

Editorial

¹Africa as the Cradle of Biomedical Engineering II

A full appreciation of the developments in biomedical engineering, bme in Africa can only be done by considering in its totality the developmental pattern of bme with respect to its activities through the years. This is so, because the level of development of any profession is determined by how highly developed its manpower is as well as how organized its professional societies are.

And manpower devt for bme can be said to be the evolution of specific knowledge as well as strategic skills in a person to enable him solve problems in biology and medicine. Bme in Africa with respect to the processes of its manpower devt has mainly 3 phases: education (for acquisition of specific knowledge), training (for acquisition of strategic skills) and practice (for solving problems); in addition to professional organization.

In Africa, the devt of bme *education* can be traced to the late 1960s, when in 1969 the Dept of Medical Physics and Bioengineering was formed in the Univ. of Cape Town (UCT), South Africa. Soon after the establishment of the Dept of BME as a separate entity, 4 years later, postgraduate programmes in bme were introduced in UCT. In Nigeria, the early 1970s, the College of Medicine, University of Lagos established a Department of Biomedical engineering to train low and middle level manpower in bme. Then in 1976, the Systems and Biomedical Engineering Department (SBME) was established in the Faculty of Engineering, Cairo University in Egypt and produced first graduate in 1980. In the late 1990s and early 2000s, there was a plethora of academic institutions in Africa mounting programs in bme.

Most of the developmental efforts in African bme have hitherto been in the area of *training*, be it as a short courses, continuing education, seminars, workshops or even conferences. This is expected because this is the aspect of manpower development prone to sponsorship and also the one that forms an interface for individuals making for changes in their fields of interest.

This is true because initial entrants into the bme profession held degrees and certificates in traditional engineering areas like electrical engineering, mechanical engineering and chemical engineering. So these personnel needed to acquire few bme skills through trainings via short courses, seminars and workshops to be able to manage biomedical equipment. Thus, while education emphasized the development of knowledge, training emphasizes the development of skills, which can come in form of short courses, seminars and workshops.

Attempts in bme training in Africa started even earlier than its education. Many non-bme institutions had conducted courses in bme. Specifically, in South Africa, even before the University of Cape Town commenced programmes in bme, it has in conjunction with other institutions organized workshops and courses in bme in the 1960s. In Nigeria, the early 1970's, the then Nigerian Association of Health Engineering (NAHE) based in the Department of BME, College of Medicine, University of Lagos had conducted a number of seminars and conferences in bme. Their first conference held in 1974.

In professional practice, African bme can be said to be currently making steady but slow progress especially with the establishment of a handful of educational institutions and professional societies since the 1960s that bme was first observed in the continent.

In Africa, most bme professionals undertake their professional practice in the hospitals, medical and health centres or other clinical healthcare settings. Thus, among the five career areas for the practice of bme – clinical, industry, research/devt, academia and government – the *clinical* setting holds the greatest prospect for bme professionals in Africa. As a result, many teaching hospitals and ministries of health have recognized and in fact created separate bme units from the traditional works dept.

Biomedical engineering practice in the *academia* is improving in geometrical proportions in Africa, with the high increase in the number of educational institutions mounting programs in biomedical engineering in the continent.

A handful of ancillary research centres for bme exist across Africa but there is still a paucity of research centres devoted solely for bme *research and development*

The *industry* setting is the worst hit by paucity of the professional practice of bme in Africa. African bme industry is largely that of distribution of finished products and services. As a result, there is very few or no known sustained biomedical equipment manufacturing across the African continent especially in large scale. However, there have been production of biomedical accessories and disposables and a handful of individuals have tried their hands on biomedical equipment manufacturing and fabrication, though these have not been sustained.

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