-hours and emergency care settings. The benefits identified for patients include:

- Patient care is shared more effectively across organisations.
- Healthcare professionals have the relevant information they need, resulting in more timely and informed decisions.
- Patients do not have to repeatedly explain details, or remember medications.
- The risk of prescribing errors or adverse reactions to prescribed medications is reduced.<sup>(16)</sup>

In 2019, HIQA published the National Standard on Information Requirements for a National, Electronic Patient Summary, which defines both the situations where a patient summary is used — unscheduled care, such as when attending an out of hours GP clinic or the emergency department of a hospital — and the clinical dataset required for a national, electronic patient summary for Ireland.<sup>(16)</sup>

To find out more, see the [animation on a national electronic patient summary](#).

The Patient Summary is expected to contain the clinical information defined in the National Standard on Information Requirements for a National Electronic Patient Summary—that is:

- **Subject of care:** the patient's demographic information for the purpose of a national electronic patient summary.
- **Health conditions:** the patient's current health condition, which includes health problems or diagnoses. It can include conditions that may have a

chronic or relapsing course (for example, irritable bowel syndrome or otitis media), conditions for which the patient receives repeat medications (for example, diabetes mellitus or hypertension) and conditions that are persistent and serious contraindications for classes of medication (for example, dyspepsia, migraine or asthma).

- **Medication prescribed:** a list of the current medicines prescribed for the patient
- **Allergies:** the agent that is responsible for the adverse reaction. It includes allergies, intolerances and adverse reactions to all substances, not only those arising from medications or medicines. It also describes other clinical information that is imperative to know so that the life or health of the patient does not come under threat. For example, intolerance to aspirin due to gastrointestinal bleeding.
- **Procedures:** any procedures which the patient has had—that is, any clinical activity carried out for therapeutic, evaluative, investigative, screening or diagnostic purposes.
- **Vaccinations:** details of immunisations or vaccinations that have been administered to the patient.<sup>(16)</sup>

**Recommendations on the Implementation of a National Electronic Patient Summary** were then developed, covering best practices for the successful implementation the national electronic patient summary in compliance with the National Standard. The Recommendations were informed by a **best practice review of summary care records** (patient summaries) in nine jurisdictions and an **As Is Analysis of the Irish eHealth landscape** of the programmes, projects, and services involved.

The implementation of a national electronic patient summary may be considered as an initial step in the wider programme (outlined in Slaintecare Implementation Plan) to implement a national shared record and a national electronic health record, defined later in this document.

The Slaintecare Implementation Plan (2018) lists summary care records (as national electronic patient summaries are also known) as one of the primary and community-based ICT services that will improve the lives of patients and that can be introduced immediately to support community care.<sup>(13)</sup>

The Terms of Agreement between the Department of Health, the Health Service Executive and the Irish Medical Organisation regarding GP Contractual Reform and Service Development (2019) includes a commitment to support the introduction of summary care records, compliant with the National Standard.<sup>(15)</sup>

## Q4 | WHAT IS A NATIONAL SHARED (CARE) RECORD?

A national shared care record enables healthcare providers in different settings—for example, primary care and hospitals—to view patient records for

direct patient care.<sup>(17)</sup> It brings together information from various systems into a single place for care professionals to use to support the delivery of care.

The Northern Ireland Electronic Care Record is an example of a shared care record, bringing together information from existing electronic record systems in hospitals and clinics throughout Northern Ireland.<sup>(18)</sup> The clinical information in the Electronic Care Record system can include the Emergency Case Summary (current medications, known allergies, medications), lab tests, x-rays, referrals, investigation requests, appointments, encounter and discharge letters from hospitals.

In 2015, the Health Service launched the (national) Electronic Health Record strategic programme, with the national shared (care) record listed as one of the four constituent work streams:

- National Shared Record
- Community Operational Systems
- Acute Operational Systems
- Integration Capability.

The national EHR is expected to consist of core operational solutions along with the ability to aggregate data from these systems into a comprehensive national record, accessible to health and social care professionals, and to patients, service users and carers. The Slaintecare Implementation Plan (2018) recognizes the national Electronic Health Record and the national Shared (Care) Record as key components of the eHealth pillar.

## Q5 | WHAT IS A NATIONAL ELECTRONIC HEALTH RECORD?

An Electronic Health Record (EHR) contains the information documented by healthcare professionals when they interact with that patient—for example, the patient’s symptom history, past history of illnesses and operations, clinical observations made by the professional such as a blood pressure reading, blood and other test results, X-rays and scan results, prescriptions and other treatments, care advice, the course of the illness, preventive and public health activities such as immunisations, and activities undertaken by patients to stay healthy.<sup>(17)</sup>

An EHR system can support healthcare professionals by facilitating for example, the use of checklists, alerts, and predictive tools, and embedding clinical guidelines, electronic prescribing and the ordering of tests.

