Ghana

State of Clinical Engineering (CE) - Health Technology Management (HTM) – Body of Practice (BOP)

Clinical Engineering practice is well recognized and widely accepted as an established post in the public healthcare structure in Ghana. As clinical engineering field is interdisciplinary, there are people with different engineering background, especially electrical/electronic and communication engineering and computer engineering working alongside people with biomedical engineering background as clinical engineering managers, technologist or technicians. These people apply engineering techniques, technology and theories to solve problems in healthcare and management technology in healthcare but predominantly, the day-to-day activities is skewed towards medical equipment maintenance management and few are involved in Health Technology Management (HTM) activities, i.e. medical equipment purchasing support, clinical decision support, and technology planning and assessment.

In general practice, there is little or no distinction between biomedical engineering and clinical engineering in Ghana. Although there is no university running clinical engineering as a discipline at the undergraduate level, clinical engineering is currently the only space available for biomedical engineers/technologists to practice in the health sector.

How would you suggest to show the Value of and from having CE-HTM program

In Ghana, very little is known to the general public about clinical engineering as a profession in the health sector. A biomedical engineering awareness radio talk show program organized by the Ghana Society of Biomedical Engineers Chapter in Ashanti Region of Ghana displaced gross ignorance of the general public to this profession.

More awareness creation about clinical engineering as a profession in the health sector is needed through different levels of stakeholder engagements. Example; parliament, inter-ministerial, Ecowas and AU.

Example of success stories where CE supported patient outcomes

In Ghana, the clinical engineering professional play very important role in supporting patient outcome. The following are few examples:

- In the surgical environment, clinical engineers are part of the surgical team to ensure that equipment like anaesthesia, suction machine and surgical diathermy units function properly during surgical procedures as failure of these equipment during surgery would be detrimental to the patient.

- The government of Ghana through her donor partners funded a Tuberculosis project under which x-ray machines were distributed to some public hospital across country in 2016. However, personnel (Radiographers) to operate the machines were in short supply and therefore the ministry of health in consultation with other stakeholders engaged clinical engineering professionals and gave them additional training to operate the x-ray machines for taking radiographs as well as performing maintenance on the
equipment. With this intervention, all the facilities that were having this challenge are now in full operation.

- Clinical engineering professionals also involve in ensuring patient safety by effectively carrying out calibration and quality assurance on some medical devices.
- Clinical engineering professional in Ghana also ensures that medical equipment are well maintained and are readily available to support patient care. A typical example is the Radiotherapy Centre in Korle Bu Teaching Hospital where clinical engineers in the facility were able to sustain a Cobalt 60 teletherapy machine (the only cancer treatment machine serving Ghana and the neighbouring West Africa countries) for over five years after manufacturers of the machine have declared they no longer provide technical support on the machine.

**CE Education program available (levels and content) – Body of Knowledge (BOK)**
Currently there are four universities in Ghana offering undergraduate program in biomedical engineering. Of these, one university (University of Ghana) offers both graduate and post graduate program, with clinical engineering offered as a specialization at the post graduate level, one university (Valley View University) offer diploma and undergraduate programs. The other two universities (Kwame Nkrumah University of Science and Technology and All Nations University) offers only undergraduate program in biomedical engineering. Also, one Technical University (Koforidua Technical University) offer diploma program. Another Technical University (Accra Technical University) has just started certificate program in biomedical engineering in the current academic year which began in September this year. Although there are differences in the curriculum or course content from these universities, the core body of knowledge (BOK) are taught across the universities.

**CE Association/Society and Credentialing/Certification program if available**
Ghana Society of Biomedical Engineers is recognized as the National Society for Biomedical/Clinical Engineering professional in Ghana. The Society has its aims and objective as follows:

1. To foster the spirit of brotherliness and unity among Biomedical Engineering professionals in Ghana and the World at large.
2. To encourage the development, dissemination, integration, and utilization of knowledge in biomedical engineering.
3. To cater for the social, economic and professional needs of the members
4. To exercise professional supervision over members with a view to maintaining a high standard of professional competence and conduct.

The Ghana Society of Biomedical Engineers is a member of the International Federation for Medical and Biological Engineering (IFMBE) and also play important role in the Africa Activities Working Group of IFMBE.
It is worth mentioning of the defunct ‘Biomedical Engineering Association of Ghana’ who merged with the Ghana Society of Biomedical Engineers in 2015 and maintained the name ‘Ghana Society of Biomedical Engineers’.

Currently, there is no credentialing or certification program available but there is a need for it now looking at the fact that biomedical/clinical engineering is the only profession in the health sector without professional certification. Although some individuals have registered under Ghana Institution of Engineers for certification, they are placed under the Electrical Engineering arm of the institution.

**CE major challenges (think of 3 subjects)**

1. In most instances, clinical engineering professional at the micro (facility) level are not involved in medical equipment procurement decision. This result in procurement of medical equipment without proper technical training for in-housed clinical engineering professionals. There is also inappropriate coordination between service contractors and in-house technical staff.

2. Inadequate Software, tools and calibrating equipment for effective maintenance

3. Licensing and regulation of Clinical Engineering professionals
   Clinical engineering is the only profession in the health sector without licensing or regulatory body. The Ghana Society of Biomedical Engineers has made a petition to the Engineering Council of Ghana to register the Society as a Licensing body but this has not been materialized.

**What is the most important action you will support to increase CE recognition**

1. International cooperation for transfer of knowledge and technical expertise
2. Credentialing and Certification
3. Clinical Engineering Innovation, development and Technology transfer