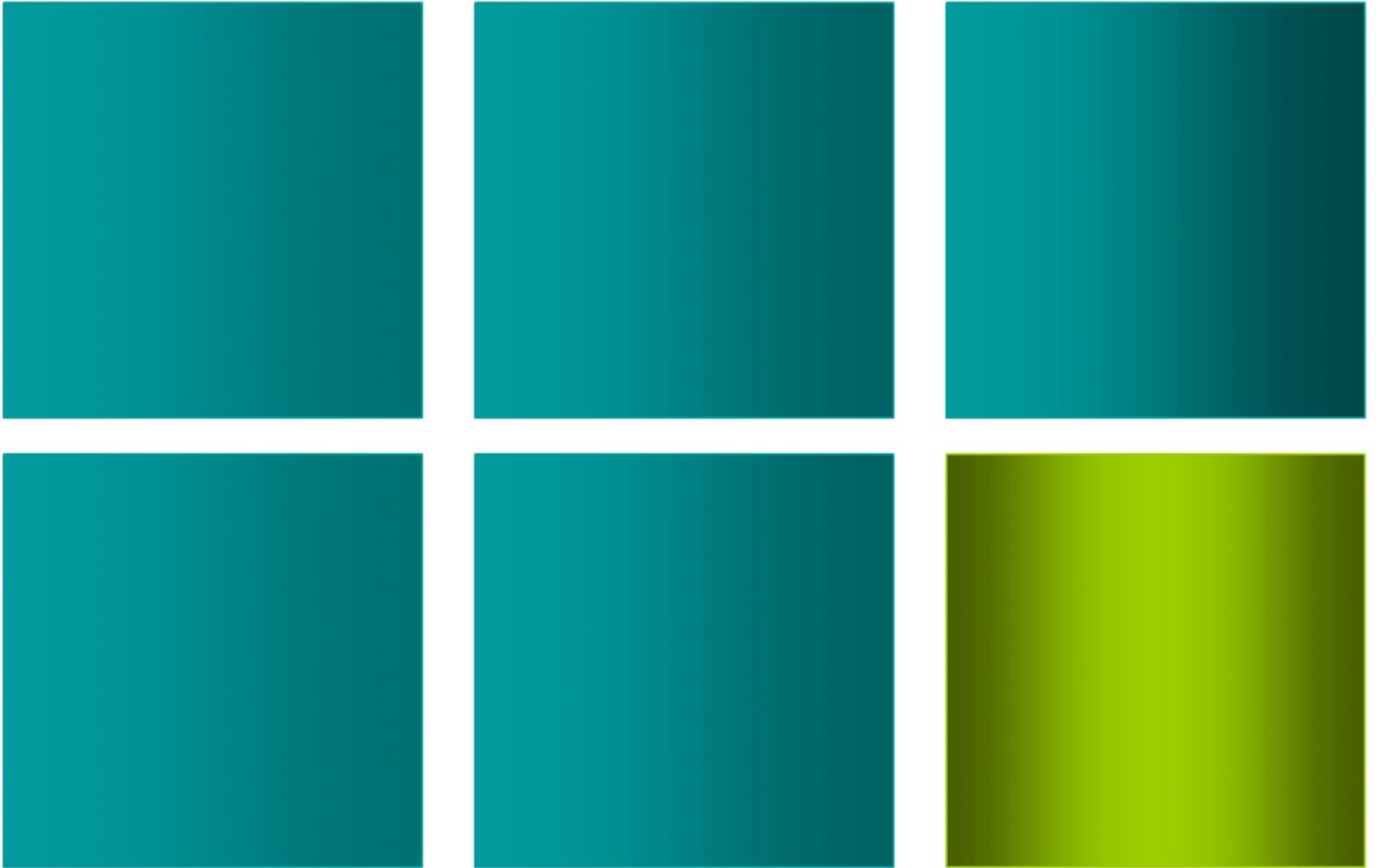


Health Information Interoperability Standards



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Disclaimer of Liability

Dubai Health Authority (DHA) is responsible for the Health Information Interoperability Standards in the Emirate of Dubai. DHA is also responsible to set the policies associated with the operation and use of a city-wide eHealth Information Network in the Emirate of Dubai. The policies are not included in this document and shall be defined at a later stage.

The Health Data and Information Analysis Department (HDIAD) within the Health Policy and Strategy Sector (HPSS) in DHA has compiled this report on the basis of information available from various Governmental, non-Governmental organizations and trade bodies. Dubai Health Authority, its employees, officers or agents shall not be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including without limitation lost profits), however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of the report, data, or any information contained herein.

Introduction

The Health Data and Information Analysis Department's (HDIAD) mission is to improve access, quality, health status and efficiency in the Dubai health sector by expanding access to high-quality health information and facilitating the efficient flow and exchange of information among patients, providers, funders and regulators with a focus on transparency and confidentiality and a balance between standardization and autonomy. This will be achieved by developing the necessary standards for implementing and managing the health information systems in the Emirate of Dubai [Article 5, Section 9, Law No.13 of 2007 – Establishment of Dubai Health Authority]. The goal is to achieve widespread adoption of interoperable electronic health records (EHRs).

