

Risk Management in a Nonprofit Organization

Jair Santillán Saldivar

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FEUP Advisor: Prof. António Carvalho Brito



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A Chiara y Liuba.

A mis padres, Martha y Alfonso, por sus enseñanzas, por sus palabras de aliento y su apoyo en cada paso que doy.

Risk Management in a Nonprofit Organization

Abstract

Risk is an abstract concept, it is commonly described as an event than has the potential to prevent an individual to achieve an objective or to maintain a certain state; decisions regarding risks are made on a daily basis with an internal evaluation and assessment of the consequences of taking them, these consequences are normally associated with a negative impact but can also be seen as opportunities.

From an organizational point of view, risk is directly associated with its economic component, but the application of the concept in an organization can provide a framework in which these events can be identified and not necessarily eliminated to guarantee a continuous development and innovation.

The immediate challenge is to understand how to treat these risks, an effective risk management is strategic and a key to guarantee sustainability among all areas of an organization. The present project aims to develop tools based on risk management concepts that will help a non-profit organization on the identification, analysis and treatment of risks associated with its activities on different areas of action in the city of Porto.

The International Standards for Risk Management (ISO 31000 family) were considered in order to design and propose a risk management methodology for the non-profit organization. Data acquisition was performed at one of the main establishments owned by the organization that provides medical services to the community, for each main transversal process it was developed an inventory with relevant assets and a risks catalogue related to them. The proposed methods were tested within the context of the mentioned service in order to provide a basis for the development of specific measures, control systems and contingency plans for each identified risk.

Overall results provide a characterization of the internal and external context of the institution; an inventory of relevant assets and subjects in the main processes of the institution; a complete risks inventory and the proposed strategy for the analysis and treatment of risks as baseline for development of control and contingency plans.

A complete and detailed study of the processes based on the proposed system resulted on a solid base for the further replication of this system in other areas and services of the non-profit organization, supporting a continuous improvement of the activities developed in the institution and guaranteeing the sustainability of the institution as a whole.

Keywords: Risk assessment, Non-profit Organization, Internal Audit.

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Acronyms

3LoD – Three Lines of Defense Model

CAS – Center of Social Hospitality (*Casa de Acolhimento Social*)

CHCF – Medical Center *Conde de Ferreira* (*Centro Hospitalar Conde de Ferreira*)

COSO – Committee of Sponsoring Organizations of the Treadway Commission

CRN – Northern Center for Rehabilitation (*Centro de Reabilitação do Norte*)

DAC – Department of Cultural Activities (*Departamento de Atividades Culturais*)

DAI – Department of Internal Audit (*Departamento de Auditoria Interna*)

DIS – Department of Social Intervention (*Departamento de Intervenção Social*)

DMC – Department of Marketing and Communication (*Departamento de Marketing e Comunicação*)

DRHFP – Department of Human Resources and Professional Training (*Departamento de Recursos Humanos e Formação Profissional*)

DSI – Department of Information Systems (*Departamento de Sistemas de Informação*)

ERM – Enterprise Risk Management

ERPI – Residential Structures for Senior Citizens (*Estruturas Residenciais para Idosos*)

EU – European Union

FERMA – Federation of European Risk Management Associations

GAJC – Office of Legal Affairs and Litigation (*Gabinete de Assuntos Jurídicos e Contencioso*)

GEPCG – Office of Studies, Planning and Management Control (*Gabinete de Estudos, Planeamento e Controlo de Gestão*)

HP – *Prelada* Hospital (*Hospital da Prelada*)

IIA – Institute of Internal Auditors

IRM – Institute of Risk Management

MMIPO – *Misericórdia do Porto* Museum (*Museu da Misericórdia do Porto*).

OTPI – Occupational Therapy Plan of Intervention

RIMS – Risk Management Society

RM – Risk Management

SCMP – *Santa Casa da Misericórdia do Porto*

SPeC – Shared and Corporate Services (*Serviços Partilhados e Corporativos*)

SRC – Security, Risk and Compliance

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1 Introduction

The present study was developed as part of the implementation of the project in Security, Risk and Compliance (SRC) applied in the institution “*Santa Casa da Misericórdia do Porto*”. The application of innovative management practices and methodologies is one of the improvements recommended by the top management of the institution with the objective to guarantee its sustainability and fulfill its mission as relevant agent in the social development of the community and as important reference for social action in the city of Porto, Portugal.

The SCMP has a rich historical background with nearly 520 years of experience as a provider of services and organizer of activities with the objective to support society and fulfill the fourteen acts of mercy in which its actions are based. The institution is responsible for several establishments and diverse processes which is reflected on a highly developed organizational structure, a strong link with several other organizations, a high reputation within the country and a great number of users of its services.

It is in the Department of Internal Audit (DAI) that a concern arises regarding scenarios that can obstruct the completion of objectives defined by the institution. It is proposed to apply the concepts related to Risk Management under the framework provided by the standard ISO 31000; to promote the use of its methodologies in different areas of the institution and provide a management tool that can support the daily and strategic decisions made by all areas of the SCMP.

1.1 The Institution: *Santa Casa da Misericórdia do Porto*

Santa Casa da Misericórdia do Porto (SCMP) is a charity and social assistance institution with philanthropic objectives and of public utility; it currently develops its activities in the areas of social intervention; health; special and regular education; culture; environment and special projects designed for the community (SCMP, 2016).

The organization has a rich historic background; the institution was founded in the year 1499 with the support of the Portuguese crown and as a response for diverse social needs found in the city of Porto by the then King *Manuel I* and Queen *Leonor* (SCMP, 2015). For nearly 480 after its foundation, SCMP received support from several benefactors and important Portuguese institutions to continue its philanthropic activities and developed several social solutions for the citizens of Porto. Its services included the management of hospitals, churches, orphanages, homes and rehabilitation centers.

During the year 1976 and as part of the change of regime in Portugal, the management of the medical establishments owned by the SCMP passed to the government. Later on, the management of one of the Medical centers returned to the institution, and together with other two medical establishments built on 1988 and 2013 represents the current health offer of the SCMP (SCMP, 2017).

Currently the SCMP is an important reference of the development of social economy and philanthropy in Portugal. It is one of the institutions that maintains a sustained growth despite being a nonprofit organization thanks to the variety of establishments and lines of action that include health services, education, restoration of real state, homes for old people, among others. The SCMP has an active role when it comes to providing innovative solutions to identified social problems in the city of Porto.

1.1.1 Organizational Culture

SCMP defined the main basic references for its development as can be seen in Table 1.

Table 1- Vision and mission of the SCMP (SCMP, 2017)

Vision
Be the Portuguese institution of reference in the provision of integrated solutions and answers in the area of social solidarity.
Mission
Offer their clients, users and beneficiaries integrated and innovative solutions of social service based on excellence, high quality levels and professional ethics; ensure the improvement of living conditions and quality of life of the community; specially for the less favored. Preserve the cultural patrimony, material and immaterial, promoting initiatives and partnerships for the support of social economy.

The mission of the SCMP is based on the fourteen works of mercy that take part of general knowledge in the catholic religion; its actions, activities and projects are related to the completion of these works divided in corporal and spiritual as showed in Table 2.

Table 2 – Works of mercy

Corporal Works of Mercy						
Feed the hungry	Give drink to the thirsty	Shelter the homeless	Visit the sick	Visit the prisoners	Bury the dead	Give alms to the poor
Spiritual Works of Mercy						
Counseling the doubtful	Instructing the ignorant	Admonishing the sinner	Comforting the sorrowful	Forgiving injuries	Bearing wrongs patiently	Praying for the living and the dead

1.1.2 Social Organisms

The institution has three main internal organisms created to guarantee the correct development of the activities in the organization: The general assembly; the administrative board and the Board of Definers as can be seen in Figure 1.

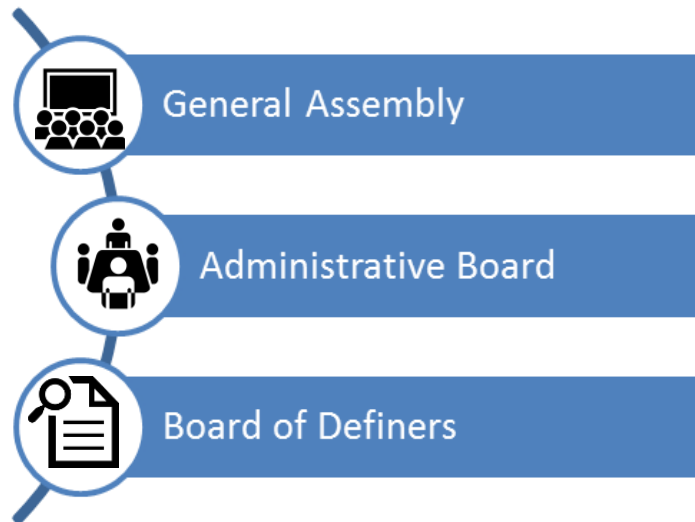


Figure 1 – Social organisms of the SCMP

The general assembly is the organism with the maximum decision power in the institution and is composed by the voting members and a board of representatives in charge of managing the meetings and sessions. The board is composed by a president, a vice-president, two secretaries and four substitute members. The decisions made in the general assembly include the approval of annual reports and annual plans of the institution as a whole as part of the key decisions to guarantee the sustainability of the organization.

The administrative board is the executive organism with the most decision power regarding the management of the institution and responsible for executing all decisions made by the general assembly. Currently it is composed by the chairman, a vice-chairman, a general treasurer, four board members assigned to four relevant areas (Administrative modernization and Information Systems; Agriculture Development and Special Education; Cult and Culture; and Social, Women and Youth Area) and three substitute board members.

The Board of Definers is the maximum inspection organism and has as part of their responsibilities the supervision of statutes, finance and managerial activities. It is composed by a president, a vice-president, a secretary and two additional members

1.1.3 Shared and Corporate Services

The activities managed by the SCMP require an operational and administrative support that guarantees the continuous development of the institution and the maximization of the scope of their projects. As part of the organizational structure it is possible to identify in Table 3 the main departments and offices whose responsibilities are transversal to all operational units, establishments and activities of the SCMP. A complete map of the areas of the SCMP can be found in Annex A and Annex B.

Table 3 – List of shared and corporate services at the SCMP

Shared and Corporate Services (SPeC)	
Support Services	Department of Accounting and Finances (DAF)
	Department of Administrative Management and Heritage (DGAP)
	Department of Human Resources and Professional Training (DRHFP)
	Department of Information Systems (DSI)
	Department of Marketing and Communications (DMC)
Management Services	Department of Social Intervention (DIS)
	Department of Cultural Activities (DAC)
Inspection Services	Department of Internal Audit (DAI)
Management Support Services	Department of Environment and Quality (DAQ)
	Office of Legal Affairs and Litigation (GAJC)
	Office of Studies, Planning and Management Control (GEPCG)

1.1.4 Operational Units

SCMP offers diverse services to the community in order to fulfill its mission; its activities are determined by the strategic and operational development plans. The main areas of action are the ones listed in Table 4.








Following the scope of the present study, the analysis will focus on the Health Area of the SCMP, specifically on the Medical Center *Conde de Ferreira* (CHCF). The SCMP has more than 500 years of experience in providing health services to the community of Porto; its main three medical centers are between the most important of the northern region of Portugal (SCMP, 2017)

The *Prelada* Hospital “*Dr. Domingos Braga de Cruz*” (HP) is the main hospital managed by the SCMP; it opened in 1988 with the specialties of Orthopedics; Plastic and Reconstructive Surgery and Physical Rehabilitation (HP, 2016). Currently the hospital has over fifteen specialties and represents one of the main sources of income for the organization as a whole. The Northern Center for Rehabilitation “*Dr. Ferreira Alves*” (CRN) is the most recent medical center of the SCMP; it started operations in the year 2013 and has as main activity the provision of physical rehabilitation services to the community (CRN, 2016).

The third Medical Center is the “*Centro Hospitalar Conde de Ferreira*” (CHCF); one of the medical establishment with more history and background among the ones owned by the SCMP. It was inaugurated in 1883 in the city of Porto and during a period of time after the change of political regime in 1976 it was owned by the Portuguese State, but returned to the

SCMP in 2002 (CHCF, 2016). It is an internationally recognized Portuguese mental health institution with focus on assistance, education and research in psychiatry; its main services include external consults, long and short term admissions and daycare for mentally ill people. This last one establishment represents the focus of the present study.

Table 4 – Operational Units at the SCMP

Operational Units SCMP		
Health		-Medical Center <i>Conde de Ferreira</i> -Northern Rehabilitation Center - <i>Prelada</i> Hospital
Society, Women and Youth		-Residential Structures for Senior Citizens (ERPI) -Shelter for Victims of Domestic Violence (<i>Bento XVI</i> and <i>Santo António</i>) -Support School for the endangered youth <i>Barão de Nova Sintra</i> -Center of Social Hospitality <i>D. Manuel Martins</i> -Homeless Shelter <i>Casa da Rua</i> -Domiciliary Support Service
Education		- <i>N. Senhora da Esperança</i> School
Special Education		-Integrated Center for Defficiency Support - <i>Albuquerque Castro</i> Center – Braille Printer
Agriculture Development, Well-being and Environment		- <i>Quinta D'Alva</i> - <i>Prelada</i> Park - <i>Avides Moreira</i> Park
Culture		- <i>Misericórdia do Porto</i> Museum (MMIPO) - <i>Prelada</i> House
Justice		- <i>Santa Cruz do Bispo</i> Prison

1.2 Methods and Objectives

For the project developed in the CHCF Medical Center, the International Standards for Risk Management ISO 31000 and ISO Guide 73:3009 were considered in order to design and propose a risk management system. The project presents the proposal for implementation of the risk management methodology and has as main objectives:

- Provide a characterization of the Internal and External Context of the CHCF
- Provide an inventory of risks in the main transversal processes in the CHCF
- Propose a risk analysis strategy as baseline for further development of control and contingency plans.

The steps followed in the study include a literature review of the implementation of a risk management system; the planning and development of a series of interviews and focus groups

designed to identify and characterize the relevant aspects for the understanding of the internal and external context of the medical center; the data collection of transversal processes and activities in the institution; the identification of risks in the analyzed activities; the design of a strategy for measuring and prioritizing risks for the development of specific control and contingency plans; and a discussion of the results and further opportunities of development. The present document is structured with the aim to follow the proposed methodology and includes the application of data collection methods and specific analysis of processes.

2 State of the art: Risk Management

In the following chapter the main concepts for the proposal of a Risk Management System will be presented. A consistent literature review is presented as baseline for the development of the methodology followed in the project; the analyzed topics are the definition of risks and its characterization, followed by tools for measuring and analyzing risk. Furthermore, the recommended frameworks for risk analysis in organizations are presented and its link with the role of Internal Audit in institutions.

