

Chile's National Center for Health Information Systems: A Public-Private Partnership to Foster Health Care Information Interoperability

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Abstract

Despite the continuous technical advancements around health information standards, a critical component to their widespread adoption involves political agreement between a diverse set of stakeholders. Countries that have addressed this issue have used diverse strategies. In this vision paper we present the path that Chile is taking to establish a national program to implement health information standards and achieve interoperability. The Chilean government established an inter-agency program to define the current interoperability situation, existing gaps, barriers, and facilitators for interoperable health information systems. As an answer to the identified issues, the government decided to fund a consortium of Chilean universities to create the National Center for Health Information Systems. This consortium should encourage the interaction between all health care stakeholders, both public and private, to advance the selection of national standards and define certification procedures for software and human resources in health information technologies.

Keywords:

Medical Informatics; Public Health Informatics; Organization and Administration

Introduction

Health care spending in Chile has grown considerably over the last years. In 2015, Chile spent 7.7% of its gross domestic product (GDP) on health care [1]. Sixty-one percent of the total spending was allocated to public health services which covers around 80% of the population. From an administrative standpoint, public health care provision is organized into 29 independent health departments, in charge of regional hospitals and secondary outpatient clinics; primary care administration is in charge of almost 300 independent municipalities [2]. A myriad of private health care providers are also available, ranging from large, multi-hospital health care networks to single physicians' private practices. There is significant cross-over movement of patients from the public to the private systems and vice versa, with some private providers having up to 50% of their patients coming from the public system [3]. From the financing perspective, working citizens are mandated to contribute at least 7% of their monthly income to health care coverage, which can be obtained through the public insurer, the National Health Fund (FONASA) or through multiple for-profit health care

insurance companies (ISAPREs). This complex organization generates a massive fragmentation of patient information.

Until 2008, the implementation of electronic health records (EHRs) was mainly driven by individual efforts at private hospitals and academic medical centers who could afford such projects [4]. However, in 2006, and after several unsuccessful attempts, the government declared the digitalization of the health care system as a key priority. The driver for that process was, for almost 10 years, a public procurement framework called Health Care Network Information System (SIDRA, for its acronym in Spanish). Through SIDRA, public health departments could buy pre-assessed health information technology solutions [5]. Although interoperability was one of the concerns when creating the SIDRA strategy, initially there was no emphasis in the adoption of standards. Moreover, the SIDRA strategy did not include private health providers, which created additional information silos.

Although to date more than 70% of all primary health clinics have adopted some kind of electronic medical record solution [6], each one of the 29 public health departments operates as an information silo incapable of communicating actionable patient information with each other. This situation becomes more complex if we take into account existent information silos among private health care providers, making it extremely difficult to monitor the population's health using health information technologies.

Within this context, strategies to advance the adoption of health information technologies have been recently given priority by the current government as a driver that could lead to economic growth and, at least in part, help reduce health care equality gaps. To support this effort, the National Development Agency (CORFO, for its acronym in Spanish) created the *Health + Development* program (S+D, for its acronym in Spanish), whose aim is to set up a public-private collaboration to establish the needs, current gaps and priorities for the health information technology sector. With the support of the RAND Corporation and different national private and public stakeholders from government, industry and universities, a roadmap emerged to streamline the development of the Chilean health information technology sector. S+D's main objective is to promote competition and innovation among health information technology providers by facilitating the adoption of standards and promoting the coordination among the different stakeholders (see Figure 1). Towards that goal, and as the first approved project, CORFO funded the creation of the National Center for Health Information Systems (CENS, for its acronym in Spanish). The

center would initially focus on interoperability, software certification, and the promotion of formal health informatics training programs to educate and certify advanced human capital in this domain.

Public-Private coordination as a key element

The S+D program began its operation as a government agency with no prior experience in the health information technology sector. As such, finding support from the health IT experts and government health authorities was one of its first priorities. To achieve the above, the team conducted over 100 interviews and working group meetings, promoting private-public discussions. The results of these discussions were documented and validated by all participants in several published reports [7, 8, 9]. Those reports condensed the existing knowledge and perceived needs of the country's main stakeholders in this domain.

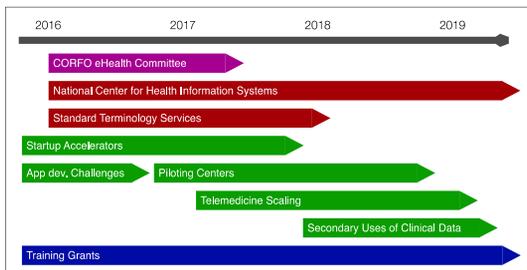


Figure 1—The creation of a National Center for Health Information Systems is part of a broader ecosystem that seeks to create a mature health information technologies market in which developers and health care providers can collaborate to create new products and services.

Additionally, and to ensure political support, the S+D program convened a diverse set of government authorities and representatives from the private sector, academia and patients to participate in its board of directors. This independent board of directors was assigned the tasks of prioritizing projects, assure the communication between the different actors of the health IT sector and, in the future, enforce the use of standards for interoperability.

After obtaining public and private commitment to the S+D strategy, the board of directors defined health care information interoperability as the main priority. In the context of a national health information technology strategy that had started almost 10 years before—which indeed advanced the adoption of electronic health records—it was now important to ensure the correct flow of patient information as a way of generating efficiencies in the use of resources and, ultimately, provide better care. Following RAND corporation's recommendations, the S+D program (together with CORFO) secured funding for the creation, through a public call for proposals, of a National Center for Health Information Systems that should largely focus on health information interoperability.

