



Standard and Interoperability Lab -  
Nepal

# DIGITAL HEALTH STANDARDS TO ENHANCE PATIENT CARE: WORKSHOP



PREPARED BY  
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COMPUTING



## Executive Summary

### *Objectives:*

- *To introduce the SIL function and its relevance to standardisation.*
- *To provide an overview of EMR and the need for EMR specification.*
- *To prepare a draft EMR specifications for standardisation of Electronic Medical Records.*

On 5th June 2024, the Ministry of Health and Population and SIL-Nepal held a workshop at Lemon Tree Premier, Budhanilkantha, focusing on Digital Health Standards to enhance patient care. The day featured a series of sessions starting with opening remarks by IT Director Er. Ramesh Raj Subedi, followed by a recap of the previous day and an overview of EMR by SIL-Nepal's Technical Lead, Mr. Sanjaya Poudel.

Key discussions included data safety, privacy, electronic prescriptions, lab and imaging integration, billing, coding, and mobile access. The workshop also emphasised the need for robust change management, data backup, and recovery, alongside structured training and support. Closing remarks were delivered by IT Director Er. Ramesh Raj Subedi, from the Ministry's Quality Assurance and Regulation Division, summarising the incorporation of the day's insights into the draft EMR specifications.



## Summary of the Agreement and Issue Raised

### Opening Session:

The workshop started with an opening remark from IT Director Er. Ramesh Raj Subedi, followed by a recap of the previous workshop and an overview of EMR by SIL-Nepal's Technical Lead, Mr. Sanjaya Poudel.



### Digital Health Standards:

*Mr. Hareram Bhattarai, Digital Health Consultant*

Mr. Hareram Bhattarai provided a detailed overview of health data standards including FHIR Standard. The major highlights of his presentation were:

- Improved patient care through informed caregivers and consent-based data sharing.
- Necessity for digital health standards ensuring interoperability among applications.
- Compatibility of personalised health systems with FHIR and EMR.



## Technical Session:

The workshop's major discussions were done via unconference sessions. At first the participants were asked about the topics of their interest via mentimeter and based on their feedback, 5 topics were selected and they were divided into 5 groups.



### Objective of the session:

- To generate ideas and prepare a draft EMR specification.

## Unconference I:

*Data Safety and Privacy, User Authentication, Patient Demographics, Medical History, Encounter Documentation*

**Group I put forward their suggestions as well as put forward their discussion as follows:**



### Data Safety and Privacy:

- Triage of health information should be done depending on the sensitivity of the issue.
- Clinical Data Management System
- Strategies for data protection in various hospital departments and health facility infrastructure.
- Regulations play an important role but trainings aren't enough
- Considerations for facility infrastructure in different geographical areas.

## User Authentication

Security measures like USB port disabling, multi factor authentication, and encryption to prevent data breaching.

## Patient Demographics:

- Need to contextualise it based on our context
- Only relevant history on clinical data
- Nepali and English calendar
- GPS tracking



## Medical History and Encounter Documentation:

Only relevant information should be taken.

If a person has all the clinical data recorded in the same health care facility in their lifetime - provider-specific information - is 10 years enough?

When considering the retention period for cervical cancer screening data, a key factor is the clinical significance of the information.

While hospital-based data typically has a retention period of 10 years, the relevance of observation data, such as lab reports, may vary. Determining the appropriate duration involves a debate between the value of screening data and broader health data. With the advent of Personalized Health Records (PHR), these records might be transferred to different portals, suggesting that 10 years could be insufficient for lifetime clinical data maintained within a single healthcare facility. This retention policy needs to balance clinical utility with financial implications, ensuring a comprehensive health data model that serves both providers and patients effectively.

## Unconference II:

### *Electronic Prescription, Lab and Imaging , Billing and Coding, CDA*

#### Electronic Prescription:

- Adoption of GS1 Standard for global supply chain management..
- DDA Formulary (Generic name)

The hospital may have two different brands of the same component - insurance follows generic names - there might be issues with the hospital maintaining bills - different brands might have different price



- Drug Interaction Alert
  - Providing the effects of prescribed drugs - part of CDSS - already in use in many EMR - should be mandatory
  - History of previous adverse drug reaction
- Narcotics drug prescriptions
  - System-to-system prescription - to verify - that certain drugs are not provided by

