

# Medical informatics within the undergraduate and postgraduate curriculum in Pakistan: challenges and need of 21<sup>st</sup> century

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Medical informatics is a regular developing scientific field that deals with resources, devices and formalized methods for optimizing the storage, retrieval and management of biomedical information for problem-solving and decision-making. It is an interdisciplinary field, which helps to enhance healthcare, biomedical research and education through the extensive use of Information and Communication Technology (ICT)

As an academic discipline, medical informatics has become an essential and highly pervasive component of all healthcare activity. ICT also integrates epidemiology, health information, computer science and engineering.

Presently, medical informatics has become more effective and relevant with the presence of internet and World Wide Web (www). It has very strong impact on daily life in healthcare sector. Academic medical institutions have not always been able to keep pace with these advances. In medical colleges there are limitations to their implementation but they are very important to train successfully the medical graduates of 21<sup>st</sup> century.

Most of the medical schools in the world have realized the significance of medical informatics in their curriculum except Pakistan and other very few third world countries.

We should also realize that medical schools of our country should have even a stronger foundation in medical informatics with the skills to efficiently utilize increasingly complex information technology for clinical problem-solving and decision-making. So we have to review our curriculum.

However before its implementation in curriculum the faculty needs access to training and medical updates in medical informatics. Faculty members need to know the practical and scientific aspects of medical informatics. They should learn how to integrate information technology in their daily work in communication knowledge-sharing and decision-making if we really want medical informatics to integrate effectively and seamlessly within the teaching-learning process then there has to be an avenue that can help promote healthy discussions and foster the required knowledge and skills. There must be a forum for addressing the highly complex issues surrounding medical informatics. I hope that through this "IT Agenda" medical schools of Pakistan can begin to address these needs.

In order to successfully integrate medical informatics within the curriculum, some very real challenges have to be kept in mind.

## Challenge-1: Implementation of medical informatics:

For successful implementation of medical informatics, two components are needed. First one is "new hardware" and second is "new skills". The hardware includes operating and application of software, network services, security services and proper maintenance. Medical professionals should be retooled i.e. the medical professional involved in medical informatics should be trained and retrained on regular basis which is a major investment.

Teachers also have to take advantage of the interactivity and innovation provided by the multimedia components of the Internet and World Wide Web. To affect a paradigm shift about use of ICT is a major step forward which needs to be taken if we are serious in implementing the medical informatics within the medical curriculum

## Challenge-11: Problems faced in advancement in medical informatics:

In Pakistan, unluckily we are facing a lot of problems to the advancements of informatics like high rates of computers, use among students and faculty, lack of information regarding faculty computer skills and lack of collaboration among computer section and faculty members utilizing informatics in the teaching-learning process. Computers are perceived as invasive tools that often deliver less than they promise and are difficult to master. It is a fact that incorporating ICT into the curriculum ensures a high quality of medical education.

## Real concept of medical informatics curriculum:

It can be understood, assessed and implemented by following tools.

1. Conduct a needs assessment.
2. Review the recommendations of the experts.
3. Enlist faculty and local institutional support.
4. Develop a human centered approach.
5. Integrate informatics training within the curriculum.
6. Provide easy access to computers.
7. Provide practical training to faculty members and students.
8. Assess and report educational outcomes.

## Challenge-III: Future planning:

Fully integrated enterprise wide communication networks are very much needed to develop medical informatics. We should buy upgradeable equipment with after sale services from the conductors familiar with the infrastructure required for healthcare system of our country. The fully integrated network should be supported by staff provided



with ongoing training workshops and overseen by a knowledgeable network manager.

**Challenge –IV: Introduction of evidenced based medical education:**

Medical informatics is a key component of the practice of evidenced- based medical education and should be integrated within the curriculum. Evidenced- based medical education is not dependent on computers. It is about the training and experience of medical students to participate actively in their teaching-learning process. It is about quality improvement documented consistently changing and patient- focused.

A student with a web based medical education can study more effectively and make sound judgments regarding the clinical problems they face during their practical life. The curriculum adopted in the most of medical schools of developed countries is replaced by a number of new teaching methods that enhance active learning but unfortunately we are still stuck to the old traditional methods of medical teaching based on lectures and memorization.

The modern method includes Case Based- Learning (CBT), Problem Based Learning (PBL): interdisciplinary, integrated courses, self-learning, self-assessments, students' seminars and a variety of Small Group Discussions (SGDs). The learning objectives now include attention to issues that reflect contemporary challenges for the physician like professionalism, medical ethics and medical informatics. The faculty members place an even greater role in keeping up with the most recent traditional advancements. Academic medicine has to accept its share of responsibility for the existing situation. A failure to institute accountability for teaching has contributed to the problem. Most of the faculty members consider teaching as optional not as a core of responsibility. This is the reason that medical schools in our country have not placed a high enough value on teaching often fails to recognize or reward faculty for their contributions. Why teaching has

become a low priority for many faculty members at a time when the World Wide Web and Internet provide so interesting and innovative possibilities to enhance the quality of the teaching-learning process in our medical institutions.

**Conclusion:**

At present a large number of private and public medical schools in Pakistan are still teaching by traditional methods whereas most of the medical schools in the modern world are training their future physicians by latest teaching tools like evidenced-based and problem-based learning. It is a fact that our graduates no doubt have very strong knowledge of basic sciences and clinical skills. They can compete anywhere in the world but we should accept that we are weak in medical informatics due to many reasons. We must recommit ourselves to our teaching missions by vigorously pursuing strategies that support and recognize the invaluable contributions of teaching faculty to the preservation of these missions. In my opinion we must continuously innovate and utilize innovative methods like medical informatics as a tool to help us to attain our mission to produce physicians of 21<sup>st</sup> century. We should produce the doctors who have the knowledge, attitude, aptitude and clinical skills consistent with the teaching-learning philosophy of medical institutions.

**References:**

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*Note. This article is based on the presentation made by Associate Professor Dr. Zalina Ismail on " The role of information technology in the medical education: opportunities and challenges at the workshop on Medical Informatics on September 2003 in School of Medical Sciences, University Science Malaysia, Kota Bharu, Kelantan, Malaysia.*