The term Electronic Health Record (EHR) can be used to describe electronic records of care at a number of different levels—for example, the record of a patient’s care from a particular healthcare service or the hospital-wide record of a patient’s care.<sup>(17,19)</sup> It can also be used to describe a much fuller record of the patient’s healthcare regionally, nationally, or across international borders.

The overarching ambition of the National Electronic Health Record strategic programme is to deliver a single national health record, spanning acute and



community care.<sup>(20)</sup> Information from acute and community settings, together with information from other settings, will be integrated into the National Shared Care Record, which will ultimately evolve into the National Electronic Health Record for Ireland. That is, a complete digital record of a patient's journey, across all health and social care settings for their entire life.<sup>(13,17)</sup>

The National Electronic Health Record will draw information from a wide range of healthcare organisations in Ireland – such as laboratories, specialists, medical imaging facilities, pharmacies, emergency facilities, primary, secondary, and tertiary care, public health, community care, and social care – to provide the most complete information available to the authorised healthcare professional caring for the patient in the patient's National Electronic Health Record.

The patient's National Electronic Health Record then becomes the single source of truth for all their care information.

The Slaintecare Implementation Plan (2018) recognizes the national Electronic Health Record a key component of the eHealth pillar.

## Q6 | WHAT IS A NATIONAL HEALTH IDENTIFIER?

The Health Identifiers Act (2014) defined provided for the establishment and maintenance of national registers of Individual Health Identifiers (IHIs) and of Health Service Provider Identifiers, for practitioners and organisations.<sup>(11)</sup>

An IHI is an 18 digit number that is used to uniquely and safely identify a patient. An IHI is assigned to the patient for life and is not re-used after the patient's death. As the IHI is adopted and embedded into the patient's record in different health services, it will facilitate the linking of correct health records from different health systems, to provide a full medical history. It is expected to be used as the single number for identifying a patient by all of the Electronic Health Record systems across healthcare organisations in Ireland.

The Health Service Executive Access to Information Health Identifiers strategic programme is expected to deliver the following elements to support the introduction of national health identifiers in Ireland:

- a single national register of individual service users
- a business operations function to provide service user identity services
- technical infrastructure with appropriate external interfaces to support and maintain the national register (IHI system)
- technical interfaces enabling data exchange between the IHI system and selected consumer systems.

## Q7 | WHAT IS A NATIONAL PATIENT PORTAL?

A patient portal is specially created to allow online access for individuals to their own healthcare information through apps on their smartphone or other devices, or using a website.<sup>(17)</sup>

In many countries, patients use a patient portal to access to their electronic health record, where they can see their latest test results, clinical correspondence, request repeat medications and to request appointments. Some patient portals also enable patients to add their own health information, to maintain their own record of home monitoring for conditions such as diabetes. In another example, the record may provide a parent with the ability to add supplementary entries to an incomplete vaccination record for their child. The clinician reviewing the record can then review these and the original entries to gain a better understanding of the child's vaccination history.

## PART C ABOUT A STANDARDS-BASED APPROACH TO EHEALTH POLICY IMPLEMENTATION

This section outlines how the eHealth elements described, such as shared care records, need the capability to share patient data appropriately and securely, and how a standards-based approach supports this.

### Q8 | HOW ARE KEY EHEALTH ELEMENTS IMPLEMENTED?

To implement all of the eHealth services discussed, clinicians, labs, hospitals, pharmacies and patients need to be able to share data—regardless of the system they are using.<sup>(21)</sup>

In effect, all of the systems involved need to use a common 'language' to communicate.<sup>(9)(10)(22)</sup> Using a common 'language' in this way is known as **semantic interoperability**, a cornerstone of eHealth. It ensures a patient's health information can be shared seamlessly and appropriately, which improves the overall coordination and delivery of healthcare.<sup>(21)</sup>

Semantic interoperability is achieved through national standards—for example, a national standard can define the structure, format, units and results meaning the results from a laboratory system can be sent to a GP practice system.<sup>(9)(10)(22)</sup>

Agreeing national and international standards greatly increases the potential for sharing health information appropriately, wherever and whenever it is needed. This provides the basis for the introduction of national electronic patient summaries or other eHealth elements.

