

Role of BME in hospital management

Objectives

- Roles biomedical engineers play in the health care delivery system. ✓ p.g 2
- Biomedical engineers as a department in Hospitals Organogram. ✓ P.g 3
- Major role that advances in medical technology have played in the establishment of the modern health care system. ✓ P.g1

Health system

Definition: sum of all the organizations, institutions and resources whose primary purpose is to improve health.

Concepts: the health system covers a whole gamut of health activities, health programmes, institutions providing medical care such as hospitals, clinics and primary health care centres and the policies enunciated (stated) by governments to provide optimal health care for its citizens.

How did Engineers get involved in Medicine?

1. **Clinical engineers** were first introduced during the late **1960s** to be responsible for **the hospital electrical safety**.
Example: accidental cardiac arrhythmia during catheterization blood vessels near the heart as result of voltage differences from outside sources and normal cardiac electricity.
2. Roles of engineers by the mid-**1970s**
 - Developing **cost-effective approaches for using medical technology**.
 - Provided hospital administrators with advice regarding **the purchase of medical equipment** based on their ability to meet specific technical specifications.
 - Became involved in **the training of health care personnel** regarding the safe and efficient use of medical equipment.
 - Started using modern scientific methods and working with quality assurance policies.
3. During the 1970s and **1980s**
 - The **USA Veterans Administration (VA)** (إدارة قدامى المحاربين) convinced that clinical engineers were vital to the overall operation of the VA hospital system.
 - **Health care professionals—physicians and nurses—needed assistance in utilizing existing technology and incorporating new innovations.**
 - **Certification of clinical engineers became a reality** to ensure the continued competence of practicing clinical engineer.
4. During the **1990s**
 - **The evaluation of clinical engineering as a profession**
 - establishment of the American College of Clinical Engineering (ACCE) and the Clinical Engineering Division within the International Federation of Medical and Biological Engineering (IFMBE).

Practical Examples for BME interplay with medicine

- Developing of **biosensors** to be used in prosthetic devices to develop a means of detecting and using the bioelectrical signal to power the device.
- **Automating the clinical chemistry laboratory.**
- **Solving problems** within the health care system.