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Preface

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The IMIA Yearbook of Medical Informatics is now established as a source that we are waiting for and refer to in our daily work within Medical Informatics or, as I prefer to call it, Health Informatics. The great success of the Yearbook is due to the fact that the quality of the content has always been very high.

This year, the Yearbook is devoted to "The Promise of Medical Informatics" and is therefore different from its forerunners. In this volume there are no invited papers about specific topics but, instead, a number of reprinted articles, most of them published around the 1970s and regarded as major contributions to the development of Medical and Health Informatics.

When browsing through these articles I could not resist going back to the Proceedings of the first MEDINFO Conference, held in Stockholm, 1974. In his Introduction (pages XV–XXXII) the Chairman talks about the future in terms of the rising cost of health care delivery, the need for better follow up of production, and quality of care. Most of the authors also agreed on the necessity to solve the problems of communication between information systems and better education.

When we look at developments during the two decades after 1974, it is obvious that most of the ideas that are implemented today were already expressed at that time. For example, we continue to understand better that information technology (IT)

increasingly governs how clinical activities are conducted and organized. New technology breeds new forms of work, which in turn breed new organizational forms. The difference between technological developments in general and IT in particular is that IT manages data and thus information, and also knowledge. IT is not about computers but about globally interlinked collaborative information technology, creating a networked knowledge society; for example, by using the Internet.

The new challenge is to learn what fundamental values in health care are supported by information technology and how they can contribute to its continued development. In short, the best way to anticipate the future is to learn as much as possible from the past and the present. Therefore, this initiative to reprint some of the documented old experiences and to make them easily available is of extreme importance.

What happened during the 1980s and early 90s was that the systems that were available on the market were copies of existing manual systems. The discussion focused on problems such as incompatibility between systems, the need for open, modular systems and standard interfaces, both between systems and between the system and the users. This led to a bad reputation in some areas. One important reason for that was the high cost. Other reasons were lack of understanding between health-care professionals and computer scientists,

the lack of understanding about the necessity for changes in working routines in order to fully benefit from information technology, and that the security and privacy problems were unsolved.

We can all agree that the proliferation of computer technology in health care has been slow and expensive. This is partly due to the conservatism that has always been part of health care, partly to its immense complexity in working routines as well as in organization, not to mention the reorganizations that are continuously occurring. Until now it has not been feasible to create an overall and effective computer support for multi-faceted and varied activities such as health care. To understand why this has been the case and why this is now about to change radically, it is necessary to understand what information technology means, including what it is now and where it is heading. Without this basic understanding of the new concepts and patterns of thought that characterize today's information technology, discussions about the use of IT unavoidably end in confusion. The solution to this problem is better education of all health-care staff.

One of the most important advances in information technology is object-oriented development methodology. Dividing tasks into independent parts known as objects and having these perform their tasks "without anybody watching" has resulted in a completely new view on how organizations work,

as well as on the development of large complex software systems. The emergence of the Internet and the technologies upon which it is based implies that the computer-based patient record that we see today will soon be a thing of the past. The advantage of Internet-based information systems can be summed up in two words: access and administration. The problem is that security on the world-wide web is still unsatisfactory.

There is also a power shift taking place from health-care providers to patients. The catalyst for this is the Internet. According to surveys, medical information is the most attractive subject on the Internet. This mass of knowledge may produce better informed patients, who may even know more about their own health condition than their provider of health care. In this new role, patients may demand the ownership of the information, which should be presented in a way that is suitable for patients as well as for providers. Another thing that patients are demanding today is that they do not want to repeatedly provide information about themselves and their diseases each time they see another health-care provider. The patient record becomes additive and not merely repetitive.

Electronic patient records are the diamonds of all health-care information systems. The key lies in a system's ability to transfer patient data to the locations where they are needed in a timely manner. Using traditional electronic patient record systems (as opposed to those based on Internet technology), the transfer of patient data between different databases was, and still is, very costly and technology-intensive. For today's health-care providers, patient data must be presented as one uniform digital record, i.e., a virtual patient record, independent of the geographic location of the patient data. Usually, the health-care provider requires only a subset of the data about the patient at each visit. By means of distributed object technology, these requirements can now be met. This calls for only one patient record for each patient that includes all their data, regardless of where or by whom they were generated.

It is important to realize systems that are modular and capable of a gradual growth. In the new patient record, data can be presented or formatted in different ways in different places. Thus, distributed patient data are made available through references, such as hyperlinks, and are accessed as needed by the health-care provider. Object technology allows users to retrieve only the required parts of the records, instead of the entire patient record.

The rate and speed of implementation of these electronic patient records depends on the education of the staff who are going to use the system, and how well the necessary changes in working routines and organization are implemented.

Without some standards, and/or agreed-upon basic functions, development of this new electronic patient record will be very slow. The most important areas are to agree upon an architecture, a common terminology, rules for access to the records and how to protect content from unauthorized users.

Only experiences from earlier developments and a profound knowledge of the technology that we are going to use can guide us into the future. Therefore, it is important to know about the past and the present. The IMIA 1999 Yearbook is an easy and effective way for busy health-care providers to learn from the past and keep up to date with what is happening in our rapidly developing field.

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