### Q9 | WHAT ARE THE MAIN TYPES OF HEALTHCARE INTEROPERABILITY STANDARDS INTERNATIONALLY?

To achieve semantic interoperability, health information standards must cover both the semantics (meaning) and the syntax (structure) of the data exchanged.<sup>(22)</sup> This can be achieved by exchange of a structured message, through a message broker, and may also require a structured clinical document.

The choice of message or clinical document depends on the clinical scenario. If the information to be exchanged is a snapshot in time, such as a discharge summary that needs to be human-readable, an electronic document may be appropriate. If the information is transaction-based and transmitted in real time, such as appointment scheduling and acknowledgement, then a message may be best. Clinical terminologies provide the common 'language' for the clinical information contained in the message or clinical document.

Therefore, the main types of healthcare interoperability standards are:<sup>(15)</sup>

- **Messaging and Document Standards** specify the structure and order of the elements that make up a message such as the patient information, the laboratory information, the test undertaken and the results.<sup>(23)</sup> The term 'message' refers to a unit of information that is sent from one system to another, such as between a laboratory information system and a general practitioner's clinical information system.<sup>(23)</sup> Examples of messaging standards include HL7 versions 2.x, HL7 versions 3, and HL7 Fast Healthcare Interoperability Resources (FHIR). Document standards indicate the type of information included in a document and also the location of the information. An example is the HL7 Clinical Document Architecture (CDA) for electronic sharing of clinical documents, which can be used in conjunction with HL7 version 3 messaging standard.
- **Terminology standards** ensure semantic interoperability — that is, that healthcare systems understand and use data in the same way, as defined by the terminology standard.<sup>(22,24)</sup> They can ensure that higher quality data is recorded during the patient visit and that this high quality data is available for epidemiological research and statistical reporting after the visit.<sup>(25)</sup> Terminology standards can be divided into two broad categories: clinical terminologies and classifications.
  - **Clinical terminologies** define the meaning of all terms in a clinical domain clearly and independent of any specific purpose.<sup>(26)</sup> Clinical coding at the point of care has been shown to significantly improve the overall quality of clinical data.<sup>(22,26)</sup> Examples include Systematised Nomenclature of Medicines – Clinical Terms (SNOMED CT) and Logical Observation Identifiers Names and Codes (LOINC).
  - **Classifications** define a set of 'non-overlapping classes in single hierarchies' according to the classification rules and are more suited to the recording and analysis of secondary use data, such as for epidemiological research or to generate health statistics.<sup>(22,26)</sup> They provide the framework to generate administrative, public health and research information from routinely collected clinical data. Examples include the World Health Organization (WHO) International Classification of Disease (ICD) and the International Classification of Primary Care.

## Q10 | WHAT ORGANISATIONS DEVELOP INTERNATIONAL STANDARDS FOR HEALTHCARE INTEROPERABILITY?

Health information interoperability standards are developed by a wide variety of healthcare organisations including regulators, vendors, consultants and healthcare providers. Most often, the development of interoperability standards involves technical committees that define methods and groups representing communities of interest.<sup>(22)</sup>

Several international standards development organisations (SDOs) have developed the major interoperability standards for healthcare that have achieved widespread adoption around the world.<sup>(22)</sup> They include:

- **Comité Européen de Normalisation (CEN), or the European Committee for Standardisation** is involved in developing multidisciplinary standards including standards for healthcare systems and interoperability.<sup>(22)</sup> TC 251 is the health informatics technical committee in CEN with responsibility for publishing standards addressing aspects of health information representation including messaging, electronic health records and eHealth initiatives.<sup>(21)</sup> CEN national members are the national standardization bodies of the 27 European Union countries, the United Kingdom, Serbia, Turkey and the Republic of North Macedonia together with the three countries of the European Free Trade Association (Iceland, Norway and Switzerland). There is one member per country.<sup>(27)</sup>
- **Health Level Seven (HL7) International** The HL7 organisation is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive frameworks and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services.<sup>(28)</sup> HL7 is supported by more than 1,600 members from over 50 countries, including more than 500 corporate members representing healthcare providers, government stakeholders, payers, pharmaceutical companies, vendors/suppliers, and consulting firms.<sup>(28)</sup> It publishes messaging standards for healthcare interoperability that aim to enhance care delivery, knowledge transfer and optimise workflow. HL7 products include HL7 version 2.x , HL7 version 3 messaging standard, HL7 Fast Interoperability Healthcare and Clinical Document Architecture (CDA).
- **International Standards Organisation (ISO)** is a global standards development and accreditation organisation with a network of national standards institutes for 165 countries. The ISO has a number of technical committees, including technical committee, **ISO/TC215 Health Informatics**, which has responsibility for standardization in the field of health informatics, to facilitate capture, interchange and use of health-related data, information, and knowledge to support and enable all aspects of the health system.<sup>(29)</sup> It has 28 participating members and 35 observing members.
- The global **Joint Initiative Council (JIC)** provides strategic leadership in the specification of sets of implementable standards for health information sharing, to contribute to better global healthcare outcomes by:<sup>(30)</sup>
  - Enabling interoperability of information and process across health documents.
  - Supporting the timely, efficient delivery of safe coordinated accountable, high-quality health services to individuals, communities and populations.
  - Facilitating effective global markets for health information systems.The JIC was originally created, in part, to provide a vehicle for SDO's to identify opportunities to collaborate with one another in order to engage a broader segment of the international digital health community, and to reduce duplication in the development of standards artefacts.

