

Engineering a Roadmap for Health Information Technology in Chile

Health systems around the world have been looking to health information technology (health IT) to help tackle some of their greatest challenges. But it can be difficult to harness new technologies, and health IT is no exception.

When Chile's Ministry of Economy added health IT to its Strategic Programs for Smart Specialization, it had an inkling of the complexities at hand. Health IT is not new to Chile. In 2008, another division of the government, the Ministry of Health, started working on a digital health initiative, which met with mixed success. In 2015, the Ministry of Economy commissioned RAND to create a roadmap that would encourage growth of the health IT sector in Chile. Though the ministry's principal concern was the economic growth associated with stimulating health IT, successful health IT growth and implementation can also improve access to Chile's public health care system, reduce costs, and improve health outcomes.

Health IT and the Chilean Landscape

Health IT is a catchall term for a myriad of technologies, from electronic health records (EHRs) to telemedicine, that hold the promise of improving the efficiency and convenience of health care services and creating new ways to address health disparities. Successful health IT implementation depends on coordination and interoperability among providers, insurers, and patients. But more health IT is better only if it's deployed intelligently: An EHR that cannot "talk" to remote providers or connect to appointment and billing systems bumps up against the same limitations as a paper health record.

When RAND researchers evaluated the current state of health IT in Chile, they found that a tangle of entities play important roles in the Chilean health care system. A mix of public and private insurance and providers, several governing divisions in the public sector, big international firms and small local IT firms, and medical providers all vary in their ability and willingness to adopt health IT tools.

Basic health coverage is nearly universal in Chile, but health IT standards have not been established in either the public (FONASA) or the private (ISAPRE) insurance systems. The vast majority of Chileans, especially those with

Key findings:

RAND developed a roadmap with five objectives for the Chilean government to expand its health information technology (health IT) capabilities over the next ten years:

- Develop capacity for health IT implementation and create a nongovernmental entity to coordinate efforts.
- Institute interoperable electronic health records (EHRs) in the public health system.
- Implement a pharmaceutical and medical device tracking system that integrates with the EHR.
- Expand use of online appointment and payment systems.
- Scale up telemedicine projects to help reach Chileans in remote and underserved areas.

lower incomes, receive health coverage from FONASA. Cost-sharing can be lower with FONASA, but appointments in the public clinics are harder to come by than appointments in a private clinic for patients with a private insurance plan (ISAPRE), particularly for specialist doctors.

Health care providers generally align themselves with either a public clinic that is paid by FONASA or a private clinic that accepts ISAPREs. Patients who have FONASA may be permitted to see physicians in private clinics, but straddling the two systems becomes complicated when systems can't share information. Even within FONASA, the health IT systems in place are too fragmented for data to be shared efficiently among providers. Despite the Ministry of Health's digital initiative, about 80 percent of patient records remain paper-based, according to a 2013 estimate.

The landscape itself also affects access to care. Chile's long, relatively narrow territory hugs the Pacific, bounded by the Andes to the east, the ocean to the west, and the desert and glaciers to the north and south. Physicians tend to concentrate in the cities: An estimated 60 percent of physicians

practice in the largest city, Santiago, where 40 percent of the population resides. This imbalance creates disparities in care that affect a significant proportion of the population, particularly in the outlying areas. The infant mortality rate, for example, varies widely depending on location. In an affluent part of Santiago, the rate is 2 deaths per 1,000 live births, whereas 700 kilometers away it is 45 per 1,000.

Pockets of information technology isolation—lack of access to the Internet, computers, and even electricity—can also compound disparities in remote or underfunded areas. An estimated 30 percent of primary care units, especially in rural areas, have connectivity problems, and about 10 percent of hospitals lack the electric infrastructure to support health IT.

