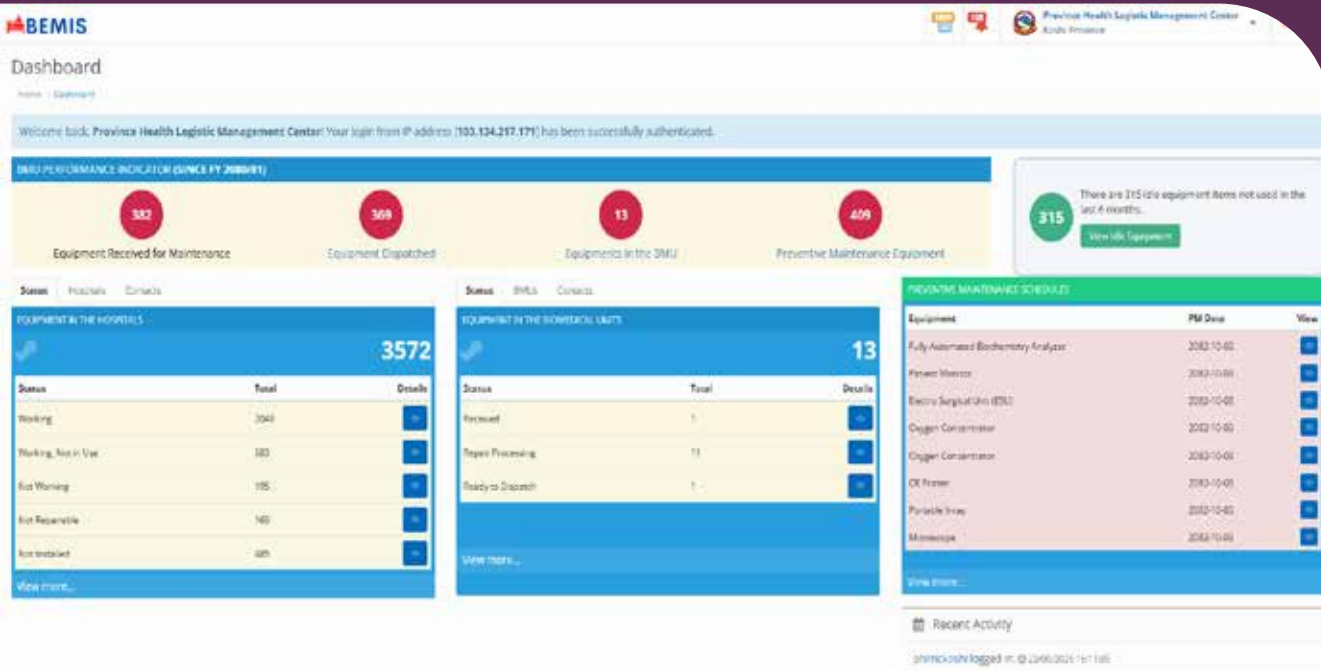


ENHANCING RURAL HEALTHCARE

BIOMEDICAL EQUIPMENT MANAGEMENT INFORMATION SYSTEM (BEMIS) IN NEPAL



Background

Biomedical equipment management is an important component of effective, efficient, quality, and timely healthcare delivery. However, health facilities have been facing challenges in biomedical equipment management due to limited resources, fragmented systems, poor visibility of equipment status, weak coordination, and limited skilled human resources. Health facilities often work in silos with limited information on equipment availability, functionality, and its maintenance.

As a result, many hospitals face:

- Human resource gaps
- Limited use of available biomedical equipment
- Repeated breakdown and prolonged downtime
- Inefficient procurement and resource duplication
- Weak preventive maintenance systems
- Compromised quality of service delivery

To address the critical shortage of technical capacity, Nick Simons Institute (NSI), under the leadership of the National Health Training Centre (NHTC), has supported the development and deployment of Biomedical Equipment Technicians (BMETs) to provide essential technical services for the operation, maintenance, and repair of biomedical equipment in health facilities.

To strengthen coordination and service delivery, Provincial Biomedical Management Units (PBMU) were established across seven provinces. However, after BMET deployment and PBMU establishment, significant operational gaps were observed especially in maintaining real-time equipment information, standard reporting, preventive maintenance, tracking, and timely access to reliable data for decision making.

To address these challenges, there was a clear need for a standardized, digital, and evidence-based biomedical equipment management system.

System Development

In coordination with the Provincial health ministries, Nick Simons Institute (NSI) supported the development of the Biomedical Equipment Management Information System (BEMIS). The system was rolled out at the provincial level, which involved equipment profiling of the hospitals in the province, system support, and upgrading of the software for user-friendly data accuracy reporting.

Biomedical Equipment Management Information System (BEMIS)

BEMIS is a cloud-based digital platform introduced in 2081 (2024). It is designed to track and manage biomedical equipment across hospitals.