## Lab and Imaging:

- The data from the machine has to be HL7-compatible
- To perform QA after machine integration - code level
- Quality control -
- Test order and report - which values to take from the patient
- Sequencing standards
- In COVID - to hold positive data - but should we hold negative data as well - it might be even more important because the person shows symptoms but shows negative
- EHR and clinic decisions cannot be linked - after the decision is made only the data has to be entered into EHR -
- Define machine integration in TOR so that the vendor is aware - about the machine integration with EMR
- Data archiving and backup - for radiographic data - which are huge in size

## Billing and Coding:

- IRD certified
- Link to the health insurance program



## Unconference III

*Billing and coding, Audit Trails, Customisation and Workflow, Human resources.*

### Billing and Coding:

- Offline feature
- NHDD regulatory standard

### Audit trails:

- Changes have to be liable
- Log generation
- HIPAA compliance
- EHR log
- Encryption

What is the data that can/can't be deleted?

- Keeping records of who changed the data since there's no trail after deletion.
- Deleting primary record isn't an option
- Need to reverse enter data in case of deletion.
- In EMR - deleted from UI - but stays in the database as historical data - stays logs of every small action



- Offline Features:
  - NHDD regulatory standard.
  - HIPAA compliance for audit trails and data encryption.
  - Handling of deleted records and ensuring data traceability.

## Unconference IV:

*Mobile access, Data backup and Recovery, Training and Support, Referral Mechanism, Structure to build the non standard EMR to standards*

### Structure to build the non standard EMR to standards:

- SIL lab will determine - SIL certified - to be certified; is it multipoint; 20%,30%; or yes/no - it is yes/no - we will be interactive - SIL lab will have a consulting office - where everyone can consult about the EMR software if it is certified
- Sandboxing - we are not in that position - we will only be benchmarking; yes /no - it is very advanced - maybe in the future



### Data backup

- At least NAS - keep it separate than the production server
- terminology definition - NHDD - architecture flow - FHIR standard

### Referral mechanism

- Clinical flow - administrative part

### Mobile access

- PHR
- Mobile interface - Patient profile - bare minimum
- OTP is not reliable for the provided but it is reliable for the patient.
- CIA : Basic model - We need to consider this model while developing any application
- Versioning issue - Device safety - who to use -
- Data encryption

## Unconference V:

*Change Management, MSS for EMR, Human Behavior change and recommendation for providers, Data Hosting and ownership, Patient Identification*

### Change Management

- Tracking and managing changes through formal policies.
- Importance of digital literacy and security measures.
- Connectivity, data hosting, patient identification, and data sharing policies.



### Data Hosting and Ownership:

In the present health facility itself has to be hosted in central

Data sharing - within health facilities - but it happens to be in several entities - insurance - court police - printable format

Data validation - by whom? needs to be clarified

### Patient Identification:

- Health ID and National ID syncing

Data capture level - separate the clinical data from different officials - data analytics -

How to manage the data when accessed to a patient - and how to share the data

Severity of Password sharing

Log of shift change in hospitals (whose duty) - accountability hold

## Closing Session:

The workshop provided important information for the draft of an outline of what standards need to be added and what needs to be considered before drafting a specification for EMR. A draft specification will be drafted as per the suggestion from the participants which will be a living document for further process in setting a specification for EMRs.

## Conclusion

In conclusion, brought together key stakeholders from the Ministry of Health and Population, SIL-Nepal, and various sectors to collaborate on enhancing healthcare delivery through standardised EMR systems.

The workshop concluded with a few remarks from Mr. Paban Ghimire, National Professional Officer from WHO and the session ended with closing remarks and thank you speech by Er. Ramesh Raj Subedi, IT Director at QSRD under the MoHP.



Throughout the day, insightful discussions and presentations underscored the importance of data interoperability, privacy protection, and comprehensive EMR specifications. Participants actively engaged in sessions that addressed critical issues such as data security, electronic prescriptions, lab and imaging integration, billing, and mobile access, emphasising the need for robust technical solutions and supportive frameworks.

As we move forward, the collaboration and expertise shared during this workshop will continue to guide Nepal's efforts in integrating digital health technologies into everyday practice, ultimately improving healthcare access and outcomes nationwide.

The workshop's outcomes include a commitment to developing a draft EMR specification that incorporates the day's deliberations and insights. This document will serve as a foundation for advancing digital health standards in Nepal, ensuring that healthcare providers have the tools and guidelines necessary to deliver efficient, secure, and patient-centric care.

We extend our gratitude to all participants for their contributions and look forward to continued progress in this vital area of healthcare innovation.