



Servicio Andaluz de Salud  
CONSEJERÍA DE SALUD



Indra

## The identification of citizens in health systems



The identification of health system beneficiaries is one of the main cornerstones supporting healthcare continuity assuring the appropriate quality standards and data consistency, connectivity, availability and safety



could affect the health of patients. Therefore, the mechanism for the identification is an element that assures the safety of curing and administrative procedures.

The identification of health system users and patients is one of the main cornerstones supporting health information systems on a regional basis. The health system must assign a unique health record number to each of them, valid both in the administrative and clinical sphere and in all healthcare system areas. This unique identification assures healthcare continuity.

The univocal identification of the citizens must allow healthcare professionals to be sure that the information contained in the medical record corresponds to the precise patient. This identification is required as otherwise, the information systems would induce committing administrative errors and, much more serious, medical errors that

### Identification of users of the health system and patients

A particularly sensitive issue is the identification based on currently existing codes, such as the social security number or ID card number, as they do not allow for a univocal identification of all beneficiaries, because these codes cover only a part of the population. Therefore, the identifiers must be unique and belong to healthcare services. With this regard, to be noted is the treatment of individuals that, though not direct beneficiaries, at some time have some contact with health institutions. These are individuals from other regions, travelling or working people, foreigners or beneficiaries with access to the health system through emergencies, with no means accrediting them. These people must be also identified by a unique code that allows linking them to the clinical and administrative information throughout the healthcare process. In the specific case of patients in emergencies, they should be subsequently related to the appropriate beneficiary codes to assure consistency in their case histories.

Incidentally, epidemiological monitoring will benefit substantially from this univocal identification, as it will avoid duplicating cases when the same individual is managed at several health centres for the same health condition.



## Support for identification

Among the different mechanisms of identification available, an individual health card containing the administrative data of the beneficiary is the most effective solution, as it assures that the individual can be fully identified in the information systems. With regard to the contents of these health cards, there is some controversy about the appropriateness of registering relevant health data on the card, such as allergies and contraindications, ongoing therapies or chronic conditions. The truth is that the latter requires synchronizing two different sources of data, the health card and the medical record, which could cause medical errors in case any incident occurs in the above synchronization. This risk creates a discouraging drawback with respect to associating clinical data with the health card. However, the electronic signature must be included in this card as a procedure to assure that access to the medical history of the patient is authorized by the beneficiary. Therefore, the health card becomes a

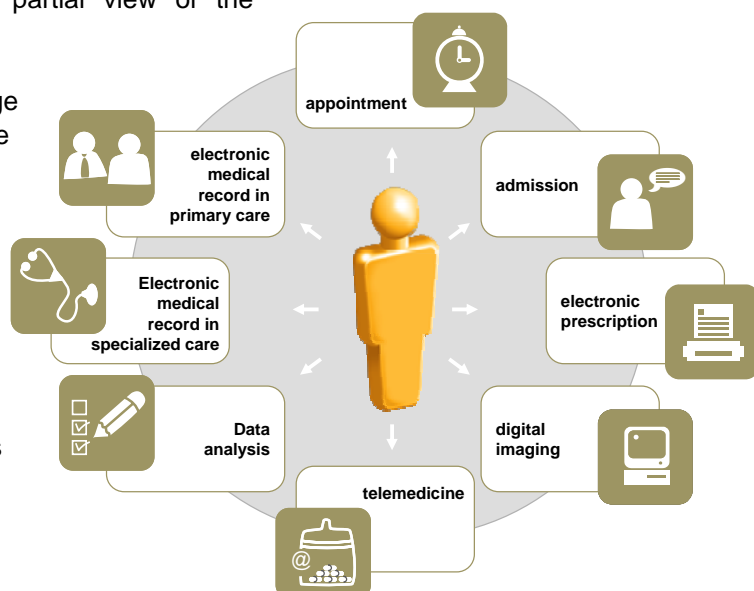
key that assures authorized access to the clinical data of the patient included in their clinical history.

With regard to the distribution of health cards, only beneficiaries recognized in the health system should have it as, otherwise, handling these cards would become terribly complex. Therefore, this clearly detaches holding the health card from the identification in the system: all beneficiaries should have and use actively their health card and have a single identification in the system, while occasional patients should have a unique identifier, but not a health card.

## Healthcare continuity

The univocal identification of the patient in a regional and/or national setting becomes the key element to assure the continuity of healthcare. Therefore, as the citizen has a unique code that identifies him univocally throughout the health system, regardless of the place where the care is provided, thus facilitating the accessibility to all his clinical information. This issue is essential as a partial view of the clinical information since it can lead to making wrong decisions. This scenario can occur when different identifiers of the citizen are used at different health centres. The result is a partial view of the medical record of the patient.

With regard to the storage procedure, centralization is the most appropriate one, since it avoids possible inconsistencies that could occur in a decentralized system. This centralization is not a disadvantage, not even in centres with low-capacity communication lines because the volume of data exchanged is extremely low.



## Eligibility

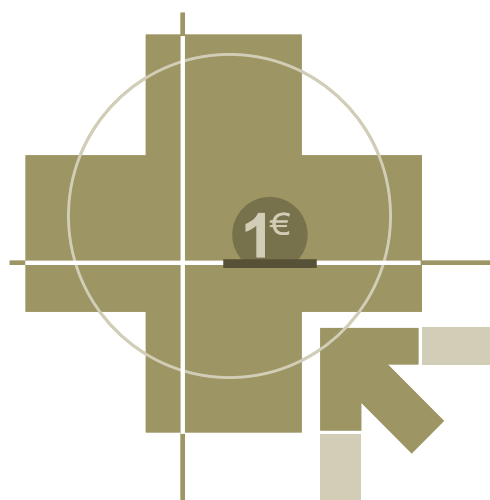
Additionally and since health services usually include various healthcare levels based on the social group, the systems for the identification of beneficiaries must ensure that each individual receives the healthcare agreed, avoiding fraud and assuring the efficient use of resources.

