EHR-National Standardization Initiative

National Resource Centre for EHR Standards (NRCeS)
C-DAC Pune
**Background**

- Ministry of Health & Family Welfare (MoHFW) notified the Electronic Health Record (EHR) Standards for India in Sept 2013
- The notified standards were not only supported by professional bodies, regulatory bodies, stakeholders, but various technical and social commentators also
- Revised EHR Standards for India were notified in Dec 2016
EHR Standards for India 2016 - Highlights

• EHR Standards for India (2016) provides a structured overview of the key EHR standards with respect to Indian healthcare system
• Detailed recommendation on the various aspects of EHR systems standardization perspective
• Short guideline regarding implementation specific to the item-in-context included
• It is understood that with proper adoption interoperability of both meaning and data can be achieved.
• Aim: *Any person in India can go to any health service provider/practitioner, any diagnostic centre or any pharmacy and yet be able to access and have fully integrated and always available health records in an electronic format*
EHR Standards at a Glance

**Architecture and Data Content**
- Identification & Demographics
- Patient Identifiers
- Architecture Requirements
- Functional Requirements
- Reference Model and Composition
- Terminology
- Coding System

**Information Exchange**
- Imaging
- Scanned or Captured Records
- Data Exchange
- Other Relevant Standards
- Discharge/Treatment Summary
- E-Prescription
- Personal Healthcare and medical Device Interface

**Security and Privacy**
- Data Privacy and Security
- Information Security Management
- Privilege Management and Access Control
- Audit Trail and Logs
- Data Integrity
- Data Encryption
- Digital Certificate
Initiatives towards Adoption of EHR Standards

- India has become a member of SNOMED International (also IHTSDO) in April 2014 with a view of widespread adoption of SNOMED CT in our country.
- MoH&FW, Govt. of India had set-up National Release Centre (NRC) for SNOMED CT in September 2014 at C-DAC Pune.
- MoH&FW, Govt. of India has set-up a Centre of Excellence for promotion and adoption of notified EHR Standards in healthcare applications as National Resource Centre for EHR Standards (NRCeS) in February 2017 at C-DAC Pune.
- A major initiative to set up National Digital Health Authority (NDHA) of India is underway with a vision to ensure adoption of e-Health and related standards in India in an orderly manner.
National Release Centre (NRC) for SNOMED CT

• Within their own countries,
  – NRCs manage the use of SNOMED CT
  – Communicate with a range of stakeholders, including SNOMED CT Affiliate Licensees, healthcare institutions, clinical groups and end users
• NRC for SNOMED CT in India: C-DAC Pune (www.snomedctnrc.in)
  – Conduct workshops and trainings to promote usage of SNOMED CT
  – Provide free & open source tools and resources for use and adoption of SNOMED CT in EHR
  – Assist in implementation of SNOMED CT by vendors and hospitals
  – Develop national Refsets and Extensions for ease of adoption
• NRC is a single point of contact for communications with SNOMED International and other SNOMED International Members
SNOMED CT

• It is the *richest vocabulary* available to describe clinical findings, diseases, procedures etc.
• Contains *443,237 concepts*, more than 1.3 million descriptions and more than two and a half million relationships.
• Recommended as the terminology standard to be used for precisely representing clinical information across the scope of health care.
• SNOMED CT aims at transmitting all concepts that have been expressed throughout history in the healthcare domain, unambiguously.
• Used to code, retrieve, and analyze clinical data.
SNOMED CT Benefits

**Individual**
- Consistent, common representation of clinical information
- Enable guideline and decision support systems to provide real time advice
- Support appropriate information sharing
- Allow accurate and comprehensive searches

**Population**
- Facilitate early identification of emerging issues
- Enable accurate and targeted access to relevant information
- Enable delivery of relevant data for clinical research
- Enhance audits of care delivery

**Evidence Based Healthcare Decisions**
- Link clinical records and clinical guidelines and protocols
- Enhance individual quality of care
- Reduce costs of inappropriate and duplicative testing
- Raise cost effectiveness and quality of care of populations
239 Affiliate Licensees from various parts of the country has been issued

- 113 Vendors have reported implementation of SNOMED CT
- 26 Hospital have reported integration of SNOMED CT
- 8 Institutes/ Colleges for Study & Research
- 18 State Government/R&D initiatives for integrating SNOMED CT
- 74 Individual Affiliate licensees

Note: This is the partial list of the affiliate licensees as on October 2017
SNOMED CT Implementation Status

as on October 2017

SNOMED CT Implementation Status

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Major Implementation Supported

- **eHospital** – Hospital Information Management System (HMIS) deployed across various states in the country
- **PHRMS** – MeitY funded project for development and deployment of PHR system
- **Megh Sushrut** – new edition of HMIS deployed across various hospitals and states
- **Kerala eHealth Project** – HMIS application used in Kerala state under eHealth Project
- **AIIMS eDeath Note** - Used for recording event of death and generating death certificate, OPD form, print card, and international death form
- Manorama Infosolutions Pvt. Ltd for integration in HMIS
- HealthQik for integration in Electronic Medical Records (EMR)
- E3 Systems Pvt. Ltd for integration in HIMS
- Softlink International for integration in Panacea software
Scope: SNOMED CT  →  EHR Standards

National Release Centre
India

National Resource Centre
for EHR Standards
India
National Resource Centre for EHR Standards (NRCeS)