2.1 The Concept of Risk

Risk is defined commonly as a situation involving exposure to danger or a chance of loss, injury or other adverse consequence (OXFORD; 2017), however more comprehensive understandings of the word risk consider it the potential of obtaining or losing something that can be considered valuable (Kungwani, 2014). For an individual, this can mean losing health, money, status, opportunities, among others that can prevent it to achieve a specific goal or maintain a certain state. From an organizational point of view, risk is commonly associated with its economic component, directed mainly to the most efficient use of resources to reduce financial losses (Crouhy, 2014)

Decisions regarding risk are made on a daily basis with an internal evaluation that typically includes the identification of a risk, its evaluation, studying the consequences of taking them or not and/or establish ways to reduce/increase its occurrence or effect in the valuables involved. Under these latter definitions, the concept of risk does not only consider negative impacts, but also takes into account that the uncertainty can be seen as an opportunity.

The definition provided by the Standard ISO Guide 73 for Risk Management that includes the vocabulary and guidelines associated with the application of risk-based methodologies states that risk is the effect of uncertainty in the objectives. In order to fully understand the definition of risk, the vocabulary clarifies that the term effect is relative and depends on the previously defined objectives and expected outcomes from a situation: expected gain, maintenance of a state, among others. The term uncertainty refers to the lack of specific and complete information regarding the occurrence of a situation.

Another set of definitions provided by the Federation of European Risk Management Associations (FERMA), The Institute of Internal Auditors (IIA) and the Committee of Sponsoring Organizations of the Treadway Commission (COSO) consider two main components of risk: Probability and Impact. In concordance with the terms provided by the ISO Guide 73, Probability is an indicator of the uncertainty and is related to the likelihood of occurrence while Impact is an indicator of the effects that this occurrence has over the analyzed situation (consequences). Therefore, as seen in Figure 2, Risk is the result of the combination of the probability of an event and its impact, where consequences can range from positive to negative (IRM, 2002).

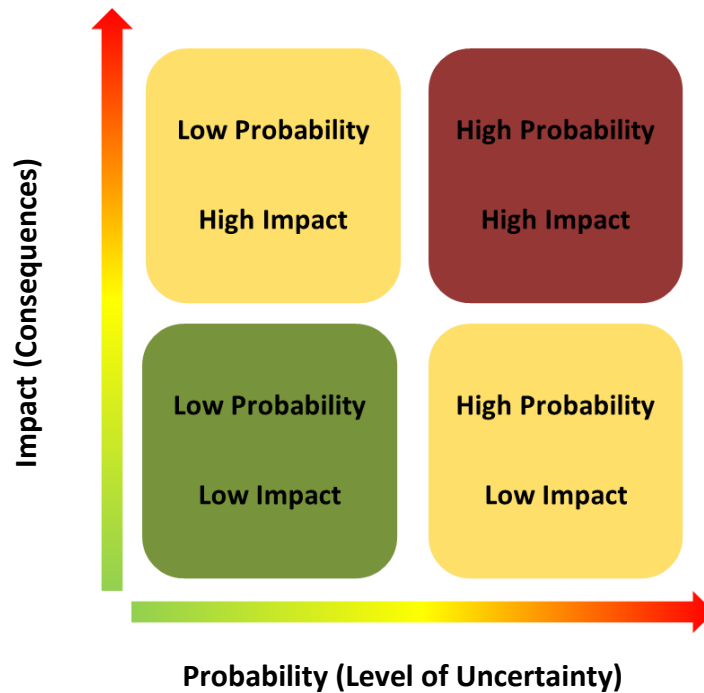


Figure 2 – Probability and Impact, components of Risk

2.2 Types of Risk

There is a wide range of division and subdivisions of risks depending on several factors such as sources, effects, uncertainty or specific topics related to the objectives of an individual or organization; as part of the literature review presented in this section, some basic and broad classifications will be addressed taking into account its pertinence to the presented project and the better understanding of the concepts related to risk management.

As previously stated, risk can be referred to both negative and positive results related to the objectives and goals defined for a specific situation. Therefore, an initial classification of risks in terms of results and uncertainty can be as hazard, control risk or opportunity (ISO, 2009a) as seen in Figure 3. It is important to clarify that these classification varies regarding the context of the individual or organization that analyzes the risk and its point of view and are a clear example that the assessment of risks is subjective and depends on several factors.



Figure 3 – Types of risk based on the nature of the expected outcome

More specific typologies of risk can be found in the literature as part of the recommended steps for a risk manager; however, a consensus regarding a definite set of categories hasn't been reached; for effects of the present study, a compendium of the categories that can be applied to the context of the analyzed institution will be selected and developed as baseline for the categorization of further identified risks.

The classification of risks described in Table 5 is based on the source that generates the uncertainty regardless of the possible consequences and impact. These categories can be further decomposed into more specific ones according to the requirements of the institution or area involved in the analysis (Crouhy, 2014).

Table 5 – Types of risk defined for the study

Type of Risk	
Financial Risk	
Socio-Economic Risk	
Operational Risk	
Reputational Risk	
Human Resources Risk	
Strategic Risk	
Compliance Risk	

Financial risks are described as those uncertain situations related to the available resources and their potential to generate a loss or gain in financial terms as part of their investment; the financial risk is one of the most common analyzed types in the literature due to the direct and immediate effect of market changes in the normal development of companies and organizations (Crouhy, 2014). For the specific analyzed context, the availability of resources and adequate control of investments and financial tools are crucial to the sustainability of an organization such as SCMP that doesn't have a profit profile and that depends on contributors and re-investments to continue its operations.

Socio-economic risks are those related to the economic, social and political context in which the organization develops its activities, the aspects to analyze form organization to organization vary depending on the field of action related to the institution. SCMP, as a nonprofit organization dedicated to provide social services to the community has a high vulnerability to abrupt changes in the social, cultural, economic and political aspects.

Operational risks are related to the daily operations and activities of the organization; the scope of the risks that can be located under this category can refer to specific processes, internal standards, communication, and tangible resources owned or used by the institution in their daily activities. Examples of operational risks can be those linked with the safety of people and facilities, as well as the fully completion of tasks in a specific area.

Reputational risks are those directly related to the image and brand that the institution has among its partners, clients and other relevant stakeholders. Public image has proven to be an important, if not essential part of the sustainability of any institution; specifically in a nonprofit context, the risks related to reputation have the potential to provide a solid foundation to the continuum of the SCMP activities or the potential to prevent the institution from achieving its goals.

Human resources risk, as specified by its name, is the category that directly includes and incorporates the human factor as source of risk in an institution. These risks are related to the capacity to attract, manage and retain high quality collaborators, as well as their productivity and presented results in the institution.

Strategic Risks are referred to the statement and completion of objectives in the institution based on the defined strategies; some important components in this category are the attraction of clients, users and the existence of similar institutions that can provide same services or products to the clients. As mentioned before in the first chapter, the strategies and objectives of the SCMP are defined by the fourteen works of mercy; in the context in which the project is developed, the strategic risks can be related to the capability to fulfill the mentioned works.

Compliance Risks are those related to the existing laws, standards and obligations assumed by the institution as part of its activities. The universe of documents that must be followed by the SCMP include laws regarding the formal registration of the organization, laws regarding employment, and the compliance of general requirements as part of the city of Porto and the type of activities developed.

2.3 Risk Management in Organizations

From an organizational point of view, risk is commonly associated to its economic and financial component, often related to the investment of resources in the stock market, however, the methodology for risk management provided by the standard ISO31000 can and should be applied to all areas and components of an organization in order to guarantee support and foundation for the development of main activities.

Risk management is defined by the ISO Guide 73 as “the coordinated activities to direct and control an organization with regard to risk” (ISO, 2009). This broad definition has been evolving during the past few decades and some parallel definitions were introduced and adopted by companies who were interested on the implementation of risk management practices.

2.3.1 Enterprise Risk Management

Another relevant definition obtained in the literature and provided by COSO mentions the term Enterprise Risk Management (ERM) and describes it as a process in which the personnel of an organization defines and apply strategies that help identify potential events that might affect it and manage this situations accordingly to the level of uncertainty that the institution might be able to accept as part of their operations (COSO, 2014).

These two main definitions allow to identify specific key terms and ideas that should be followed for the development of a comprehensive risk management system to be implemented in any organization:

- Risk management is a process, and as one it is subject to improvements and continuous revision from the people responsible of it;
- All the personnel should participate in the risk management process as part of its responsibilities;
- Risk management is based in a strategic level, which means it should be considered as part of the main decision-making processes in the institution;
- It involves the organization as a whole, applying the adopted practices across the institution and at every level;
- It is necessary to identify potential events and their effects in the organization;
- Risk management implies a classification and prioritization process of identified events in the organization;
- Risk management is not the same as eliminate risks, but manage situations in a way that provides a determined level of assurance in the organization;
- Risk management is not an end on its own, but a tool to help the organization achieve its goals and objectives.

2.3.2 The three lines of defense model

The concept of risk management is also embedded in the “Three lines of defense model” (3LoD). This concept, introduced by the Institute of Internal Auditors provides a framework in which organizations can assign roles and responsibilities and apply specific controls and mechanisms to manage risks.

The concept of lines of defense is an analogy applied to the level of protection of an organization to threats; the basis of the model is that an organization might be subject to external or internal incidents that can prevent them from achieving their goals; the organization should be able to develop a series of internal control methods to prevent the occurrence of undesired situations or mitigate its effects (IIA, 2013).

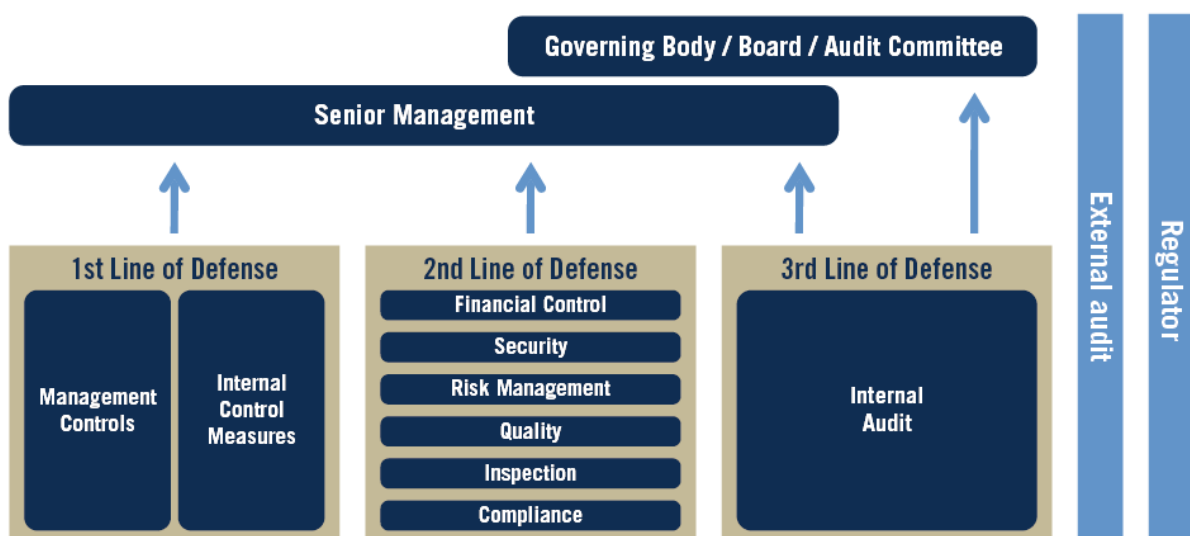


Figure 4 – Three lines of defense model (IIA, 2009)

The model is represented in Figure 4 and includes three levels involved in an effective risk management system in an internal level; these three groups respond to a senior management and an internally defined board that oversees the operations and implementation of the control activities defined to deal with possible risks. Specific functions of the three lines are presented in Table 6.

Table 6 – Functions related to the three lines of defense

First Line of Defense	Second Line of Defense	Third Line of Defense
Functions that own and manage risks	Functions that oversee risks	Functions that provide independent assurance
Operational Management	Supervision and Monitoring	Evaluation and Assurance

The first line of defense represents a level in which risks are owned and managed directly through defined control measures; it consists on the group of operational managers within the institution that deal with risks on a daily basis; the controls defined by the first line of defense should be embedded in the general responsibilities of the involved areas.

The second line of defense consists of a group of areas that provide methodologies and tools related to the recommended practices to identify, analyze and treat risks; it is in this second line of defense that the ISO 31000 framework is applied as part of the present study.

The third line of defense consists of the activities of an internal audit department; ensuring the correct application of the practices previously defined by the second line of defense and provides a comprehensive, objective and independent appreciation on the development of the risk management system. Internal audit is a recommended governance requirement for all organizations (IIA, 2013).

External bodies included in the model are the external auditors and regulators; these agents reside outside of the main structure of the organization; external auditors ensure an extra level of independence related to the evaluation and analysis of good practices regarding risk management and regulators provide a baseline for the development of general activities; the role of these agents is evident in regulated industries or organizations.

2.4 The ISO 31000 Standard on Risk Management

Due to the widely spread of concerns regarding the concepts of risk management, The International Organization for Standardization developed and published a framework referred to the application of risk management practices in organizations. This standard provides broad definitions with the ISO Guide 73:2009 and a specific set of steps to be followed in order to guarantee the development of a risk management system to support the completion of goals in an organization.

While organizations naturally deal with risks as part of their daily operations, the standard ISO 31000 was designed to provide a series of principles to be satisfied in order to ensure an effective system. The standard recommends the development, implementation and continuous improvement of the process to integrate the culture of risk in the operations and governance of the institutions (ISO, 2009a).

Risk management is applicable to the organizations as a whole entity including their many areas and levels (ISO, 2009a). The implementation of the standard can be completed for

diverse objectives listed in the literature, the main relevant objectives for a nonprofit organization such as the SCMP that were identified in the standard are:

- Increase the likelihood of achieving objectives;
- Encourage proactive management;
- Improve the identification of opportunities and threats;
- Comply with relevant legal and regulatory requirements and international norms;
- Improve stakeholder confidence and trust;
- Establish a reliable basis for decision making and planning;
- Improve controls, operational effectiveness and efficiency;
- Improve organizational resilience;
- Contribute to the creation of sustainable value.