Council members include:

- HL7 International
  - SNOMED International
  - ISO Health Informatics TC 215
  - Integrating the Healthcare Enterprise International
  - DICOM
  - CEN Health Informatics TC251
  - Regenstrief (LOINC)
  - GS1
- 
- **The OpenEHR Foundation** is a not-for-profit organisation established in 1999. OpenEHR is a virtual community working on interoperability and computability in eHealth. Its mission is to enable semantic interoperability of health information, within and between EHR systems. The openEHR Foundation has published a set of specifications defining a health information reference model, a language for building 'clinical models', or archetypes, which are separate from the software, and a query language. The architecture is designed to make use of external health terminologies, such as SNOMED CT, LOINC and ICD. Its main focus is EHRs and clinical information systems.<sup>(22)</sup>
  - **Integrating the Healthcare Enterprise (IHE)** is an initiative by healthcare professionals and ICT professionals to improve the way computer systems in healthcare share information. IHE promotes the coordinated use of standards such as DICOM and HL7 to address specific clinical needs in support of optimal patient care. It is claimed that systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively. The aim of IHE is to improve the state of systems integration and remove barriers to optimal patient care by creating and operating a process through which interoperability of healthcare IT systems can be achieved.<sup>(23)</sup>
  - The US **National Electrical Manufacturers Association (NEMA)** holds the copyright to DICOM®, which is the international standard for transmitting, storing, retrieving, printing, processing, and displaying information in medical imaging information.<sup>(31)</sup> It was developed by the DICOM Standards Committee, whose members are also partly members of NEMA.<sup>(33)</sup>

The following international standards development organisations develop the main terminology standards internationally:

- **SNOMED International**, formerly known as the International Health Terminology Standards Development Organization (IHTSDO), maintains SNOMED CT.<sup>(32)</sup> Established in 2007, SNOMED International is a not-for-profit organisation with 39 member countries including Ireland and more than 5,000 affiliates. Members of SNOMED International can be an agency

of a national government, or another body (such as a corporation or regional government agency) endorsed by an appropriate national government authority within the territory it represents. Members play a critical governance role through the approval of the organization's budget and strategy.

- The **Regenstrief Institute** is an international, not-for-profit organisation that creates and maintains, free of charge, the Logical Observation Identifiers, Names and Codes (LOINC®) terminology standard.<sup>(25,33)</sup> LOINC is used in 166 countries worldwide, and is provided in 21 separate language releases.<sup>(34,35)</sup>
- **World Health Organisation (WHO)** developed and maintains the International Classification of Disease (ICD), which is the foundation for the identification of health trends and statistics globally.
- **World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA)** – The International Classification of Primary Care (ICPC) is a classification designed for use in primary care or general practice and is copyright property of Wonca.<sup>(36)</sup>

## Q11 | WHAT ARE THE MAIN STANDARDS FOR HEALTHCARE INTEROPERABILITY?

The Health Level 7 organisation has developed a suite of standards of messaging and document standards that are used internationally, including:

- **HL7 version 2.x messaging standard** is an application protocol for electronic data exchange in healthcare environments.<sup>(37)</sup> Widely used in hospitals and general practice, this suite of standards provide specifications for messages to support the sharing of referral information, appointment information, and information about admission, transfer and discharge from hospital.<sup>(22)</sup> The standards also support the laboratory test ordering and results, radiology test ordering and results and the ordering of pharmaceutical products for patients.<sup>(22)</sup> The General Practice Messaging Standard for Ireland is compliant with HL7 version 2.4.<sup>(38)</sup>
- **HL7 version 3 messaging standard** was developed to reduce the level optionality available in version 2.x.<sup>(25)</sup> HL7 v3 uses an information model called the Reference Information Model (RIM) and a formal methodology called the HL7 Development Framework (HDF) to increase the detail, clarity and precision of the message specification.<sup>(22)</sup>
- **HL7 Fast Healthcare Interoperability Resources (FHIR®)** is an interoperability standard intended to facilitate the exchange of healthcare information between organizations.<sup>(39)</sup> FHIR is suitable for use in a wide variety of contexts, including uses for mobile devices, cloud communications, EHR-based data sharing, server communication in large institutions.<sup>(40)</sup> The FHIR platform can serve as a clinical model for analytics and machine learning. FHIR also provides standardization for application programming interfaces (APIs) and leverages Web standards including XML,