Each equipment is given a unique digital identity, capturing real time data that enables tracking of:

- Location and distribution
- Function status (working, not working, working not in use, not installed, and not repairable)
- Maintenance history
- Equipment age and preventive maintenance schedules
- Spare parts tracking

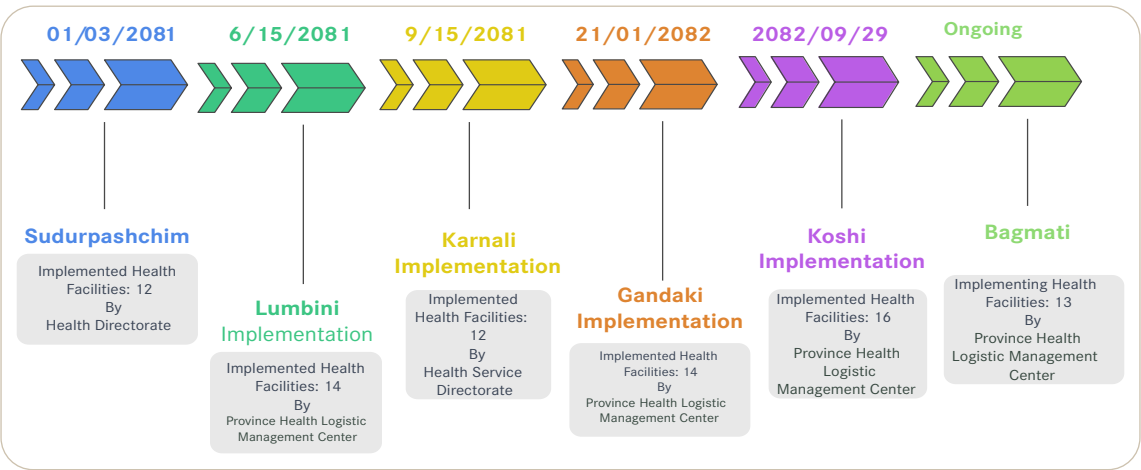
BEMIS has enabled real time tracking and evidence-based decision making, reducing unnecessary procurement, proper utilization of resources and improving prioritization. It helps program planners by providing real-time reports of equipment.



Status of BEMIS

The system was first launched in Sudurpashchim province and subsequently expanded in other provinces. Expansion to Madhesh province is yet to be completed, while equipment listing and the data entry into the system in Bagmati province are

currently ongoing. Similarly, orientation and access are provided to the respective Ministry of Social Development (MoSD)/ Ministry of Health, the Health Directorate, the Provincial Health Logistics Management Center (PHLMC), the Hospitals and Provincial Biomedical Units (HBUs/PBUs) in the provinces.



As of May 13, 2026, BEMIS has recorded 16,402 biomedical equipment from 68 hospitals. Of the total Sudurpashchim Province accounted 3,022, Koshi Province for 3,587, Gandaki Province for 3,324, Lumbini Province 3,776 and Karnali Province 2,693 items.

Key Achievements

- Improved visibility of biomedical equipment across hospitals
- Strengthened preventive maintenance practices
- Reduced equipment downtime and maintenance delays
- Strengthening evidence-based planning and budgeting
- Improved coordination between different levels of government authorities
- Identified donors, vendors, and suppliers for biomedical equipment

Challenges Faced

- Limited availability of dedicated biomedical engineering and maintenance personnel in hospitals
- Frequent turnover of BEMIS trained staff (focal person)
- Insufficient budget allocation for preventive maintenance, repair, calibration, and replacement of biomedical equipment
- Limited internet connectivity and electricity interruptions in remote health facilities are affecting timely system updates
- Challenges in transitioning from paper-based inventory systems to digital platforms due to resistance to change and limited digital literacy
- Limited availability of calibration and testing devices for specialized biomedical equipment for hospitals BMETs



Further Steps

- Develop a mobile application enabling offline data entry and field use
- Add advanced analytics, visualization, and filtering features in the dashboard
- Include a user feedback and rating mechanism to assess system usability and service satisfaction
- Linkage with Hospital Minimum Services Standard (MSS) tools for verification of annual preventive maintenance and repair records
- Strengthening policy and governance framework for biomedical equipment management through the outcomes of the BEMIS
- Integrate BEMIS with national health information systems and digital health architecture for interoperability

For more information, please contact:

Nick Simons Institute
Box 8975, EPC 1813 Sanepa, Lalitpur, Nepal
Phone: 977-1-5451978
Fax: 977-1-5444179
Email: nsi@nsi.edu.np / www.nsi.edu.np

- Introducing automated alerts for warranty expiry, develop inventory forecasting and resource planning functionalities to support evidence-based procurement

Conclusions

The rollout of Biomedical Equipment Management Information System (BEMIS) has significantly improved the management of biomedical equipment through improved asset inventory management, real-time monitoring, preventive maintenance scheduling and fault reporting. This platform has enhanced monitoring, reporting, and maintenance tracking, data visibility, accountability, and evidence-based decision-making for equipment planning, utilization, and resource allocation across supported hospitals and provinces. To achieve optimal functionality and long-term sustainability, further efforts are required to strengthen policy and regulatory alignment, institutional ownership, biomedical engineering human resource capacity, system usability, data standardization, and data quality assurance mechanisms.

Continued investment in user training, digital infrastructure, integration with national health information architectures, and routine performance monitoring will be critical to institutionalizing BEMIS as a sustainable digital health system supporting efficient equipment management and improved service delivery outcomes.