

The SIGLIC System for Improving the Access to Surgery in Portugal

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Abstract: This paper describes the design and first results of an information system (SIGLIC) that supports the new integrated management program (SIGA) to improve the access to surgery in Portugal. SIGIC, the Ministry of Health's agency responsible for access to surgery management, started re-thinking the system in 2005 by re-defining key processes and workflows. The designed information system SIGLIC integrates all hospitals with surgery with every other hospital, where it picks the data to allow the search for optimal solutions for each patient. In the context of SIGIC (Waiting List for Surgery's Integrated Management System) "access" means to assure the treatment by services in terms of quality, standards, equity, process and transparency. The existence of a significant number of patients waiting for treatment that exceed the clinical acceptable times has ominous consequences not only for the individuals (increasing suffering, reduce treatment success, more complex treatments) but also for the society (more expensive use of resources, higher absenteeism, etc), which made the government to create SIGIC program. SIGIC's goals are to reduce waiting time for surgery, to apply identical standards to all patients, to profit from good use of resources and, to create a national structure of homogeneous information based in a system of data collection. The methodology followed was to: a) "survey of information systems and technology in Demand/Supply/Resources"; b) "institutionalization and monitoring of procedural standards for management of the Waiting List for Surgery (WLS)", c) provide "evaluation by results" and, d) "Correction of deviations to the standard". To fulfill SIGIC's objectives it was created a management model (SIGA) and SIGLIC to support it. By now 57 public hospitals and 96 private clinics and hospitals (with convention in SIGIC) had joined the SIGIC network. The Information model include the following items: information on patients and events to allow "Process management", "clinical information" for "Disease Management" and "financial data" to allow management between the health units, from which data is gathered to improve access management. The information is recorded by hospitals in accordance with a set of standards and integrated into the central database of SIGIC. The quality of integrated information from the hospitals is guaranteed by a set of tools to validate its consistency, rejecting non-compliant data. The information is recorded in hospitals throughout the process of managing the patient on WLS and integrated daily in the central database. The results since 2005 show the importance of an integrated information system to overcome the bureaucracy: There was a 36% improvement in number of scheduled surgical episodes and 60% reduction in days on waiting time.

Keywords: waiting list for surgery, information systems, organizational processes, health information management

1. Introduction

The Portuguese National Health System (SNS) services aims at serving all citizens. In this regard, the need for Information Systems (IS) to address the exchange of information between different health institutions is critical (Lapão, 2007). Today, most of the problems have to do with lack of coordination between systems due to the use of different architectures and standards (Lenz and Kuhn, 2002). The National Health Systems Administration (ACSS) has both responsibilities in addressing the "National Health Information Systems Infrastructure" and the development of "Surgery Access National Program", among other things. ACSS started to implement the SIGIC (Integrated System of Management of the Waiting List for Surgery) program in 2005, following a less integrated program named PECLEC that started years before. By "access to healthcare" is meant the possibility that individuals have to get proper healthcare treatment according to their needs in order to have real healthcare gains (EOHSP, 2009). In Portugal, access to healthcare services is a constitutional right for all citizens. Proper care treatment is understood as a combination of factors: the opportunity (on-time treatment), the gains in health (effectiveness), the adequate costs (efficiency), and the value felt by the patient. The need for regulation elapses from the fact that healthcare services are a scarce and valuable resource. SNS has deal with limited resources to serve the 10 million inhabitants: the numbers of primary care health centres in the public healthcare system in Portugal (regarding the North, Centre, Lisbon, Alentejo and Algarve Regions) are respectively: 105, 111, 84, 44 and, 16 (255 in total); The numbers of hospital beds (b) in the public healthcare system (regarding North, Centre, Lisbon, Alentejo and Algarve Regions) are respectively: 6342, 4763, 7072, 1412, 859 (20448 in total); The numbers of National Reference System for Continued Integrated Care (RNCCI) beds (North, ISSN 1566-6379

Centre, Lisbon, Alentejo and Algarve Regions) are respectively: 726, 871, 614, 266 and, 216 (2693 in total). All these resources (surgery scheduling, hospital and tertiary beds availability, primary care referencing) need proper and timely management. SIGIC (as a structure of the Health Ministry) defined by law that “access to surgery” means to assure the treatment by services in the following terms (PRLD, 2007):

- Standards of technical quality of the healthcare services (quality);
- Maximum waiting time by medical priority and pathology (standards);
- Schedule rules safeguarding medical priority and time waiting (equity);
- Guarantees of alternative choice if waiting time is 75% of the maximum waiting time established (process);
- Transparency and guarantee of information quality (transparency).

