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Commentary

Short Note on Biomedical Engineering

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DESCRIPTION

BME (Bio Medical Engineering) is also known as "Bioengineering. This area aims to bridge the gap between engineering and medicine by combining engineering's design and problem-solving talents with medical biology to advance health-care treatment, such as diagnosis, monitoring, and therapy. The application of engineering ideas and design concepts to medicine and biology for healthcare reasons is known as Bio Medical engineering (BME) or medical engineering (e.g., diagnostic or therapeutic). A biomedical engineer's responsibilities also include the management of existing medical technology in hospitals while conforming to industry standards. This profession, also known as a Bio Medical Equipment Technician (BMET) or clinical equipment technician, entails making equipment recommendations, purchase, routine testing, and preventative maintenance. In comparison to many other engineering topics, biomedical engineering has just lately evolved as a distinct field of study. A new field's evolution from being an interdisciplinary specialization within already-established topics to being deemed a field of its own is common. Much of the work in biomedical engineering is research and development, which covers a wide range of topics. The development of biocompatible prostheses, various diagnostic and therapeutic medical devices ranging from clinical equipment to micro-implants, common imaging equipment such as MRIs and EKG/ECGs, regenerative tissue growth, pharmaceutical drugs, and therapeutic biological are all examples of prominent biomedical engineering applications. Clinical engineering is a subset of biomedical engineering that deals with the actual application of medical devices and technologies in hospitals and other clinical settings. Clinical engineers' responsibilities include training and supervising biomedical equipment technicians (BMETs), selecting technological products/services and logistically managing their implementation, collaborating with government regulators on inspections/audits, and serving as technological consultants for other hospital employees (e.g. physicians, administrators, I.T., etc.) Clinical engineers also advise and consult with medical device manufacturers on potential design improvements based on clinical experiences, as well as monitor the state of the art so that procurement patterns can be redirected properly. Clinical engineers inherent focus on practical implementation of technology has tended to keep them oriented toward incremental-level redesigns and reconfigurations, rather than revolutionary research and development or ideas that would be many years from clinical adoption; however, there is a growing effort to extend the time-horizon over which clinical engineers can influence the trajectory of biomedical innovation. They serve as a bridge between primary designers and end-users in their varied positions, combining the viewpoints of being near to the point-of-use while also being schooled in product and process engineering. Clinical engineering departments will occasionally hire industrial/systems engineers in addition to biomedical engineers to assist with operations research/ optimization, human aspects, cost analysis, and other issues. For an examination of the techniques used to develop safe systems, see safety engineering. The ratio in the hospital is one engineer per eighty beds.Clinical engineers are also authorised to conduct audits of pharmaceutical and related stores in order to keep track of FDA recalls of invasive medical devices. It is the methodical use of engineering sciences to the design, development, adaptation, testing, evaluation, application, and distribution of technical solutions to challenges faced by people with disabilities. Mobility, communications, hearing, vision, and cognition are some of the functional areas addressed by rehabilitation engineering, as are activities related to work, independent living, education, and community inclusion.

While some rehabilitation engineers have master's degrees in rehabilitation engineering, which is usually a subspecialty of Biomedical engineering, the majority have undergraduate or graduate degrees in biomedical engineering, mechanical engineering, or electrical engineering. Biomedical sensors based on microwave technology have gotten a lot of attention in recent years. Microwave sensors, for example, can be used as a complementary tool to X-ray to monitor lower extremity trauma, and different sensors can be produced for specific usage in both diagnosing and monitoring illness conditions. When measuring at different stages during the healing process, the sensor monitors and the dielectric properties may thus detect changes in tissue (bone, muscle, fat, etc.) beneath the skin, so the response from the sensor will change as the wound heals.

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