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Editorial

Clinical Engineering: An Overview

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EDITORIAL

Clinical engineering is a subfield of biomedical engineering that focuses on the application and implementation of medical technologies to improve healthcare delivery. Clinical engineers' responsibilities include educating and managing biomedical equipment technicians (BMETs), collaborating with government authorities on hospital inspections and audits, and providing technological advice to other hospital employees (i.e. physicians, administrators, IT, etc.) Clinical engineers also advise medical device manufacturers on potential design changes based on clinical experiences, as well as monitor the state-of-the-art to reroute hospital procurement patterns accordingly.

Clinical engineers' innate concentration on practical implementation of technology has tended to keep them oriented toward incremental-level redesigns and reconfigurations, rather than revolutionary R&D or cutting-edge ideas that would be several years from clinical adoption; nonetheless, there is an effort to extend the time-horizon over which clinical engineers can affect the trajectory of biomedical innovation. They serve as a "bridge" between product creators and end-users in their varied jobs, combining the viewpoints of being near to the point of use while also being schooled in product and process design. Large hospitals' clinical engineering departments will occasionally engage not only biomedical engineers, but also IT and industrial/systems engineers to assist with operations research, human aspects, cost analysis, and safety, among other things. While some say clinical engineering dates back to the 1940s, it wasn't until 1969 that the word was coined. Landoll and Caceres' work from 1969 contains the first explicit mention to the phrase. Clinical engineering is thought to have been coined by cardiologist Cesar A.

Caceres. Of course, the area of biomedical engineering as a whole is still very new. According to the Alliance for Engineering in Medicine and biology, the first modern professional intersociety engineering symposium focused on the application of engineering in medicine was presumably conducted in 1948.

Healthcare is becoming increasingly technology-driven, necessitating qualified personnel to meet the growing need for specialists in the area. To meet the country's human resource development needs, the Indian Institute of Technology Madras (IITM), Sree Chitra Thirunal Institute of Medical Sciences and Technology, Trivandrum, and Christian Medical College, Vellore (CMC) have launched an M-Tech Clinical Engineering course. This was done to promote indigenous biomedical device development and technology management, as well as contribute to the country's overall healthcare growth. Engineering students gain an understanding of biology, medicine, relevant electronic background, clinical procedures, device development, and even management issues over the course.

During internships, students are matched with clinical doctors from CMC and SCTIMST to gain hands-on experience. This is done to help students comprehend the process of discovering unmet clinical needs and, as a result, contribute to the country's creation of novel medical equipment. Clinical attachment, which exposes students to the clinical world, is a distinctive component of the course. Engineers will be trained to manage and oversee the safe and effective use of technology in health care delivery as point of the initiative.

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