2. Problem Specification: The effects of long permanence in the waiting list for surgery

The need for regulation at the Portuguese National Health System elapses from the fact that healthcare services are a scarce and valuable resource. In the context of SIGIC (Waiting List for Surgery's Integrated Management System) “access” means to assure the treatment by services in terms of quality, standards, equity, process and transparency.

The existence of a significant number of patients waiting for treatment that exceed the clinical acceptable times has ominous consequences not only for the individuals (increasing suffering, reduce treatment success, more complex treatments) but also for the society (more expensive use of resources, higher absenteeism, etc), which made the government to take political measures like the creation of the SIGIC program. SIGLIC is an information system to support SIGA in improving the access to surgery. This information system integrates the data from all hospitals with surgery together, where it picks the data to find optimal solutions for each patient. It allows real time exchange of information to drive SIGIC's decision-making processes. SIGIC's goals are to reduce waiting time for surgery, to apply identical standards to all patients, to profit from good use of resources and, to create a national structure of homogeneous information based in a system of data collection. It was clearly defined who produced and signed the information, the minimal data set and all the information to be recorded is included in the workflow.

In the recent past, the access to healthcare was carried through in a non-regulated manner and the integration of the different levels of treatment was inexistent. The citizen did not have the opportunity to participate in the process. The system evolved, with the expansion of new regulation units (SIGIC, MCSP, MUCCI¹) guided towards efficiency of the system centred in the patient. It was defined and consolidated health-care referencing nets and it was strengthened the participation of the patient in the development of the processes (Jeston and Nelis, 2006). It is understood as a global system that integrates the diverse levels of healthcare. The regulation is centred in the patient gains in health. As SNS is driven by the “Primary-care”, closer to patients, from which MCDT (Exams, Complementary Diagnosis and Therapeutically Means) are prescribed and hospital-care is referenced. SIGIC personnel works the data from surgical services, medical services, and other MCDT in order to manage the “surgery access” (with SIGA: the Integrated System of Management of the Access) and related it with Continued care and, Patient needs.

3. Methods: Integrated system for management of surgery access – SIGA

SIGIC goals are to reduce waiting time for surgery (improve the service), to apply identical standards to all patients (equity in access), to profit from good use of resources (Increase the efficiency) and, to create a national structure of homogeneous information based in a system of data collection (a database) that elapses from the production process (knowledge and transparency). The strategy chosen was the “survey of information systems and technology in Demand / Supply / Resources”, the “institutionalization and monitoring of procedural standards for management of the Waiting List for Surgery (WLS)”, to provide “evaluation by results” and, to regard the “Correction of deviations to the standard”. To fulfil SIGIC's objectives (defined by law) it was created a management model and an information system (IS) to support it. SIGA is the integrated system of management of the access

¹ MCSP is the Mission Unit for Primary Care; MUCCI is the Mission Unit for Continued Integrated Care.

(includes the information model, regulation model, financial model, incentives and Penalties). There are four main issues to be accomplished by SIGA: create knowledge, establish the equilibrium between demand and supply, guarantee the equity in access, improve the quality/efficiency, and tackle sustainability. Therefore, the SIGA mission is to serve well the citizen needs of surgical treatment. By now 66 public hospitals (all with sustainable surgery activity) and 54 private hospitals (with convention with SIGIC) had joined the SIGIC network (now with 3,012 certified users).

Means to achieve the goals: After setting the goals and defining the targets, they were built the necessary instruments for pursuing them. The main targets identified were: increasing supply of “surgeries”, improving the management of WLS (i.e. creating the conditions to improve the use of surgical rooms and teams), supply and demand regulation, process improvement, assess the quality of services provided, guarantee of the access for all citizens and, improving the quality of information.

Processes Effort: Right from the beginning of the process, it was established a strong effort to properly define the right workflow processes by involving all actors within the system. The result is the defined: “The circuit of the patient in WLS and in hospital transfers” (figure 1).