JSON, HTTP, and so on. The current release, FHIR Release 4, is the first “normative” edition, now an ANSI standard, providing stable resources and backward compatibility.

- **HL7 version 3 clinical document architecture (CDA® RELEASE 2)** is an XML-based document markup standard that specifies the structure and semantics of "clinical documents" for the purpose of exchange between healthcare providers and patients.<sup>(41)</sup> Developed to be both human and computer readable, it supports a combination of free text for human readability and adds structure and coding to the document to enable machine processing.<sup>(22)</sup> CDA Release 2 is the current version in use.

The most commonly used clinical terminologies and classifications are:

- **Systematised Nomenclature of Medicine – Clinical Terms (SNOMED CT)** is the ‘most comprehensive and precise’ clinical terminology currently available internationally.<sup>(26,42,43)</sup> It covers many aspects of healthcare, including patient histories, details of procedures, and the spread of epidemic disease.<sup>(44)</sup> SNOMED CT is described as the lingua franca within electronic patient records and electronic health records.<sup>(43)</sup> It aims to improve the quality and safety of healthcare by improving the accuracy of storage and or recording of clinical data in patient records and by recording healthcare encounters.<sup>(45)</sup> It can also be used to integrate decision support systems within clinical information systems, supporting evidence-based care. SNOMED CT also supports cross mapping to other terminologies and classifications such as ICD-10, LOINC, and OPCS-4. The International Edition includes a mapping to the ICD-10 Classification. Mappings to other terminologies and classifications are released separately.
- A widely used clinical terminology, **Logical Observation Identifiers, Names and Codes (LOINC®)** was developed as a common terminology for laboratory and clinical observations in electronic reports.<sup>(46,47)</sup> One of the main goals of LOINC is to facilitate the communication and grouping of test results for clinical care, healthcare management, and research. LOINC is used primarily to identify laboratory tests when test results are messaged electronically from laboratories to healthcare professionals.<sup>(48)</sup> When hospitals or other healthcare organisations receive messages using LOINC codes from multiple laboratories, they can automatically file the results in the correct location of their medical records and can use the data for clinical care and management purposes.<sup>(46)</sup> LOINC codes are also used in the HL7 Clinical Document Architecture to defined clinical documents.<sup>(49)</sup>
- The **World Health Organization (WHO) International Classification of Disease (ICD)** is the foundation for the identification of health trends and statistics globally. ICD is the international standard:
  - for defining and reporting diseases and health conditions in all clinical and research purposes
  - for mortality and morbidity statistics.



It provides a comprehensive definition of diseases, disorders, injuries, symptoms, and the reason for the encounter, together with social factors and external causes. This allows for:

- easy storage, retrieval and analysis of health information for evidenced-based decision-making
- sharing and comparing health information between hospitals, regions, settings and countries
- data comparisons in the same location across different time periods.<sup>(50)</sup>

Originally intended primarily for secondary data use, ICD is now used for health information purposes in public health, primary, secondary and tertiary care settings. ICD-10 is used to report mortality data in more than 100 countries.<sup>(50,51)</sup> It has been translated into 43 languages. ICD-11 is the global standard for health data, clinical documentation, and statistical aggregation and has multiple uses including primary care.<sup>(52)</sup> It comes into effect in January 2022.

- The **International Classification of Primary Care (ICPC)** is a classification designed for use in primary care or general practice.<sup>(53)</sup> ICPC was designed as an epidemiological tool to enable healthcare providers to use a single classification system to code information for three aspects of the healthcare encounter — that is, a patient’s reasons for encounter, the healthcare practitioner’s assessment of the diagnosis or problem, and process of care (decision, action, or plans).<sup>(53)</sup> The ICPC-2 is unique as it enables the provider to classify the initial episode of care from the time the patient first presents with a specific problem until the final encounter for the same problem resulting in a more defined diagnosis.<sup>(43)</sup> ICPC-2 is designed for use in paper-based statistical collections and in electronic information systems for both encounters and episodes of care. It has inclusion and exclusion criteria in addition to paper-based and electronic indexes to guide appropriate usage. Mappings are provided from other aggregation terminologies such as ICD-10.