Public funding for a private non-profit corporation

One to the main issues faced by economic development agendas are the changes that occur when new governments are installed, and Chile has been no exception. A proven mechanism to provide continuity is to involve and commit the private sector or the academia in the development of such

projects. CORFO, as the agency in charge of promoting innovation and entrepreneurship has a longstanding experience in creating such alliances and was, therefore, chosen as the appropriate mechanism to fund the creation of the National Center for Health Information Systems.

Establishing such a center in the health care domain presented additional challenges. In comparison to other relevant economic activities in Chile, such as mining or agriculture, the development the health information technology sector (according to the strategy defined by the S+D program) also had to reduce the inequality gap between private and public care. Such goal was not entirely possible to meet if standards and certifications were left in hands of the health IT industry alone, as it has been the case in previous, even successful, experiences elsewhere [10]. The decision was then to invite Chilean universities to participate in the call to create the center, and to require the establishment of a new non-for-profit organization to host the newly constituted center. It was anticipated that this decision would also help to consolidate different teams of experts currently working in the health IT domain and, therefore, strengthen national human capacities.

Finally, Universities were required to include private entities in their proposals so they could contribute to the sustainability of the center in the long run but, through established mechanisms of participation, establishing a diverse representation and ensuring objectivity and reducing conflicts of interests.

Current Advances and Proposed Organizational Structure

The request for proposals opened in July 2016 and after a review by national and international panelists the project was awarded to consortium of five Chilean universities, with support from public and private health care providers, national and international health information technology organizations, and national and international health information system vendors.

As anticipated, the center's governance is a key issue to ensure its sustained success and independence. To make sure this is the case, the center has been designed to have a board of directors constituted by members designated by the funding universities, as well as representatives from national public health entities (Chilean Ministry of Health, FONASA), software vendors and independent members (Figure 2). During the first year of the center's operations, the main task will be to establish its by-laws and constitute it as a non-for-profit entity according to the requirements established by Chilean legislation. We anticipate that this process will be completed during 2017. One of the critical components of these by-laws will be the explicit definition of the mechanisms required to add new participants to this center, with the goal to continuously ensure a broad and diverse representation.

The main lines of action proposed by CENS are the following:

- **Define interoperability standards:** the center will not recreate previously existing standards but will work with internationally recognized standard definitions and organizations to identify the best available ones for the Chilean market, and broker their adaptation to the local needs when required. To accomplish this, CENS has initiated cooperation agreements with international entities such as IHE-Europe and Salud.uv.
- **Establish software certification and testing procedures:** the center aims to establish explicit and transparent certification criteria and testing

procedures. The center will not conduct testing activities but will outsource those activities to adequate testing facilities that already operate in Chile.

- **Establish professional certification procedures:** given the limited availability of formal training programs in health informatics in Chile, the workforce is today constituted by professionals that have mostly learned on the job. Based on international experience on the subject [11], the center will establish professional profiles and certification procedures to add transparency to the job market in health informatics.
- **Technology surveillance:** the health IT domain is changing fast and will continue to do so. As a consequence, the center will establish formal technology surveillance procedures to ensure that its standards and recommendations follow internationally respected best practices.
- **Consulting:** as a vehicle to ensure transferability of the knowledge generated through its activities, the center will establish formal consulting services that will be available to all stakeholders in the Chilean health IT market.

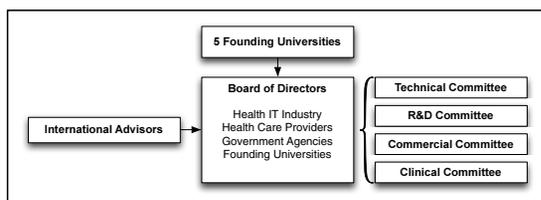


Figure 2 - The proposed organizational structure is composed by a Board of Directors with members named by founding universities as well as individuals representing a set of domain expert committees. These committees will be the setting in which most stakeholders will interact to define proposals to the Board. Additionally, the center will establish a set of external international advisors.

Conclusions

As a private-public strategy, achieving health information interoperability for the Chilean health system, remains a communication and cooperation challenge. As of today the success of the predefined projects and roadmap lies mainly within the “social capital” that was built by Salud+Desarrollo. Although there is broad consensus among stakeholders on the path to follow and the steps needed to do so successfully, a critical aspect is the sustained political commitment of S+D’s board of directors. Chile is facing a presidential election during 2017, and CENS will have to consolidate its role in the ecosystem and become the public space for keeping that social capital. To do so, the social capital and public trust needs to be soon transformed into concrete deliverables that prove to be useful for all actors in the Chilean health care system.

At the same time, the independent nature of the entity requires a business model for sustainability that has to consider both local and international markets, making the need to participate in the international fora, highly relevant.

Finally, the recent changes in the digitalization strategy of the Ministry of Health, changes that include the end of SIDRA as a mechanism for buying health information system solutions, creates new demand for internal capabilities since public

health departments will have to create their own frameworks at the same time they are required to abide by new interoperability standards.

Acknowledgements

This work has been funded by the Chilean Development Agency (CORFO) grant number 16CTTS-66390.

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