Business process management to manage clinical risk: a case study in the healthcare sector

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Abstract

Purpose. Clinical risk management is a managerial approach to improve quality in healthcare sector: this paper aims to demonstrate how important is the adoption of a process focused organization for the survival of healthcare structures, improving quality of management, patient safety, reducing costs and risks.

Methodology. The methodology used is the case study, in order to analyze a specific case of real life: this method will be applied to the Health Care sector, as a practical example of identification, analysis and management of critical situations, in terms of improvement.

Findings. Results show how a comprehensive view of the processes may provide improvements in operations, identifying different risks and bottlenecks, suggesting the rapid adoption of corrective policies and improvements, in terms of overall efficiency.

Practical implications. A healthcare system could achieve a competitive advantage through the innovation of the organizational processes, thanks to which it is possible to identify and reduce clinical risks.

Originality/value. Within the Italian healthcare system, limited attention has been paid to design of healthcare facilities; the need is to provide flexible solutions to realize a lean management. The originality of the work is the analysis of a complex organization, thanks to which it has been possible to identify the hidden critical situations, and suggest solution of improvement for a better healthcare management.

Keywords

process; critical situations; improvement; clinical risk; bottlenecks; healthcare system

1. Introduction

Nowadays healthcare companies pay greater attention at improving the quality of services offered, getting better the governance structures and health-care policies for waste management (Caniato et al., 2015): meeting the needs of a patient who is at risk of life is a priority for the management of healthcare facilities and medical personnel (Ferencovà & Lizàcovà, 2014). In this context it is necessary to implement innovative organizational logics, in order to balance the requirements of cost and quality.

To do this, it is necessary to start from the analysis of the organizational structure adopted, ensuring the adaptation to market needs, through an intense redefinition, tuning and monitoring of business processes, implementing continuous improvement, innovating methods of production and control.

In recent years, as consequence of the lack of resources, it is perceived the need to change the healthcare management, introducing organizational models normally used in private companies. The managerial literature suggests the adoption of "process management approach" that, with a global vision, makes the business more flexible and adaptable to the changing conditions of the market.

Most companies continue to adopt a functional organization, based on the specialization of labour: employees perform the same activities, operating within the same department and focusing on a single result. This approach is surpassed by a processes approach, with a global vision of work, ensuring the improvement through the implementation of effective and efficient actions.

Through the systemic view, the company is seen as an interdependent system of parts (structure, resources, operations, processes) interrelated and interacting with the environment in a dynamic way.

In this context, Business Process Management is a methodology of approach, introduced in Europe in the early 90s, as part of the innovative managerial approach, Total Quality Management, based on quality and continuous improvement of business operations.

Business Process Management involves substantial improvements in performance: it is a necessary step, especially in the health sector, where technical progress, the aging population and the growing number of patients with chronic diseases, increase the costs of health care.

Moreover, the health sector, being a high labor-intensive sector, supports increasing costs, due to the new and expensive techniques, the development of expensive drugs and the demand of patients.

Consequently, it is very difficult in this sector to put together quality and patient's satisfaction; so it is essential to start from the organizational structure to make the health systems effectiveness.

2. Process Management to reduce Clinical Risk

2.1. Business Process Management in healthcare sector

Healthcare organization is seen as a complicated network with different stakeholder, such as patients, administrative and medical staff. To manage this complexity it is necessary to promote the introduction of technological innovation, facilitating the improvement of patient safety, the reduction of medical errors, and the increase of patient satisfaction (Rani et al., 2015).

With reference to innovation, it is not just technological, but also organizational ones. In fact, technology should be interpreted more broadly, recognizing that it is incorporated in all activities of the business system (Silvestrelli, 2014).

From an organizational point of view, healthcare organizations have been applying Business Process Management for modelling, executing, monitoring, analysing and optimizing business processes, improving patients' services and quality of cares; sometimes improvement is applied to isolated activities, due to the complexity of the sector (Martinho et al., 2015).

Business process is defined as a set of tasks related to achieve a defined business objective.

