



**African Biomedical
Engineering Consortium**
Innovation through Education



Roles of Biomedical Engineers in Design and Maintenance of Medical Devices

Lovemore Mkukuma, PhD

Malawi University of Science and Technology

9th November, 2021

ABEC 2021 Design School

- BMEs can be employed in 4 categories:
 - hospitals,
 - outside service providers, and
 - the manufacturers themselves,
 - Service engineer
 - R/D dept to design new equipment.

➤ University and research institutions.

- Teaching and research
- Design studio

- BMEs can also work at the Ministry of Health headquarters where they are involved in policy formulation and managing service contracts.
 - HTM policy;
 - Procurement policy of medical devices;
 - Donation policy of medical devices;
 - Engineering specialist training policy.

- BMEs can also get into entrepreneurship as local agents of foreign distributors/suppliers.

Responsibilities of BMEs

- Hospital-employed BMEs generally have the following responsibilities:
 1. Corrective maintenance
 - Troubleshooting
 - Repair

2. Planned Preventive Maintenance.

- Cleaning, greasing, changing filters, o-rings;
- Carrying out electrical safety tests;
- Performance assurance;
- Calibration.

3. Conducting user training.

4. Pre-purchase evaluation.

As new equipment (new models or entirely new devices) is considered for purchase, many BMEs are involved in the selection decisions, usually working very closely with the medical staff.

Challenges that BMEs Face

- Resistance by some cadres in the health sector;
- Lack of proper tools and spare parts;
- No specialist training;
- Smaller economies cannot attract manufacturing companies of medical equipment.

Opportunities

- It's a new booming profession in Africa.
- The introduction of BME in some African universities e.g. MUST is a game changer.
- Time to come up with equipment designed in and for Africa.
- Time to influence the formation of a local regulatory body for medical devices.

Thank you