Does biomedical engineering hold the key to future healthcare challenges?

In our fast-paced world of quick data access, AI and value-based healthcare, the growing importance of engineering in medicine is quickly becoming evident. Yet will the interface between engineering and medicine solve the growing challenges we face in healthcare? Can biomedical engineering really solve the challenges of tomorrow?

MRI machines to bedside monitors to artificial heart valves – these are only some of the innovations that have come about through the crossover of engineering into medicine. As we look to the future, it seems highly probable that biomedical engineering will break new ground, leading to ever more fascinating discoveries.

For hospital leaders and healthcare providers, it seems that the growing upward trend in biomedical engineering can no longer be overlooked when it comes to resolving some of the medical challenges of today and tomorrow. Yet, the question is: How can engineers and clinicians work together to tackle these challenges? Is it possible for engineers, surgeons and researchers to work in a multidisciplinary setting?

Multidisciplinarity. This involves bringing together engineers, surgeons and researchers from different fields in order to speed up healthcare innovations. This can be achieved by providing specialised training programmes and creating team-based projects. Although creating multidisciplinarity may clearly lead to several challenges, such as workplace conflict, the benefits can certainly outweigh the benefits. According to Jeffrey W. Holmes, Professor of Biomedical Engineering and Medicine at University of Virginia, "ground-breaking innovations are possible only through the contributions of multidisciplinary teams of researchers, clinicians and engineers."

At the University of Virginia, the Centre for Engineering in Medicine is promoting innovation by inserting nursing and medial trainees into engineering laboratories and engineering students into clinical settings. Several medical schools in the US have also launched new programmes that provide a good mix of both medical and engineering courses. Yet, although this is a worthwhile endeavour, a lot more remains to be done in terms of providing adequate medical training.

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I**nadequate medical training**. The AAMC (American Association of Medical Colleges) reports that for the year 2018, M.D. and Ph.D programmes are producing only 600 graduates a year, a figure that represents only 3% of medical school graduates. Medical training is limited and constrained by financial resources and there are very few students who go on to become qualified in both the medical and engineering fields. More incentives and

joint programmes need to be provided in order to encourage wider participation and greater collaboration across the two fields.

Creating collaborative opportunities. In order to accelerate healthcare innovation, more collaborative practices need to be established across various fields. One such exciting opportunity arises through the collaborative interface between engineering and medicine. Creating collaborative opportunities between engineers and healthcare professionals is not only quick and cheap, but it is also a feasible and worthwhile endeavour. It does not require extensive training or the launching of complex biomedical engineering programmes, just a willingness to promote collaboration and to create spaces (such as conferences, seminars, workshops and cross-disciplinary events) which encourage multidisciplinary collaboration.

Sources: AAMC, The Conversation
Image: iStock

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