With reference to clinical process, it is similar to business process but it refers to clinical activities (Khodambashi, 2013).

In hospital, medical processes have to be planned and traced. Usually organizational tasks have to be coordinated manually by the clinical personnel. As consequence, many errors occur and patients have to wait because resources are not available.

Clinical processes may become impossible to perform if information is missing, preparatory procedure has been postponed, cancelled or requires excessive lead-time (Lenz & Reichert, 2007).

In particular way, the health service malfunctions happened in Italy are connected with managerial and structural errors, wrong working method, inadequate or absent planning activity, the lack of technological technique and the lack of sharing result all of levels.

The cases of death, adverse effects, medical errors, the rising costs of the insurance system for the increase in litigation, represent different aspects of non-quality of the health system.

In this context it should be accept the human fallibility but also promoting intensive risk management activities involving the active and conscious participation of all stakeholders.

The risk represents a condition of uncertainty, correlate with the occurrence of potential and negative event: accidents are more often the result of erroneous organizational action, due to wrong management decisions or unsuccessful internal communication system, as result of events that are not controlled, because delegated.

The managerial inefficiency can be a source of waste, due to the wrong use of resources, with no value added for patient; the most common examples of inefficient services in the healthcare sector are represented by a long hospitalization period, the high wait time for a specialist examination, the lack of prevention, inadequate human resources allocation with the increase of fixed costs.

The typical weakness of health facilities is also decision-making processes not clearly defined, dysfunction and bureaucratic delays, organizational issues in relation to the definition of roles and responsibilities of the hierarchical levels.

Therefore it is essential to develop a monitoring system for adverse events, aimed to trace situations not comply with standard protocols and with company procedures, researching anomalies and starting point of errors or inefficiency, which are source of damages to patients, to the organization and to internal staff. For this reason it could be promoted, in each departments of the structure, awareness activities to involve personnel, as active part, in the reporting process, in order to reach excellence.

The process approach represents a way to reduce the risk clinician, through the identification and decomposition into phases and activities of the processes provided, and then identify the most critical ones, which need an accurate measurement activities. Patient safety is ensured through the control process, that minimize the number of errors, through the identification, monitoring, analysis and treatment of risks that may cause harm to the patient (Perrella & Leggeri, 2011).

2.2. Re-engineering and Improvement approaches

Once companies decide to adopt an organization for processes, it is necessary to manage processes themselves. Managing the processes means acting on them in order to achieve

improvements in efficiency through the reduction of costs and waiting times, making them fast and lean with higher quality, by creating value through integration actions.

The interventions of improvement are divided into two categories of approach: Business Process Reengineering and the Business Process Improvement.

The aim of the first approach is reconsidering processes, executing a big bang action, bringing a dramatic and radical rethinking of the company. In 90s Professor Hammer argued that through a review of non-value added processes it is possible to identify and eliminate "no-core" activities, ensuring a reduction of costs and improvement of quality (Serrano Gómez & Ortiz Pimiento, 2012).

In the following years, Champy (1993) defined the Reengineering as a way to achieve radical improvements in quality and productivity (O'Neill & Sohal, 1999) or, other authors defined it as a way to obtain substantial improvements in methods, techniques, procedures and organizational models.

Since this approach requires a substantial investment, time and risk, generating discontinuities in management, it is only used whit a declared critical.

It is necessary to promote an improvement approach, without waiting for the occurrence of criticality, but anticipate it, with a dynamic management, by priority.

The Business Process Improvement model does not require a radical rethinking of the company, but it is a more flexible and less invasive approach than BPR (Paul et al., 2010) with the introduction of gradual changes, in order to prevent, manage and remove criticality through measurement and monitoring of performance.

The improvement model makes it possible to anticipate the needs of customers, increasing the performance, through the removal of unproductive activity, waste, lead-time, operating costs, by providing less bureaucratic organizational structures, more flexible and more responsive in meeting the demands of customers (Cook, 1996).