SIGIC Access Governance Model

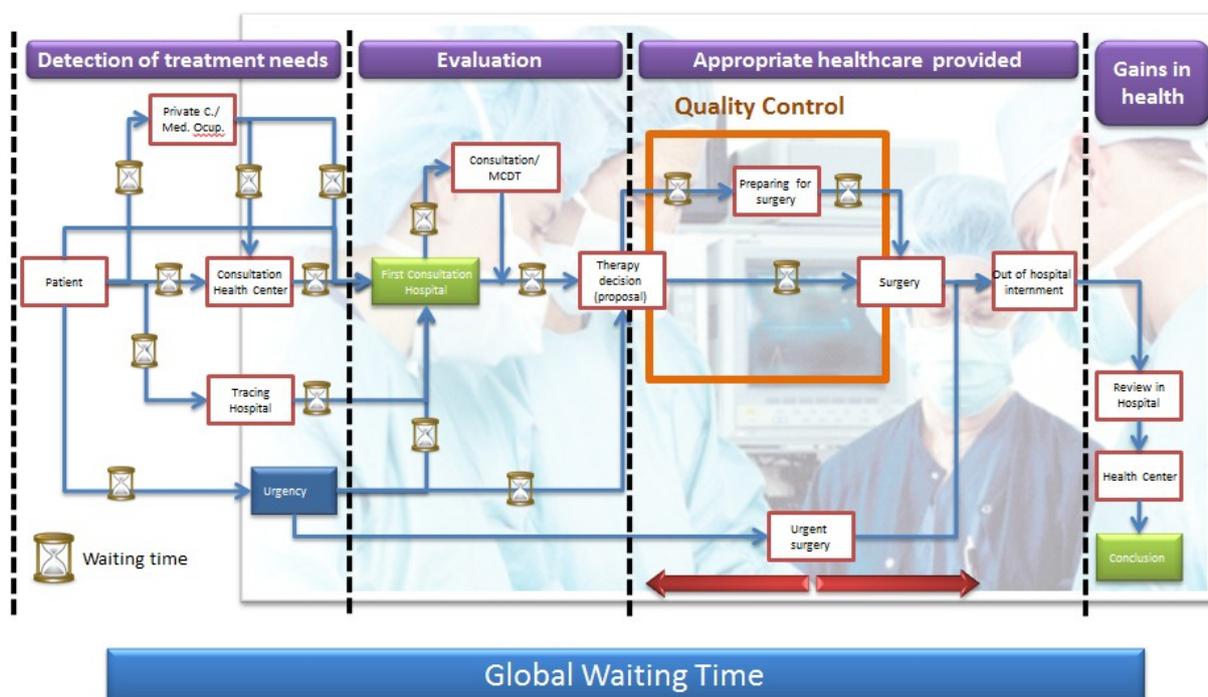


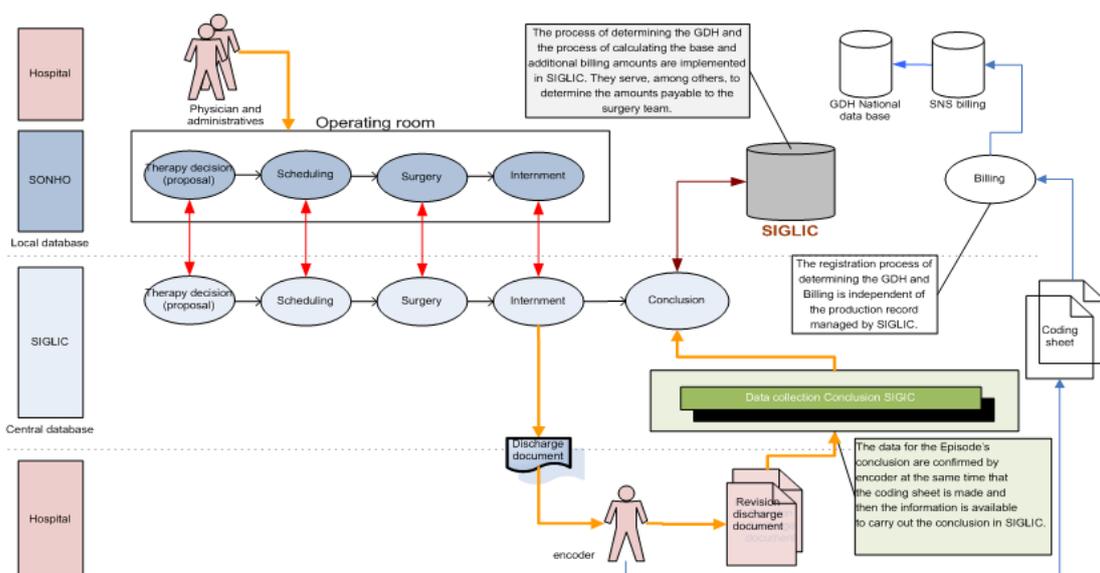
Figure 1: SIGIC Access Governance model

The “hospital of origin” of the patient (HO, the hospital where the patient had the first consultation) classifies the patients according to their priority and tries to schedule a surgery for them on time. But, there is a defined time limit of 15 days to the HO surgery department to reply for all cases: The HO must then clarify and declare every lack of capacity for coping with the high priority patients in the list. Therefore, it was defined a time limit of one month for the HO to perform the surgery. Otherwise, if HO could not schedule the surgery, the patient must be transferred to another hospital in the network (and accepted by the patient): Then, within 1 to 6.75 months, depending on the fact of being or not a priority patient, the patient should be sent to another hospital. This destination hospital could be a private hospital on the condition of having a convention agreement with SNS/SIGIC. The limited maximum waiting time allowed was defined in 9 months (always adjusted to pathology). The circuit of each patient is always monitored in order to guarantee that the maximum waiting time is never reached.

4. SIGLIC: The Access to surgery information system design and implementation

SIGLIC was defined as an information system to allow real time exchange of information to support all the SIGIC decision-making processes. The knowledge is integrated with a unified and coherent set of information that is based on the needs revealed by patients, integrating the production processes while generating cost and value and which culminates in the perception of the gains in health and the value perceived by the patient. The Information model include the following items: information on patients and events to allow "Process management", "clinical information" for "Disease Management" and "financial data" to allow the "Contract management" between the health units, from which data is gathered to improve access management (quality treatment, i.e. gains in health, and value perceived for the patient). The information should be recorded by hospitals (with the responsibility for the information contents) in accordance with a set of standards and then integrated into the central database of SIGIC. It was also clearly defined who produced and signed all the information, the