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Change Management Strategies: Transforming a Difficult Implementation into a Successful One

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Abstract

The implementation of health Information Technologies (IT) contributes to improve quality of care and management processes. In spite, evidence shows that the rates of IT adoption are not the expected ones. Since 2004, Public Healthcare System of Buenos Aires city has been implementing a Healthcare Information System with a difficult adoption in clinical setting. In December 2015, the Government made some changes that allowed the implementation of an Electronic Health Record in 20 Primary Care Centers. This paper describes the change management strategies that were designed in order to transform a difficult implementation into a successful one. The combination of timely approach to change management, good governance and specialized human resources were keys to achieve this goal.

Keywords:

Electronic health record, Healthcare system, Change management

Introduction

Implementation of health Information Technologies (IT) contributes to improve quality of care and management processes. Provision of quality information for health care decision making, optimization of resources, contribution to the healthcare system giving timely and equitable care, are some of the benefits that can be achieved. Although IT benefits are clear and well described, evidence shows that the adoption of new information systems is not an easy task, and the utilization rates are not the expected for the current times [1].

There are many issues that can become barriers in the implementation of a health IT project, if they are not timely taken into account. For example: political and economical support to ensure governance, the design of a strategic plan with clear objectives in short, medium and long term, the lack of external regulations and internal processes that provides a legal framework according to the needs, the definition and adoption of interoperability standards, and change management strategies to transform the organizational status quo [2]. Evidence has shown that more than a half of IT projects result in failure [3]. Despite inevitable failures, medical informatics leads to many successes. Implementing information systems into complex healthcare organizations requires an effective blend of technical and organizational skills [4]. Therefore, the technology field offers challenging possibilities and new tools that demand new approaches, without disregarding the human factor [5].

Since 2004, the Public Healthcare System of Buenos Aires city has implemented a Health Information System (HIS) called SIGEHOS (Sistema de Gestión Hospitalaria -Hospital Management System-). SIGEHOS was mainly adopted in hospitals for administrative purposes such as patient identification, manage medical appointments and billing services according to patient insurance. In 2012, SIGEHOS was provided with clinical record capabilities and tried to implement in Primary Care centers; however, all approaches and strategies to accomplish significant results were unsuccessful. The arrival of a new Government in December 2015 brought in different policies on health IT and the possibility of another chance.

This paper describes the new approach and strategies designed after 2015 in order to transform a difficult implementation into a successful one.

Methods

Setting

Health Care Network

Buenos Aires is the capital city of Argentina and its largest and most important one. According to the 2010 census, the city's population is 2, 890,151 inhabitants [6].

The Argentine's Public Healthcare System provides free services to its entire population but much different insurance models often coexist on the same patient. According to 2014 statistical data, the average of the population residing in Buenos Aires city is insured only by the public system is 17.8%. This percentage reaches 31.2% in the south of the city, which is the more unprivileged [7].

The healthcare network is formed by 33 Hospitals and 43 Community and Primary Care Centers (Centros de Salud y Acción Comunitaria - CESAC). The city is structured into 12 areas in order to organize health care delivery (Figure 1). In 2015, the Buenos Aires´s Public Healthcare System provided approximately 9,600,000 of consultations in ambulatory setting [8].

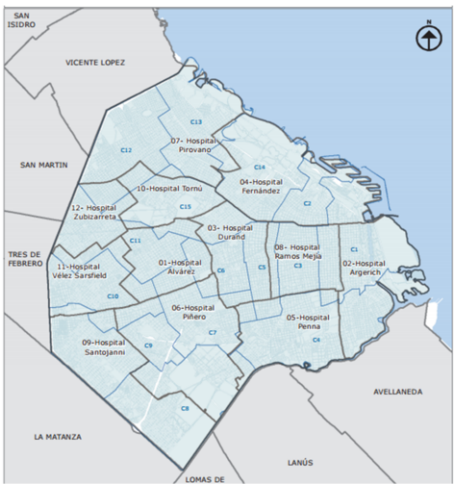

Figure 1 - Geographical distribution of healthcare areas

Software

SIGEHOS is web-based and in-house developed software (Figure 2). From 2004 to 2012, the first version of SIGEHOS was implemented in 20 hospitals, including modules that allowed patient identification, schedules management, hospital admission and billing, pharmacy stock management, registry of corpses and management reports. In 2012, an electronic health record (EHR) was developed and incorporated into SIGEHOS with the aim of replacing paper clinical records and getting the benefits of the electronic format.