With appropriate planning and infrastructure build-out, health IT can help address disparities and bolster public health in Chile. Interoperable EHRs, along with telephone and video consultations, create new paths for providers to reach patients remotely. Such an interoperable network is not yet available in Chile, but with RAND’s roadmap to guide thoughtful coordination among the insurance and government entities, as well as providers, it may be a reality within ten years.

Steps Toward Interoperable Health IT

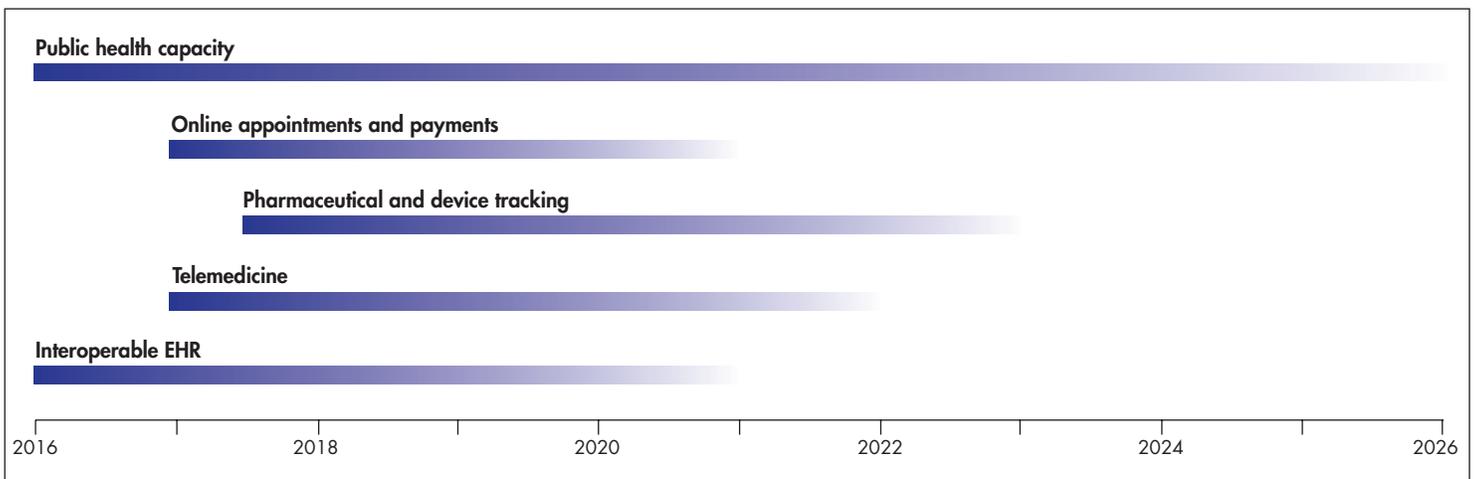
RAND’s roadmap identified five objectives to pursue over the next ten years (see figure):

- Develop public health capacity to implement health IT projects (2016 to 2026).
- Implement an interoperable EHR (2016 to 2021).
- Implement a pharmaceutical and medical device tracking system (mid-2017 to 2023).
- Broaden use of interoperable online appointment and payment systems (2017 to 2021).
- Scale up existing telemedicine projects (2017 to 2022).

Develop public health capacity. The first objective involves establishing an independent entity that coordinates with stakeholders to realize the long-term vision of expanded and interoperable health IT. Chile is already ahead on this front: While RAND was still conducting its study, Chile created a nongovernmental entity called Salud + Desarrollo (S+D, which translates as “Health + Development”) to take charge of building the foundation for the remaining objectives.

In many ways, the role of S+D is similar to that of a leader of a road construction project. The RAND roadmap set the guideposts; S+D needs to find where dead ends exist, determine how to link them with other stretches of road, and build a sturdy base throughout to create a functional road system that will last. S+D must identify and allocate resources and lead a task force to determine key changes needed to foster health IT growth, such as privacy laws. In addition, S+D will need to support the setup of standards and certification principles and work with government entities to shore up the technical infrastructure. RAND also recommends collaborating with the education system to address digital literacy issues.