This is achieved by defining all subjects eligible for healthcare services, registering the benefits they are eligible for and providing the mechanisms to guarantee this is up-to-date information. This is particularly important when the provision of healthcare services correspond to different management and information systems.

## Clinical management and research

When all the information of the healthcare system can be allocated to each individual, enormous possibilities to the clinical and management research arise. Besides, epidemiologic research will benefit enormously from this univocal identification, in as much as it will avoid the duplicity of cases that take place when a same individual is taken care of by several health centres, in relation to a same health problem.

The allocation of costs incurred in the health system by patient is a historical lack in the information systems, in part due to the difficulty to identify citizens if they are not identified univocally at all health centres. The identification of the patient throughout the healthcare process facilitates markedly the allocation of the actual costs incurred in the care of each patient, enabling the performance of an analysis of deviations from the standard and improves the efficiency of the processes. This analysis is critical in the current scenario of growing health costs, particularly because it acts as a catalyst for the efficiency of the health agencies.





## The approach of the Andalusian Health Service

The solution provided by the Andalusian Health Service for this problem is to create a centralized database, with high availability and safety that gathers the administrative and healthcare data assigned to the citizen.

The beneficiaries are identified by a single code, which is used as a medical record number, and is assigned when created. This code, for safety and management reasons, is not made from the identifying data of the citizen; on the contrary, this is a non-significant code. It is therefore more difficult to infer it and requires no updating in case of mistakes or changes in the initial data used for building it. This system is completed with the management of the health cards, responsible for issuance, cancellation and renewal.

The citizen database of the Andalusian Health Service has three basic functions. The first one is related to eligibility, i.e., to maintain updated and accessible all the information related to the benefits of the patient and all its personal information: age, telephone, address, etc. The second, not less important one, is to be used for planning based on the population distribution (such as the distribution of health facilities or professionals) and the management of resources (for example, the payment based on capitation). But undoubtedly, the last function, the one that facilitates the identification of medical records with a unique medical record per citizen accessible from all healthcare facilities in the region, is the one that makes the difference with similar systems.

For the development and launching of the citizen registry (in October 2001), an initial charge of citizens from the Spanish Social Security database was made. Ever since, the citizen registry is compared with this national database in order to check changes in the eligibility of patients and to maintain those data up-to-date. In addition to this mechanism, new citizens (e.g., new born or people that have moved to Andalusia) are proposed from health centres and are managed by the sanitary districts. Cancellations such as those caused by death, for example, can be also proposed from health centres.





In the Andalusian Health Service, like other providers and before the Diraya<sup>1</sup> model, health centres were equipped with local information systems being medical records restricted to the very health centre. In the Diraya model, all the clinical information of the citizen is related to its unique identifier in the citizen registry in a native form, unlike previous medical records. In order to retrieve the clinical information of the citizen, a series of procedures were built to conciliate the identification of the citizen in the local systems and the identification of the citizen according to the citizen registry of Diraya. Also new procedures were set up, to convert or - simply to make visible the information corresponding to each citizen, but always after having established the correspondence between these registries and the unique identifier.

The experience of the Andalusian Health Service shows that the initial load can be carried out from other registries, even if they do not share a single identifier per patient. Specific processes of validation and consistency will assure a coherent result, allowing the acquisition of valuable information from external sources, as well.

Special units located in every health district are responsible for the maintenance of the citizen registry and health cards. A central unit coordinates the general activities (load of data, quality controls, etc). Specific software named GADU has been designed to facilitate the usual interactions with the citizen database: new registrations, cancellations, citizen data modifications, physician and health centre assignment, management of population assigned to general practitioners, card requests, etc. In addition to these specific systems, since the citizen registry provides information to the rest of the Diraya modules, all the professionals involved in healthcare provision (clinical as much as administrative), have access to this database. The functions they carry out in their work are those corresponding to their access profile, from the simple consultation to data updating.

The operators of this citizen registry are informed of the commitments involving data confidentiality and that their actions in the system will be registered, and can be audited at any time. Their attributions are managed by a model of profiles assigning the minimum attributions required by the functions assigned to each type of operator. Furthermore, additional safety mechanisms must be available to protect sensitive data.

One of the tasks the operators must perform is purging data since this task cannot be made automatically as that it requires comparing with external sources.

The value of this system lies in its quality level, availability, safety and connectivity to the other modules of the regional healthcare information system. Users are identified by means of the citizen registry for any relation with the health system (medical appointments, inter-consultations, admission), so that to associate all clinical information.

Therefore, the processes for the management of proposals, queries and updates are pre-designed; the quality of the data is especially monitored, the connectivity is supported in a communication interface, based on the XML standard, and security meets the requirements regarding the handling of personal data.

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<sup>1</sup> Diraya is the actual regional health information system of Andalusia

## Main figures

**The Andalusian Health Service exploits a database of health system beneficiaries that lodges a total of 7.7 million citizens and is used as a mechanism for the identification of 5.7 million medical records. One million phone appointments per month and over 1.3 million medicinal products dispensed every month are linked to this registry of beneficiaries (data as of July 2007).**



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