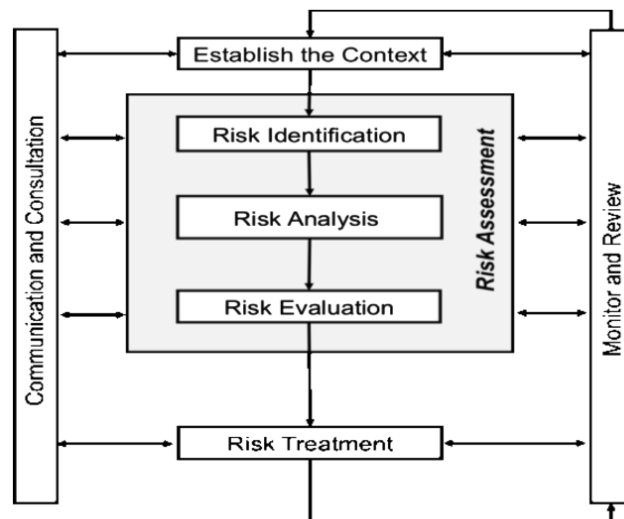


Figure 5 – The Risk management process from ISO31000:2009

As mentioned in the standard, the process for risk management should be an integral part of the general management process of the institution; therefore, it is required for it to be embedded in the culture and practices of the organization and designed specifically for the analyzed context. The full spectrum of activities to be developed as part of the risk management process is showed in Figure 5.

2.4.1 Communication and Consultation

The activity of communication and consultation should take place before, during and after the implementation of risk management systems in an institution; the specific plans for the application of the methodology should be defined at early stages, as well as establish a clear communication strategy with all involved stakeholders.

The main goals of maintaining a constant communication and consultation are to provide a solid foundation for the implementation of the system, guarantying the collaboration of all personnel and assuring a common understanding of the risk concepts in the institution. According to the standard, important expected outcomes of an effective development of this activity are the faster understanding of the institution's context, ensure a clear understanding of the needs and interests of stakeholders, help ensure that the risks are adequately identified and further endorsement and support of the treatment plans (ISO, 2009a).

2.4.2 Establishing the context

A better understanding of the context in which the organization develops its activities provides a framework for faster and more accurate risk identification and analysis; the context can be divided in external and internal.

External context is referred to the environment in which the organization develops its activities. Having a good understanding of the external context guarantees that the objectives and concerns of external stakeholders are considered when developing risk criteria (ISO, 2009a). The standard ISO 31000 includes some specific topics to be considered as part of the external context evaluation but states that more can be identified accordingly with the field of action of the organization:

- Social, political and cultural environment;
- Legal and regulatory environment;
- Financial and economic environment;
- Market and competitive environment;
- International, National, Regional and Local environment;
- Key drivers and trends related to the operations in the organization; and,
- Relationships with partners and other external stakeholders.

The Internal context is the environment in which the risk management system will be developed. The main goals of defining and establishing the internal context is to guarantee that the new system and tools for risk management are aligned with the culture and processes of the institution, as well as follow the already defined strategies. Some of the aspects that should be studied are:

- Organizational Structure and Governance;
- Policies, objectives and strategies;
- Resources and know-how;
- Relationships and perceptions of internal stakeholders;
- Organizational culture;
- Flows of information and communication;

- Standards and guidelines adopted by the organization; and,
- Characterization of contractual agreements.

2.4.3 Risk Identification

According to the standard, the organization should identify sources of risk and areas of impact; the main objective is to generate a comprehensive list of risks that have the potential to accelerate the achievement of objectives or prevent its completion.

Recommended guidelines are to consider risk with internal and external sources, whether they are in control of the organization or not or even if the main cause is not clearly defined. It is recommended to develop a comprehensive tool and internal methodology that allows the organization to identify risks in their daily operations.

2.4.4 Risk Analysis

After a full inventory of risks is developed, the organization should guarantee a fully understanding of the risk which includes its typology and association to a specific area or process in the institution. Risk analysis includes stating the source and causes of the risk; in parallel, assets or subjects involved in the identified situation should be mentioned and listed.

Risk analysis responds to a qualitative understanding and classification of identified risks; it can be delivered with diverse levels of detail depending on the purpose of the analysis and the available information (ISO, 2009a).

2.4.5 Risk Evaluation

Risk evaluation has the purpose to assist in the decision-making process based on the outcomes of the risk analysis. It is recommended to classify analyzed risks accordingly to their likelihood (probability of occurrence) and consequences (level of impact). This assessment will provide a tool for continuing with the risk management process. The institution should establish their own criteria to complete and deliver this activity based on the information gathered during the establishment of the context.

2.4.6 Risk Treatment

Based on the results of the risk evaluation; a treatment method can be defined for every prioritized risk in the inventory. There are several recommended alternatives to treat risks based on the level of risk identified in each situation. As mentioned in the standard ISO 31000, risk treatment involves a cyclical process of assessing, defining treatment options and re-assessing the risk after the implementation of these improvements.

There are four main recommended ways to treat identified risks in organizations as mentioned by the standard ISO Guide 73: Reduce, Transfer, Avoid and Accept; an informed decision can be made by assessing and prioritizing the identified risks. This decision should be made by the risk owners and managers, which are responsible for the regular development of the activities that might be affected by a specific risk (ISO, 2009b).

- Reducing the risk implies modifying its occurrence and/or changing its impact, this can be achieved by establishing specific control measures. Risk managers are normally encouraged to design and monitor these control measures in their areas.

- Transferring the risk to insurance companies or by outsourcing operations is another possible way of treatment; this option normally involves the use of financial resources and can help other third party-related risk appear.
- Avoiding the risk means to stop the activity that generates it, this option can be considered for high risk activities that do not help reach the goals of the organization.
- Accepting the risk is to continue with the activity or process and assuming the consequences of this decision; many circumstances can lead to making this decision based on the level of impact that the risk provides to the organization or by an identified opportunity.

An informed decision on which strategy to follow for each risk should be based on the risk analysis and evaluation, this represents the next step to establish specific controls and plans for the organization (ISO, 2009b).

2.4.7 Monitoring and review

Monitoring and review is the second component of the methodology that should be transversal to the development of the risk management process guarantying a continuous review process. The main outcome of an effective monitoring and review process is to ensure that opportunities for improvement are detected and applied during the development of the previews steps (ISO, 2009a).

As part of this process it might be productive to involve the top management or relevant internal stakeholders previously identified as part of the risk management process. A first assessment can also be made to facilitate a continuous performance evaluation of the system. Some proposals on Risk Management Maturity Assessment Models are available and proposed by the IIA and promoted by the Risk Management Society (RIMS). This proposed model can be seen in Figure 6.

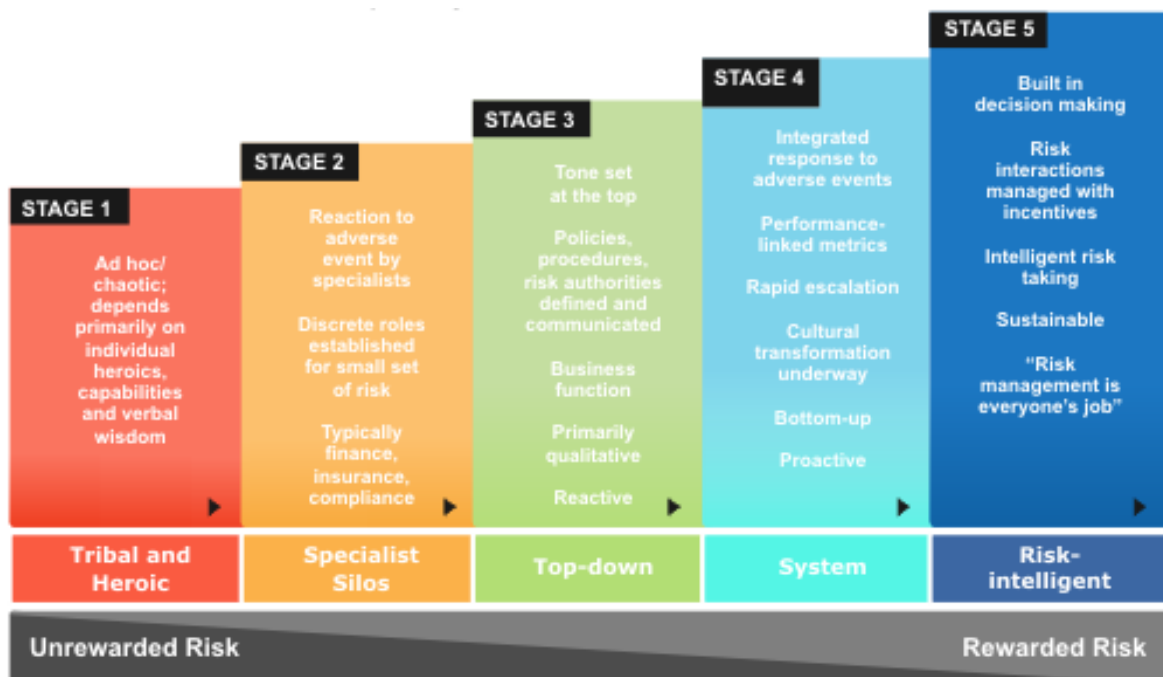


Figure 6 – Proposed Risk Management Maturity Model (RIMS, 2014)

3 Current Situation

A nonprofit organization like the SCMP has several lines of action; the occurrence of some sort of situations can prevent it from achieving its goals and fulfill its mission. Specifically for the analyzed establishment CHCF, facilities destined to provide healthcare services face a series of risks as part of their daily operations. However, a risk management approach is not normally a part of the methodologies followed by nonprofit organizations because of insufficient resources or focus on other priorities.

3.1 Risk Management in the organization

The SCMP identified the need and opportunities for improvement that are generated as part of the development and application of a risk management system in the establishment and services provided by the institution; as first approach to this opportunity, it was developed an inventory of the risks that some areas of the institution face and an assessment of the maturity of the institution in terms of risk approaches.

Based on the framework for maturity assessment presented in section 2.4.7, the institution defined a series of opportunities for improvement analyzing four main aspects linked to the levels described in the maturity model. The description of these aspects can be identified in Table 7.

Table 7 – Description of components in the Risk Management Maturity Model

	Stage I	Stage II	Stage III	Stage IV	Stage V
Component	Tribal - Heroic	Specialist Silos	Top-Down	System	Risk Intelligent
Adoption of Standards, tools and techniques	Not standardized	Aware but not formally applied	Adoption of standards and techniques	Regular adoption of new standards and techniques	Full knowledge and application of standards
Knowledge on Risk management	Low level knowledge on RM	Aware of RM related topics	RM knowledge in some areas of the organization	Full RM knowledge and its value	Full knowledge of RM applied to the organization
Developed activities related to RM	No development of RM related activities	Some completed RM activities, lack of resources	Existence of an RM model with little application	Formally established RM program	RM integrated to the goals and decisions
Awareness of the benefits of RM in the organization	Not knowledge of RM benefits	Aware of the need for RM approaches	Aware of the benefits of RM approaches	Knowledge and embrace of the benefits of RM	RM included in planning and strategies

Based on the previously assessment made by the institution, it is possible to affirm that the SCMP is on a Stage II of implementing a solid Risk Management system with the opportunity to apply standards, tools and techniques that include risk concepts to the daily operations on the institution, and to promote the use of these techniques with a visible benefit. More time and resources can be allocated to the further development of a Risk Management system and to communicate the benefits of its implementation to all areas in the institution (SCMP, 2014).

3.2 The Analyzed Establishment - CHCF

The Medical Center *Conde de Ferreira* was the first medical facility build and dedicated exclusively to psychiatry in Portugal in the year 1883 (SCMP, 2017). Ever since, it became a recognized center and a reference for assistance, training and research in the area of mental health in the country. The influence of the developments in mental health and medical management proposed by the CHCF were innovative in their time and helped stablish the first law related to psychiatry in Portugal, called *Lei Sena*.

In 1976 the CHCF management was transferred to the then political regime as part of the general changes that the country passed during the mentioned period of time. It only went back to the SCMP in the year 2002 with nearly three hundred residents in its facilities. Ever since the CHCF medical center returned to the responsibility of the SCMP, the facilities, management and services provided changed and were re-defined as follows:

- The rehabilitation of the facilities; including the nurseries, main buildings, gardens, library and common areas;
- The inclusion of new medical services; complementing the current psychiatric offer given to the community; among the most important are the daycare center for recovering patients, the ambulatory center for external consults and the center for Occupational Therapy;
- The construction of a laboratory;
- The development of protocols and agreements with the universities in the city of Porto to help with the training of students in health areas; and,
- The development and integration of research techniques to support and complement the activities in the medical center.

As part of the methodology proposed by the standard ISO31000; the process of establishing the context should be followed to initiate the description of the current situation on the establishment.

3.3 General Context for the development of the study

As stated by the ISO31000 standard, the analysis should begin with the characterization of the current situation based on defining a plan of communication and the general context in which the activities are taking place.

3.3.1 Communication and Consultation

With previous insights provided by the SCMP and with the review of existing documentation about the activities in the medical center, it was decided to classify four main types of relevant internal stakeholders and establish a specific strategy on how to communicate with them throughout the development of the study as seen in Table 8; this stakeholders will be consulted during all stages of the project and will provide the most important insights regarding the current activities and further risk identification.

Table 8 – Characterization of stakeholders for initial data collection







Relevant Internal Stakeholder	Communication Approach	Main techniques for data collection
Top Management CHCF	<ul style="list-style-type: none"> • Direct contact for scheduling of meetings. • Authorizers of further development of the project. 	<ul style="list-style-type: none"> • Directed Interviews • Questionnaires • Documentation
Core Areas CHCF – Health	<ul style="list-style-type: none"> • Contact and scheduling through second management level. • All meetings must be scheduled with knowledge and authorization of top management. 	<ul style="list-style-type: none"> • Directed Interviews • Questionnaires • Focus Groups • Documentation • On site observation
Support Areas CHCF – Management	<ul style="list-style-type: none"> • Contact and scheduling through second management level. • All meetings must be scheduled with knowledge and authorization of top management. 	<ul style="list-style-type: none"> • Directed Interviews • Questionnaires • Focus Groups • Documentation • On site observation
Other stakeholders in the SCMP	<ul style="list-style-type: none"> • Direct contact with relevant areas of the SCMP (SPeC) outside of the analyzed establishment and with strong link with it. 	<ul style="list-style-type: none"> • Directed Interviews • Documentation

3.3.2 External Context

There are diverse and specific techniques to identify relevant aspects of an organization's environment. On this stage of the study it was proposed the use of two main tools: The PESTEL analysis and the Porter's five forces analysis applied to nonprofit institutions. The PESTEL tool was chosen because its scope allows identifying important macro-







environmental factors to be considered on a strategic analysis. The six main factors and their description are specified in Table 9.