The application of process improvement and organizational change management methods in a hospital setting is not new: in fact authors, such as Jimmerson, used a lean thinking approach for re-designing processes within hospitals to facilitate problem-solving activities thanks to the use of value stream mapping or Holden used the same approach for re-designing workflow processes in 15 emergency departments to reduce problems related to crowding, delays, cost and patient safety (Bastian et al, 2015).

There are so many reasons why hospitals should implement BPI in their processes: to realize cost reduction, to realize the benefits of technology, to find the redundant parts and eliminate wastes, to eliminate steps or roles which are useless, improving quality of care.

In fact, process improvement represents a way to reduce mortality of patients, making the process effective, promoting innovative working methods, improving productivity and minimizing the clinical risk (Manfreda et al., 2014).

2.3. The clinical risk management

The clinical risk management is an approach aimed at continuous improvement of clinical practice to make it safer, starting from the identification of risks and inefficiencies, getting to their reduction, or elimination, ensuring the safety of patients, a better quality of system and the reduction of waste, with a significant economic impact (Crema & Verbano, 2015), thanks to the adoption of guidelines, protocols, organizational and clinical procedures.

The link between clinical risk and business processes management is necessary to identify areas of weakness, roles and responsibilities allowing the integration of all functions, ensuring the central rule of the patient and the excellence in healthcare services (Chiozza & Plebani, 2006).

Historically, clinical risk management was considered from an insurance point of view, due to the increased requests for compensation for medical malpractice.

From the initial insurance approaches it has gone to the study of errors and their causes, linking the error's analysis with the process mapping, measuring the efficiency of operations: safety is a vital component of health care quality (Brennan et al., 2005).

"Clinical risk" refers to the possibility that a patient suffers an "injury" due to medical care or conditions of inefficient management, structural, organizational or technological, that could bring the extension of hospitalization period, worsening health conditions or the patient's death. Moreover in complex organizations it does not guaranteed publication of results because it is performed a "culture of confidentiality", which may be disadvantageous for patients.

From an academic point of view, a great attention is given to Health Lean Management, a managerial approach which could contribute to reach improvements in efficiency, identifying and eliminating any wastes, attributing value to the patient and reducing costs.

In literature it is promoted the possibility to combine Health Lean Management and Clinical Risk Management, analyzing the impact of this methodology on quality improvements (Crema & Verbano, 2015).

Clinical risk management can be handled by multiple points of view: analyzing the economic damage from a claim, the legal consequences, the damage of image, verifying services and quality of care provided, analysing operational management and insurance costs.

In order to avoid the transformation of the risk in damage, it is necessary to analyze processes, starting with those that have a greater frequency, a greater impact on the economic damage and on the health of patients, in order to adopt a set of methods, tools and actions to identify, analyze, evaluate and treat risks and realize intervention of improvement.

There are most important tools to reduce adverse events and adopt improving policies, promoted by Ministry of Labour, Health and Social Policies: the root cause analysis, FMEA analysis (Failure Mode and Effect Analysis), clinical audit, incident reporting, analysis of clinical documentation, client reports, decision-making trees, checklist[1].

This kind of instruments are very useful to manage the probability that a patient suffers any damage of health caused by medical care provided during the period of hospitalization, bringing a prolongation of hospital stay, or in extreme cases, the death (Crema & Verbano, 2015).

3. Case Study: Business Process Management in healthcare

3.1. The case study methodology

The case study includes qualitative and quantitative tools, such as the direct observation, interviews, descriptive documents, statistics and questionnaires, which help the researcher to explain the reason of the occurrence of a certain event, so as it appears. It is a popular method for its ability to examine a "concrete case", seen in a situation of "real life" (Yin, 2014).

Thanks to the study of a case there is the opportunity to investigate a phenomenon in a truthful context in which it occurs does not necessarily make use of a single data collection method, but on a variety of evidence, collected by different instruments. The case study allows you to collect data, makes the analysis, presenting and communicating the results (Yin, 2012).

