Cameroon

The Republic of Cameroon is situated in Central Africa at the juncture of the Gulf of Guinea. It belongs to the 40 poorest countries in the world although gifted with rich natural resources, including oil and gas, minerals, high-value species of timber, and a variety of different agricultural products. Cameroon has a population of about 25 million inhabitants with a mean age of 18.5.

In the last ten years, many healthcare facilities have seen the day both public and private, with just a hand full of them properly equipped and managed. The optimization of medical devices’ uptime is a prime factor for private healthcare facilities to remain competitive and maintain her reputation in the sector. For this reason, management is usually very stringent with clinical engineers who have to work hard in limiting down times. The government has in the past three years embarked on an emergency program to renovate and equip some major healthcare facilities around the country but the problem of efficient health technology assessment and management still prevails. If this issue is not properly addressed, in the next 5 years after renovation, these equipments shall breakdown and be abandoned. 85% of public healthcare facilities have very obsolete medical devices or completely absent. There is usually a problem of budget allocation for the systematic repair and renewal of medical devices. This is partly due to the fact that the opinion of clinical engineers is usually not sought when preparing budgets for a new financial year.

No matter the efforts put together by universities in training clinical engineers, most of them still end up jobless after their studies although the demand for experienced engineers still remains high. This is partly due to the fact that the curricular is about 90% theoretical and 10% practical. For this reason, there is an urgent need to adapt academics to the demands of healthcare facilities by increasing for instance the total number of hours for practical sessions in hospitals. The few that succeed in getting a job in healthcare institutions are
usually not given the chance to put into practice what they learned. Most medical doctors, always interfere in their job by for instance approving the supply of medical equipments without prior discussion with the clinical engineer(s). For this reason, usually after supply, the equipments are abandoned without proper follow up or periodic preventive maintenance. One issue which clinical engineers face especially in public healthcare facilities is that of access to medical equipment and devices on which to work. Most of these hospitals are poorly equipped making work boring and after some years of idleness, the engineers decide to go for greener pastures in Europe or USA leaving the health facility handicap. Most of these worries are to be grouped and tackled in several meeting sessions by the Cameroonian Association of Biomedical Engineers. But at the moment, there is need to first of all harmonize the several groups or associations of clinical engineers and technicians, then bring forth or elaborate a road map which will be adopted nationwide.
1. **State of Clinical Engineering (CE) - Health Technology Management (HTM) – Body of Practice (BOP)**

Clinical engineering in CAMEROON is at developing stage. Public and private sector health institution’s managers recognizes more and more the key role of Clinical Engineers or Technicians. Discussions started with the Ministry of Public Health in order to:

- Always have a Clinical Engineer or a Technical Referent in all the regional and departmental Hospital Management team
- To have a biomedical engineer/ Technician affected to each hospital from district level hospital.
- To give the agreement for Health Equipment sales only to companies having a biomedical engineer amongst their staff.

Actually there is no official HTM standards practice. Most the Clinical Engineers will rely on France or WHO standards/documents of practice.

2. **How would you suggest to show the Value of and from having CE-HTM PROGRAM?**

For Cameroon, I would suggest a national conference on clinical engineering involving various stakeholders like ministry decision makers, universities staff, health institution managers, medical school managers... this conference will showcase the local clinical engineering experience and foreign experts will also present about the Value / How to set up a CE-HTM Program.

Such a conference was planned in 2014 by ACATEB (Cameroon Biomedical technology professional’s Association) unfortunately for lack of funds the conference was cancelled.

3. **Example of success stories where CE supported patient outcomes**

3.1 – Centre des Urgences de Yaoundé (Emergency Center of Yaoundé)

In the frame of the cooperation with KOICA, a Reference Emergency Center were built near the biggest hospital of the country (Central Hospital Yaoundé).

A team of technicians and a local Clinical Engineer was recruited to insure HTM in this new emergency center with the support of KOICA experts.

3.2 – Shisong Cardio surgery Center

This hospital provides quality healthcare because of the great technological and medical set up. The real difference is made by the presence of local technicians who with remote support from manufacturers insure a good HTM.

3.3- University health clinic of Bangangté

The CE in this health institution is runs by biomedical engineers trained in Université des Montagnes Bangangté. They make sure that the available equipment support the medical practice. Many biomedical engineering students realize their academic internship there.

4. **CE Education program available (levels and content) – Body of Knowledge (BOK)**

There are several schools and university providing academic training in biomedical engineering.

4.1- **Secondary School Level (Bertoua, Kumba, Yaounde)**

There are 3 secondary school were students receive basic biomedical engineering teaching. At the end of the curriculum a hold a General Certificate of Education (GCE) Advanced Level in biomedical
With this diploma they can candidate for university cursus in engineering, physics, sciences...
The content is basics of electronic, physic, mathematics, electricity.

4.2- Professional / Vocational School (Bio Elec)
The school is held by a Clinical Engineer with above 15 Years of Clinical Engineering experience in Cameroon. This school is known amongst local biomedical engineers as “very useful step” for young graduated biomedical engineers or technicians who need to develop practical skills.

4.3- University Bachelor and Master Program
a- Université des Montagnes de Bangangté, (Bachelor and Master degree)
b- Institut Universitaire de Technologie de Douala (Bachelor degree)
c- Institut Universitaire de la Cote de Douala (Bachelor degree)

These 3 universities prepare most of the local CE professional in Cameroon. Every year more than 75 biomedical engineering students graduate from those schools.

5. CE Association/Society and Credentialing/Certification program if available:

ACP-GBM: Association Camerounaise des Professionnel du Genie Biomedical (Cameroon Biomedical Engineering Professional’s association) created in 2015 in replacement of ACATEB (Cameroon Association of Biomedical Technology’s Professional)

ACITEB: Association Camerounaise des ingenieurs et Techniciens Biomédicaux (Cameroon Biomedical Engineers and Technicians’s Association) created in 2016

There is no official Certification program or validation of experience existing in Cameroon for clinical engineering. The above named associations are working in order to create awareness in schools, hospital, and ministry of public health about CE.

6. CE major challenges (think of 3 subjects)
- Need for more specialized training for clinical engineers to develop specific skills in repair, management or assessment
- Non Distinction between Biomedical Sciences technicians (Laboratory Staff) and Biomedical Engineering Technician by the government during recruitment. The last years many technician appointed in Public Hospital as Biomedical Engineering Technician were graduated laboratory technician
- Budget very limited for proper CE in most of public hospitals
- Needs for national guidelines, norms, laws or regulations on Importation, Purchase, and Donation...

7. What is the most important action you will support to increase CE recognition.
For Cameroon, I would suggest a national conference on clinical engineering involving various stakeholders like ministry decision makers, universities staff, health institution managers, medical school managers... this conference will showcase the local clinical

www.ced.ifmbe.org
engineering experience and foreign experts will also present about the Value / How to set up a CE-HTM Program.