- Facilitate adoption of the entire set of notified EHR Standards in the country, Ministry has set-up “National Resource Centre for EHR Standards (NRCeS)” at Centre for Development of Advanced Computing (C-DAC), Pune
- Provide assistance in developing, implementing and using EHR standards effectively in healthcare applications in India
- Support the proposed National Digital Health Authority (NDHA) to facilitate adoption of EHR related standards in an orderly manner
NRCeS Activities

**Tools and Technologies**
Software tools and resources for use and adoption of EHR Standards

**Education and Training**
Promotion and proliferation for use of EHR standards

**Implementation Support**
Assistance to vendors and hospitals. User and License management of standards

**National Releases**
Manage Reference sets and Extensions

**Liaison with SDOs**
Co-ordination with national and international Standards Development Organizations

**Advisory and Consultation**
Assistance in process/best practice adoption in implementing healthcare application
NRCeS – Your Friend in EHR Standardization

- **Adoption**: Training & Education for Awareness, Understanding Importance and Advantages
  - Assist in selection Standards, Best practices

- **Planning**: Guidance in adopting new technology
  - Assistance in designing, adopting best practices

- **Procurement**: Implementation Support, Assistance in trouble shooting
  - Staff training, License Management

- **Development**: End user Training
  - Use

- **Deployment**:
Tools and Technologies

• Free and open source standard enabled software tools
  • Free and open source SDKs for ease of implementing/ enabling standards within healthcare systems
    – SNOMED CT Toolkit (CSNOtk)
    – SDK for ANSI/HL7 v2.8.2-2015
    – SDK for DICOM PS3.0-2015
    – available from C-DAC at www.cdac.in (sdk-enq@cdac.in)
• Utilities, applications, sample codes, middleware components for demonstrating integration approaches
  – PoCs for specific use case, technology, platform, etc.
• Tools for mapping, conversions, interoperability, etc. for use and quick adoption of EHR Standards
  – SNOMED CT to ICD-10 mapping APIs
Education and Training

• Workshop for Healthcare professionals (Clinicians, Nurses, Hospital IT Staff, Paramedics, etc.) on EHR Standards and benefits
• Workshop for Vendors and Implementers on EHR Standards and technical implementation
• On-demand need-based training to hospitals, vendors, and implementers
• Workshop/Training to policy makers, departments, educational institutes, organizations, consortiums, associations, etc. on sensitizing about EHR Standards
• Specialized trainings on creation and validation of national releases and extensions
• Training on using and integrating SDKs and tools
• e-Learning videos and materials
Implementation Support

• Assistance in design and integration of EHR Standards in application
• Approaches for integration of EHR Standards in to their existing healthcare applications
• Assistance in getting SNOMED CT release files and Affiliate License for the use of SNOMED CT Standard within India
• Case studies, discussion papers, guidance documents for implementation and assistance in setting and using the developed tools and SDKs
• Peer review of EHR standard enabled software developed by vendors
• One point contact for implementation support: nrc-help@cdac.in
National Releases

• SNOMED CT national refsets
  – Preview Refsets for oral cancer, cervical cancer, cataract, diarrhoea, pregnancy related anaemia, malaria and tuberculosis are released and can be downloaded from SNOMED International MLDS account by licensees
  – Additional 14+ refsets are planned for release

• National Drug Extension for SNOMED CT
• Country specific customizations to EHR standards
• Manage and maintain national releases
• Assists in development of vendor / implementer specific subsets / refsets
Drug Information Repository (DIR)

- Primarily developed for collecting drug information which will be used as corpus for development of National Drug Extension of SNOMED CT for use in India
- Provides a secured platform for users (medical, pharmaceutical and experts) to add drug and substance information
- Includes workflow for curating and reviewing contents for completeness and correctness
- Over time with more collection of data, the DIR could additionally serve as information reference about drugs and substances in India
Liaison with SDOs

- Co-ordinate with national and international Standards Development Organizations (SDOs)
- Interact with peer bodies in states to learn and leverage exposure about EHR standards
- Participate in development and evolution of EHR standards
- Act as a bridge between SDOs, MoHFW, vendors and hospitals, and end users
- Consolidate and report requests, queries, concerns about EHR standards to national health authority
- NRCeS/C-DAC is represented at BIS (India) and ISO (through BIS)
- NRCeS/C-DAC is now member of HL7 Organization, LOINC Standard Committee, openEHR Foundation, DICOM Committee
Advisory & Consultation

• Consulting/advisory services for strategic approach and advice on healthcare system implementation and adoption
• Assistance in process/best practice adoption in implementing healthcare application
• Assistance in defining roadmap/strategy in healthcare application development to both the government and private sector
NRCeS Statistics

- SNOMED CT Affiliate Licenses: 239
- Workshops and Trainings: 48
- National Refsets for SNOMED CT: 7
- Tools Downloads: 500
- Consultations: 12
- People Trained: 2795

As of October 2017
EHR Standards Resources

- Available at: www.nrces.in
- One-stop information portal regarding all aspects of EHR Standards includes information, implementation and adherence
- Resources such as documents, tools downloads, presentations, videos etc., information on relevant events, workshops, and conferences
- Brief and detailed information on each notified Standard under EHR Standards for India 2016
- Dashboard for the status and statistics of the activates of NR CeS
Thank You

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