Figure 2 - SIGEHOS Interface

First EHR implementation

Since 2012, the Government intended to implement an EHR and develop initiatives to improve the infrastructure of the healthcare institutions.

It was not until 2014 that said implementation started in Primary Care Centers, but by October 2015 it was adopted only in 1 of the 43 CESAC.

The following problems were encountered:

- Difficult negotiations with each CESAC due to lack of governance, and project management were in hands of a technical department with few healthcare professionals participating
- Lack of a multidisciplinary team which understands how to deal with healthcare professional's resistance to change.
- The definition of standards was inappropriate to represent the different domains of clinical knowledge

Study design

This is a descriptive paper about the strategies implemented in the primary healthcare network in Buenos Aires city since December 2015. These strategies were based on a better health care strategic planning and on the redesign of the primary care network [9].

Results

Change management strategies

The strategic plan comprises 7 fields related to Health IT projects [10].

1. Change of project leadership: The Clinical Informatics (CI) Office was created and coordinated by a physician specialized in health informatics. Thirty professionals from different disciplines such as medicine, nursing, health informatics, systems analysis and engineering, sociology, psychology, anthropology, social communication and education sciences, were incorporated to the implementation team (Figure 3). All these professionals set up a great interdisciplinary workforce along with the IT department.

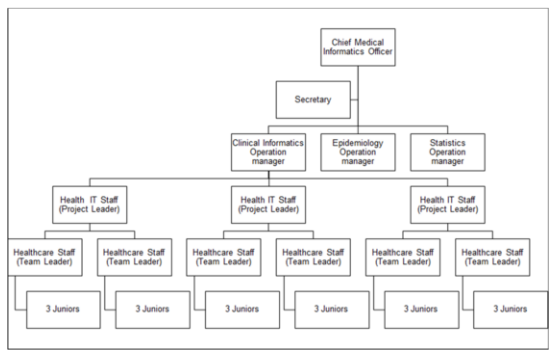

Figure 3 - Organization Chart

2. Organizational Policies and Procedures: The standardization of key processes, such as patient identification, was needed. In this regard, a special area for internal policies and procedures was created with the purpose of redesigning, documenting and publishing processes and workflows along with the implementation of the EHR.
3. Standards for interoperability
   - *Person Identification Services:* The patient identification module was strengthened with rules for unique and unequivocal identification. A Master Patient Index (MPI) with an audit module was developed based on Person Identification Services (PIDS) and CORBAmed standard [11].
   - *Clinical Terminology Services:* Several SIGEHOS EHR modifications were requested to the development team, taking into account physicians complaints and recommendations before extending the implementation. One of these complaints was the ICD-10 codification drop-down menu. Clinical Terminology Services (CTS) based on SNOMED CT as reference vocabulary were included to

automatically coding diagnoses and problems list [12].

4. User Centered Design (UCD): One of the major modification from the first EHR version was the shift to a problem oriented EHR. The new version allowed professionals to record clinical notes, anthropometric values, vital signs and vaccination (Figure 4). The developing team worked with UCD techniques in new functionalities like: family clinical record, pregnancy registry sheet, a computerized physician order entry (CPOE) module, recording and visualizing social, environmental, community and epidemiological data, all of which are keys for Primary Care and Public Health [13].

