Improving quality of care and patient safety in Chile: Servicio de Salud Metropolitano Occidente

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ABSTRACT

The *Servicio de Salud Metropolitano Occidente* (Western Metropolitan Healthcare Network) has embarked upon an ambitious process to modernise administrative and clinical management. It is therefore implementing GS1 Standards to monitor stock and to enable traceability of drugs and medical supplies. This is "*an important step toward quality and safety for patients*" according to the responsible parties.

About SSMOCC

The Western Metropolitan Health Service (SSMOCC) is an agency of the Chilean Health Ministry managing and coordinating a healthcare network including six hospitals, a Diagnostic and Treatment Center, a Health Reference Center, 33 Primary Healthcare Centers and 23 Rural Healthcare Centers. A population of 1,200,000 people of fifteen municipalities in the west area of the Chilean capital (Santiago) are assigned to the network.

"Más Salud Occidente"

The SSMOCC aims to improve quality of care and to increase access and opportunity to healthcare. A strategic decision was therefore made to implement a system on hospital management, focused on the clinical care of patients. In 2008, after an exhaustive process to define requirements and analyse possible solutions, a comprehensive, world-class system in healthcare information (HIS) was established. It is a pioneer in the Chilean public healthcare system.

The project is called *Más Salud Occidente* and creates an Electronic Health Record (EHR) system.

The system is aimed at patient management within the healthcare network (waiting lists, scheduling, referral and counter-referral between centres, etc.), management of available resources (availability of beds, optimisation of stocks of medicinal products and medical supplies, optimisation of the use of operating rooms and diagnostic and therapeutic equipment, etc.), quality assurance and opportunity to receive care (access to clinical guidelines, treatment protocols, follow-up of explicit guarantees to health, safety in drug use, etc.) and management information (includes real-time reports on how the centres in the network are operating, management of indicators, information regarding compliance with goals, etc.).

Drug traceability

Important challenges have arisen within the framework of this project. Specifically, in the case of handling medicinal products, to achieve drug traceability, from the time of acquisition until a given dose is administered to the patient. This was made a priority to improve the safety and quality of clinical procedures. The need to monitor the entire flow of medicinal products, with reliable records throughout every stage and in every centre in the network, set the challenge of creating a standardised coding system for drugs, using product characteristics and logistical information.

This was a serious challenge, given that no system of the kind existed in Chile to code and track medicines. Therefore, the first task the team undertook was to analyse the existing alternatives on the market. The main criteria were to use universal, recognisable, shared standards, which allow for the exchange of information with parameters that suppliers, institutions within the sector, logistics companies, etc. have in common.

GS1 Standards were considered to be the best option for the Department's requirements. It is an international coding system, widely used by supplier companies, which can be integrated into the *Red Occidente* (Western Network) information system. It primarily allows for the precise tracking of medicinal products. Furthermore, the Chilean Ministry of Health's *Central Nacional de Abastecimiento* (CENABAST) [National Supply Centre], which is the Department's main supplier of drugs and consumables,

had already started to use this same coding system, making the standard requisite for its providers.

Preliminary steps

The preliminary steps were not easy. A detailed study was required to standardise and approve the drugs used by the various hospitals in the network. Then a "master list" was drawn up to which every hospital in the network had to conform. At the same time, the procedures of each hospital were analysed with an end to defining a common flow, including warehouse receipt, delivery to pharmacy, dispatch to clinical services and dose administration to the patient.

This flow chart was developed in the field, alongside local teams in each centre, thereby facilitating a standard procedure to be applied to all the centres.

Meanwhile, another essential piece was being developed: a clinical table was created containing information concerning each medicinal product (active substance, pharmaceutical form, strength, route of administration, etc.). To this end, a review was carried out regarding the existing available information. It was determined that a study developed by the *Instituto de Salud Pública* (ISP) [Public Health Institute] could be used, which had a base of clinical information for each drug on the market.

The GS1 System enabled the information from the ISP to be collected, while adding to it the logistical data for each product (origin, storage conditions, lots, expiry dates, etc).