Table 9 – Description of PESTEL analysis components

Component	Description
P – Political 	<p>Factors and decisions made by the government that affect the development of activities in the institution.</p> <p>Political decisions have a strong and clear consequence on health, education, public services and infrastructure.</p>
E – Economic 	<p>Factors related to the position of the local, regional, national and international economic environment.</p> <p>Affects the availability of resources in organizations and have a special impact on imports and exports.</p>
S – Social 	<p>Factors related to the cultural and demographic aspects in the community. High trends in cultural behavior or important demographic changes affect specific consumption trends in several sectors in the business and nonprofit areas.</p>
T – Technological 	<p>Factors in this category are related to the development and access to new technologies relevant for the area of analysis. It is also related with the research and development activity within the studied sector.</p>
E – Environmental 	<p>Factors related to the direct or indirect impact of climate, weather and seasonality to the normal development of an organization.</p>
L – Legal 	<p>Factors directly related to the laws and standards that affect the daily operations of the organizations. Specific legal decisions can affect the continuation of activities in different industries or the expansion of the sector within its context</p>

A literature review and documentation analysis was made in parallel with the data collection to identify important areas of focus to be considered in order to characterize the external context of the institution based on the PESTEL analysis. A summary of main considerations is listed on Table 10 as baseline for the development of the study.

Table 10 – PESTEL analysis for the CHCF medical center

Component	Key findings
P – Political 	<p>Portuguese government stability in terms of health services and funding (Unlike past experiences during the last century)</p> <p>Existence of bureaucracy</p> <p>Freedom of press</p> <p>Focus on consumer protection</p> <p>Existing laws in the scope of the EU</p> <p>Regulation of health services</p>
E – Economic 	<p>Recovering Portuguese economy</p> <p>Existing of a common currency in the EU (Euro)</p> <p>Main focus on productive industries</p> <p>Fiscal policies for nonprofit institutions</p>
S – Social 	<p>Stigma on psychiatric illness. Increasing awareness.</p> <p>Increasing rate of basic education in the country</p> <p>Society highly influenced by catholic religion</p> <p>Steady population growth rate</p> <p>Transition towards less numerous families</p>
T – Technological 	<p>Available but scarce funding for research and development</p> <p>Low technology development in psychiatric healthcare during the past decades</p> <p>Transition towards electronic and virtual management environments</p> <p>New and growing technologies on data protection and cybersecurity</p> <p>Development of communication technologies</p> <p>Easy access to information</p>
E – Environmental 	<p>Portuguese transition towards clean energy</p> <p>Unpredictable and highly variant weather in the city of Porto</p> <p>Promotion of sustainable practices among organizations in the city of Porto</p> <p>Increasing awareness on sustainability-related topics</p>
L – Legal 	<p>Existence of specific legislation and standards for healthcare</p> <p>Public employment laws focused on protecting workers and collaborators</p> <p>Existence of safety laws</p> <p>Existence of data protection laws</p> <p>Strong influence of the decisions made by the EU.</p>

In order to complement and obtain more information regarding the external context of the institution a Porter analysis was developed based on the most important external stakeholders; Porter model is mainly oriented to a business environment analysis and strategy assessment, however, as mentioned by Schwenger (2014), an adaptation of this model can be also useful for the analysis of nonprofit institutions such as the SCMP or, specifically, the medical center CHCF as seen in Figure 7.

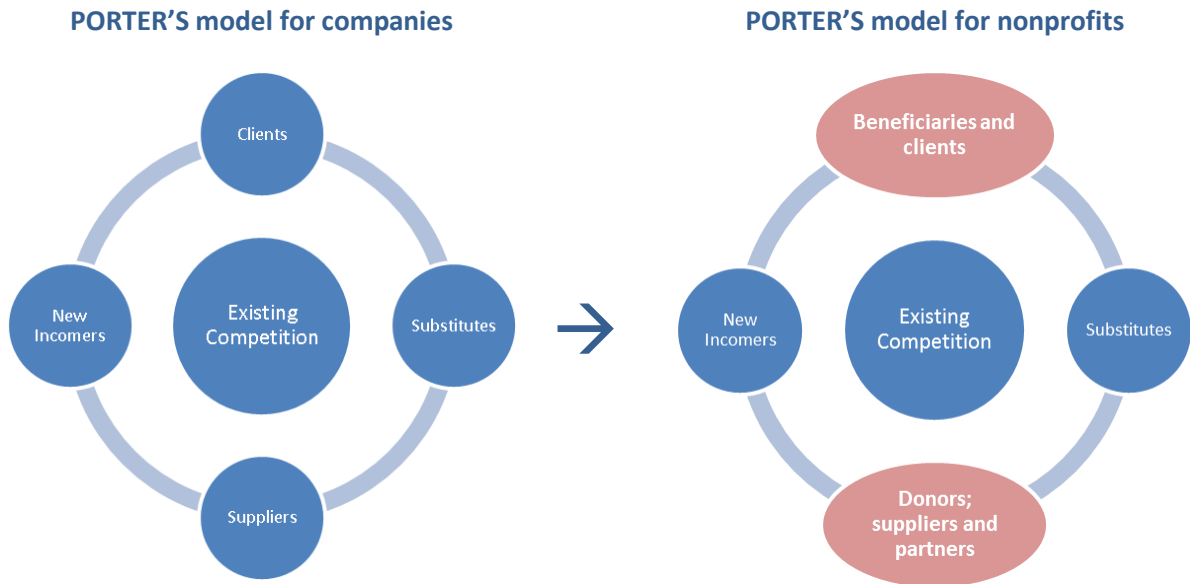





Figure 7 – Adaptation of the Porter’s five forces model to nonprofit organizations

Based on the proposed structure it was developed an inventory of relevant stakeholders that fit the new categories for nonprofit institutions, the analysis was made specifically for the *Centro Hospitalar Conde de Ferreira* in order to provide a more specific framework for the development of the study. In Table 11 and Table 12 are presented some of the main identified stakeholders.

Table 11 – Main identified external stakeholders for the CHCF – Traditional approach

Stakeholder	Key findings
Existing Competition	Psychiatric areas of the main hospitals in the northern region of the country.
New incomers	Potential new psychiatric services as part of the services provided by hospitals in the region
Substitutes	Homes and daycare for old and mentally ill people. Rehabilitation centers.

Table 12 – Main identified external stakeholder for the CHCF – Application to nonprofits

Stakeholder	Key findings
<p>Beneficiaries and clients</p>	<p>Mentally ill people who reside in the CHCF permanently.</p> <p>Mentally ill people who benefit from the CHCF daycare services.</p> <p>Universe of the population in the northern region of the country who require psychiatric and psychological services.</p> <p>Family and/or legal guardians of the beneficiaries</p>
<p>Donors, Suppliers and Partners</p>	<p> Donors of the SCMP (Patrimony and resources management)</p> <p> Providers of daily medical material</p> <p>Providers of medicine and pharmaceutical materials</p> <p>Providers of basic services and communication</p> <p>Providers of security and safety services</p> <p> Universities and technical schools</p> <p>Hospitals and medical centers within the region</p> <p>Social security and regulators of health services</p> <p>Art schools, elementary schools</p> <p>Porto city hall</p>

3.3.3 Internal Context

The Internal context of an institution can be defined and characterized by diverse methodologies; based on the recommendations proposed by ISO 31000 and the references regarding application of strategic analysis for nonprofit organizations by Schwenger (2014) there were analyzed six main aspects of the CHCF as can be seen in Figure 8.

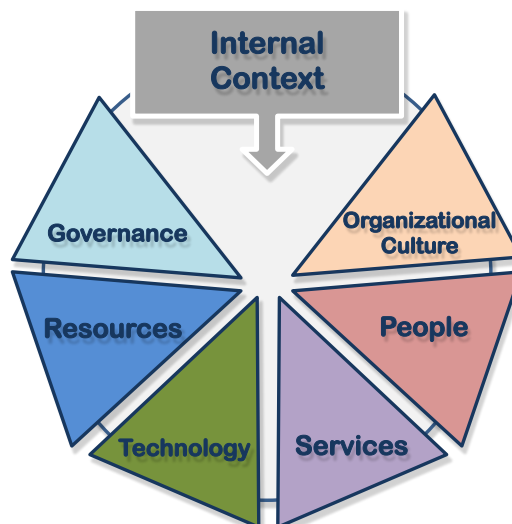

























Figure 8 – Relevant components for the analysis of the internal context

In order to describe the relevant aspects of the internal context in the CHCF, the communication strategy presented in Table 8 was used. A match between the important information of the six components of the internal context and the specific data collection method was made and can be consulted in Table 13.

Table 13 – Information on relevant components of the internal context

Component of the Internal Context	Relevant required information	Data collection method	
Organizational Culture	• Communication channels	Directed Interviews	
	• Tolerance to change	Focus Groups	
	• Knowledge transfer	On site observation	
Governance	• Vision and Mission	Documentation	
	• Values	Directed Interviews	
	• Objectives and strategy	On site observation	
	• Organizational Chart	On site observation	
Services		Directed Interviews	
	• Processes and procedures	Questionnaires	
	• Adopted standards	Focus Groups	
	• Protocols and agreements with partners, suppliers and third parties	Documentation	
	• Services and activities	On site observation	
Technology	• Equipment	Directed Interviews	
	• Software	Documentation	
	• Security Measures	On site observation	
	• Communication systems	On site observation	
People	• Abilities of the personnel	Documentation	
	• Relationship with and within workers	Directed Interviews	
	• Level of turnover	Focus Groups	
	• Characterization of workers	On site observation	
Resources	• Assets	Documentation	
	• Sources of income	Directed Interviews	
	• Ability to create value	On site observation	

Directed interviews were conducted with the authorization of the top management in the CHCF medical center to identify the main relevant aspects about the organization as a whole and to characterize the internal environment using the components described by the proposed model, there were also scheduled specific visits to the facilities and operational areas. Due to time restrictions it was not possible to schedule all planned focus groups. A full list of interviews and visits can be found in Annex C. The main findings applied to the internal context are presented in Table 14 to Table 19.

Table 14 – Main findings for the organizational culture component of the CHCF

Component of the Internal Context	Relevant required information	Main findings
Organizational Culture	• Communication channels	Opportunities for improvement in communication between areas
	• Tolerance to change	Main changes in the past few years are only related to infrastructure and development of new services
	• Knowledge transfer	Sharing knowledge on technical topics is common practice, periodic meetings to present clinical cases.

Table 15 – Main findings for the governance component of the CHCF

Component of the Internal Context	Relevant required information	Main findings
Governance	• Vision	Defined vision, mission and values (as part of the SCMP)
	• Mission	
	• Values	Established objectives and strategy linked to the mission, but not known by everyone.
	• Objectives and strategy	Existence of a defined organizational chart divided in operational areas in the institution (Refer to Annex D)
	• Organizational Chart	

Table 16 – Main findings for the services component of the CHCF

Component of the Internal Context	Relevant required information	Main findings
Services	• Processes and procedures	Low maturity on the definition of procedures for the existing processes.
	• Adopted standards	No current facultative certifications for clinical management.
	• Protocols and agreements with partners, suppliers and third parties	Several agreements with fellow clinical centers, social security and city hall for treatment of psychiatric patients.
	• Services and activities	Strong link with universities and technical schools for the completion of internships and voluntary work.
		Main services: Long term and short term commitment (addictions and psychiatric illness); Occupational therapy; daycare center and external consults.

Table 17 – Main findings for the technology component of the CHCF

Component of the Internal Context	Relevant required information	Main findings
Technology	<ul style="list-style-type: none"> • Equipment • Software • Security Measures • Communication systems 	<p>Adequate equipment for medical care and pharmaceuticals storage.</p> <p>Physical management of patient records and medical history.</p> <p>Integrated security circuit with supplier.</p> <p>Internal system connected to the SCMP network, e-mail and telephone as main communication systems.</p>

Table 18 – Main findings for the people component of the CHCF

Component of the Internal Context	Relevant required information	Main findings
People	<ul style="list-style-type: none"> • Abilities of the personnel • Relationship with and within workers • Level of turnover • Characterization of workers 	<p>Adequate formation level of professionals in the institution.</p> <p>Opportunities for improvement in the hiring process</p> <p>High turnover level</p> <p>Clear definition of ranges for workers in the institution</p>

Table 19 – Main findings for the resources component of the CHCF

Component of the Internal Context	Relevant required information	Main findings
Resources	<ul style="list-style-type: none"> • Assets • Sources of income • Ability to create value • Facilities 	<p>Main sources of income are linked to the other establishments in the SCMP</p> <p>Current agreements with social security and national health services provide resources to the completion of activities.</p> <p>Facilities currently in renovation; long waiting list for new beneficiaries.</p>

4 Proposal and Implementation of a Risk Management System

The analysis of the context provided a broad picture of the activities that take place at the medical center CHCF and was the baseline to initiate the second stage of the study which is the implementation of the risk identification and analysis at the CHCF. A second set of interviews and meetings was held in order to identify key aspects of the development of activities in the establishment (a complete list of scheduled and concluded sessions of data collection is available in Annex C).

Based on the available information collected during the interviews and the organizational chart it was decided to analyze six main areas of the establishment divided in core and support areas as seen in Table 20.

Table 20 – Selected areas of the establishment for the risk management proposal

Core Areas	Support Areas
Occupational Therapy	Social Services
Pharmaceutical Services	Facilities and Equipment
Daycare Center	Provisioning

4.1 Proposed Tools of the risk management system

Based on the collected information it will be completed a proposal for the identification and analysis of risks that will serve as baseline for the further definition of specific treatment measures and control plans in the institution. The proposed tools and methods for the completion of the analysis and its application to main transversal processes in the establishment will be presented in the current chapter.

4.1.1 Workflow analysis approach for the identification of risks

Based on the recommendations of the ISO31000 standard it was proposed a process approach to the activities for the identification and analysis of risks. The specific methodology proposal is based in the identification and classification of inputs and outputs (assets) and relevant subjects dedicated to the main processes of the selected areas in the institution as baseline for the identification of risks. This approach is commonly used on the identification of environmental or safety aspects as part of the standards on life cycle assessment (ISO, 2006a).

A catalogue of main assets and subjects was developed based on the Portuguese accounting code (*Código de Contas*) that allows having a more structured inventory of relevant inputs

and outputs of the analyzed processes (Complete catalogue available in Annex E). With the support of a structured workflow and the identification of assets and subjects the user has a support tool for the identification of risks based on a more comprehensive approach to the daily activities developed by the area. A detailed graphic of the followed steps in this stage of the analysis is presented in Figure 9.

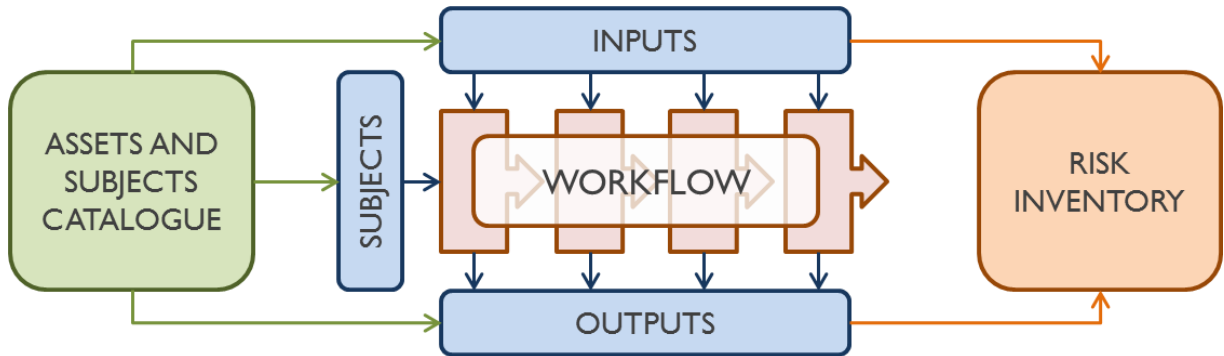


Figure 9 – Input/Output identification as base for the risk inventory

The interviews to the different relevant areas subject to the analysis were conducted based on the objective to identify the main transversal activities, resources, outcomes and potential risks. The base for this interview was a general questionnaire that can be found in Annex F, the completion of these questions were used as input for the development of the internal workflow and the assets and subject inventory whose basic template can be found in Annex G.