[1] http://www.salute.gov.it

3.2 Introduction to the Local Health Unit

In Italy, the Local Health Unit is considered as a public entity which is part of the National Healthcare Service, with legal personality and organizational, managerial, administrative, technical and accounting independence, whose structural set includes Hospitals, Districts and Administrative Department, whose objective is to guarantee the health needs of citizens[2].

The organizational structure is divided into Departments; the need of "departmentalization", is due to economic reasons, for preventing duplication of costs and resources (such as equipment, beds, supplies, medical personnel, technical and administrative) between operational units, realizing an efficient use of resources and reduction in costs, especially fixed ones, and thus wastes.

The Strategic Board is composed by the General, Administrative and Medical Director; the General Director is responsible for defining the organizational arrangements within the company; the Medical Director has the function of driving, supervising on health facility, coordinating the health personnel and he is responsible for health care offered to patients; the Administrative Director assists the General Director in the government of the company, directing the administrative services.

3.3 A clinical risk case: analysis of a process

The case study treated regards an accident occurred in Vascular Surgery Department, in Italy. During a period of observation in the Local Health Unit, is has been rebuilt the process of accident, with a business process view, identifying the bottlenecks and trying to individuate the possible inefficiencies responsible for the accident, with possible perspectives of improvement.

Starting from the General and Legal Affairs Office, in which arrive all claims for damages due to clinics and organizational problems of the hospital, reason why patients seek a refreshing compensation, it is tried to understand what should be the causes attributable to the incident, trying to identify situations of improvement which, once implemented, could reduce the probability of risk, related to the event in question.

The case treated concerns a refunding request by a patient, who complains the damage due to the postponement of surgery, after having already made the preoperative medical treatment.

According to health personnel, the company contacted the patient to inform for intervention, but patient refused the appointment; there is not any evidence of the telephone conversation and the consequent refusal of the date by the patient. Unfortunately, waiting for the Vascular Surgery operation, the patient experienced a worsening of health conditions: he was forced to make an emergency surgery to another hospital, addressing all risks related to an unplanned operation.

Since there are not analytical data to develop a detailed analysis of the case and the Local Health Unit does not use a business process organization, it is analyzed the trends, observing the events for the period 2012-2013 in a cross manner, in order to identify potential structural problems: organization, departments, staff, responsibilities, practices, procedures in use.

So that, starting from the patient's claim, it has been analyzed the case, looking for causes attributable to it. First of all, it has been observed claims for compensation for the years 2012-2013.

Specifically, the most of the compensations are attributable to incorrect or missing surgery: from 9 in 2012 to 18 in 2013, as shown below.

[2] http://www.salute.gov.it

Table 1. Total number of requests for compensation

Subject	Number in 2012	Number in 2013
Wrong medical treatment	3	6
Wrong therapy	1	1
Wrong surgical intervention	9	18
Wrong / delayed diagnosis	5	10
Total	**18**	**35**

Source: Our elaboration

It is necessary to identify the Department responsible for this kind of problem. So that, the tables below summarize the types of problems attributed to each Department.

Table 2. Requests for compensation due to Wrong medical treatment

Wrong medical treatment		
Department	**2012**	**2013**
Surgery	1	2
Emergency	2	1
Urology	0	2
Pediatrics	0	1
Total	**3**	**6**

Source: Our elaboration

Table 3. Requests for compensation due to Wrong therapy

Wrong therapy		
Department	**2012**	**2013**
Obstetrics	1	0
Emergency	0	1
Total	**1**	**1**

Source: Our elaboration

Table 4. Requests for compensation due to Wrong surgical intervention

Wrong surgical intervention		
Department	**2012**	**2013**
Orthopedics	4	9
Surgery	4	6
Otolaryngologist	1	0
Obstetrics	0	2
Urology	0	1
Total	**9**	**18**

Source: Our elaboration

Table 5. Requests for compensation due to Wrong / delayed diagnosis

Wrong / delayed diagnosis		
Department	**2012**	**2013**
Emergency	2	5
Surgery	2	3
Pediatrics	1	0
Neurology	0	1
Orthopedics	0	1
Total	**5**	**10**

Source: Our elaboration

With reference to the wrong surgical intervention, the Departments more involved are Orthopedics followed by Surgery, where it denotes a greater number of claims: in the Surgery Department from 4 to 6.