In October of 2010, Dubai Health Authority established the Health Data and Information Analysis Department (HDIAD) to advance this goal. Among these were: creating processes to harmonize standards, develop nationwide health information network prototypes and recommend necessary changes to standardize diverse security and privacy policies.

The objectives of HDIAD's Health Information Interoperability Standards:

- To serve and establish a cooperative partnership between the public and private sectors to achieve a widely accepted and useful set of standards that will enable and support widespread interoperability among healthcare software applications in a city-wide eHealth Information Network for the Emirate of Dubai.
- To harmonize relevant standards in the healthcare industry to enable and advance interoperability of healthcare applications, and the interchange of healthcare data, to assure accurate use, access, privacy and security, both for supporting the delivery of care and public health.

Executive Summary

Interoperability contributes to enhanced healthcare delivery facilitating continuity of care and better decision making while delivering cost savings. Interoperability is seen by the Dubai Health Authority as a state of readiness to deal with new technologies, clinical practices and changes in policies. DHA’s aim is to provide a standardized coding system for describing the specific items and services provided in the delivery of health care in the Emirate of Dubai.

The following are standards classified into the aforementioned categories:

A) Health Terminologies*		
1) Disease Coding	ICD-10	ICD-10-CM is more preferable to ICD10-WHO; Public Domain
2) Procedure Coding	CPT4	Current Procedural Terminology (CPT) code (4)
3) Clinical Terminologies	SNOMED CT	Systematized Nomenclature of Medicine -- Clinical Terms
4) Lab Test Order & Results Coding	LOINC	Logical Observation Identifiers Names and Codes
5) Imaging Codes	DICOM	Digital Imaging and Communications in Medicine (DICOM) standard
6) Dental	ADA	American Dental Association
7) Drugs	MOH or DHA	(Ministry of Health; Dubai Health Authority) For Drug Products Code Vs. Active Ingredient Code
8) Consumables and Disposables	HCPCS	Healthcare Common Procedure Coding System (HCPCS) coding system

* Specific definition of **The Value Set** will be done to achieve interoperability for specific use cases at a later stage.

B) Clinical Data Structure	
For summaries, lab & general reports:	HL7 CDA Release 2.0
For imaging:	DICOM
For unstructured data:	PDF with a CDA header

C) Services & Data Interchange	
For document sharing:	IHE-XDS
For patient identity management:	IHE-PIX or IHE-PDQ (Both exist in HL7 v2 & v3)

D) Security & Privacy	
Security	Audit Trail and Node Authentication: IHE-ATNA*
Privacy	To be defined.

* Includes encryption when transmitted over internet.

A) Health Terminologies

1) Disease Coding - ICD-10

- The International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) is a coding of diseases and signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or diseases, as classified by the World Health Organization (WHO). ICD-10-CM is more preferable to ICD10-WHO.

2) Procedure Coding - CPT4

- CPT (Current Procedural Terminology) codes are numbers assigned to every task and service a medical practitioner may provide to a patient including medical, surgical and diagnostic services. They are then used by insurers to determine the amount of reimbursement that a practitioner will receive by an insurer. Since everyone uses the same codes to mean the same thing, they ensure uniformity. CPT-4 will need licensing from the American Medical Association (AMA).

3) Clinical Terminologies - SNOMED CT

- SNOMED CT (Systematized Nomenclature of Medicine -- Clinical Terms) is a standardized, multilingual vocabulary of clinical terminology that is used by physicians and other health care providers for the electronic exchange of clinical health information. SNOMED CT currently contains more than 300,000 medical concepts, divided into hierarchies as diverse as body structure, clinical findings, geographic location and pharmaceutical/biological product. Each concept is represented by an individual number and several concepts can be used simultaneously to describe a complex condition. It is suggested that maybe part of the 300,000 medical concepts will be needed initially and may be worth while defining the part(s) required.

4) Lab Test Order & Results Coding – LOINC

- Logical Observation Identifiers Names and Codes (LOINC) is a standard for identifying medical laboratory observations. It was created in 1994 by the Regenstrief Institute Inc., an Indianapolis-based research organization affiliated with Indiana University, in response to demand for the electronic movement of clinical data. To do this, LOINC applies names and identifiers to more than 58,000 medical term that can be kept in an electronic health record.

5) Imaging Codes – DICOM

- Digital Imaging and Communications in Medicine (DICOM) is a standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. The communication protocol is an application protocol that uses TCP/IP to communicate between systems. DICOM files can be exchanged between two entities that are capable of receiving image and patient data in DICOM format.

6) Dental – ADA

- The American Dental Association (ADA) is the professional association of dentists dedicated to serving both the public and the profession of dentistry. The ADA promotes the profession of dentistry by enhancing the integrity and ethics of the profession, strengthening the patient/dentist relationship and making membership the foundation of successful practice. The ADA fulfills its public and professional mission by providing services and through its initiatives in education, research, advocacy and the development of standards.

