

# Insights and Challenges in the Early Implementation of Digital Health Initiatives in Geographic and Resource Constraints Setting of Gandaki Province, Nepal

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# Background

- Digital technologies offer major opportunities to strengthen health systems and service delivery.
- Nepal's Ministry of Health launched its national e-Health strategy in 2017, followed by the Health Sector Strategic Plan 2023–2030, prioritizing digital tools like EMRs and health intelligence systems.
- Gandaki Province (pop. 2.47M) has diverse geography and 85 local levels, including 43 remote/very remote areas.
- Since 2023, Gandaki has piloted several digital health initiatives to improve healthcare delivery in challenging settings.

# Objectives

- To summarize key digital health tools implemented in Gandaki Province.
- To document early lessons learned from their rollout.
- To inform future digital health efforts in similar contexts within Nepal and beyond.

# Methodology

**Approach:** Participatory, mixed-methods.

## **Data Sources:**

- Desk review of key policy/program documents.
- In-depth interviews with tool designers, users, managers, and IT staff.
- Site visits to 3 health facilities.
- User interactions and observations.
- Provincial workshop (Jan 2025), guided by an independent expert.

**Participants:** 28 stakeholders from province, district, and facility levels.

**Analysis:** Thematic; anonymized data reviewed by all authors.

**Ethics:** No formal clearance required; informed consent ensured.

# **Digital Tools – Purpose & Utility**

## **Electronic Medical Records (EMR)**

- Deployed in 12 district hospitals and local facilities.
- Records prescriptions, visits, diagnostics, outcomes.
- Enables secure, standardized records and insurance claims.

## **Electronic HMIS (e-HMIS)**

- Rolled out to 69/85 municipalities and 695 health facilities.
- Automates data recording/reporting using DHIS2 platform.
- Enhances real-time reporting, data quality, and decision-making.

# **Digital Tools – Purpose & Utility**

## **Pregnancy Registration & Tracking System (PRTS)**

- Android-based tool integrated with e-HMIS.
- Tracks pregnant/postpartum women via FCHVs and SMS.
- 10,863 active pregnancies tracked; improves maternal care.

## **Family Health Profile (FHP)**

- Collects household-level demographic and health data.
- Informs local planning and service monitoring.
- Supports accurate targeting and resource allocation.

# **Benefits of Digital Tools in Health Systems**

1. Reduce human error and health worker workload.
2. Improve data quality, consistency, and real-time reporting.
3. Enable efficient service delivery, monitoring, and feedback.
4. Enhance decision-making and promote equitable health access.
5. Support predictive analysis and data-driven planning.
6. Foster paperless, eco-friendly systems with research potential.
7. Driven by energetic, IT-savvy workforce and supportive leadership.

# **Challenges of Digital Tools in Health Systems**

1. Poor internet, electricity, and ICT infrastructure in remote areas.
2. Low digital literacy, resistance to change, and staff turnover.
3. System errors, lack of standardization, and fragmented tools.
4. High resource needs for training, maintenance, and scale-up.
5. Data security, ownership, and privacy concerns.
6. Governmental and institutional capacity gaps hinder progress.



# Interoperability & Additional Tools

## Additional Digital Tools in Use:

- **SORMAS** – Real-time outbreak surveillance.
- **MPDSR** – Maternal/perinatal death reporting.
- **e-LMIS** – Supply chain & logistics management.
- **EWARS** – Early warning for disease outbreaks.
- **MSS/Clinical Audit** – Monitoring Minimum Service Standards.

## Interoperability Efforts:

- Linking EMR, e-HMIS, PRTS, FHP, e-LMIS with DHIS2, National ID, and CRVS.
- Goal: Integrated, population-level health tracking.
- Gandaki Digital Health Framework enables unified data exchange across platforms.

# Digital Health Framework - Gandaki

Federation

Province

Local Level

HF/ Com.

National Policy and  
Regulatory Frameworks



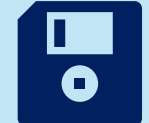
SIL



National ID



Dashboard



CDRS

- Digital Health Implementation Unit
- Policy, Strategy and other Legal Frameworks

Provincial  
(functional) ID



Family Health  
Profile



Health Facility



Hospital  
EMR



PDRS



e-HMIS

dhis2

Other Digital Health Solutions



PTRS



sormas



eLMIS



Client Portal

Interoperable

# Conclusion

- Digital tools such as EMR, e-HMIS, PRTS, and FHP are transforming healthcare delivery in Gandaki Province.
- These innovations enhance service access, quality, record-keeping, and feedback systems—especially in remote areas.
- Despite clear benefits, challenges exist at individual (digital literacy), technological (infrastructure, security), and organizational (planning, sustainability) levels.
- Effective planning, piloting, and system maintenance are essential for long-term success.

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# A Brief Bio

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Khim Bahadur Khadka currently serves as the Director General for the Ministry of Health, Gandaki Province of Nepal. In this role, he is responsible for leading provincial health policy, planning, budgeting, and program execution. He is also pursuing a PhD in Medical Research International Health as a scholar at LMU. His background includes significant experience in public health program management and systems strengthening, with previous roles at Save the Children, NHSSP, GIZ, and CARE International.