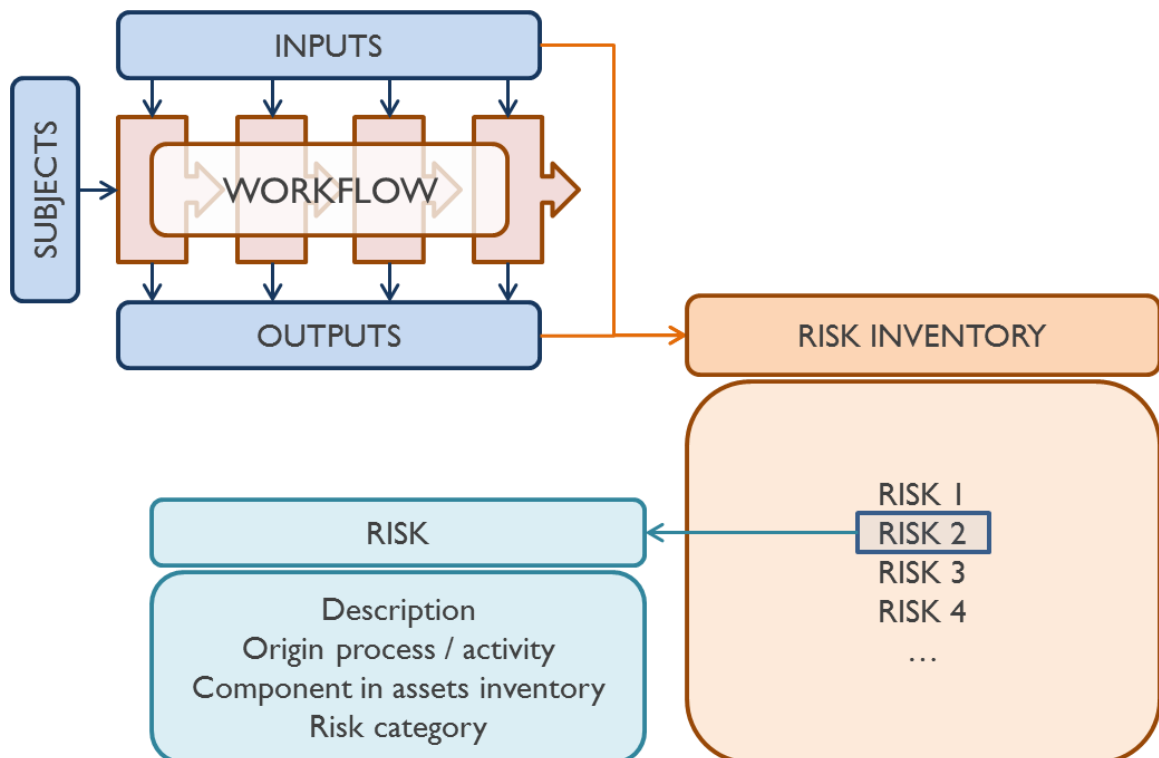


Figure 10 – Composition of the risk inventory (identification and classification)

A posterior set of interviews and data collection sessions were held to identify and categorize specific risks. As complement of the questionnaire presented in Annex F, there were developed a series of trigger questions for the identification of risks that can be found in Annex H. The collaboration of the internal stakeholders and their insights provided a list of risks that might be relevant for the development of the analyzed activities. The classification

of these risks was based on the categories presented in section 2.2 and was included as relevant aspect of the characterization of the risk. In Annex I it is possible to see the proposed template for the design of a risk inventory that includes its classification and link to the previously designed workflow input/output/subject inventory. A graphic representation of the risk database can be seen in Figure 10.

4.1.2 Analysis and evaluation of risks

The main outcome of the risk identification approach is a detailed risk inventory for selected processes in the analyzed areas of the establishment. According to the standard ISO31000 it is required to analyze and evaluate the identified risks, as presented in section 2.1, the risks will be assessed based on their level of impact and probability of occurrence. The level of impact is related specifically in the project with the possibility to continue with the operation and/or the actions required after the occurrence; while the probability is based on the historic of occurrences in the institution and external environment.

Table 21 – Levels of impact considered for the study (I)

1	2	3	4	5
Barely Noticeable	Quick and easy response	Impact unacceptable to the area	Impact unacceptable to the top management	Impact unacceptable to beneficiaries and users
No areas of the scope affected	Minor areas of the scope affected	Major areas of scope affected	Required stop of operations	Defensive legal actions might be required

Table 22 – Levels of probability of occurrence for the study (P)

1	2	3	4	5
No previous occurrence nationally	No previous occurrence in the institution	Two or less occurrences in the past year	Two or less occurrences in the past month	More than two occurrences in the last month

In Table 21 and Table 22 are presented the proposed indicators and description that will be used to assess the previously identified risks. Each risk should be subject to this analysis and the overall indicator of the level of risk is the result of the addition of these individual levels ($R=P+I$). The finished risk assessment should be added to the template presented in Annex I and will help construct a risk map for the analyzed process that serve as baseline for the definition of treatment measures and control/contingency plans. An empty version of the proposed template for the risk map can be found in Annex J.

4.2 Application of the proposed methodology

As mentioned at the beginning of the chapter, it was decided to apply the methodology in 6 main areas of the medical center CHCF; as part of the activities of these areas it was chosen a specific process that will be subject to the proposed analysis. The criteria used for this

decision was the availability of information and the relevance given by the area of the mentioned process. The selected processes for the analyzed areas are listed in Table 23 and will be analyzed accordingly to what was described in section 4.1.

Table 23 – Selected processes for the analysis

	Area / Service	Process / Activity
Core Areas	Occupational Therapy	Development of an Occupational Therapy Plan of Intervention (OTPI)
	Pharmaceutical Services	Daily distribution of medicine
	Daycare Center	Admission of a new user
Support Areas	Social Services	Request for patient interdiction
	Patient Management	Filing of deceased patient’s clinical records
	Provisioning	Supply of materials to nurseries

4.2.1 Area: Occupational therapy

The chosen process to analyze in the core area of Occupational Therapy is the Development of an Occupational Therapy Plan of Intervention (OTPI). The objective of this process is to establish the best course of action to support the treatment of a new patient with specific activities related to occupational therapy and recreational activities.

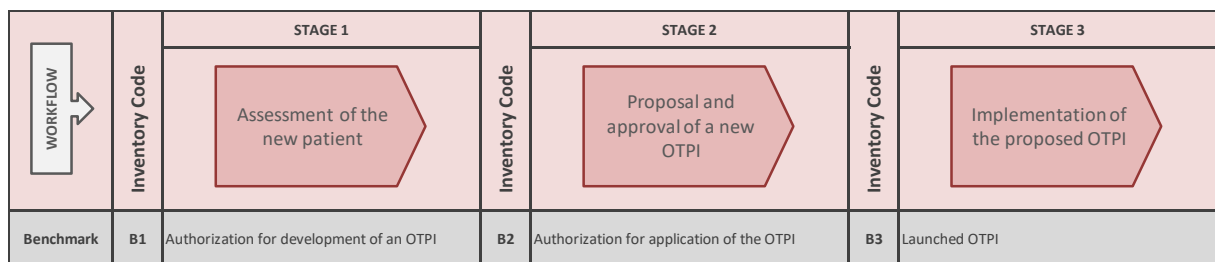



Figure 11 – Workflow for the development of a new OTPI

Plans are constructed for every patient individually and their development includes the participation of several internal stakeholders from the medical departments in the establishment. The designed workflow for the completion of the activity is described in Figure 11 based on the template provided in Annex G. This figure includes the relevant benchmarks for the completion of each stage. After the identification of the stages and benchmarks, a complete list of relevant subjects and assets (inputs and outputs) was constructed as main baseline for the identification of risks. The inventory of inputs, outputs and subjects is presented in Table 24. A comprehensive inventory that includes the specific codification and use of the template can be found in Annex K.

Table 24 – Inputs, outputs and subjects / Development of a new OTPI

Stage	Assessment of the new patient	Proposal and approval of a new OTPI	Implementation of the proposed OTPI
Inputs	<ul style="list-style-type: none"> • Patient’s Clinical Records • Patient’s Personal Information • Knowledge/expertise • Facilities 	<ul style="list-style-type: none"> • Patients Database • Patient’s Clinical Information • Knowledge/expertise • OTPI proposal 	<ul style="list-style-type: none"> • Database of available therapeutic activities • Facilities • Equipment and materials • Defined and scheduled OTPI
Outputs	<ul style="list-style-type: none"> • Updated Clinical Records • Updated Patients Database • Authorization for development of an OTPI 	<ul style="list-style-type: none"> • Approved proposal for OTPI • Updated Clinical Records • Authorization for application of the OTPI 	<ul style="list-style-type: none"> • Products • Updated database of available therapeutic activities • Updated Patients’ Database • Acquired abilities and skills
Subjects	<ul style="list-style-type: none"> • Patient • Medical and Technical team 	<ul style="list-style-type: none"> • Medical and Technical team • Occupational Therapist 	<ul style="list-style-type: none"> • Patient • Occupational Therapists • Nursing team

Table 25 – Risk Inventory / Development of a new OTPI

COD	Risk	Risk Category
		
R-01	Loss/Theft of patient's clinical records	Operational/ Reputational
R-02	Release of patient's personal information	Operational/ Reputational
R-03	Insufficient team abilities to develop the OTPI	Human Resources/ Reputational
R-04	Unavailability of facilities to celebrate the initial meeting	Operational
R-05	Fail to update patient's clinical records	Operational/ Reputational
R-06	Fail to update patients' database	Operational/ Reputational
R-07	Fail to reach a consensus regarding development of new OTPI	Human Resources/ Operational
R-08	Fail to authorize development of a new OTPI	Operational
R-09	Fail to communicate authorization for development of a new OTPI	Human Resources/ Operational
R-10	Fail to deliver a new OTPI proposal on time	Operational
R-11	Fail to deliver a new OTPI proposal	Operational
R-12	Fail to authorize new OTPI	Operational
R-13	Fail to communicate authorization for new OTPI	Human Resources/ Operational
R-14	Loss/Theft of new authorized OTPI proposal	Operational/ Reputational
R-15	Fail to find available information on therapeutic activities	Operational
R-16	Fail to update therapeutic activities' database	Operational
R-17	Damage to equipment and/or materials	Operational
R-18	Loss/Theft of equipment and/or materials	Operational
R-19	Fail to schedule the recommended therapeutic activities	Operational
R-20	Incident (Fire, flood, ...) during the activities	Operational

The inventory of risks for the analyzed process is presented in Table 25. Using the references provided in section 4.1.2. it was possible to establish the risk levels for each identified risk; the risk map for the process is presented in Table 26. A comprehensive database of the identified risks and their characterization based on the Probability/Impact scale can be found in Annex L.

Table 26 – Risk map / Development of a new OTPI

		IMPACT				
		1	2	3	4	5
PROBABILITY	5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
				R-5 R-6		
	4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
			R-7 R-9	R-16		
			R-10 R-13			
	3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
			R-12 R-15	R-8 R-11 R-19	R-14 R-17 R-18	R-1 R-2
	2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
			R-4		R-3	R-20
	1	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6

4.2.2 Area: Pharmaceutical Services

The chosen process to analyze in the core area of Pharmaceutical Services is the Daily distribution of medicine. The objective of this process is to provide the nurseries with the assigned quantity and type of medication for the patients based on the prescriptions provided by the doctors of the establishment.

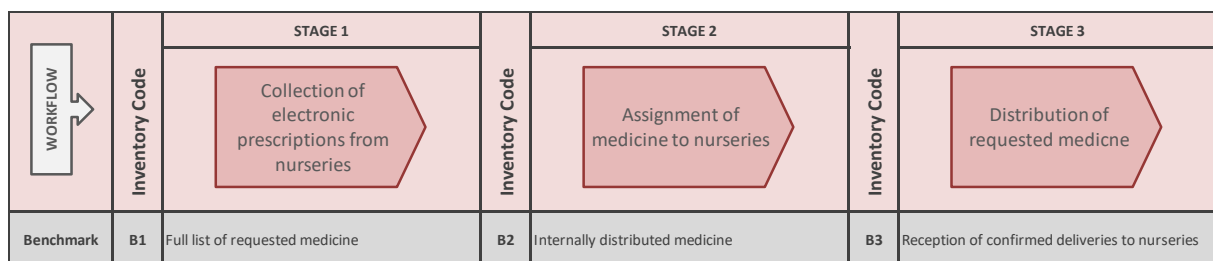


Figure 12 – Workflow for the daily distribution of medicine


Prescriptions are provided individually for each patient and are introduced in the internal pharmacy system by the medical team; this system can be consulted by the doctors, nurses and pharmaceutical personnel. The designed workflow for the completion of the activity is described in Figure 12 based on the template provided in Annex G. This figure includes the relevant benchmarks for the completion of each stage. After the identification of the stages

and benchmarks, a complete list of relevant subjects and assets (inputs and outputs) was constructed as main baseline for the identification of risks. The inventory of inputs, outputs and subjects is presented in Table 27. A comprehensive inventory that includes the specific codification and use of the template can be found in Annex M.

