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Synopsis

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Health Information Systems

In recent years the concept of Health Information Systems has evolved from organization-centered to patient-centered systems. There are several reasons for this, but two deserve special attention: a) the need for integration and inter-operability and b) the advent and development of the Internet.

The need for integration at all levels is very clear today, but a long and strenuous pathway had to be opened and paved before it became evident that software applications in healthcare share a common kernel that is essentially centered on the patient and patient data.

Till recently, several good Hospital Information Systems were mostly directed towards administrative and billing purposes. There has been a very distinct but misleading division into clinical and administrative systems. Although for those unfamiliar with health care information that division may make things clear, it applies only to the use people will make of data, but unfortunately usually defines how to collect data, in detriment of other possible and desirable uses.

Collecting and storing data should be done just once, whatever the final purpose may be. Proper data collection is essential for an integral and integrated Health Information System. Applica-

tions within a health care organization must access data from a unified data-repository and use it to generate new data. However, each individual datum should not be entered or stored twice.

Data collection and storage must be assessed carefully and somehow unified if the information system is to fulfill the needs of all stakeholders in the health care organization. This task is not simple. In particular, it requires strategic planning.

The Internet has brought above all a new state-of-mind. Although Health Information Systems have not been able to make full use of all potential aroused by the Internet and its technologies it is self-evident, today, that the patient must be somehow considered when designing Health Information Systems.

Classically, from the 70's to the mid 90's, Information Systems tended to be used internally for organizations to deal with their demands for production automation and enterprise management. The typical systems of that era were designed to be used only by the staff. Clients, partners and suppliers were kept away from the corporate Information System. The Information System was centered on the organization and the organization tended to be self-centered.

A revolution started with the Internet. At first, customers were able to purchase goods from websites that "recognized" the client from previous purchases. Then banks started stimulating "people like us" to use the same Information Systems they used to deny clients only few years ago. Nowadays it is possible to use our own bank's Information System, via the Internet, to assess the profitability of investment funds and then decide what to do.

Healthcare organizations in general recognize the need to treat patients and partners as an active part of the organization and providing proper room for them within their Information Systems.

One interesting point to consider is that there is a difference in view between the healthcare organization and the patient. From the Hospital point of view, a patient-centered health care Information System is one which is designed around the patient, the data they provide, their needs and their well-being. Most data are available to the patient on line and at their request. However, from the patient viewpoint, a patient-centered system is one which will give them a view of all health information related to them, wherever such information may be available from.

The Internet provides the means for

making such an Information System available, and that IS a revolution. We are years away from having nationwide fully integrated multi-institution Health Information Systems. However the *seed* has been sown. The combination of Internet concepts, standards and technologies with the awareness that the Health Information System must remain adherent to the organization's needs means a deep change in the way we think, design and deploy Information Systems.

Not surprisingly, the four papers in this section deal directly or indirectly with the concepts outlined above.

The paper by Beuscart-Zephir, Anceaux, Crinquette and Renard, entitled *Integrating Users' Activity Modeling in the Design and Assessment of Hospital Electronic Patient Records: The Example of Anesthesia*, explores the need for revitalizing methods (and concerns) for extracting information from the user that will lead to an Electronic Patient Record that meets the requirements for practical use.

Generation and Evaluation of Intraoperative Inferences for Automated Health Care Briefings on Patient Status After Bypass Surgery,

by Jordan, McKeown, Concepcion, Feiner and Hatzivassiloglou is a fine example of a system that takes knowledge from the literature and data from the Information System to bring in the information where it is required for decision making.

The paper *Giving Patients Access to Their Medical Records via the Internet: The PCASSO Experience*, by Masys, Baker, Butros and Cowles, deals with the problem of giving patients access to their data. Not only do the technical aspects deserve a great deal of thought but also legal, ethical and moral aspects are very complex indeed. The paper unveils pathways and outlines guidelines for patients to be in control of the data available on themselves. Just for the record, as the paper discusses matters related to denial of access to patient's own data, the reader may like to know that the Brazilian legislation clearly states that all patient data *belongs to the patient* and the health care provider guards the data on the patient's behalf.

Finally, the paper *Strategic Information Management Plans: the Basis for Systematic Information Management in Hospitals*, by A. F. Winter

and co-workers, tackles the need for planning strategic, tactical and operational actions in order to cope with a Hospital's complexity and diversity.

The papers in this section are decisive examples that Health Information Systems are increasingly more adherent to results and progressively distant from technical and technological aspects. There is a long way to go till Hospital Information Systems reach the maturity and the integration that has been achieved by IS in other areas, but, then, other areas are not as complex as health care!

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