The Integration of Clinical Information

Conclusions of the Experts' Meeting Held on 16th December 2004[*]

In the experts' meeting that was held by SEIS, some issues which had been considered already in former SEIS reports, were made clear. The fact that these topics are still under consideration shows their importance and indicates that in some cases, they are problems which have not yet been solved.

Among these issues is the need for the unequivocal identification of people who have received care in any facility of the health system. To solve this problem, again we must emphasize the necessity for establishing a unified database and a standard health card for the National Health Care System.

The importance of confidentiality is evident in every chapter of the report. The Third Informe SEIS dealt solely with confidentiality. This same issue was updated in the Fifth Informe SEIS which was dedicated specifically to the electronic health record. It has become clear that effective integration of clinical information also demands standardization, normalization of the lexicon, and codification. All of these actions should respect the free writing of daily clinical practice.

It has been considered that the clinical information system adds great value as a point of confluence for all professionals who take part in patient health care plans. However, this system is not able to substitute for direct communication between these professionals.

Admission services

The admission services of a health care institution have as their objective organization and management of the patient's flow through its various services, while ensuring effective support to make possible successful health care intervention and improving this in each place where it is provided. Admission services also make easier the relationship between the different health care facilities.

The main function of admission services is to integrate and give cohesion to the organization.

The use of the Information and Communication Technologies (TIC) make possible two new models:

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[*] Translated by Stephen Johnson and Javier Carnicero

- The "transparent" support to Admission Services, which allows eliminating many of the administrative proceedings and transfers most of the operational tasks to users of the health system.

- The idea of a support to the management of patients, which goes further than the health facilities, and which would be called "Health Area Admission Service".

The Admission Services must support the new emerging challenges, such as the ambulatory surgery and the patient's free choice of physicians.

There are not completely effective solutions for special situations, such as the scarcity of beds.

The use of an informational system, which allows knowledge of the case mix of outpatient services, emergency rooms and other special areas, using a similar method to that used in hospitalization, has not yet been implemented.

The Admission Services are the central skeleton of an integrated clinical information system, the axis of which must be based on the "patients data base" (or "health card").

Admission Services must have enough flexibility to provide effective management of the wide range of components of health care.

Clinical attendance at the patient's bedside

Clinical attendance must be given on an individual basis to persons. The clinical information is stored in the medical record. When the TIC is applied to the medical record, it becomes the electronic medical record (EMR) which is a subsystem of the electronic health record (EHR).

The use of the EMR must not be in any case a burden. To the contrary, its use must bring some "extra benefit" to all the different users.

Although the technology provides a guarantee of confidentiality much greater than using conventional methods, the EMR's protection of privacy must be real and explicit.

The specific characteristics of clinical attendance compels the existence of a textual style ("free writing") which is able to coexist with codification systems. A mixed EMR, that combines free writing and codes, is recommended.

The use of free writing requires the standardization of the terminology used.

To make the EMR a reality it is necessary to establish unequivocal identification of each patient.

The professionals that are involved in using this system must participate in the design and implementation of the EMR, in order for it to be successful.

Central Services

The Central Services system (laboratory, pathology, pharmacy, radiology and others) must not be isolated entities; to the contrary they must interact with the remaining components of the clinical information system.

These systems have had, for various reasons, an independent development and are focused on their own organization. While the integration of all systems is coming, each of these systems must change their perspective and must focus on the patient.

TIC allows the effective and efficient management of each of the laboratory's procedural stages: pre-analytical (petitions of studies and explorations), analytical, and post-analytical (report with test results).

It is necessary to establish a general catalog of techniques and services once operating procedures are standardized.

IHE (Integrating the Health Care Enterprise) defines an information model intended to facilitate the laboratory's workflow.

Unifying the terminology and the classification and codification systems is a necessity in order to assure comparability of results given by different laboratories. SNOMED is becoming the appropriate solution to this problem.

Standardization of the catalog of techniques, services and units of measure is infrequent in Spain. This situation makes it difficult to transfer reports between health care facilities.

The procedures of general laboratories are very systematized. However, it continues to be the case that there is a great heterogeneity, especially in Microbiology and Pathology. These two areas share characteristics of general laboratories and of clinical practice.

TIC is a very useful tool in both general management and quality improvement management.

Digitalization of images, the so called "virtual slides", is a new practice used in Pathology.

The Radiology Information System (RIS) must be integrated to the Hospital Information System (HIS). Historically RIS has been developed as a separate

management system. However, today there is no reason for that situation to continue, despite claims of distinctive particularities of these services.

The images management system (PACS) must not be exclusive for Radiology. Moreover, PACS must become the facility's images management system, or the hospital's system, and must integrate all the images of any origin or source.