Table 27 – Inputs, outputs and subjects / Daily distribution of medicine

Stage	Collection of electronic prescriptions per nursery	Assignment of medicine to nurseries	Distribution of requested medicine
Inputs	<ul style="list-style-type: none"> • Electronic prescriptions per patient • Full compendium of prescriptions per nursery • Software for electronic prescriptions • Full inventory of available medicine 	<ul style="list-style-type: none"> • Full inventory of available medicine • Summary of all requested medicine and patients • Sterile and clean deposits for medicine • Received new supplies • Facilities 	<ul style="list-style-type: none"> • Individual carts per nursery (for transportation) • Assigned and grouped medicine per nursery • Authorization for delivery of medicine • Summary of assigned medicine to be delivered
Outputs	<ul style="list-style-type: none"> • Summary of all requested medicine and patients • Authorization of head of pharmaceutical services • Request order of not available medicine • Updated inventory of medicine 	<ul style="list-style-type: none"> • Lists of fulfilled and unfulfilled prescriptions per nursery • Assigned medicine in the available space per nursery • Updated full inventory of available medicine • Confirmation of reception of new medicine • Communication of fulfilled and unfulfilled requests 	<ul style="list-style-type: none"> • Confirmation of medicine reception in nurseries • Fulfilled prescriptions by nursery • Assigned and grouped medicine per patient
Subjects	<ul style="list-style-type: none"> • Doctor • Head of pharmaceutical services • Employee of pharmaceutical services 	<ul style="list-style-type: none"> • Head of pharmaceutical services • Employee of pharmaceutical services • Internal medicine provider (SCMP) 	<ul style="list-style-type: none"> • Nursery staff • Internal distributor

Table 28 – Risk Inventory / Daily distribution of medicine

COD	Risk	Risk Category
		
R-01	Wrongfull introduction of prescription to the system	Operational
R-02	System failure on collection of prescriptions per nursery	Operational
R-03	Insufficient team abilities to define prescription	Human Resources/ Reputational
R-04	Unavailability of access to the prescription system	Operational
R-05	Fail to retrieve information on full inventory	Operational
R-06	Fail to develop a full summary of requested medicine	Operational
R-07	Fail to authorize distribution of medicine	Operational
R-08	Fail to assign required medicine on time	Operational
R-09	Fail to update inventory's database	Operational
R-10	Unavailability of deposits for medicine storage	Operational
R-11	Unavailability of personal laboratory equipment	Operational/ Reputational/ Compliance
R-12	Unavailability of required medicine	Operational
R-13	Loss/Theft of equipment and/or materials	Operational/ Reputational
R-14	Incident (Fire, flood, ...) during the activities	Operational
R-15	Uncompleted delivery of medicine	Operational
R-16	Work accident on handling operations	Operational
R-17	Damage to equipment and/or materials	Operational

The inventory of risks for the analyzed process is presented in Table 28. Using the references provided in section 4.1.2. it was possible to establish the risk levels for each identified risk; the risk map for the process is presented in Table 29. A comprehensive database of the identified risks and their characterization based on the Probability/Impact scale can be found in Annex N.

Table 29 – Risk map / Daily distribution of medicine

		IMPACT				
		1	2	3	4	5
PROBABILITY	5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
	4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
	3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
			R-10	5-05 R-06	R-02 R-04	R-01
				R-08	R-12	R-11
	2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
				R-07	R-03 R-13	
					R-14 R-16	
1	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	
				R-17		

4.2.3 Area: Daycare Center

The chosen process to analyze in the core area of The Daycare center is the Admission of a new user. The objective of this process is to formally include a new beneficiary of the services provided by the daycare center in the patients’ database and to provide the starting point of provision of caring activities for the new user.

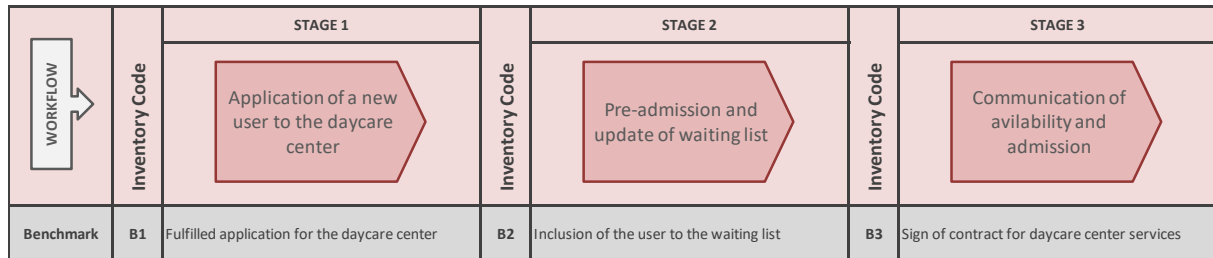



Figure 13 – Workflow for the admission of a new user

The admission process starts when a new client contacts the establishment or is referred by a third party and concludes once the patient is integrated as user of the services provided by the daycare center by signing a contract. The designed workflow for the completion of the activity is described in Figure 13 based on the template provided in Annex G. This figure includes the relevant benchmarks for the completion of each stage. After the identification of the stages and benchmarks, a complete list of relevant subjects and assets (inputs and outputs) was constructed as main baseline for the identification of risks. The inventory of inputs, outputs and subjects is presented in Table 30. A comprehensive inventory that includes the specific codification and use of the template can be found in Annex O.

Table 30 – Inputs, outputs and subjects / Admission of a new user

Stage	Application of a new user to the daycare center	Pre-admission and update of waiting list	Communication of availability and admission
Inputs	<ul style="list-style-type: none"> Communication of interest from the user/client Template for the application of new user/client Patient’s clinical records New user/client personal contact information 	<ul style="list-style-type: none"> Fulfilled application of new user/client Knowledge/Expertise Facilities Database of users/clients on waiting list 	<ul style="list-style-type: none"> Communication of availability of new vacancy Database of users/clients on waiting list Confirmation of interest of new user/client Contract with new user/client Database of daycare center users
Outputs	<ul style="list-style-type: none"> Full information on application process Full information on services and costs Fulfilled application of new user/client 	<ul style="list-style-type: none"> Results on evaluation of new user/client Decision on pre-admission of new user/client Updated database of users/clients on waiting list Communication of decision to user/client 	<ul style="list-style-type: none"> Signed contract with new user/client Communication of new user/client starting date Updated database of daycare center users
Subjects	<ul style="list-style-type: none"> New user/client Employee of daycare center 	<ul style="list-style-type: none"> Head of daycare center Doctor Psychologist 	<ul style="list-style-type: none"> New user/client Employee of daycare center Head of daycare center

Table 31 – Risk Inventory / Admission of a new user

COD	Risk	Risk Category
		
R-01	Fail to register new user/client interest on the service	Operational/ Reputational
R-02	Unable to provide full information on the process	Operational/ Reputational / Strategic
R-03	Loss/Theft of patient's clinical records	Operational/ Reputational
R-04	Loss/Theft of patient's personal information	Operational/ Reputational
R-05	Unable to meet new user/client requirements	Strategic
R-06	Incapability of new user/client to meet costs of the service	Strategic
R-07	Loss/Theft of new user/client application	Operational/ Reputational
R-08	Insufficient team abilities to take on the evaluation	Human Resources/ Reputational
R-09	Incident (Fire, flood, ...) during the activities	Operational
R-10	Loss/theft of waiting list database	Operational/ Reputational
R-11	Unable to authorize the inclusion of a new patient in the waiting list	Operational/ Reputational
R-12	Fail to update the waiting list database	Operational
R-13	Fail to communicate the decision of pre-admission	Operational/ Reputational
R-14	Unavailability of new vacancies	Reputational/ Strategic
R-15	Desinterest of new user/client on joining the institution	Strategic
R-16	Fail to update the users database	Operational
R-17	Fail to schedule the starting date	Operational
R-18	Fail to sign the contract in time	Operational

The inventory of risks for the analyzed process is presented in Table 31. Using the references provided in section 4.1.2. it was possible to establish the risk levels for each identified risk; the risk map for the process is presented in Table 32. A comprehensive database of the identified risks and their characterization based on the Probability/Impact scale can be found in Annex P.

Table 32 – Risk map / Admission of a new user

		IMPACT				
		1	2	3	4	5
PROBABILITY	5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
	4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
				R-06 R-11 R-14	R-05	R-18
	3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
			R-12	R-02 R-15 R-16 R-17	R-01	
	2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
			R-13		R-08 R-09	R-03 R-04 R-07 R-10
1	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	

4.2.4 Area: Social Services

The chosen process to analyze in the support area of Social Services is the Request for patient interdiction. The objective of this process is to formally establish that a patient is no longer capable of take care of himself and requires a legal guardian.

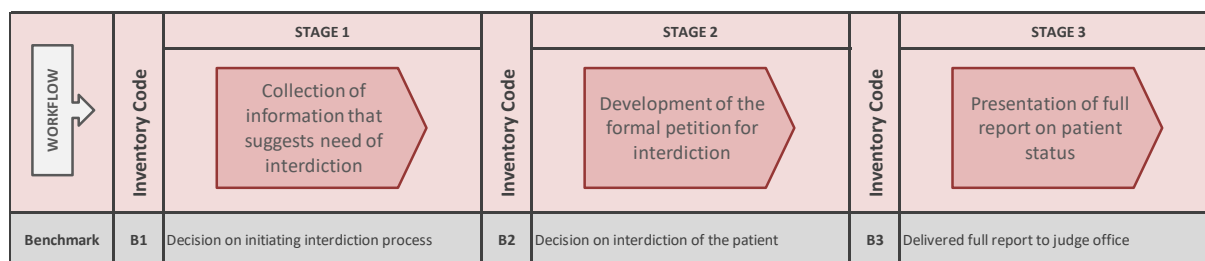



Figure 14 – Workflow for the request for patient interdiction

The interdiction process initiates when an indication of the incapability of the patient to make decisions regarding his own care is identified. The designed workflow for the completion of the activity is described in Figure 14 based on the template provided in Annex G. This figure includes the relevant benchmarks for the completion of each stage. After the identification of the stages and benchmarks, a complete list of relevant subjects and assets (inputs and outputs) was constructed as main baseline for the identification of risks. The inventory of inputs, outputs and subjects is presented in Table 33. A comprehensive inventory that includes the specific codification and use of the template can be found in Annex Q.

Table 33 – Inputs, outputs and subjects / request for patient interdiction

Stage	Collection of information that suggests need of interdiction	Development of the formal petition for interdiction	Presentation of full report on patient status
Inputs	<ul style="list-style-type: none"> • Communication on patients signs of incapability • Knowledge/Expertise • Facilities • Patient’s clinical records 	<ul style="list-style-type: none"> • Patient’s clinical records • Knowledge/Expertise • Communication on initiation of the process 	<ul style="list-style-type: none"> • Decision on interdiction of the patient • Patient’s clinical records • Collection of full documentation of the patient • Report on social situation of the patient
Outputs	<ul style="list-style-type: none"> • Evaluation of patient’s condition • Decision on initiating interdiction process 	<ul style="list-style-type: none"> • Signed petition for interdiction • Confirmation of reception of the request • Decision on interdiction of the patient 	<ul style="list-style-type: none"> • Confirmation of reception of the report • Communication on conclusion of the process
Subjects	<ul style="list-style-type: none"> • Patient • Doctor • Social Worker • Psychologist 	<ul style="list-style-type: none"> • Doctor • Social worker • Head of institution • Public Ministry 	<ul style="list-style-type: none"> • Social worker • Judge

Table 34 – Risk Inventory / Request for patient interdiction

COD	Risk	Risk Category
		
R-01	Fail to identify signs of incapability	Operational
R-02	Insufficient team abilities to conclude incapability	Operational/ Reputational
R-03	Loss/Theft of patient's clinical records	Operational/ Reputational
R-04	Fail to reach a consensus regarding incapability	Operational
R-05	Fail to communicate decision on initiating interdiction process	Operational
R-06	Fail to deliver interdiction petition on time	Operational
R-07	Denial of patient interdiction request	Operational/ Reputational
R-08	Fail to provide full report on time	Operational/ Reputational

The inventory of risks for the analyzed process is presented in Table 34. Using the references provided in section 4.1.2. it was possible to establish the risk levels for each identified risk; the risk map for the process is presented in Table 35. A comprehensive database of the identified risks and their characterization based on the Probability/Impact scale can be found in Annex R.

Table 35 – Risk map / Request for patient interdiction

		IMPACT				
		1	2	3	4	5
PROBABILITY	5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
	4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
	3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
			R-07	R-01 R-04		
	2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
				R-05	R-02 R-06 R-08	R-03
	1	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6

4.2.5 Area: Patient Management

The chosen process to analyze in the support area of Patient management is the Filing of deceased patient's clinical records. The objective of this process is to remove the clinical records from a deceased patient from the main storage to the corresponding immobilized archive for clinical records.

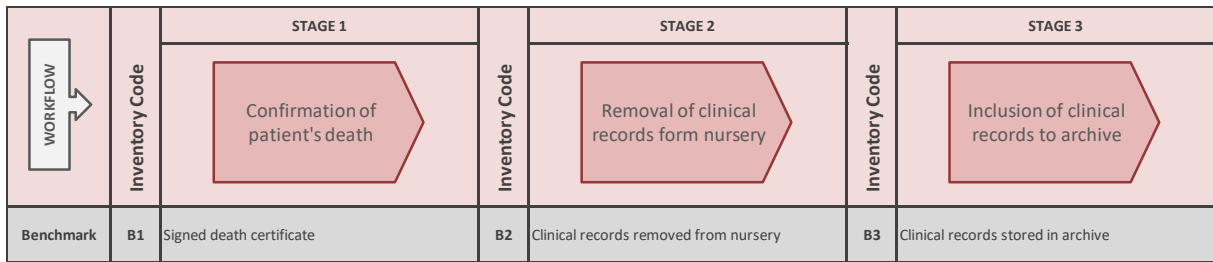



Figure 15 – Workflow for the filing of deceased patient’s clinical records

The process begins with the unconfirmed notice of the decease of the patient and concludes when all corresponding documentation has been stored and filed as part of the archive. The designed workflow for the completion of the activity is described in Figure 15 based on the template provided in Annex G. This figure includes the relevant benchmarks for the completion of each stage. After the identification of the stages and benchmarks, a complete list of relevant subjects and assets (inputs and outputs) was constructed as main baseline for the identification of risks. The inventory of inputs, outputs and subjects is presented in Table 36. A comprehensive inventory that includes the specific codification and use of the template can be found in Annex S.

Table 36 – Inputs, outputs and subjects / Filing of deceased patient’s clinical records

Stage	Confirmation of patient’s death	Removal of clinical records form nursery	Inclusion of clinical records to archive
Inputs	<ul style="list-style-type: none"> • Communication on patient’s signs of death • Knowledge/Expertise • Facilities 	<ul style="list-style-type: none"> • Patient’s clinical records • Facilities • Declaration of patient’s death 	<ul style="list-style-type: none"> • Facilities • Patient’s clinical records • Available archive space
Outputs	<ul style="list-style-type: none"> • Evaluation of patient’s condition • Declaration of patient’s death 	<ul style="list-style-type: none"> • Updated clinical records • Communication of removal of patient’s clinical records • Update of the nursery’s archive database 	<ul style="list-style-type: none"> • Stored death patient’s clinical records • Update of the general archive database
Subjects	<ul style="list-style-type: none"> • Patient • Doctor • Nurse • Head of patient management 	<ul style="list-style-type: none"> • Nurse • Head of patient management 	<ul style="list-style-type: none"> • Head of patient management • Worker of archive

Table 37 – Risk Inventory / Filing of deceased patient’s clinical records

Risk	Risk Category
	
Fail to identify signs of death on time	Operational
Insufficient team abilities to conclude death	Operational
Fail to declare death in time	Operational
Loss/Theft of patient's clinical records	Operational/ Reputational
Fail to update patient's clinical records on time	Operational
Fail to communicate the decision to remove clinical records	Operational
Fail to update nursery's database	Operational
Unavailability of space in the archive for incoming documents	Operational
Fail to update general archive database on time	Operational

The inventory of risks for the analyzed process is presented in Table 37. Using the references provided in section 4.1.2. it was possible to establish the risk levels for each identified risk; the risk map for the process is presented in Table 38. A comprehensive database of the identified risks and their characterization based on the Probability/Impact scale can be found in Annex T.