## PART D ABOUT HEALTHCARE INTEROPERABILITY STANDARDS IN IRELAND

In Ireland, HIQA develops National Standards, Guidance, and Recommendations principally to support semantic interoperability for healthcare. HIQA's work programme is based on highest priority areas, as defined in the Slaintecare Implementation Plan (2018), and to date, has covered a number of crucial strategic areas:

- national ePrescribing
- national electronic patient summaries
- messaging
- other programmes for healthcare interoperability.<sup>(13)</sup>

### Q12 | NATIONAL ePRESCRIBING WORK PROGRAMME

A national ePrescribing solution provides a safer and more efficient service to individuals and pharmacists, and is another key building block for interoperability between eHealth systems, as a reliable, accurate, and up-to-date source of medications information for a patient. As part of a longer term work programme in this area, HIQA has developed the **National Standard on Information Requirements for Community Based ePrescribing**, defining the minimum dataset for information systems in the national ePrescribing solution—as determined by clinical relevancy and potential to improve patient safety to support integrated care. The National Standard covers the use cases where medication items are prescribed and an electronic message is retrieved from the message exchange, then all, some, or no medications are dispensed. It also makes provision for the pharmacist to modify the items or to use a paper prescription, where no electronic prescription, is available. The prescription can also be cancelled by either the prescriber or the pharmacist. HIQA also made **Recommendations on community-based ePrescribing in Ireland**, informed by an **international review** of ePrescribing best practice, to support the success of a national, community-based ePrescribing programme in Ireland.

### Q13 | NATIONAL ELECTRONIC PATIENT SUMMARY WORK PROGRAMME

Continuing its work in the area of summary care records/patient summaries, HIQA published the **National Standard on Information Requirements for a National Electronic Patient Summary** defining the use case—unscheduled care—and the clinical dataset for the patient summary.

**Recommendations on the Implementation of a National Electronic Patient Summary** were then developed, covering best practices for the successful implementation the national electronic patient summary in compliance with the National Standard. The Recommendations were informed

by a **best practice review of summary care records** (patient summaries) in nine jurisdictions and an **As Is Analysis of the Irish eHealth landscape** of the programmes, projects, and services involved. The implementation of a national electronic patient summary may be considered as an initial step in the wider programme (outlined in Slaintecare Implementation Plan) to implement a national shared record and a national electronic health record, defined earlier in this document.

## Q14 | MESSAGING WORK PROGRAMME

A number of standards have been developed to support the sharing of healthcare information using Healthlink, the National Health Messaging Broker. Healthlink provides a secure, standardised messaging service that allows patient information to be transferred between entities using international health messaging standards, enabling integration and interoperability of health systems. Healthlink supports the following national standards:

- **General Practice Messaging Standard version 4.0 (HL7 version 2.4)** and supports all messages defined in the Standard. The **General Practice Messaging Standard** is intended to standardise the electronic transmission of messages between healthcare practitioners in different healthcare settings in Ireland — for example, between general practitioners (GPs) and hospitals or between prescribers and dispensers. The General Practice Messaging Standard version 4.0 supports a range of use cases, including sending notifications to a patient's GP for a range of scenarios, **shared ante-natal care** scenarios, and **ePrescribing** scenarios. The General Practice Messaging Standard is based on the **HL7 version 2.4** and uses the national messaging broker, Healthlink.

- **National Standard for Patient Referral Information** supporting improved delivery of care through:
  - **Cancer referrals:** The National Cancer Control Programme (NCCP), collaborated with Healthlink, GPIT and the HSE to develop electronic referral forms for breast, prostate, lung and pigmented lesion cancer, which were then integrated into accredited GP practice management systems and rolled out nationally to designated cancer centres. Once the referral has been submitted, an instant acknowledgement is received to confirm that it has been successfully sent. A response outlining triage and appointment information is sent to the referring GP within 5 working days.
  - **General referrals:** A general referral form has also been integrated into accredited GP software systems and into systems in the Royal Victoria Eye and Ear hospital. Once the referral has been submitted, an instant acknowledgement is received to confirm that it has been successfully sent. The referral is no longer printed on arrival in the Hospital resulting in substantial savings in administrative time due to automation of this key step in the process.
  - **COVID-19 referrals:** Healthlink has been instrumental in enabling referrals for patients who need a COVID test to be done or who need to be seen at a Community Assessment Hub. It is also instrumental in returning laboratory results for COVID to referring clinicians – including GPs.
- Healthlink inserts the **national health identifier** into every eReferral where sufficient demographic data provided to match. An HL7 API will be available to facilitate direct communication with the IHI, allowing on-going tracing of IHI numbers for new patient records, or previously un-traced patient records which have new details that could be used for matching.