minimal data set (standardized information), and all the information to be recorded is to be included in the workflow. The quality of the integrated information from the hospitals is guaranteed by a set of tools that validate its consistency, and rejects non-compliant data. The information is recorded in hospitals throughout the process of managing the patient on WLS and integrated daily in the central database (Figure 2).

SIGLIC - Process of acquiring the information



The information is recorded in hospitals throughout the process of managing the patient on WLS and integrated daily in the central database.

Figure 2: Flow of information between hospitals and the central database

The information exchanges between hospitals and central database are executed (two-way) daily. They must be subject to central data sync with the hospitals and to a reporting system for errors that identifies gaps in the transaction. Thus the central IS does not create parallel processes but it generates an integrated knowledge of hospital activity with only 24 hours of delay. In SIGIC, all the information campaigns, the training sessions for professionals and the provision of quality information are key measures to promote the participation of all stakeholders in this process of improvement.

5. Evolution of the performance indicators on WLS

The SIGIC program results are very positive (Figure 3, 4, 5 and 6) and show clearly the importance of developing an information systems that allow improved resources allocation. In Figure 3., one could see that the number of people in waiting list for surgery has decreased 33,7%, which is an evidence

that the system is actually working. The impact could also be translated in reduction time: the waiting time for surgery decreased from 8.6 to 3.4 months, meaning a 60,5% reduction simply being allowed through better system organization and management (Figure 4.). At the same time, this improvement has allowed an increased on patients entrances (meaning an improve in accessibility to surgery) from 426,949 to 560,695 episodes (+31,3%) (Figure 5.). This was possible because of an increased on scheduled surgery from 345,321 to 475,293 episodes (+37,6%) has been provided (Figure 6.). Another significant impact has been on hospital transfer (a usual bureaucratic process) which has increased from 3,003 to 38,976 episodes (+1200%). This last result shows the real impact of an integrated IS over bureaucracy.