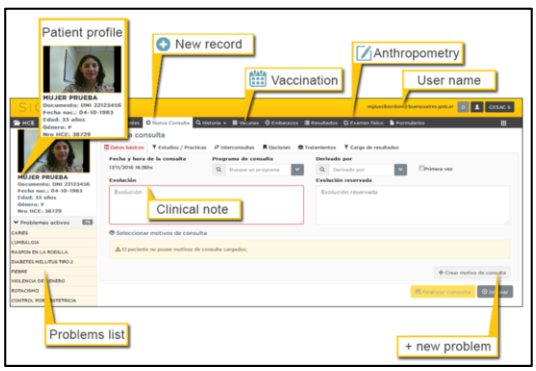

Figure 4 - SIGEHOS EHR Interface

5. Training, Communication and Support
   - Training characteristics: The implementation team committed to train the final users of the system (software) in situ with a theoretical-practical approach. A team of 4 people performed the training 7 hours a day during a period of 4 weeks.
   - *Communication and Support:* A web-based portal for Primary Care was developed; this webpage was the entrance door for access the EHR and its support system. This web page allowed unifying communication between clinical staff and delivering news about health care to final users.
6. Qualified human resources for continuity: In November 2016, a multidisciplinary residency program on health information systems was created. This program is oriented to professionals from different disciplines and based on a similar training program already in practiced in Argentina with more than 10 years of experience [14, 15]. Once residents finish the program, they should be capable of:
   - Analyze Health Information Systems (HIS) and detect opportunities for improvement in healthcare organizations.
   - Design HIS to accompany healthcare processes and contribute with quality information for continuity of patient care.
   - Implement HIS that allows obtaining quality data for the management of public health policies
7. External Rules, Regulations, and Pressures
   - *Legal framework:* In October 2016, Buenos Aires legislature passed the EHR law [16]. This law provided an important legal framework to support the implementation of the project and help to overcome the natural resistance to change. It also guaranteed the rules to carry out standardized implementations between public and private health care providers.
   - *Specialist Advisory:* To develop the project, the Government received advice from a specialized physician with almost 20 years of healthcare management experience and a pioneer in health information system implementation in the region [17].

Implementation results

Implementation results are described before and after applying the strategies described above as parameters of implementation success.

Goals

At the beginning of the project the goal was to implement the EHR in 14 CESAC by the end of 2016, taking into account that 6 months were needed for setting up the team, gather processes and change the SIGEHOS software. The first implementation was in June 2016, and after applying new strategies the team was able to increase the initial target until 20 CESAC were fully implemented by December 2016.

Users

The adoption of the EHR increased from 27 users in 2015 to 1200 on December 2016, 90% of them was healthcare professionals and 10% administrative staff.

Among the healthcare professionals users, most frequent specialties were pediatrics, nursing, general medicine, psychology, obstetrics, internal medicine and social service (Figure 5).

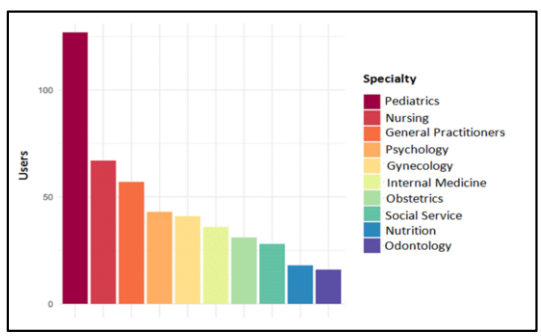

Figure 5 - SIGEHOS users by specialties

Identifying patients

In a similar way, the new approach helped to increase more than 10x times the number of patient registered in the MPI in a 6 months period reaching a total of 52,580 patients by December 2016 (Figure 6).

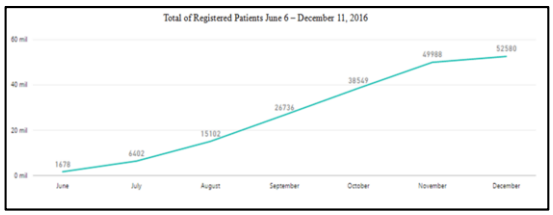

Figure 6 - Total of registered patients

Progress of Clinical Notes

The more professionals used the EHR the more clinical notes were registered, going from 10,000 notes to a total of 75,281 by December 2016 (Figure 7).

