

Clinical engineering: Definition, Evolution, Role, Responsibilities, Functional status, History of clinical engineering and Technology in Health Care System, Enhancing patient safety

CLINICAL ENGINEER:

A person who supports patient care by applying engineering and managerial skill to health care technology.

CLINICAL ENGINEERING:

Definition: Clinical engineering is a multidisciplinary field that combines the principles of engineering ,medicine and health care to design, develop and maintain medical devices, equipment and system .

EVOLUTION OF CLINICAL ENGINEERING:

Engineers were first encountered in the clinical field during the late 1960s. Due to rapid increase of medical equipment especially in academic medical centres and to ensure patient safety engineers entered clinical field.

- To provide technological support and to meet the above needs a new engineering discipline called clinical engineering evolved.
- During 1970s clinical engineering experienced a major expansion due to the following reasons.
 - The veterans Administration convinced that clinical engineering were vital to the overall operation of the VA hospital systems.
 - The country is divided in to biomedical engineering districts. A chief biomedical engineer oversees all engineering activities in the hospitals in a district
 - Clinical engineering departments were established in large as well as small medical centres throughout united states.
 - Clinical engineers were hired to use the existing technology and to incorporate new technology.

After the entry of clinical engineering in hospital environment, routine electrical safety inspections exposed that only a small part of the equipment failed due to electrical safety failure. other problems were due to improper understanding and improper maintenance of the device .

Simple visual inspections often revealed broken knots ,frayed wires .on further investigation it was found many devices did not perform in accordance with manufacturers specification , also those devices were not maintained according to the manufacturers instruction.

By the mid 1970s complete performance inspection before and after use become the norm. Clinical engineering department became the logical support centre for all medical technologies.

Clinical engineers were assigned additional responsibilities like

- Managing high technology instruments
- Managing systems used in hospitals
- Training medical personals (doctors, nurses) in equipment use and safety