**Note.** Hospitals and GPs vary in their adoption of electronic messaging for communication.

## Q15 | OTHER PROGRAMMES FOR HEALTHCARE INTEROPERABILITY

In addition to these national standards and recommendations, HIQA has worked over a number of years to identify and define critical building blocks for national healthcare interoperability:

- **National health identifiers:** are a critical prerequisite for healthcare interoperability, ensuring that patients, healthcare professionals, and healthcare providers are identified uniquely within the healthcare system. After consultation with all stakeholders, HIQA made **Recommendations on national health identifiers**, which informed the National Health Identifiers Act (2014).
- **Clinical terminology:** clinical coding has been shown to improve the quality and safety of patient care, and to support the introduction of electronic health records. After providing guidance on terminology and

classification systems (2013), HIQA made **Recommendations regarding the adoption of SNOMED Clinical Terms as the Clinical Terminology for Ireland** and provided **Guidance on Terminology Standards for Ireland**. As a result, SNOMED CT has been adopted as the national clinical terminology for Ireland.

- **Clinical document exchange:** the exchange of standardised electronic documents—such as shared patient summaries or ePrescriptions—is a critical prerequisite for interoperability between eHealth systems. Several national standards have been developed, defining the respective minimum datasets needed that can be reused in clinical documents, such a national electronic patient summary:
  - **National standard diagnosis dataset and clinical document architecture (CDA) template**, defining the minimum dataset for a patient’s diagnosis
  - **National Standard for a Procedure Dataset including a Clinical Document Architecture specification**, defining the minimum dataset for a patient’s procedure
  - **National standard adverse reaction dataset and clinical document architecture (CDA) template**, defining the minimum dataset for a patient’s adverse reactions and adverse reaction events.

National standards have been developed for clinical documents, such as discharge summaries and referrals:

- **National Standard for Patient Discharge Summary Information**, defining the minimum dataset for clinical discharge summary information that is typically sent by secondary or tertiary care to the patient’s GP following the patient’s discharge.
  - **Report and Recommendations on Patient Referrals from General Practice to Outpatient and Radiology Services including the National Standard for Patient Referral Information**, defining the minimum dataset for a referral from primary care.
- **Data model for an electronic medicinal product catalogue – a National Standard** An electronic medicinal product catalogue is an electronic dictionary of medications available for prescribing and dispensing within a jurisdiction. It has been shown to provide a consistent approach to the identification and naming of medicines, which can support medicines management, prescribing and dispensing activity across health domains. The National Standard defines the data model that will provide a structure for data used within information systems in the healthcare systems nationally.

## Q16 | SUMMARY OF NATIONAL STANDARDS, GUIDANCE, AND RECOMMENDATIONS FOR HEALTHCARE INTEROPERABILITY IN IRELAND

The National Standards, Guidance, and Recommendations for healthcare interoperability in Ireland published to date include:

Year	Publication
<b>2020</b>	Recommendations on the Implementation of a National Electronic Patient Summary in Ireland
<b>2018</b>	National Standard on Information Requirements for Community Based ePrescribing
<b>2018</b>	National Standard on Information Requirements for a national electronic patient summary
<b>2017</b>	Guidance on Terminology Standards for Ireland
<b>2017</b>	Guidance on Messaging Standards
<b>2017</b>	General Practice Messaging Standard version 4.0
<b>2016</b>	National Standard for a Dispensing Note including CDA specification
<b>2016</b>	National Standard for a Clinical Dataset - Procedures
<b>2016</b>	National Standard for a Clinical Dataset - Diagnosis
<b>2016</b>	National Standard for a Clinical Dataset - Adverse reactions
<b>2015</b>	National standard for an electronic medicinal product reference catalogue
<b>2014</b>	Recommendations regarding the adoption of SNOMED Clinical Terms as the Clinical Terminology for Ireland
<b>2013</b>	National Standard for Patient Discharge Summary Information
<b>2011</b>	Recommendations on national health identifiers
<b>2011</b>	National Standard for patient referral information

## Appendix A General Practice Messaging Standard

The **General Practice Messaging Standard** is intended to standardise the electronic transmission of messages between healthcare practitioners in different healthcare settings in Ireland — for example, between general practitioners (GPs) and hospitals or between prescribers and dispensers. The General Practice Messaging Standard version 4.0 supports a range of use cases, including sending notifications to a patient's GP when:

- The patient visits or is discharged from the **emergency department** of a hospital. A clinical discharge summary notification can also be sent.
- The patient is admitted to, or dies at, a **local healthcare** facility
- The patient attends and is assessed at an **out-of-hours cooperative GP practice**
- The patient attends a local **outpatient department**
- The patient undergoes **unsolicited radiological investigation**, with the notification including the results.
- The patient undergoes **unsolicited laboratory tests**, with the notification including the results.