Having the Legal Office not a global vision of what could be critical situations perceived by patients, it is involved the Public Relations Office to acquire the types of signals recorded by citizens for the same period, trying to correlate them with the claims received by the Legal Department.

As result, in 2012, the major signals come from the Surgery Department (General Surgery, Vascular Surgery, Plastic Surgery, Otolaryngologist and Orthopedics) making reference to the waiting list for reservation and the lead-time for release of examinations.

It is possible to verify the correlation between the reports received by the Public Relations Office and claims for damages received by the General and Legal Affairs Office attributable to the Department of Surgery.

Considering the types of signals received by the Public Relations Office in 2013, they are imputable to the Department of Diagnostic Services, followed by the Department of Surgery, due to organizational aspects and the high waiting time for reservations.

Once put in relation signals with claims for compensation, it has been tried to identify the reasons of surgical delay in the operation of the injured patient.

What may have been caused the postponement and, therefore, the operation delay? The dysfunction may be attributable to the lack of beds or their misallocation, the lack of medical staff or organizational problems, closely linked to an improper planning of interventions?

At the Planning, Control and Strategic Management Office it has been estimated the average hospital stay of patients in the different departments, trying to understand if the source of problem could be attributable to the small availability of beds and, consequently, to their incorrect management.

The results show that the Vascular Surgery Department has a number of 219 discharged yearly, all underwent to surgery, with the availability of 4 beds; the average hospital stay is equal to 5,9 days, which is considered a normal value with reference to 6 days established by the Ministry of Health.

Through the study of the data it can be seen as the delay is not attributable to the prolonged patient hospitalization times.

With a comprehensive analysis, it is possible to see how the average time of total hospitalization among some Departments exceed the amount identified at national level, averaging around 8 days of hospitalization per patient, considering that an extra day of hospitalization represent a costs for the Company (700 euro per day per patient): three days are

generally attributable to pre-operative care, to expectation of exams and reports of diagnostic images.

Table 6. Average recovery in 2012

Department – 2012	Beds	Number of dismissed	Days for recovery	Average recovery
Cardiology	20	681	7.586	11,14
Plastic Surgery	6	332	1.564	4,71
Vascular Surgery	4	219	1.285	5,9
General Surgery	30	1.261	12.332	9,78
Geriatrics	22	865	9.091	10,51
Hematology	4	107	1.563	14,61
Infectious Diseases	23	490	5.994	12,23
Medicine	33	729	12.077	16,57
Neurology	10	433	2.873	6,64
Ophthalmology	4	128	907	7,09
Otolaryngologist	6	588	2.484	4,22
Orthopedics	23	1.023	6.788	6,64
Gynecology	24	1.604	6.048	3,77
Pediatrics	18	1.627	5.674	3,49
Rehabilitation	8	133	1.668	12,54
Pneumology	16	451	4.979	11,04
Urology	12	557	3.132	5,62
Intensive care	10	172	1.085	6,31
Total	**273**	**11.400**	**87.130**	**8,49**

Source: Our elaboration

Looking at the period of hospitalization of 2013 it is possible to notice an increase in number of dismissed: it is clear that in the next future, hospitalization could increase dramatically, with reference to a rise in number of patients who needs treatment.

Table 7. Average recovery in 2013

Department – 2013	Beds	Number of dismissed	Days for recovery	Average recovery
Cardiology	20	897	8.543	9,54
Plastic Surgery	6	306	1.399	4,57
Vascular Surgery	4	242	2.701	5,86
General Surgery	30	1.186	11.089	9,35
Geriatrics	22	878	9.068	10,33
Hematology	4	90	1.195	13,28
Infectious Diseases	23	527	6.475	12,29
Medicine	33	737	12.822	17,4
Neurology	10	458	2.918	6,37
Ophthalmology	4	91	516	5,67
Otolaryngologist	6	572	2.720	4,76
Orthopedics	23	1.054	6.554	6,22
Gynecology	24	1.553	6.168	3,97
Pediatrics	18	1.511	5.358	3,55
Rehabilitation	8	96	1.418	14,77
Pneumology	16	441	4.770	10,82
Urology	12	605	3.208	5,3
Intensive care	10	125	880	7,04
Total	**273**	**11.369**	**87.802**	**8,39**

Source: Our elaboration

It is very important to understand if the problem can be attributed to the lack of medical staff.