7) Drugs - Drug Product Code Vs. An active ingredient

- The Ministry of Health (MOH) and Dubai Health Authority (DHA) have unique codes established to code for drugs.

8) Consumables and Disposables – HCPCS

- The Healthcare Common Procedure Coding System (HCPCS) is a set of health care procedure codes based on the American Medical Association's Current Procedural Terminology (CPT). It includes codes for physiotherapy equipments.

B) Clinical Data Structure

- **Summaries, Lab & General Reports - HL7 CDA Release 2.0**
 - The CDA Release 2.0 provides an exchange model for clinical documents (such as discharge summaries and progress notes) - and brings the healthcare industry closer to the realization of an electronic medical record. By leveraging the use of XML, the HL7 Reference Information Model (RIM) and coded vocabularies, the CDA makes documents both machine-readable - so they are easily parsed and processed electronically - and human-readable - so they can be easily retrieved and used by the people who need them. CDA documents can be displayed using XML-aware Web browsers or wireless applications such as cell phones. While Release 2.0 retains the simplicity of rendering and clear definition of clinical documents formulated in Release 1.0 (2000), it provides state-of-the-art interoperability for machine-readable coded semantics. The product of 5 years of improvements, CDA R2 body is based on the HL7 Clinical Statement model, is fully RIM-compliant and capable of driving decision support and other sophisticated applications, while retaining the simple rendering of legally-authenticated narrative.
- **Imaging – DICOM**
- **Unstructured data - PDF with a CDA header**

C) Services & Data Interchange

- **IHE-XDS**
 - Cross Enterprise Document Sharing (XDS) registers and shares electronic health record documents between healthcare enterprises, ranging from physician offices to clinics to acute care in-patient facilities.

- **IHE-PIX or IHE-PDQ**
 - IHE Profiles provide a common language for purchasers and vendors to discuss the integration needs of healthcare sites and the integration capabilities of healthcare IT products. They offer developers a clear implementation path for communication standards supported by industry partners and carefully documented, reviewed and tested. They give purchasers a tool that reduces the complexity, cost and anxiety of implementing interoperable systems. Both exist in HL7 v3 & v3.

D) Security & Privacy

- **Audit Trail and Node Authentication- IHE-ATNA**
 - The Audit Trail and Node Authentication (ATNA) Integration Profile establishes security measures which, together with the Security Policy and Procedures provide patient information confidentiality, data integrity and user accountability.

- **Privacy**
 - To be defined.
 - Our aim is to ensure that individuals maintain the right to control what information is collected about them, how it is used, who has used it, who maintains it, and what purpose it is used for.

Appendix I – Technical Abbreviations & Definitions

- **CDA:**

- **Clinical Document Architecture** is a markup standard developed by the organization Health Level 7 International (HL7) to define the structure of clinical documents such as discharge summaries and progress notes. These documents can include text, images and other types of multimedia.

- **XDS:**

- **Cross Enterprise Document Sharing** - The Cross-enterprise Document Sharing for Imaging (XDS-I) Integration Profile specifies actors and transactions that allow users to share imaging information across enterprises. This profile depends on the IHE IT-Infrastructure Cross-Enterprise Document Sharing (XDS) profile. XDS for Imaging (XDS-I) defines the information to be shared such as sets of DICOM instances (including images, evidence documents, and presentation states), diagnostic imaging reports provided in a ready-for-display.

- **PIX:**

- **Patient ID Cross Referencing (ID)** - The PIX profile supports the Cross-referencing of patient identifiers from multiple Patient Identification Domains. These Cross-referenced patient identifiers can then be used by "identity consumer" systems to correlate information about a single patient from sources that "know" the patient by different identifiers. This allows a Clinician to have more complete view of the patient information.

- **PDQ:**

- **Patient Demographics Query** - Patient Demographics Query (PDQ) lets applications query a central patient information server and retrieve a patient's demographic and visit information.

Appendix II – Other Abbreviations & Definitions

- **DHA:**

- **Dubai Health Authority** was created, in June 2007, by Law 13 issued by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE, Ruler of Dubai, with an expanded vision to include strategic oversight for the complete health sector in Dubai and enhance private sector engagement.

- **HPSS:**

- The **Health Policy and Strategy Sector** within DHA was established in August 2009 to oversee the authority's responsibilities for policy development and strategic planning for the Dubai Health Sector inspired by the Dubai Strategic Plan 2015.

- **HDIAD:**

- **Health Data & Information Analysis Department** within HPSS has a mandate documented when the Dubai Health Authority was established under law 13 of 2007. [Article 5, Section 9] and notes: "Develop the necessary standards for implementing and managing the health information systems in the Emirate."

- **P&DS:**

- The **Planning & Development Section** (now called eHealth Section) within HDIAD is concerned with the following:
 - Define & Maintain Dubai's eHealth's sStrategy & Vision
 - Define & Maintain eHealth Information Network model.
 - Create & Maintain eHealth Policy Framework.
 - Enable eHealth IT Integration and Interoperability.
 - Provide eHealth Information and Data Services.
 - Govern eHealth & Manage its Quality.