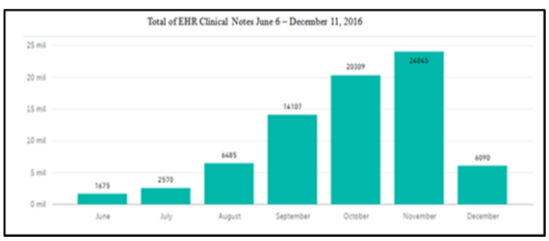

Figure 7 - Total of clinical notes

The distribution of clinical notes by specialty showed that the highest percentage of them was used in pediatrics, followed by gynecology and internal medicine. Nursing occupied the 4th place along with obstetrics (Figure 8).

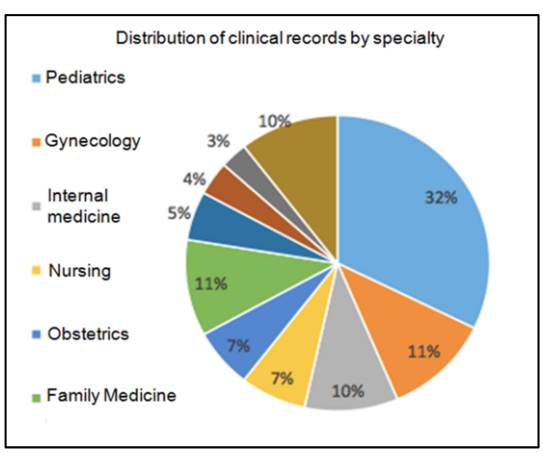

Figure 8 - Clinical records by specialty

Discussion

The governance model implemented since December 2015 allowed the successful implementation of a health information system in Buenos Aires city. The implementation was carried out within the framework of a strategic ministerial aim consisting of strengthening primary care network and achieving an integrated and efficient healthcare system that provides timely, equitable and progressive care to people.

A key issue was the standardization of processes and the incorporation of interoperability standards for unequivocal patient identification. Primary clinical data capture should be as expressive as possible, then semantic coding and control should be transparent to the user. First EHR version considered mandatory the ICD-10 codifying by professionals and it caused resistance. Terminology services were incorporated in second EHR version and users could write free text overcoming barriers. This is one of the most recognized interventions and ensures the scalability of the project [21].

Another key aspect was the careful building and shaping of the implementation team. A blend of IT professionals and clinicians cannot become a team of health informatics specialists. There was a need for specialists in health informatics to be a "bridge" between the two disciplines and to be the guide through the changes of the organizational culture. The incorporation of healthcare professionals specialized in health informatics helped to reduce the time needed to implement the software and overcome preexisting barriers [5]. Moreover, in order to maintain the project beyond any political changes, an educational program was built to train an ongoing qualified workforce.

Healthcare professionals usually have little resistance to change unless the change is beyond their control or is intended to modify existing work conditions. In order to decrease healthcare professional resistance to change it was necessary to consider healthcare workflow in the redesign of processes and the EHR. This approach avoided the misuse of the systems and the poor quality of the recorded information by professionals [4, 22, 23].

Lack of regulations and legislation about eHealth is an important barrier to a HIS adoption. Working together with a group of lawyers, lawmakers and other professionals made it possible to define a legal framework for the implementation of the EHR.

The development and implementation of a robust and scalable health information system involves the detailed knowledge of the business rules of each healthcare organization. Despite the fact that good software solutions can be imported, the strategies of implementation and the "peopleware"are proper of each institution [24].

It is hoped that this document will be useful for similar experiences. It is necessary to continue working on the implementation of this project and to achieve an evaluation through a validated instrument.

Conclusion

Implementing Health Information Systems in Public Health faces a major challenge that requires political good governance, human resources with specific skills and a health information system able to adapt to the culture and organizational context.

This paper describes first months of an EHR implementation in Primary Care in Buenos Aires city. Good governance, a strategic implementation plan and the conformation of a interdisciplinary work team with human resources trained in health informatics, were key components for carrying out a large-scale project and handling adequately the resistance to change.

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