Therefore, at the Human Resources Management Office it is tried to understand the relationship between medical and nursing staff.

Generally the number of doctors is less than nurses, because they are shared among different departments. In particular way in Vascular Surgery, work 4 doctors, that is a really small number. Moreover 1 of the 4 doctors, resulting in organic plant in 2012, has been transferred for mobility, to another location.

Finally, it has been made an inspection in the Department, interviewing the head nurse of Vascular Surgery. From this comparison, it is resulted that the Department has 3 doctors operating on Monday and Thursday morning, with 50 performances per week.

While medical staff works only in the field of Vascular Surgery, the nursing staff is shared with General Surgery and Plastic Surgery, sometimes with Orthopedics and Gastroenterology.

As regards the process to be submitted to operation, all patients are subjected to an initial visit in Vascular Surgery Clinic and later, they are added to a waiting list according to a

priority index determined by the doctor during the initial test. There are different kinds of priority:

- Priority A: the patient should be operated within a month because it is usually a very serious case;
- Priority B: the patient should be operated in a period not exceeding six months;
- Priority C: the patient can wait more than 6 months because these diseases not compromising his health.

The planning of interventions by doctors of Vascular Surgery Department depends on the index of priority assigned. One week before the scheduled date, the doctor or nursing staff contact the patient, by telephone to make the anti-platelet and anti-allergic preoperative care.

Instead, patients with urgent priority are hospitalized on average for 6 days, 3 of which belong to the preoperative care in the department.

There are very often delays in interventions due to the small number of doctors available in the Department and the reduced number of operating sessions, being the 6 operating theaters shared between all departments (Orthopedics, Urology, Surgery) and which anesthesiologists and nurses are responsible for planning.

Specifically, Vascular Surgery operates on Tuesday and Wednesday, while the urgencies, not being planned, are inserted during the hours in which it ensures the availability of medical personnel. It is not a real re-planning activity of interventions because emergencies are managed when occur.

4. Conclusions

In the specific case analyzed, the problem for the Local Health Unit is not been able to document the contact with the patient. Therefore, the hospital operator, the doctor or nurses, could not demonstrate the patient's unwillingness to intervention, reason why a structural management can't be realized with a simple call, not traced. In fact, communication with patients is one of managerial aspects to take into account.

The contact with the patient, with a phone call, should be followed by a more formal communication, such as telegram managed via telephone operator.

The telegram would demonstrate the willingness to accept the patient in the scheduled date and, if he should unavailable, the company could demonstrate the absence of liability attributable to it. An alternative is represented by the possibility for the company to obtain a small Customer Relationship Management system, thanks to which each department would notify the list of patients to contact by telephone according to the schedule of the interventions provided. The operator responsible for the contact with the patient should have a system to track day and time of the call at the number provided, recording the call, according to the legal provisions in use. In case of refusal by the patient, the system would track the contact between the health care worker, identified through a single code associated to him and the patient.

Therefore, although the problem currently is limited to only the telephone contact with the patient, with the use of more sophisticated tools and cutting edge, it is possible to reach the patient at his home and manage him remotely, thanks to the use of digitized medical records.

In this way it is possible not only to have a formalized contact with the patient and consequently the proof of it, but it is possible to tell to the patient all the elements essential to the operation (for example a specific treatment to do the day before surgery, a special drug, the need of new analysis, the need for appropriate pre-intervention diet, etc ...).

From the number of reports recorded by the citizens and acquired by the Public Relations Office a great number of signals regards the dilation of waiting times for interventions and reservations, the long lead-time to deliver exams and organizational aspects.