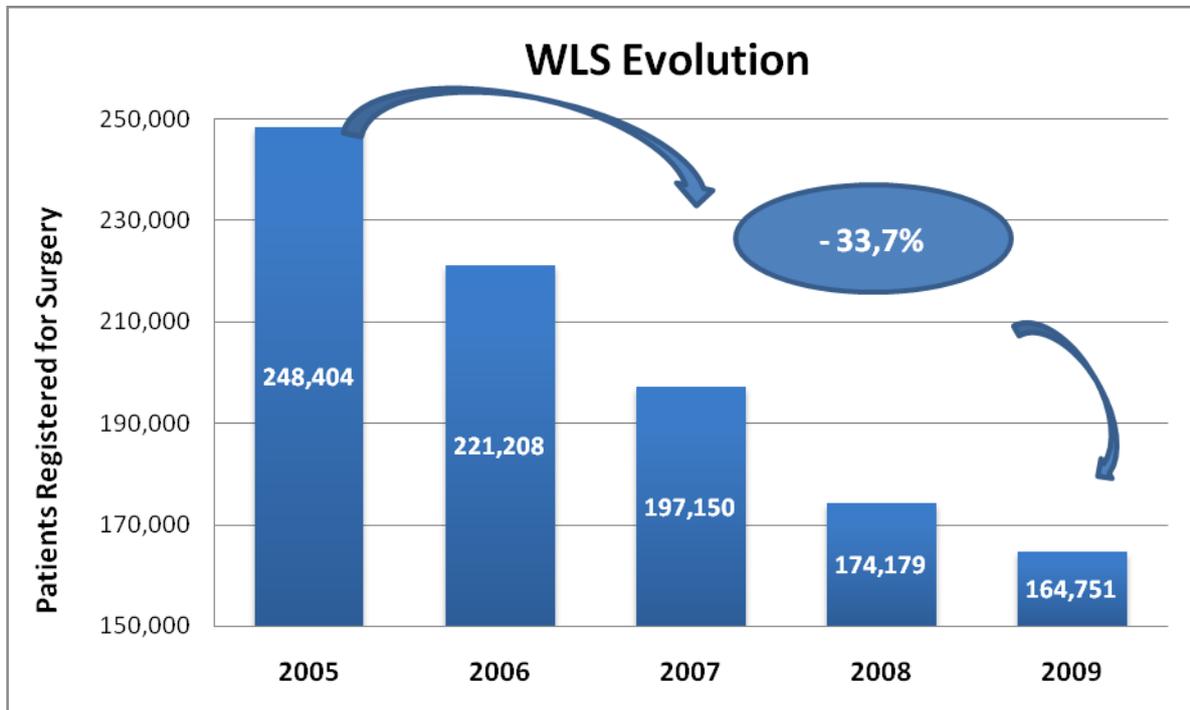


Figure 3: Waiting list for surgery time evolution (* first results not yet fully validated)

