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The medical record in regional settings

The medical record in regional settings supported by a computerized system accessible from all healthcare levels is the best way to ensure coordination among professionals, improve quality of services and efficiency in the use of resources.

of his/her health information plays a major role, be it the inclusion of a medical visit follow-up form, registration in a public health prevention programme, or a hospital event. All this information should be related and centralized in a medical record through the unique citizen identifier: the so-called medical record number. This code must be assigned to each individual that has any contact with the health system. We use the term citizen and not patient specifically because the relation of health systems with citizens does not only entail contacts for disease or therapeutic reasons, but also includes preventive and monitoring actions (for instance, vaccination campaigns or regular pregnancy controls).

The medical record is the core around which a regional health information system is structured. The medical record includes the clinical and health data of each citizen. Therefore, the medical record must not contain only the disease events of the citizen, but data of any type (text, sign or image) that allows for establishing and preservation of the health condition of a subject.

For building a medical record on a regional basis, the univocal identification of each citizen with any type

Fragmentation of the clinical data of the citizen

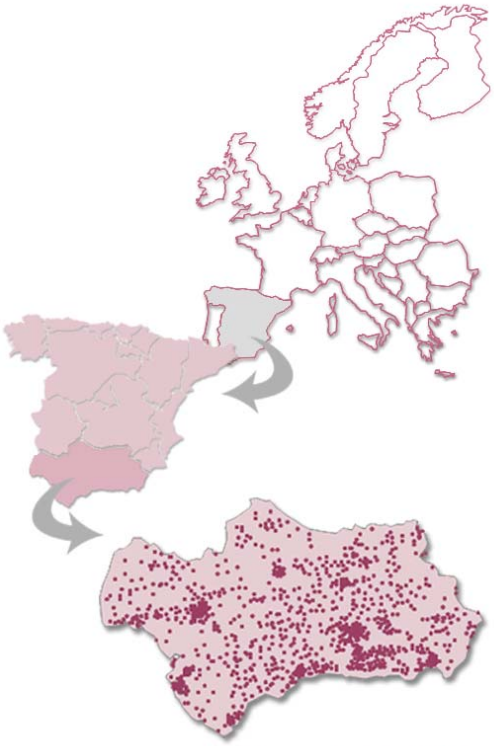
Traditionally, the medical record of a citizen, from a regional standpoint, can be considered to be formed by an unconnected set of clinical records in paper and electronic format, filed at the different health centres where the citizen has been seen. These histories are often structured according to non-harmonized conceptions, which is a hindrance for unifying the data from the same citizen, the presentation and standardized use of the information. In the case of clinical histories in electronic format on the other hand, they are usually supported by heterogeneous applications, unconnected to one another.

Therefore, the common scenario can be summarized as a heterogeneous set of unconnected pieces that must however be used for a single purpose: supporting the healthcare of the patient. Due to this actual dispersion, care providers do not actually have a complete image of the health information of the patient which is nonetheless registered in paper or electronic format, but in a non-integrated way.

Advantages of a regional medical record

The implementation of a medical record designed on a regional basis offers a number of advantages over other approaches. These include the following:

- Improving the quality of the registered information, thanks to the coding levels entered.
- Improving the capacity of data analysis and utilization thanks to the structure of the medical record.
- Improving the coordination among care providers, regardless of their location, thanks to convenient data sharing. From this standpoint, the information is supplied to the care providers with the format and at the time they can best use it, highlighting the commitment with physician-patient relation.
- Reducing medical errors thanks to the generation of user alerts in case of mistakes in dosage, allergy to some active ingredients or drug interactions, for instance.
- Improving the productivity of care providers for the immediate availability of information and general cost savings due to the reduction of duplicate or unnecessary tests.
- Improving the general prevention and management of chronic patients thanks to the addition of specific programmes for some groups and the entry of results from additional tests or examinations, for instance.
- Increasing the ability to customize patient care, through the complete view of the medical record of the patient.
- Improving the ability for data use, investigation and training of new professionals. The volume of information that can be seen in a unified structured format involves a qualitative step in the investigation and use of data, to a degree that was previously unthinkable.
- A marked increase in the confidentiality of sensitive data that cannot be reached in any way with paper support. Actually, the security mechanisms available in the information systems provide a very high confidentiality level.
- From the economic point of view, this vision provides scale economies thanks to the design, maintenance and implantation of a common solution. A more efficient use of the centralized architectures is also a clear benefit.
- Increased security and capacity for data retrieval, particularly in case of natural disasters.