Table 38 – Risk map / Filing of deceased patient’s clinical records

		IMPACT				
		1	2	3	4	5
PROBABILITY	5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
	4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
	3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
				R-03	R-01	
				R-07	R-05	
	2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
			R-08	R-06	R-02	R-04
	1	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6

4.2.6 Area: Provisioning

The chosen process to analyze in the support area of Provisioning is the Supply of materials to nurseries. The objective of this process is to provide the nurseries with all requested daily use materials necessary for patient care.

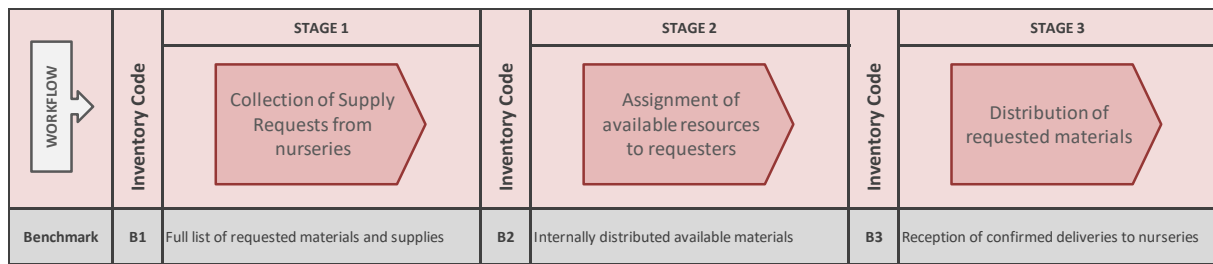



Figure 16 – Workflow for the supply of materials to nurseries

The process begins with the identification of a need for reposition in the nurseries inventory and concludes when this need has been satisfied. The designed workflow for the completion of the activity is described in Figure 16 based on the template provided in Annex G. This figure includes the relevant benchmarks for the completion of each stage. After the identification of the stages and benchmarks, a complete list of relevant subjects and assets (inputs and outputs) was constructed as main baseline for the identification of risks. The inventory of inputs, outputs and subjects is presented in Table 39. A comprehensive inventory that includes the specific codification and use of the template can be found in Annex U.

Table 39 – Inputs, outputs and subjects / Supply of materials to nurseries

Stage	Collection of Supply Requests from nurseries	Assignment of available resources to requesters	Distribution of requested materials
Inputs	<ul style="list-style-type: none"> Need of internal nursery supplies Nursey’s list of required material Authorization of head of nursing staff 	<ul style="list-style-type: none"> Full inventory of available material Summary of requested supplies and requesters Facilities Personal working equipment Personal safety equipment Received new supplies 	<ul style="list-style-type: none"> Transport Personal safety equipment Assigned and grouped materials per nursery Authorization for delivery of materials Summary of assigned supplies to be delivered
Outputs	<ul style="list-style-type: none"> Summary of all requested supplies and requesters Authorization of warehouse manager Purchasing order of not available supplies Full inventory of supplies 	<ul style="list-style-type: none"> Lists of fulfilled and unfulfilled requests per nursery Assigned supplies in the available space per nursery Updated full inventory of available material Confirmation of reception of material Communication of fulfilled and unfulfilled requests 	<ul style="list-style-type: none"> Confirmation of supplies reception nurseries Fulfilled needs by nursery Updated internal inventory in nurseries
Subjects	<ul style="list-style-type: none"> Warehouse manager Head of the nursing staff Nurse managers (per nursery) 	<ul style="list-style-type: none"> Warehouse manager Warehouse employees Provider 	<ul style="list-style-type: none"> Nurse managers (per nursery) Internal distributor (warehouse employee) Nursery staff

Table 40 – Risk Inventory / Supply of materials to nurseries

COD	Risk	Risk Category
		
R-01	Unavailable information of internal nursery inventory	Operational
R-02	Fail to identify the needs of the nursery inventory	Operational
R-03	Fail to submit the nursery inventory request on time	Operational
R-04	Error on determining the exact inventory need of the nursery	Operational
R-05	Fail to deliver the authorization for nursery's supply request on time	Operational
R-06	Loss/theft of nursery's list of required material	Operational/ Reputational
R-07	Fail to submit the summarized internal supply request on time	Operational
R-08	Fail to deliver the authorization for full internal supply request on time	Operational
R-09	Unavailability of material in the inventory	Operational
R-10	Fail to deliver the external purchasing order on time	Operational
R-11	Loss/theft of materials and supplies at the warehouse	Operational/ Reputational
R-12	Loss/theft of the summarized internal supply request	Operational/ Reputational
R-13	Incident (Fire, flood, ...) in the warehouse	Operational
R-14	Unavailability of personal working equipment	Operational/ Reputational/ Compliance
R-15	Unavailability of personal safety equipment	Operational/ Reputational/ Compliance
R-16	Uncompleted delivery of supplies by provider	Operational
R-17	Work accident on handling operations inside the warehouse	Operational

The inventory of risks for the analyzed process is presented in Table 40. Using the references provided in section 4.1.2. it was possible to establish the risk levels for each identified risk; the risk map for the process is presented in Table 41. A comprehensive database of the identified risks and their characterization based on the Probability/Impact scale can be found in Annex V.

Table 41 – Risk map / Supply of materials to nurseries

		IMPACT				
		1	2	3	4	5
PROBABILITY	5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
	4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
			R-1 R-2	R-4 R-9 R-16	R-14 R-15	
	3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
			R-3	R-5 R-6 R-7 R-8 R-10 R-12	R-11	R-17
	2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
					R-13	
1	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	

5 Results and Discussion

Overall results of the application of the presented tools provide a comprehensive inventory of inputs, outputs and relevant subjects related to the analyzed processes in the medical center *Conde de Ferreira*; the development of this inventory was the main input to complete and present a complete inventory of identified risks that can change the expected outcomes of the activities developed in the institution. Furthermore, the identified risks were categorized and evaluated with a probability/impact tool to classify the risks and provide a prioritized map that serves as baseline for the development of specific control and contingency plans for every analyzed process.

The application of the proposed methodology based on the standard ISO31000 is complemented by a series of management tools related to the analysis of processes and measurement of risks. This combination of methods resulted on the identification of situations that might concern or rise interest in the institution. Along the process analysis of the six selected areas of the medical center *Conde Ferreira* it was possible to identify common aspects that should be identified as marks of interest for the development of specific control and contingency plans.

5.1 The broader concept of risk

Not only from an organizational point of view, but as part of the daily life, the concept of risk has always been associated with danger; new approaches that were presented as part of this study help develop a broader concept of risk which not only focus on the bad outcomes of a situation, but on the possible opportunities related to these.

As it was presented before, the more recent definitions of risk focus on the uncertainty of any situation and the possible deviation from originally established outcomes or objectives. The application of this new approach provides two main aspects related to risk management that should be addressed:

- Risks should be identified based on the uncertainties identified in any activity.
- Risks can be identified only after there is an expected outcome in any situation or operation.
- Levels of risk are relative and depend on the defined objectives of an organization or person and the expectations related to the completion of an activity.

An approach that is based on uncertainty and not on an specific identification on danger situations allowed to expand the approach of risk classification; traditionally, risks would only be associated with a financial or physical component; however, based on the literature it was possible to identify seven types of risks relevant to an organization.

5.2 Management tools and the standard ISO 31000

The standard ISO31000 has provided a good example on how presenting flexible specifications and general recommendations on how to approach risk management is an opportunity to articulate and innovate in specific techniques and tools applied to management in organizations.

Considering that the study was held as part of the activities of a nonprofit organization, it was possible to adjust typically business-oriented tools for the evaluation of the external and internal context (PESTEL analysis, five forces approach) to the identification of relevant aspects to be considered as baseline for the implementation of a risk management system in an institution like SCMP.

A process approach to the analysis of the establishment was an important tool to identify the assets and subjects that take part of the activities in the organization; this approach is being used as a method of analysis for life cycle assessment and other techniques that seek to identify specific aspects of management in the context of an organization. As part of the proposal of a risk management, a process approach with the already mentioned outcomes (inputs, outputs and subjects) has showed to be a comprehensive tool that can be applied on the activities of an organization regardless of their level of maturity in terms of process modeling or quality management.

A limitation found during the development of the system is related to the tools used to characterize and define levels of risk. There are not many models that can be applied to measure the probability or impact of a determined situation, however, it was possible to define scales of probability and impact that can be easily replicated in the organization based on historic information and continuation of the analyzed activities.

Development of novel strategies on how to specifically measure probability and impact can be adapted for a nonprofit environment to put a value on the analyzed assets that compose the activities. A probability level indicator has the potential to give specific measures for the context in which the institution develops its activities and further analysis can provide new methodologies to measure the occurrence of these situations

5.3 Marks of interest

After the analysis of the six risks map related to the six specific processes selected for the study it was possible to identify common topics that might raise interest in the organization. These identified marks of interest represent aspects of the process in the medical center *Conde de Ferreira* that can be more susceptible to the occurrence of risks and should also be considered with priority when developing control and contingency plans.

One of the common identified risks with a relatively high risk level is the loss or unauthorized release of personal information. It is possible that in the specific context of the medical center CHCF, in which a great percentage of the exchanged documentation between areas is physical or in process of been digitalized, more efficiency can be reached with the design of informatics tools that can provide complete and reliable information guarantying easy access only to specific authorized personnel; avoiding unnecessary handling of physical documents and reducing waiting times for the activities. This topic is also relevant because of the recent disposition provided by the European Union (EU), in which more importance is given to personal information protection and information security, being this disposition of critical interest not only of the CHCF but of the SCMP.

5.4 Replication of the proposed system

The proposed methodology was designed and applied with the objective to serve as a reproducible tool that could be used by the areas of the CHCF to treat risks and design control and contingency plans as part of their daily management activities. These tools based on a process approach have proven to be useful and applicable in diverse areas and processes providing a solid foundation for the replication of the methodology in the rest of the organization.

Specific actions should be taken to guarantee that the risk management methods are included as regular part of the management of the organization; these might include but are not limited to:

- Validation of the methodology by the representatives of the main areas of the organization.
- Design and application of training activities on risk management and the use of the risk management tools.
- Application of a new round of analysis for the rest of main processes in the establishment.
- Monitoring of activities during the development of specific controls and contingency plans for the identified risks.
- Addition to the regular managerial responsibilities of the activities related to the periodic revision of the risks maps and contingency plans of each.
- Creation of the specific role of risk manager in the establishment as overseer of the application of the proposed methodology.

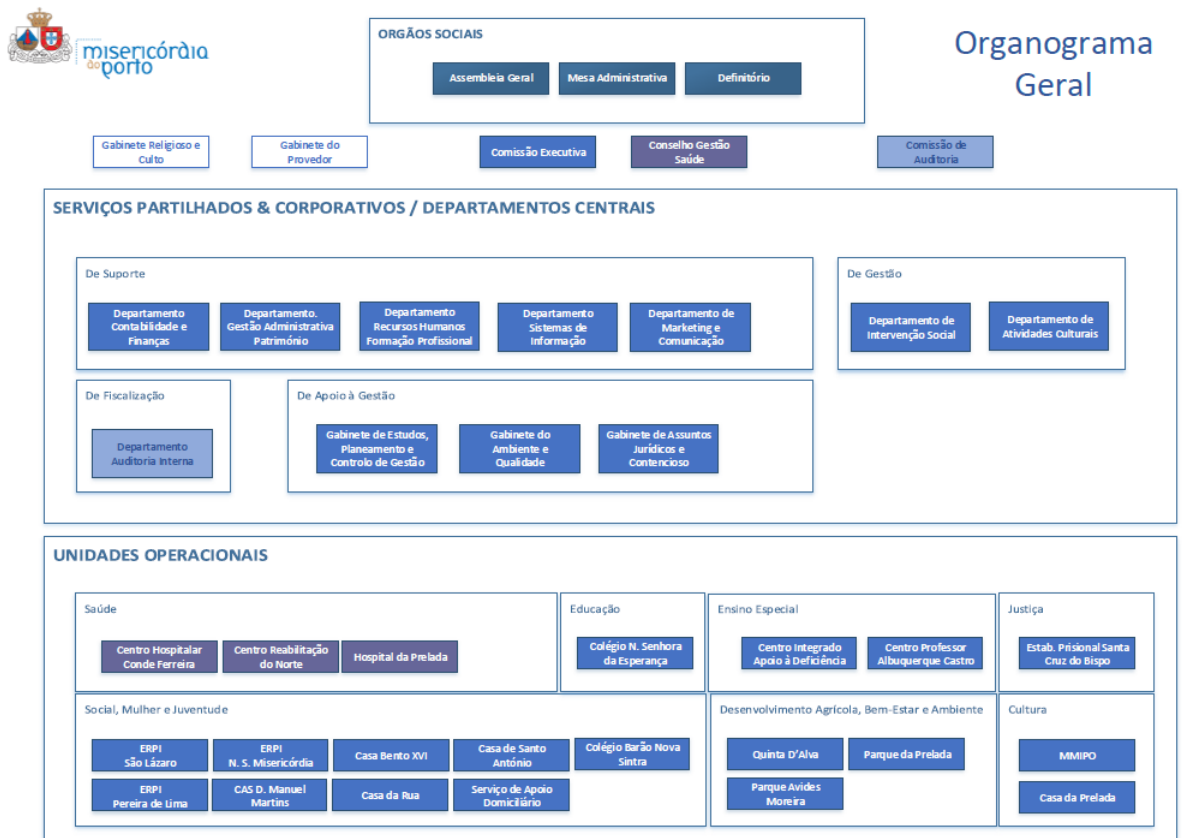
Empowerment at the operational level is one of the pillars for the successful application of a reliable risk management system; the main objective was to provide an efficient set of tools to help apply the concepts of risk management to the daily activities of the areas in the institution. The promotion of the use of these methods and approaches can benefit the medical center CHCF and provide a baseline for the implementation of a general tool for all establishments and areas part of the SCMP.