Nevertheless, the implementation of the project required a serious amount of work, being primarily focused on creating and updating the "supplies master list" and establishing a logic to the network to be offered by the system. In this way the information can be shared and the use of resources between all the centres can be optimised, contributing to the *Red Occidente* joint management.

In this context, efforts were concentrated not only on standardising the process, but also on the approval of drug-associated terms, thereby creating a common glossary for their characteristics.

Implementation and start-up

The implementation process was designed in stages, starting with Hospital San Juan de Dios, the most complex centre in the *Red Occidente* network. From there, progressive installation was foreseen for each of the other centres.

Today, with the registration and monitoring system installed in warehouse receipt, the goods are checked using a barcode reader. This allows for the integration of the clinical information for the product and the logistical information regarding origin, characteristics and forms of storage. If the goods carry the code EAN128, the lot and expiry date information are also included. If they carry the generic code EAN13, this information is added to the system locally, re-labelling the product.

In every stage following receipt –dispatch to pharmacy, delivery to clinical services and administration to the patient– the code is used again and again. Information about the drug can be recovered and traced throughout the entire flow.

Start-up of the system has entailed a serious change in the way things are done, not to mention the change in mentality, technology and infrastructure which first had to be developed.

The supply centres were the first to experience the transformation. In addition to installing the required hardware (more computers, barcode readers, etc.), spaces were redesigned and changes in infrastructure were made for the storage of the products, bearing in mind their particular conditions. This is because by having a record of information on lots, they can

be separated in the warehouse, establishing different physical spaces. The pharmacies are undergoing similar changes, with an end to adapt processes and infrastructure to the new working dynamics.

Training has also played a key role in defining and implementing the system, both in terms of management of the changes and technical know-how. All parties involved have worked closely to coordinate the changes: pharmacists, doctors, heads of supply, administrative assistants etc.

Challenges

Considering the magnitude of the project, the teams have had to handle a series of challenges during the start-up phase. The main problem has to do with the fact that some goods arrive at the warehouse without a barcode. Although the international standard has been partially put in place, there is still a large gap between those products that are labelled and those that are not; currently the Health Service suppliers are not obliged to provide this. Given the volume of products normally received by a hospital warehouse, the additional task of creating a provisional internal code and re-labelling goods has been painstaking.

The same can occur when a coded item cannot be traced in the range of pharmacological goods. In such a case, after consulting the updated GS1 Master List, a provisional code is supplied. Thanks to the GS1 web service, the information can be updated directly, incorporating new products (new suppliers, new presentations, etc.).

Furthermore, in this phase, there is currently a need for the additional task of manually repackaging drug presentations into unit-dose packaging. Each new dose must then be relabelled to maintain the information associated with the medicinal product. Coverage is currently only partial, but there are hopes of including 100% of drugs in unit-dose packaging for hospitalised patients.

Next steps

The SSMOCC plans to use the GS1 coding system for more than just drugs. Our goal is to integrate all goods into the system. This would achieve better large-scale logistics, which would no doubt influence the planning, programming and organisation of procedures relating to supply and storage and the Network pharmacies.

The records and monitoring systems in place help to optimise stock levels and rotation. This has a clear effect on costs, and in the case of medicinal products, the computerised monitoring of expiry dates implies fewer losses as a result.

In any event, the greatest progress brought about in terms of safety and quality is by far drug traceability, which is a huge step forward in the history of public health in Chile.

There are still great challenges ahead for the SSMOCC and for all related institutions – health services, pharmaceutical companies, CENABAST, etc. An integrated national system must be put in place, with common standards that allow for the exchange and monitoring of information regarding drugs and healthcare products.

The Red Occidente has made the first steps in this direction, placing the institution in the forefront of modernization in healthcare management.

ABOUT THE AUTHOR

Dr. Carolina Cerón Reyes, Director of the Servicio de Salud Metropolitano Occidente, joined the institution in 2007 as Assistant Medical Director. This year she assumed the position of director of the Department. In both posts she has played a leading role in the implementation of the HIS project.

As a surgeon with a diploma in Healthcare Institutions Management, an MBA specialising in Health and a diploma in Public Policy and Social Management, Dr Cerón has extensive experience in public health management.