Implement interoperable records and tracking systems. The success of the work on EHRs relies on establishing interoperability standards so that information can be shared within FONASA and, ideally, among all providers. RAND recommends first establishing criteria for interoperability and standards so that diseases and medications will be coded in the same manner across settings. Chile may also want to choose a single EHR system for FONASA. If choosing a single vendor seems too risky, selecting a limited set of eligible interoperable systems for use could help focus efforts. Similarly, for a pharmaceutical and device tracking system, standards will need to be decided upon. Waiting until mid-2017 to start on this piece, when some of the fundamental



EHR system decisions will have been made, should help integration go more smoothly.

Broaden use of online appointments and payments.

With these foundational tasks under way, RAND estimates that the next step, scaling up online appointment-making capabilities and telemedicine, could commence around 2017. Some, but not all, providers have systems that can handle online appointments, referrals, medical leave, and payments, so key stakeholders and end users need to be interviewed to determine the sticking points among various clinic and hospital settings, and possible solutions. Existing systems will need to be extended from urban to rural settings, and navigating the lack of physical connectivity will add complexity.

Scale up telemedicine. Telemedicine projects that can address prevention and treatment of medical conditions of great public health concern are the next priority. Virtual doctor visits and remote monitoring can address the lack of specialists outside Santiago, delays in care access due to remote location or high population density, and overuse of hospitalization for chronic disease treatment. Some specialists already participate in programs that help detect early stages of a heart attack or use eye exams to spot the signs of diabetes, but telemedicine can also diagnose patients from afar or help patients manage their own conditions from a distance. Legal regulations for distance care will need to be established.

As all of these activities unfold, S+D will need to clearly define measures of success, collect baseline data, and continuously assess the success of its efforts. Evaluation will help S+D and other entities monitor whether their approaches are hitting the mark, or whether a change in course is needed.

Build It and They Will Come?

Health IT will be new to some in Chile, and uptake of new processes and procedures could be slow. RAND recommends

considering incentives for both patients and providers to encourage use of health IT tools.

Some countries, such as the United States, have tried to set financial incentives to spur use of EHRs. The “meaningful use” program set objectives for providers that included measures for specific EHR activities, such as recording health information and protecting its security, meeting certain standards and allowing patient-provider interaction via the EHR, and attaining certain health care outcomes. Although the program did increase EHR usage, there are now many incompatible EHR systems in place, and incentives will likely change under MACRA (Medicare Access and CHIP Reauthorization Act of 2015) legislation.

RAND researchers recommend that Chile consider a combination of financial and nonfinancial incentives. For instance, with telemedicine systems, nonfinancial incentives could include providing free training to nurses and doctors, or public recognition or career advancement in exchange for use. Financial incentives, such as a bonus or per-service payment for use of telemedicine, could help support early adopter providers and facilities that invest in the equipment to support services. For patients, providing publicly available or subsidized Internet access could help increase patient demand for EHRs and other mobile services.

Change Is Hard (but Worthwhile)

Health IT on the scale that Chile envisions will be no small feat, but an efficient, interoperable system will be worth the wait. Change is already under way, and momentum is building. Further evaluation will help determine whether the roadmap is helping to develop a more comprehensive health IT system in Chile.

This brief describes work done in RAND Health and documented in *Developing a Strategic Program for Chilean Health Information Technology: Environmental Scan and Key Informant Interviews*, by Taylor EA, Fischer SH, Gracner T, Tejada I, Kim A, Chavez-Herrerias ER, and Hoces de la Guardia F, RR-1358/1-CME, 2016 (available at www.rand.org/t/RR1358z1); and, by the same authors, *A Roadmap for the Development of Health Information Technology in Chile*, RR-1358/2-CME, 2016 (available at www.rand.org/t/RR1358z2). To view this brief online, visit www.rand.org/t/RB9926. The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark. © RAND 2016

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