
Introduction

Nilmini Wickramasinghe

Stuart School of Business,
Illinois Institute of Technology,
565 West Adams Street,
Chicago, Illinois 60616, USA
Fax: +1 312.906.6549
E-mail: nilmini@stuart.iit.edu

Biographical notes: Nilmini Wickramasinghe researches and teaches in several areas within information systems with particular focus on the applications of these areas to healthcare and thereby effecting superior healthcare delivery. She is well published in all these areas with more than 50 referred papers and several books. In addition, she regularly presents her work throughout North America, as well as in Europe and Australasia. She is the US representative of the Health Care Technology Management Association (HCTM) and the Associate Director of the Center for the Management of Medical Technologies (CMMT) and holds an Associate Professor position at Stuart School of Business, IIT.

Dear Reader,

On behalf of the editorial team, welcome to this inaugural issue of the *International Journal of Biomedical Engineering and Technology*.

Healthcare is a growing industry; between 1960–1997 the percentage of Gross Domestic Product (GDP) spent on healthcare by 29 members of the Organisations for Economic Cooperation and Development (OECD) nearly doubled from 3.9% to 7.6%, while today the US continues to spend the most (16% in 2004).¹ Hence, healthcare expenditure is increasing exponentially and reducing this expenditure, i.e., offering effective and efficient quality healthcare treatment, is a global priority. Global healthcare then finds itself at a cross road trying to offer value-driven, patient-centric, quality care. Technology and automation have the potential to reduce these costs (Institute of Medicine, 2001; Wickramasinghe, 2000); thereby, making the adopting and adapting of various technologies coupled with the embracing of new techniques throughout the healthcare industry an imperative in order to provide value-driven healthcare.

In the final report compiled by the Committee on the Quality of Healthcare in America (Institute of Medicine, 2001), it was noted that improving patient care is integrally linked to providing high quality healthcare. Furthermore, in order to achieve a high quality of healthcare the committee identified six key aims; namely

- *healthcare should be safe*: avoiding injuries to patients from the care that is intended to help them
- *effective*: providing services based on scientific knowledge to all who could benefit and refraining from providing services to those who will not benefit (i.e., avoiding underuse and overuse)
- *patient-centred*: providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions
- *timely*: reducing waiting and sometimes harmful delays for both those receiving care and those who give care
- *efficient*: avoiding waste
- *equitable*: providing care that doesn't vary in quality based on personal characteristics.

In order to address all these criteria, we need a research discipline that has the necessary rigor, breadth and depth to identify how we might develop technology enabled, value-driven yet patient centric healthcare solutions.

The field of biomedical engineering and technology is both multidisciplinary and complex. As defined by the National Institute of Health in the USA

“Biomedical engineering integrates physical, chemical, mathematical, and computational sciences and engineering principles to study biology, medicine, behaviour, and health. It advances fundamental concepts; creates knowledge from the molecular to the organ systems level; and develops innovative biologics, materials, processes, implants, devices and informatics approaches for the prevention, diagnosis, and treatment of disease, for patient rehabilitation, and for improving health.”

This dynamic and relatively nascent discipline focuses on the application of engineering principles and techniques to the medical field. In particular, through combining the design and problem solving expertise of *engineering* with the medical skills of *physicians*, biomedical engineering helps to improve patient healthcare and the quality of life of healthy individuals. For healthcare delivery to evolve in this 21st century and resolve the major challenges connected with providing effective and efficient care, it is vital not only that research in the area of biomedical engineering and technology is fostered but that it also moves smoothly from the laboratory bench to the patient's bedside.

The *International Journal of Biomedical Engineering and Technology* (IJBET) has been formed as a vehicle to raise the awareness of this multidisciplinary community and specifically to underscore what progress is being made by complementary technologies and techniques. It also helps highlight the areas of biomedical engineering that are the focus of current research and development as well as identify critical issues that might require further attention.

Chris Gibbons at Johns Hopkins Medical Institute notes that

“While there are a plethora of journals in the fields of medicine, healthcare, public health and even a growing number in eHealth, currently few, if any, of these publications seek to facilitate a transdisciplinary perspective on understanding and addressing complex health. A journal that seeks to encourage investigators from diverse professional backgrounds to tear down historic disciplinary barriers and think in an integrative fashion to create novel hypotheses, elucidate nontraditional solutions and develop new knowledge for the future is both exciting and refreshing. IJBET is truly a welcome oasis.”

In addition, Professor Tuiritto, Director Pritzker Institute of Biomedical Science and Engineering at Illinois Institute of Technology notes that

“biomedical engineering is poised to play a major role in developing new approaches to the detection, treatment and cure of disease. Its impact on medical care and society in the 21st century is likely to be comparable to the impact that applications of traditional engineering offered to the 20th century. This journal provides an important link in the internationalization of this rapidly growing field.”

As the founding Editor-in-Chief of the *International Journal of Biomedical Engineering and Technology*, I am very excited that our journal can play a role in fostering and disseminating critical research in this exciting and dynamic field. It is indeed an honour to be able to facilitate the diffusion of research and the distilling of ideas so that we can indeed address the many challenges ahead that face global healthcare.

References

- Institute of Medicine (2001) *Crossing the Quality Chasm-a New Health System for the 21st Century*, National Academy Press, Washington DC.
- Wickramasinghe, N. (2000) ‘IS/IT as a tool to achieve goal alignment: a theoretical framework’, *International Journal of Healthcare Technology Management*, Vol. 2, Nos. 1–4, pp.163–180.

Note

- ¹Statistics from National Coalition on Health Care, accessed December 2006, <http://www.nchc.org/facts/cost.shtml>.