

Healthcare Technology Management (HTM): Transforming Lake Zone Patient Care by Establishing East Africa's First Centre of Excellence in Biomedical Engineering at Bugando Medical Centre, Mwanza

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Rationale

The downtime of medical equipment and lack of mature health technologies are critical barriers to providing quality health services across Tanzania. Device upkeep is hindered by a shortage of trained technicians, lacking spare parts, and poor adherence to processes. Bugando Medical Centre (BMC) serves over 300,000 Outpatients/year, with a team of 8 biomedical technicians. Our 4-year Health Technology Management (HTM) program (now in Year3) is establishing a *Centre of Excellence (CoE)* in Biomedical Engineering at BMC to serve as a regional hub.

Method

A baseline assessment of the department found significant gaps in technical capabilities, work processes, and infrastructure. These were addressed by developing three pillars of effective maintenance: establishing operational best practices (KPIs, Management Accountability), embedding critical systems and processes (Inventory, Preventative Maintenance), and delivering a holistic people strategy (performance management, talent development).

The program employs an innovative co-investment strategy leveraging the financial, infrastructure, and management capabilities at BMC to ensure sustainability and co-led programming.

Results: Operating Theatre equipment working time increased from 57% to 90%, meaning all theatres are now operational 24/7. They were reduced from an average of 14 days in 2018 to 3 days in 2020 through improved work processing. A new work order system was implemented, allowing engineers to carry out over 1,000 jobs/year, with IT dashboards to visualize data and trends. Additionally, the construction of a state-of-the-art engineering department was completed in Jan 2020, described by international experts as the *best in Africa*.

Conclusion: HTM is transforming the ability of biomedical engineers to serve the hospital and the region. The innovative program is saving lives by ensuring medical staff has working devices 24/7. According to a 2019 MOH audit visit, BMC Engineering is now Tanzania's leading hospital department for data tracking, management through KPIs, and full implementation of 5S safety standards.

