What is health care informatics?

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Health care informatics is the study of information and communication systems in health care. Coiera 1 has indicated that if physiology literally means ‘the logic of life’, and pathology ‘the logic of disease’, then health care informatics is ‘the logic of health care’. It is the rational study of the way we think about patients’ and disease, and the way that treatments are defined, selected, and developed. It is the study of how clinical knowledge is created, shaped, shared, and applied. Ultimately, it is the study of how we organize ourselves to create and run health care organizations. With such a critical role, it is to be expected that the study of informatics will be as essential to the practice of medicine and dentistry in this century as anatomy and physiology were to the last.

Although the term ‘health care informatics’ only came into use around 1973 2, it is an area of study as old as medicine itself. It was born the day that a clinician first wrote down some impressions about a patient’s illness, and used these to learn how to treat subsequent patients. In recent years, informatics has grown considerably as a clinical discipline due to advances in computer technology that have fundamentally changed our ability to describe and manipulate health information at a highly abstract level, and provided the capability to develop affluent communication systems to support the processes of health care.

Health care informatics is, therefore, as much about computers as dental caries is about the examination probe. Rather than pharmaceuticals, X-rays, or forceps, the tools of health care informatics are clinical guidelines, formal health languages, information systems, and communication systems, for example, the Internet. These tools, however, are only a means to an end, which is the delivery of the best possible health care.

The goal of health care informatics is to develop and assess methods and systems for the acquisition, processing, and interpretation of patient data with the help of knowledge gained from scientific research 3. This encompasses the entire domain of health care, from computer-based patient records to image processing, and from primary care practices to hospitals. Some areas of the field are relatively fundamental, while others have an applied character, but its predominant concerns are:

1. Understanding the essential nature of information and communication systems, and relating the principles that mold them to health care;
2. Developing interventions that can improve upon existing health care information and communication systems;
3. Developing methods and principles that allow such interventions to be designed; and
4. Evaluating the impact of these interventions on the way individuals or organizations work, or on the outcome of their work.

Just as health care itself is multidisciplinary, so too is health care informatics, and an added challenge in developing methods and systems in health care informatics is to apply systems that have been made operational for one field to other areas. While, in principle, health care informatics deals with the whole field of health care, specific subspecialties include clinical informatics, which focuses on the use of information in support of patient care; bioinformatics, which focuses on the use of genomic and other biological information; and dental and nursing informatics, which apply information and communication technology to the practice of dentistry and nursing, respectively.

References


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