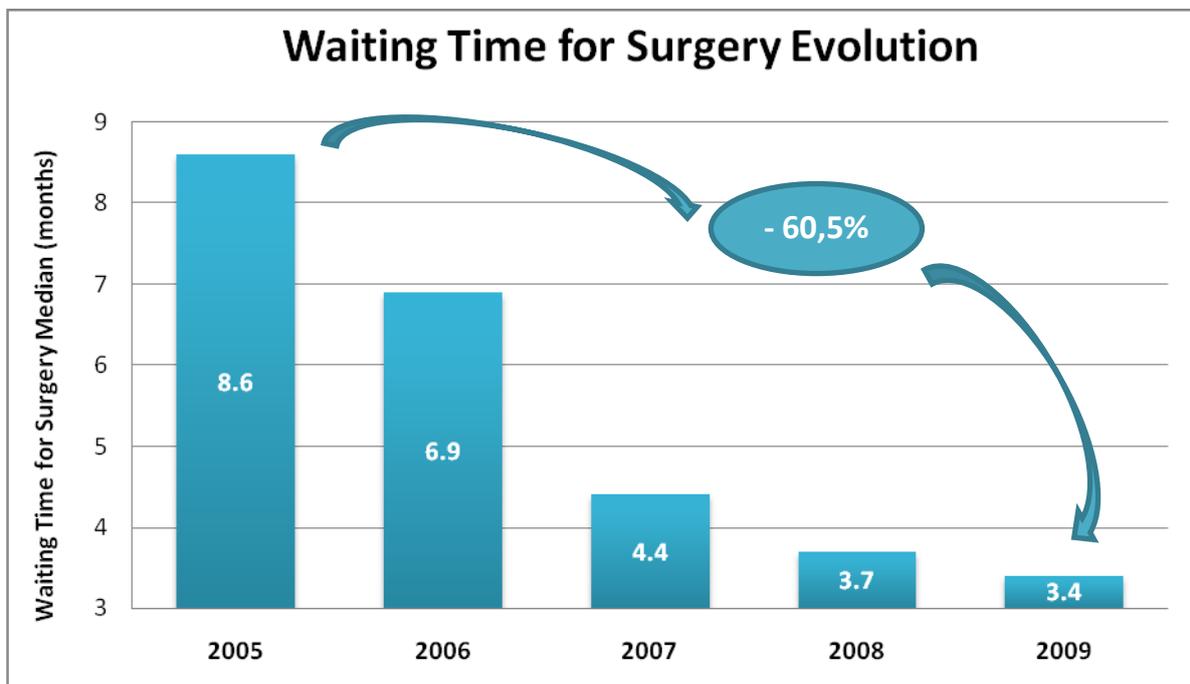


Figure 4: Waiting time to surgery reduction (* first results not yet fully validated)

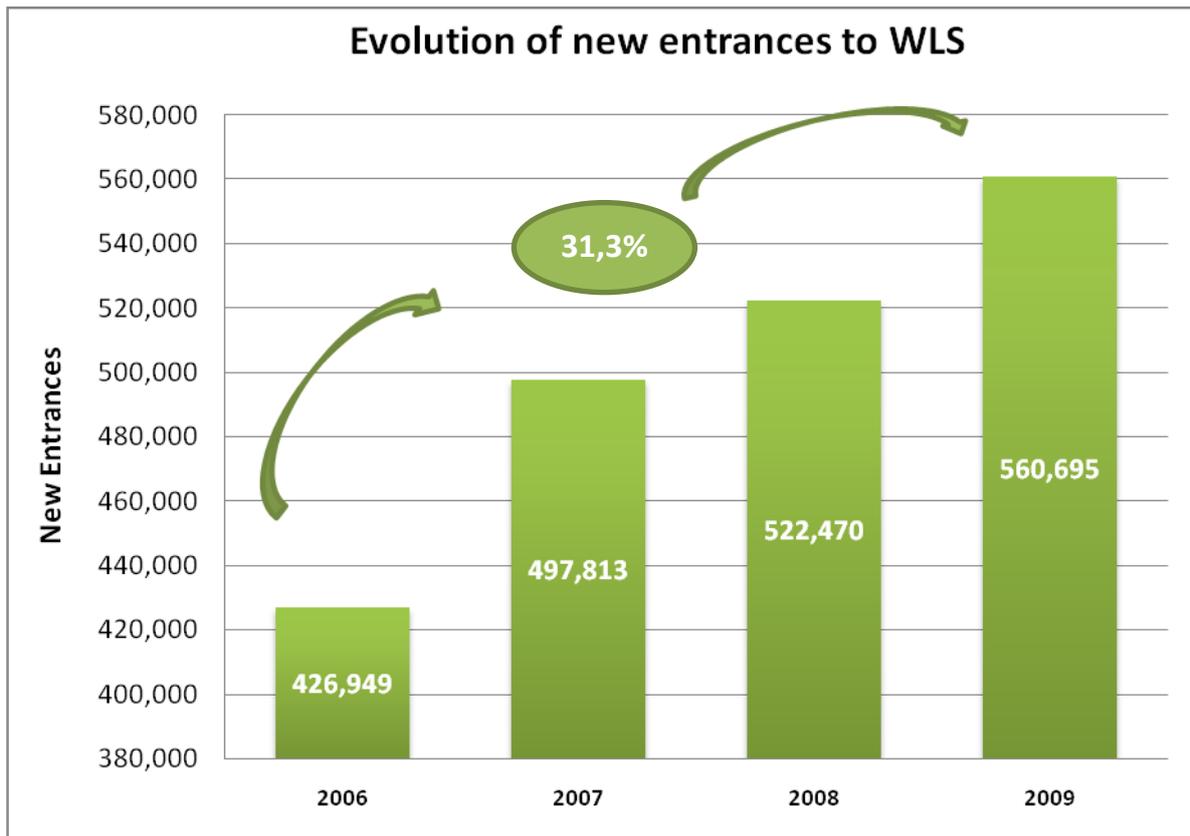


Figure 5: The evolution of new patient entrances to the waiting surgery list (* first results not yet fully validated)