Health record deployment in Andalusia

Coding as a cornerstone for the analysis of clinical data

Coding is an essential element in the standardization of data recording in the medical records. Therefore, all elements susceptible to be rated must be registered in formats that can be later exploited from an analytical viewpoint, either coding clinical and nursing diagnoses or prescriptions. An example of these codings can be the ICD, SNOMED or NANDA codes.

The final tool supporting the medical record, on the other hand, must be fitted with help utilities for coding (thesaurus).

Displaying the information

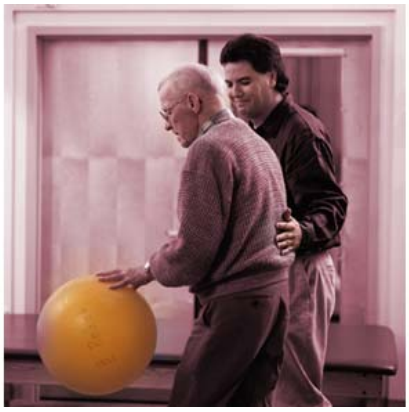
The method for displaying the information must be particularly careful as the systems must show the relevant information, not being excessive and not masking that which may be relevant. With this regard, traditionally two clinical action ratings have been used: a chronological classification and a classification based on health problems.

On the other hand, care providers must have the required flexibility for creating information items with some freedom degree. This must be translated into autonomy for the organization of forms for medical visits, events or processes.

In addition, the medical record becomes the central file containing all clinical information of the citizen, including laboratory tests, medical images, additional investigations, etc. This reinforces its binding nature, assuring the availability of the information when required.

Centralization of the information

The centralized data model assures more easily the consistency of the information and requires a reduced level of maintenance. Traditionally, the centralization of a large data volume could not be fulfilled due to the storage requirements and particularly due to the low reliability and capacity of communication lines. Thanks to the technological advances, data centralization can now be accessible, which is the most advisable scenario, provided communications allow for it.


Security and confidentiality

The tools and processes supporting the medical record must convey an image of security and confidentiality, not only for citizens but also for the professional classes, as this group eventually and independently from the timely communication campaigns to society, plays a major role in training citizens.

Therefore, the medical record must consider characteristics such as information blocking at the request of the citizen, traceability of all operations made in it and audits.

Compliance of health professionals

The success of information systems lies largely in the involvement of users, in this case health professionals, either specialist physicians, nurses or administrative staff. Their acceptance can be achieved designing the system so that all agents involved obtain benefits from its implementation. In the medical record and specifically for the medical class this is reached first by introducing tools that make administrative tasks easier (issuing prescriptions, reporting diseases, managing temporal disabilities, referrals to secondary care or requesting tests, for instance). Another issue specially valued by the medical professionals is the feedback about their professional performance allowing them to analyze different aspects of the population they take care of.

The medical record of Andalusia

The regional medical record of Andalusia, Diraya, meets the above requirements, grouping the clinical and medical data around a structured health record of the citizen that is shared by all healthcare levels.

This promotes a unified view of the clinical events of the patient both occurring in primary and secondary care (healthcare continuity). Physicians thus have a mechanism which allows them to consider relevant issues at the time of the clinical act.

In summary, the medical record must include the following sections:

- The summarized medical record, containing the following items: relevant administrative data of the citizen, composition of the family unit, past medical and family history, allergies and habits such as alcohol intake and smoking or relevant medical problems. The value of this summary record lies in the provision of easy access to the most important data in the medical record of an individual. Therefore, it must be accessible at all times and from any point of the health system; this is not a very demanding requirement from the viewpoint of the bandwidth of communications, thanks to the codification of the data registered in it
- Medical events and conditions in primary care with the relevant medical visit follow-up forms (clinical record, examination, clinical judgment, prescription, radiological images, examinations, other tests and associated legal documents).
- The health programmes, those corresponding to programmed public health actions and the healthcare process defined for each pathology.
- The medical events or conditions in secondary care, in its different areas: emergencies, inpatient, outpatient clinics, surgery with relevant images, examinations or other complementary tests.

These events both if registered in primary or secondary care are part of a whole which makes up the “medical record of the citizen”. Therefore, the medical record becomes the universal support of the clinical data of the citizen, which can be seen from any point of the health system. This approach allows for ensuring two basic requirements: the continuity of healthcare (the medical record can be seen throughout the health system) and the length of healthcare (temporal recording of the clinical and medical data of the patient occurring during a lifetime).

Diraya, main figures

Diraya, the medical record of Andalusia, implanted as much in primary care as in specialized care, lodges the medical data of 6.8 million citizens (88.7 % coverage), from 542 health centres and 22 hospitals (data as of July 2007).

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