The Standard also includes use cases where the patient's GP wants:

- to **schedule an appointment** for a patient in the **outpatient department** of a hospital, or wants to re-schedule, modify, or cancel the appointment subsequently
- to **place a patient on the waiting list** for an appointment, or to **modify or remove** the patient from the list subsequently
- to have the patient **registered with a service provider**, from whom the patient requires a service
- to **order a lab test** for a patient, providing details, and to **receive the results** immediately when they are available. The GP will also be **notified** if there is an **error in the original order** or if the laboratory **results are corrected** subsequently
- to order a **radiological investigation** for a patient from a radiology department, which acknowledges receipt
- to receive a patient's **cardiology results**.

The **shared ante-natal care** use case is also supported as the patient's GP receives clinical information generated for the patient during an ante natal visit to a maternity hospital, community clinic or GP practice. Similarly, the maternity hospital, community clinic or GP practice can receive the patient's clinical information from her GP practice. Finally, the National Standard also supports **ePrescribing** use cases, by covering situations where medication items are prescribed and an electronic message is retrieved from the message exchange, then all, some, or no medications are dispensed. It also makes provision for the pharmacist to modify the items prescribed or to use a paper prescription, where

no electronic prescription is available. The prescription can also be cancelled by either the prescriber or the pharmacist.

The General Practice Messaging Standard is based on the **HL7 version 2.4** and uses the national messaging broker, Healthlink.

Laboratory ordering GPs and practice nurses can order blood tests online using the Laboratory Order form. After selecting from a definitive set of tests for the patient, the GP or practice nurse then prints the order form (including a barcode) which is sent with specimens to the lab. Upon receipt in the lab, the form is scanned by the bar code reader and the order is immediately accessible on the system. Benefits to both GP practices and labs including elimination of illegible, incomplete order forms, electronic records of all orders placed and quicker turnaround of orders and results. This service is available for laboratories in the Mater, St. James's and Cavan General.



## Appendix B National Standard for Patient Referral Information

The aim of the **National Standard for Patient Referral Information** is the standardisation of the format and content of referral letters, ensuring that information is more complete, consistent, accurate and reliable. This improvement in the quality of patient referral information sent from primary care means that:

- Consultants and other service providers can prioritise patients more effectively and accurately, ensuring that patients with the most urgent needs can be identified quickly and clearly.
- GPs have clear, national guidelines on the information that needs to be included in different types of referrals, built in to their practice management systems.
- Hospitals can better manage referrals through a more effective triage process.

The National Standard defines the following clinical dataset for patient referrals:

- **Referral details** describes the specific hospital and service to which the patient is being referred, together with the preferred consultant (if any) and the GP's assessment of urgency.
- **Patient details** provides the patient's demographic information such as name, address, and so on.
- **Referrer details** provides the referring GP's contact and identification information such as name, address, and so on.
- **Patient's usual GP** provides the patient's GP contact and identification information, if different to the Referrer.
- **Clinical information** outlines the clinical information that secondary care clinicians will require to assess the clinical problem in question and to assign a priority to the patient
- **A hospital-use section** is an optional section that may be used by hospitals to record the progression of a referral through their referral management system, if required.

Similarly, Healthlink supports the National Standard for Patient Referral Information, supporting improved delivery of care through:

- **COVID-19 referrals** Healthlink has been instrumental in enabling referrals for patients who need a COVID-19 test to be done or who need to be seen at a Community Assessment Hub. It is also instrumental in returning laboratory results for COVID to referring clinicians – including GPs
- **Cancer referrals** The National Cancer Control Programme (NCCP), collaborated with Healthlink, GPIT and the HSE to develop electronic referral forms for breast, prostate, lung and pigmented lesion cancer, which were then integrated into accredited GP practice management systems and rolled out nationally to designated cancer centres. Once the referral has been submitted, an instant acknowledgement is received to confirm that it

has been successfully sent. A response outlining triage and appointment information is sent to the referring GP within 5 working days.

- **General referrals** Launched in 2013, the general referrals services means that GPs across the country can now refer patients electronically into every acute hospital in the country. Over 612,000 general referrals were sent between October 2019 and 2020, up from over 582,000 in the previous period.

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