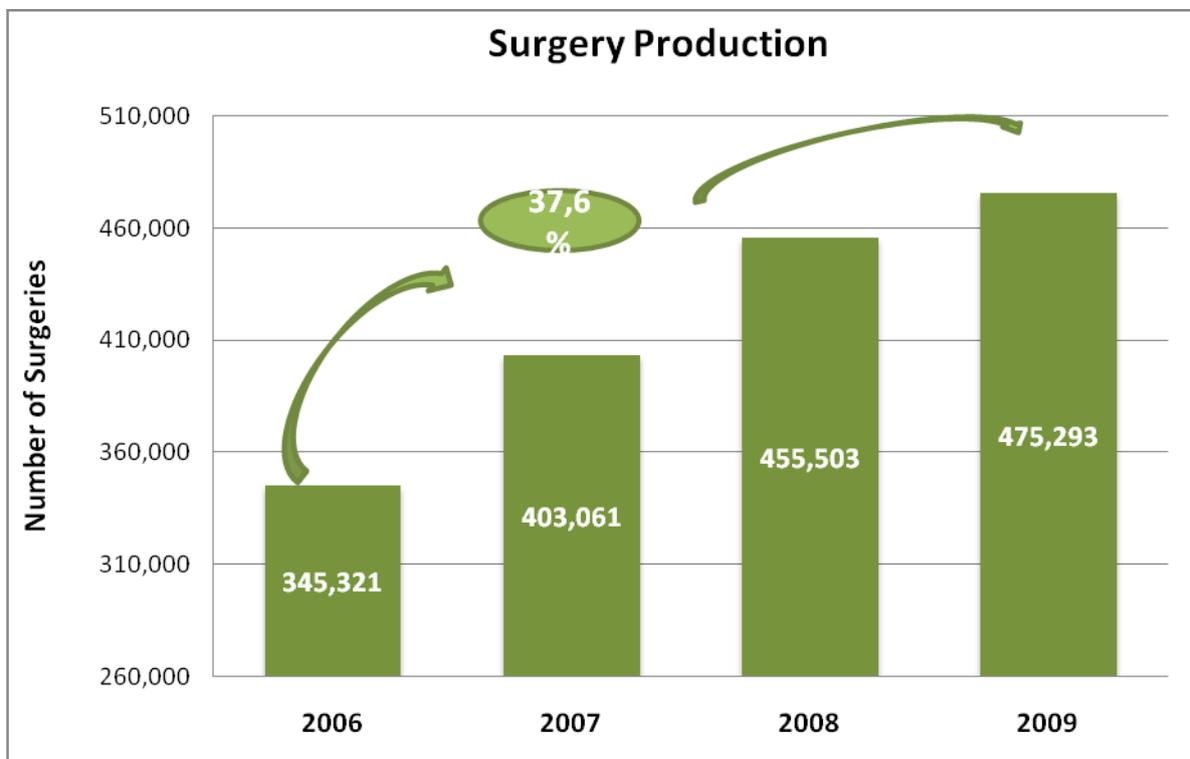


Figure 6: The evolution of the number of surgeries performed (* first results not yet fully validated)

6. Conclusion: Process of HIS design

From the case presented one should conclude that SIGLIC, the IS that supports SIGIC, has been essential to ensure the delivery of benefits to the patient and healthcare providers in improving the access to surgery. The results are quite impressive, resulting from a professional application of IS design and implementation principles that allowed the overcoming of communication barriers and the lack of operating rooms management practices. The SIGLIC system enabled the SIGIC program to cover all the country and furthermore, allowed many hospitals to increase the participation of surgeons and a more efficient usage of operating rooms.

This is only part of a bigger effort to implement a comprehensive strategy to consistently allow information collection and sharing within Portuguese healthcare sector to improve resources usage management. Future work would include both the analysis of the use of the IS itself and on the actual health gains provided with the surgeries.

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