

Chapter I

Medical Informatics: Thirty Six Peer-Reviewed Shades

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ABSTRACT

It is claimed that seeds of 'medical informatics' were sown in 1960s. From this time until the 1990s experts have described the discipline as emerging. This perennial state of advancement can be dedicated to the pioneers of medical informatics who constantly realign its frontiers as the need changes for the rapid developments in the techniques pertaining to organization, processing, management and use of information. During this evolution, researchers and practitioners have made notable attempts to define medical informatics. As a result, today we have a noteworthy collection of peer-reviewed definitions of medical informatics. These definitions not only enlighten us with different perspectives and applications of medical informatics but they also provide a measure of the proliferation of this domain's content. Many of these definitions of medical informatics are unique and explanatory in their respective inferences and contexts. Hence, collectively they can form a larger picture of medical informatics. Lack

of clarity about a domain can prove to be counterproductive for new entrants and may also deflect their energies into relatively unrewarding directions. In order to throw light on various perspectives of 'medical informatics' and to understand the evolving meaning of the domain, we carried out a systematic review of formal definitions of medical informatics. An analysis was also performed by mapping 36 peer-reviewed definitions with MeSH (Medical Subject Headings) descriptors relevant to medical informatics. We believe that this research would serve as a handy and an informative resource and may also catalyze further research.

INTRODUCTION

It may be impossible to overlook the influencing role that computers have had on almost all the domains of life – ranging from education through commerce to amusement. This influence is even more pronounced in safety and security critical domains like aerospace and banking. Medicine being a safety as well as a security critical domain is no exception. The booming diffusion of information technology and the emphasis on evidence-based medicine, force the health sector to be an information-intensive industry which desperately hankers for information-driven decisions. Of late, computers and communications technologies have become integral components of medicine and have secured commanding positions in information management in medicine. This is evident from a diverse set of applications of computers in medicine, be it hospital information management, patient records, clinical examinations and decision support systems, measurement of physiological parameters, diagnosis, treatment, public health or education computers are omnipresent (Shortliffe, Perreault, Wiederhold & Fagan, 1990; Musen, 2002) and today computers are acting as a common thread in the healthcare delivery chain by linking wards to their departments, departments to their hospitals and hospitals to their administrators and branches. In tune with the evolution of information and communications, newer and innovative applications have been joining this technological

bandwagon within medicine. Medical informatics is a composite domain that surrounds management of information in medicine. It was perhaps bound to emerge as a discipline primarily because medicine had started to exploit the demanding and extraordinary capabilities of computers to better meet its complex information needs. Currently, medical informatics is a mature discipline and is continually evolving (Patel & Kaufman, 1998). We feel as the discipline matures, there is a need to consolidate past outcomes primarily to educate future practitioners and researchers.

In this era of systems engineering medical informatics is stretching its boundaries and conquering newer boundaries. Today, practitioners of medical informatics include technologists, engineers, clinicians, service providers, regulatory agencies, academicians, professional bodies etc. and their applications of medical informatics are disruptive. For example some of these practitioners have mutually exclusive applications where as others have overlapping applications. This brings with it, to the domain, a wealth of knowledge and promise of further evolution. Because of the many areas of discordance between systems we now have a spectrum of definitions of informatics, yet this in a way reaffirms the dynamism and the continuing evolution of the domain but still there are considerable idiosyncrasies in medical informatics that hamper communication (Patel & Kaufman, 1998) and in certain instances researchers have expressed their concern over the clarity

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