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Evaluating EHR (Impilo) Coverage in Matabeleland South Province, Zimbabwe

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ABSTRACT

This study evaluates the implementation of Electronic Health Records (EHR) under the Impilo system in Matabeleland South Province, Zimbabwe, as of Q1 2025. Using descriptive analysis of provincial health data, we assess coverage rates, identify barriers to adoption, and propose targeted interventions. Findings indicate that 90.2% of the province's 153 health facilities have EHR infrastructure, with 110 sites fully functional. Key challenges include power instability, connectivity gaps in rural districts (Bulilima and Matobo), and delays in user training. Innovations such as a WhatsApp-based helpdesk and mobile backups demonstrate adaptive solutions. The study highlights the need for infrastructure investment, accelerated training, and policy adjustments to achieve universal EHR coverage. These insights are relevant for Zimbabwe's national eHealth strategy and similar low-resource settings.

INTRODUCTION

Background

This study was led by the Matabeleland South Provincial Health Team in collaboration with the Zimbabwean Ministry of Health and Child Care (MoHCC). Electronic Health Records (EHRs) are pivotal in modernizing healthcare delivery, enabling efficient patient data management, reducing medical errors, and supporting evidence-based decision-making (WHO, 2020). Zimbabwe's Ministry of Health and Child Care (MoHCC) launched the Impilo EHR system as part of its National eHealth Strategy (2021–2025), aiming for nationwide digitization of health records. Matabeleland South Province, with 153 facilities across seven districts, serves as a critical case study due to its diverse healthcare landscape encompassing urban centres and remote rural clinics.

Study Rationale

The successful implementation of EHR systems in low-resource settings faces unique challenges including unreliable infrastructure, limited technical capacity, and resource constraints. Understanding these barriers through systematic evaluation is crucial for informing policy decisions and optimizing implementation strategies.

Objectives

This paper aims to:

1. Quantify EHR Impilo coverage rates in Matabeleland South Province

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2. Identify systemic and operational barriers to full implementation
3. Document innovative solutions developed during implementation
4. Propose evidence-based recommendations for improving adoption and functionality

METHODOLOGY

Study Design

This descriptive cross-sectional study analysed EHR implementation data from Matabeleland South Province as of Q1-Q2 2025.

Data Collection

We analysed data from the Matabeleland South Provincial Health Team Meeting (May 2025) including:

- Facility-level EHR deployment status (installed, activated, functional).
- Reported challenges (power, connectivity, training).
- Digital innovations (e.g., WhatsApp helpdesk).

Data Analysis

Descriptive statistics were calculated for coverage rates, functionality status, and challenge categories. Results are presented using frequencies, percentages, and visual representations.

Limitations

- Data was self-reported by district health teams, potentially underrepresenting minor operational issues
- No comparative data from other provinces available for benchmarking
- Assessment limited to Q1-Q2 2025 timeframe
- Cost-effectiveness analysis not conducted

RESULTS

EHR Coverage Status

Total health facilities	153	100
Sites with EHR LAN installed	138	90.2
Activated (trained users)	112	73.2
Fully functional	110	71.9
Non-functional (power issues)	2	1.3
Awaiting training	26	17.0
No EHR coverage	15	9.8

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Figure 1: EHR Implementation Progress in Matabeleland South (Q1-Q2 2025).

Challenge Analysis by Category

Infrastructure Deficits (Primary Barriers)

Power Supply Issues

- Two facilities rendered non-functional due to unreliable electricity
- Intermittent power outages affecting data continuity
- Rural facilities disproportionately affected

Connectivity Challenges

- Bulilima and Matobo districts experiencing internet instability
- Delayed reporting capabilities hindering real-time data access
- Limited broadband penetration in remote areas

Human Resource Constraints

Training Gaps

- 26 sites (17%) have installed systems but lack adequately trained staff
- Centralized training model proving inefficient for remote locations
- High staff turnover affecting training sustainability

Policy and Governance Issues

Facility Exclusions

- 15 clinics (mine clinics, border posts, uniformed forces facilities) excluded from EHR rollout
- Funding silos between public and private sector mandates
- Regulatory gaps affecting comprehensive coverage

Innovative Solutions and Adaptations

The implementation process has yielded several creative solutions:

Digital Support Innovations

- EHR WhatsApp Helpdesk: Real-time technical support and fault reporting system
- Mobile Backup Collection: VPN-enabled data backup systems for connectivity- challenged sites.
- Starlink Pilot Program: Satellite internet trial at one remote site with scaling potential

Training Adaptations

- Peer-to-peer learning networks among facilities

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- Mobile training units for hard-to-reach locations
- Simplified user manuals in local languages

Implementation Progress in Context

Matabeleland South's 90.2% infrastructure coverage rate exceeds initial rollout projections, demonstrating strong political commitment and resource mobilization. However, the functionality gap (18.3 percentage points between installation and full operation) reveals significant implementation challenges that require targeted interventions.