The images management system has the same needs for integration and for each patient's unequivocal identification as does any other subsystem that is part of the EMR.

Standards DICOM and HL7 are recommended. DICOM is the most used for images and HL7 is the most used for dates.

The radiology information system must incorporate not just the results and interpretations, but information about the dose used in any study.

Images management is very dependent on technology and available resources. This is the reason to conclude, "Images should be presented as soon as the available technology allows it" as they are requested at various levels and areas.

Hospital Pharmacies have the characteristics of a central service. They do not just manage the acquisitions and dispensation of drugs, but also the information about their use, promoting, as it is called, "rational use of drugs".

The use of "hospitals pharmacotherapy guides" and the unitary dose dispensation system has been shown to be especially effective.

Using TIC allows electronic prescription of drugs. Using TIC also allows the creation of an electronic record for drugs which have been administered. Both improve safety and the ability to control the use of drugs.

The "system's intelligence" is able to improve the act of electronic prescription in order to become an "assisted prescription system".

It should be remembered that electronic prescription, although it improves security, may produce its own problems which are as yet unknown.

Continuity of the health care

EHR is the instrument that allows effective communication between the health system levels. The correct identification of the patient is again the system's key. Because of the diversity of professionals who participate in the "health care procedure" and because not everyone "calls the same things by the same terms", it would be wise to create terminological dictionaries.

The idea of "area admission service" becomes more important because it allows the effective management of the flow of patients from one health care level to another.

All the information and scheduling must be visible in the different health care levels, according to the necessities of each level. This will allow electronic appointment and referral from primary health care and emergency rooms.

The preservation of confidentiality requires that limits be determined for visibility of a patient's information. The patient would be able to require that parts of his information have restricted access. However, the patient should sign a disclaimer about the consequences of that decision (formalizing the explicit acceptance of responsibility in the same way that the patient gives informed consent to a therapeutic proposition, which implies that knowing the risks and limitations, he still allows the practice).

The prophylactic activities records are of interest both to primary health care and to specialized care providers.

Economic-administrative services and information system

Economic-administrative services not only provide the physical, human, and economic necessities, but they are a requirement to provide health care with effectiveness, efficiency, and equity values. Economic-administrative services are also a requirement for the public health systems accomplishing their own social function.

Decentralization should be promoted, in order to achieve making decisions and taking responsibilities for these decisions at the same level.

Some of the consequences of decentralization are "management clinical units". The relationship between these units and higher level hospital administration uses the "management agreement" and "budgets". Analytical accountability is useful in assigning expenses and costs to "management clinical units".

It is evident that an appropriate information system is needed. It is also essential motivating professionals involved in health care.

Human resources management must provide not just administrative support but support in order to facilitate the selection and training of staff.

The framework best adapted to improve a clinical management information system is the operating report. This system looks into all the perspectives of the

facility: mission, vision, values, human resources, and the point of view of "clients" ("patients"), also providing information about possible future actions.

Technology

From the technological point of view a "proprietary system" should not be used, because it is preferable to use a specification like J2EE, which is independent of its platform (operating system and hardware).

There is not any commercial hospital information system fully adapted to a specific hospital. Therefore it will be necessary to make many expensive adaptations. It is recommended to tailor-make each hospital information system and to integrate this system into commercial applications which have been shown to be effective.

General topics

It continues to be essential to integrate the applications.

How to make EMR or EHR appropriately visible while preserving the due confidentiality has not been yet been solved. Therefore, it is necessary to establish protocols and guidelines.

The application of TIC should not be considered as a myth, but should be considered something usual.

The unique "health card" (the users database, not the material card), which is considered essential in order for EHR to become a reality, has not yet been attained. Therefore, the responsible institutions should be summoned to do whatever actions are necessary to achieve it.

The information system model of the health care center does not fit to the clinical units' organization model and the way they actually work. Hence, it is necessary to solve this incoherence.

Health care professionals are not committed to performing in a standard way the typical procedures used in clinical practice (computerized or not).

Any "computerized" system besides the initial investment needs maintenance, which necessarily requires a commitment for permanent expense.

The clinical information system must be seen as the point of confluence for all professionals who intervene in the provision of health care in order to avoid any kind of obstacle.

It is presumed that application of TIC increases efficiency and improves quality of services. However, more evaluations are needed in order to verify this assertion and to make clear any new problems which become evident.

Summary

Systems and tasks standardization and integration are needed.

Confidentiality must be guaranteed by establishing rules, auditing access to information, and allowing (or not impeding) the access of all authorized people.

Operations flexibility must be guaranteed in order to efficiently solve the variable and exceptional situations.

The system must always provide added value.

Unequivocal identification of people is needed by implementing the user's database or health card.

A general and unified catalog of techniques and services is essential.