This information could represent a minimum estimate of the phenomenon, since not all citizens make reports or are willing to face a possible litigation.

Considering the interview conducted at the Head Nurse, information is managed at the individual level: the doctor for the planning of surgery, the doctor and / or nurse for contact with the patient. The lack of a centralized information system, make difficult the widespread of transparency within the department and between departments, being actually limited to the traceability of the patients.

It is also necessary to consider the need of staff to observe turnover, considering that some activities are carried out usually in the morning.

Another aspect regards the number of beds that as a result of the cuts imposed by the Spending Review, which have been reduced compared to the past. Beyond the numbers, the default number limits intervention cycles. Moreover, even one day late on hospitalization represent a substantial probability of slippage, with an important impact on the hospitalization period.

In addition, to manage significant peaks of emergencies, it is very useful to promote the "mobile" Department, making use of beds in other departments, realizing a lean management (such as the Vascular Surgery could make reference to the General Surgery Department).

Of course, this requires a greater flexibility of workflows, supported by adequate prior planning of the activities. A solution to reduce the length of hospital stay is the reduction of preoperative hospitalization times (for example from 3 to 1), through the improvement of the waiting time relating to the preoperative phase and the supply of diagnostic reports on time.

Generally, the delay impacts not only on the planned interventions and, as consequence, on the admission of other patients, but especially on the operating costs of the company.

Moreover the delay is due to the lack of advanced technological equipment that enables to produce diagnostic images on time. Considering that the Healthcare Company intends to invest in the next future in development activities, it is necessary to consider the improvement of this aspect, (the strengthening of diagnostic reporting) that represents a fixed cost for the company, which could be amortized for the reduction of preoperative hospital stay for each hospitalized patient.

Another solution to reduce the Clinical Risk related to the delay of operations, to the management of urgent cases, to the unavailability of the patient and the deterioration of conditions, it could be represented by the redefinition of seats available in other departments with a smaller number of performance.

For example in 2012, the Hematology Department, with 4 seats, has a number of requests equal to half of those received by the Vascular Surgery. This would allow a better allocation of beds, by the Departments with fewer activities to those more crowded. It is essential the reprogramming of resources based on what happened in an observation period.

This dynamic management of the beds would streamline the queues of hospitalizations, whose cause is to be found in organizational and managerial problems. Considering that the number of medical personnel is very small, since the doctors in Vascular Surgery went from 4 to 3 due to the Spending Review, the problem in delays in admission and therefore, interventions, depends primarily on the lack of medical personnel that, in any case, has to meet the need of a significant number of patients.

A different allocation of staff in the Department could lead to a better management of health care, often insufficient for the shortage of medical personnel, already invested with responsibilities and often stressed for overloaded. Surely it would be validated the correlation between the medical and paramedic with the number of patients to be managed, provided the traceability of each operations.

Moreover the bottleneck is represented by the access to the operating rooms in only two mornings a week: a better planning of no-urgent operations leaves times and free spaces to manage urgent operations and as consequence the reduction of clinical risk.

Finally it could be a very good solution the incentive for medical health workers to fill in the Incident Reporting sheets, thanks to which it could be possible to achieve optimal results in the reduction of clinical risk. The methodology, already present but not put into practice by the operators, should be compulsory through a business regulation that makes the compiling necessary, allowing operators anonymity.

Through the report of errors, organizational dysfunction, and clinical management problems, or reports of problems made by the personnel personally involved in the operational management, it could be possible to facilitate the making-decision at the department level and at level of inter-functional structures.

There is no doubt that "process management approach" is essential to perform in speed, costs, flexibility, satisfied relationship and the attention to managing business processes is the key to realize organizational effectiveness (Armistead et al., 1999).

Finally, the success of innovative healthcare structures is the ability to pass from complexity to the management of risks, from the research to the precise knowledge of waste and inefficiency; in managing innovation it is necessary to rethink the allocation of resources to govern the uncertainties (Denicolai, 2010).

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