Comparative Analysis

While direct provincial comparisons are limited, available data suggests that Matabeleland South's performance aligns with national trends. Reported coverage rates in Manicaland Province (88% coverage, 68% functional) indicate that power supply and training challenges are systemic nationwide issues rather than province-specific problems (MoHCC, 2024).

Root Cause Analysis

Infrastructure Challenges Zimbabwe's ongoing electricity crisis, with only 40% rural electrification coverage (ZESA, 2024), fundamentally constrains EHR functionality. The dependency on grid electricity without adequate backup systems creates vulnerability to service disruptions.

Training Model Limitations The centralized training approach, while ensuring standardization, proves inefficient for geographically dispersed facilities. Travel costs, staff time away from clinical duties, and limited training capacity create bottlenecks in the rollout process.

Governance Gaps The exclusion of mine clinics and border facilities reflects broader challenges in multi-sectoral health governance, where different ownership models create implementation silos.

Innovation as Adaptation Strategy

The WhatsApp helpdesk innovation demonstrates successful adaptation of existing communication technologies for technical support, mirroring successful mHealth interventions documented in similar settings (Gondwe et al., 2023). This low-cost, high-impact solution addresses the challenge of providing timely technical support across geographically dispersed facilities.

RECOMMENDATIONS

Short-Term (0–6 Months) Infrastructure Stabilization

- Deploy solar hybrid systems with battery backup at the non-functional sites
- Conduct comprehensive power audit at all facilities to identify at-risk installations
- Establish emergency power protocols and backup procedures

Training Acceleration

- Implement district-based train-the-trainer programs for the 26 untrained sites
- Develop mobile training teams to reduce travel burden on clinical staff
- Create competency-based certification system to ensure training quality

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Medium-Term (6–18 Months)

- Partner with telecommunications providers (TelOne, Econet) to improve rural broadband infrastructure
- Explore public-private partnerships for connectivity solutions
- Pilot satellite internet solutions in the most remote facilities
- Policy Inclusion: Integrate mine/border clinics into MoHCC's EHR mandate.

Long-Term (2–5 Years) Sustainable Financing

- Advocate for dedicated eHealth infrastructure budgets in provincial allocations
- Develop cost-recovery mechanisms for system maintenance and upgrades
- Explore international donor support for infrastructure development

System Integration

- Integrate Impilo with Laboratory Information Management Systems (LIMS) and Essential Logistics Management Information System (ELMIS)
- Develop interoperability standards for seamless data exchange
- Create comprehensive health information ecosystem

Capacity Building

- Establish provincial EHR support centres
- Develop local technical expertise through training partnerships
- Create career pathways for health informatics professionals

Implement Monitoring Framework Key Performance Indicators

Facility coverage	90.2%	98%
Functional sites	71.9%	90%
Training completion	73.2%	95%
Uptime reliability	Not measured	>95%
User satisfaction	Not assessed	>80%

CONCLUSION

The EHR implementation in Matabeleland South Province demonstrates significant progress toward digital health transformation while highlighting persistent challenges that require systematic attention. The 90.2% infrastructure coverage represents substantial achievement, but the functionality gap underscores the complexity of health system digitization in resource- constrained settings.

Key success factors include strong provincial leadership, adaptive problem-solving through innovations like the WhatsApp helpdesk, and commitment to universal coverage despite implementation challenges. However,

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sustainable success requires addressing fundamental infrastructure constraints, particularly power supply reliability and internet connectivity in rural areas.

The study's findings have broader implications for Zimbabwe's national eHealth strategy and similar initiatives across sub-Saharan Africa. The documented innovations provide scalable models for other provinces, while the identified challenges inform policy development and resource allocation decisions.

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