References

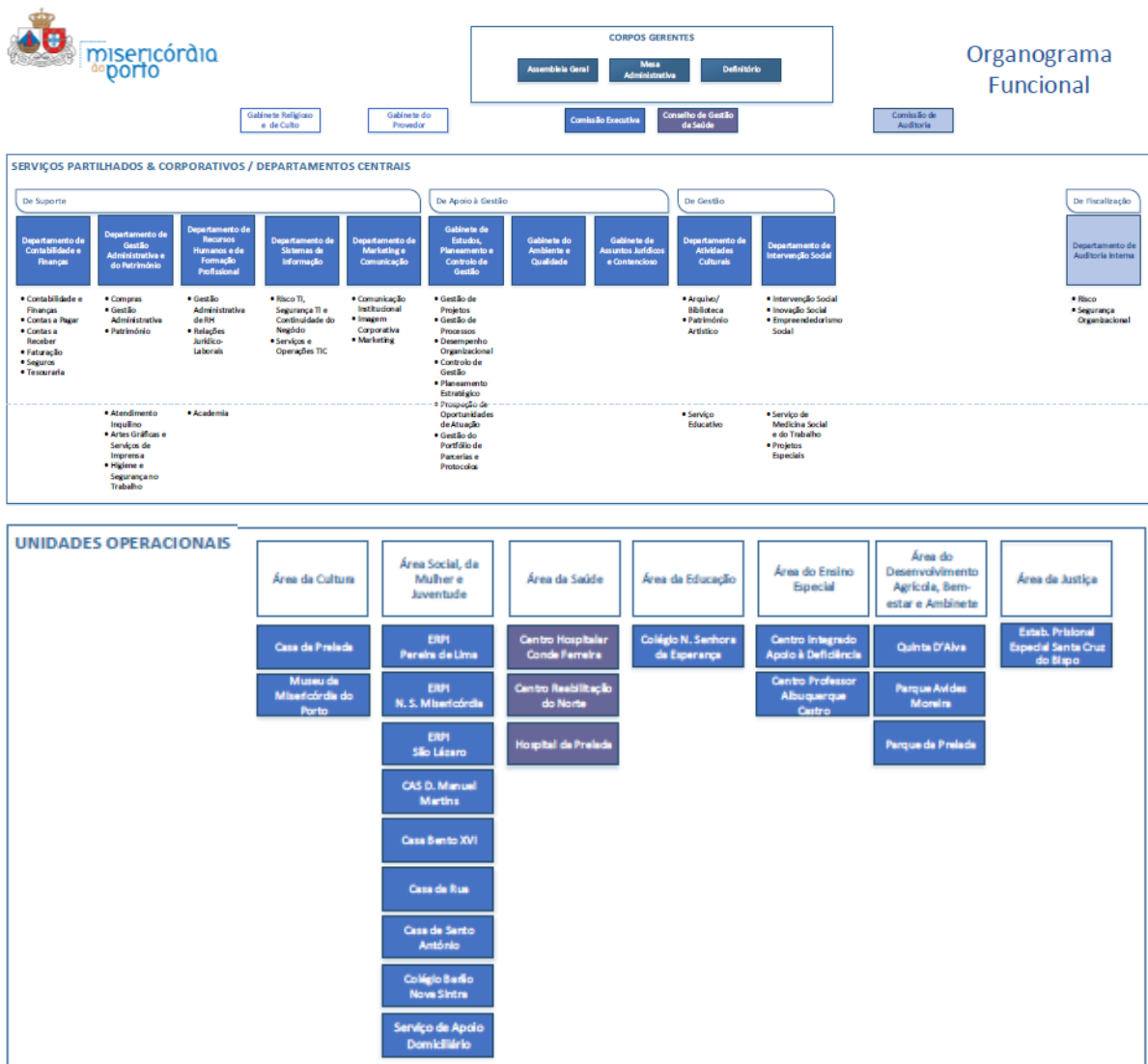
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ANNEX A: Organizational Structure of the SCMP



ANNEX B: Functional Structure of the SCMP

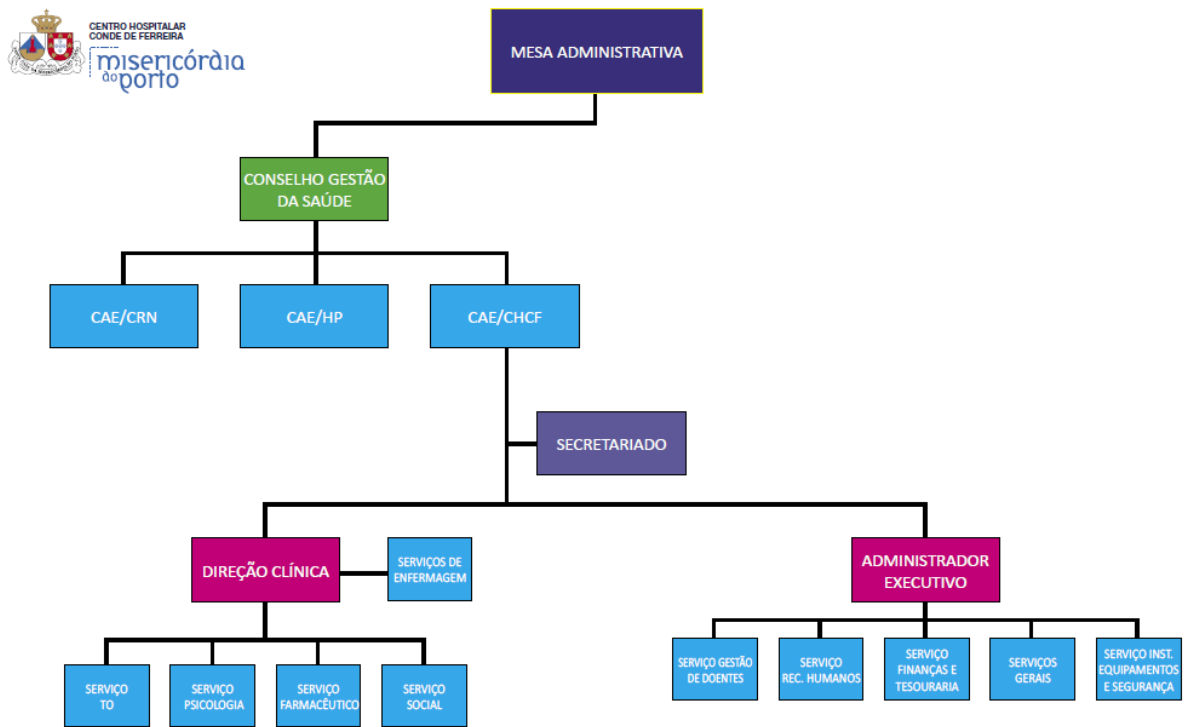


ANNEX C: List of completed sessions for data collection

Date	Week	Service / Area	Type	Duration	Objective
10-04-2017	1	Clinical Direction	Interview	00:45	Context Analysis
10-04-2017	1	Executive Board of the CHCF	Interview	00:45	Context Analysis
10-04-2017	1	Nursing	Interview	00:45	Context Analysis
10-04-2017	1	Patient Management Service	Interview	00:45	Context Analysis
10-04-2017	1	Occupational Therapy	Interview	00:30	Context Analysis
11-04-2017	1	Social Service	Interview	00:30	Context Analysis
11-04-2017	1	Nursing	Interview	00:30	Context Analysis
11-04-2017	1	Human Resources	Interview	00:30	Context Analysis
11-04-2017	1	Nursing	Interview	00:30	Context Analysis
11-04-2017	1	Pharmaceutical Services	Interview	00:30	Context Analysis
11-04-2017	1	Nursing	Interview	00:30	Context Analysis
11-04-2017	1	Facilities and Equipments	Interview	00:30	Context Analysis
11-04-2017	1	Psychology	Interview	00:30	Context Analysis
17-04-2017	2	Patient Management Service	Interview	00:20	Context Analysis / Risk Identification
17-04-2017	2	Patient Management Service	Visit	00:30	Context Analysis / Risk Identification
17-04-2017	2	Patient Management Service	Visit	00:20	Context Analysis / Risk Identification
17-04-2017	2	Facilities and Equipments	Visit	00:15	Context Analysis / Risk Identification
17-04-2017	2	Facilities and Equipments	Visit	02:00	Context Analysis / Risk Identification
17-04-2017	2	Library	Visit	00:15	Context Analysis / Risk Identification
17-04-2017	2	Facilities and Equipments	Visit	00:10	Context Analysis / Risk Identification
18-04-2017	2	Psychology	Interview	00:30	Context Analysis
18-04-2017	2	Occupational Therapy	Visit	00:30	Context Analysis / Risk Identification
24-04-2017	3	Patient Management	Interview	01:00	Workflow Design / Risk Identification
24-04-2017	3	Occupational Therapy	Interview	00:45	Workflow Design / Risk Identification
24-04-2017	3	Social Service	Interview	00:45	Workflow Design / Risk Identification
26-04-2017	3	Clinical Direction	Interview	00:45	Workflow Design / Risk Identification
26-04-2017	3	Nursing	Interview	01:00	Workflow Design / Risk Identification

Date	Week	Service / Area	Type	Duration	Objective
02-05-2017	4	Nursing	Interview	00:30	Workflow Design / Risk Identification
02-05-2017	4	Provisioning	Interview	00:30	Workflow Design / Risk Identification
02-05-2017	4	Nursing	Interview	00:30	Workflow Design / Risk Identification
02-05-2017	4	Patient Management	Interview	00:35	Workflow Design / Risk Identification
03-05-2017	4	Nursing	Interview	00:30	Workflow Design / Risk Identification
03-05-2017	4	Nursing	Interview	00:30	Context Analysis / Risk Identification
03-05-2017	4	Nursing	Interview	00:30	Workflow Design / Risk Identification
03-05-2017	4	Pharmaceutical Services	Interview	00:30	Workflow Design / Risk Identification
03-05-2017	4	Facilities and Equipments	Interview	00:45	Workflow Design / Risk Identification
03-05-2017	4	Nursing	Interview	00:30	Workflow Design / Risk Identification
03-05-2017	4	Nursing	Interview	00:30	Workflow Design / Risk Identification
03-05-2017	4	Secretary	Interview	00:30	Workflow Design / Risk Identification
08-05-2017	5	Daycare center	Interview	00:45	Workflow Design / Risk Identification
08-05-2017	5	Pharmaceutical Services	Focus Group	00:30	Risk Identification
08-05-2017	5	Nursing	Focus Group	00:30	Risk Identification
08-05-2017	5	Psychology	Focus Group	00:30	Risk Identification
08-05-2017	5	Occupational Therapy	Focus Group	00:30	Risk Identification
08-05-2017	5	Nursing	Focus group	00:50	Risk Identification
08-05-2017	5	Nursing	Focus group	00:50	Risk Identification
08-05-2017	5	Nursing	Focus group	00:50	Risk Identification

ANNEX D: Organizational Chart of the CHCF



ANNEX E: Proposed assets and subject classification

1 Subjects	
11	Worker
12	Client / User
13	Voluntary
14	Third party
141	Supplier
142	Partner
143	Potential Client
144	Other
2 Assets	
21	Net Financial Means
211	Cash
212	Deposits
213	Financial Instruments
22	Accounts Receivable/Payable
221	Clients
222	Suppliers
223	Personnel
224	Government and Public Entities
225	Financing
226	Others
23	Inventory
24	Investments
241	Financing Investment
242	Financing Properties
2421	Real State
2422	Others
243	Tangible Fixed Assets
2431	Real State
2432	Basic Equipment
2433	Transportation
2434	Administrative Equipment
2435	Others
244	Intangible Assets
2441	Software
2442	Industrial Property
2443	Others

ANNEX F: Questionnaire for the characterization of workflows and identification of relevant assets and subjects

Questionnaire for the characterization of workflows

1. Characterization and Scope

1.1 What's the name of the process or activity?

Process / Activity	
--------------------	--

1.2 What's the name of the Area in which the activity is developed?

Area/Service	
--------------	--

1.3 Who is responsible for the activities or services managed or provided by the area? (name of the position)

Responsible	
-------------	--

1.3 Who is the DIRECT beneficiary of the correct completion of the activity (choose one or more)

<input type="checkbox"/>	Final client / final user				
<input type="checkbox"/>	Other areas of the organization				
<input type="checkbox"/>	The universe of collaborators in the organization				
<input type="checkbox"/>	Other (please specify)				
: <input style="width: 150px;" type="text"/>					

2. Stages

2.1 Please list the main stages that are part of the described activity





A	
B	
C	
D	

3. Resources and requirements

What are the main needed resources to fully complete the activity in terms of...

3.1 Budget	
3.2 Information	
3.3 Facilities	
3.4 Materials	
3.5 Personnel	
3.6 Knowledge	
3.7 Equipment	
3.8 Technology	

ANNEX G: Template for the characterization of analyzed workflows

Area/Service							
Process:							
Code:							
	Inventory Code	STAGE 1		STAGE 2		STAGE 3	
							
Benchmark	B1		B2		B3		
INPUTS	I-11		I-21		I-31		
	I-12		I-22		I-32		
	I-13		I-23		I-33		
	I-14		I-24		I-34		
	I-15		I-25		I-35		
	I-16		I-26		I-36		
	I-17		I-27		I-37		
	I-18		I-28		I-38		
OUTPUTS	O-11		O-21		O-31		
	O-12		O-22		O-32		
	O-13		O-23		O-33		
	O-14		O-24		O-34		
	O-15		O-25		O-35		
	O-16		O-26		O-36		
	O-17		O-27		O-37		
	O-18		O-28		O-38		
SUBJECTS	S-11		S-21		S-31		
	S-12		S-22		S-32		
	S-13		S-23		S-33		
	S-14		S-24		S-34		
	S-15		S-25		S-35		
	S-16		S-26		S-36		
	S-17		S-27		S-37		
	S-18		S-28		S-38		

ANNEX H: Questionnaire for the identification of risks

Questionnaire for the identification of risks - Process

1. Sources of risk

1.1 Please prioritize from 1 to 6 the relevance that this factors might have on the normal development of the activity (1=not relevant; 6=extremely relevant)

	Budget and financial resources		Human Resources - Abilities and skills
	Socio-economical environment		Existence and knowledge of objectives and strategies of the organization
	Existence of procedures and defined processes		Existence of standards and laws regarding the activity
	The reputation of the organization		





2. Identification of possible risks

2.1 Please identify which of these situations can occur during the development of the activity

	Loss/Theft of equipment or material
	Unauthorized release of confidential information
	Loss of funding for the development of activities in the area
	Non scheduled absence of personnel in the area
	Fire/flood or similar disaster
	Loss of reputation in the institution
	Damage to equipment and materials
	Insufficient team abilities for completion of activities
	Unauthorized access to the designated area for the activity
	End of relationship with relevant external stakeholders
	Other: _____
	Other: _____

ANNEX I: Template for the risk inventory of a process

Area/Service	
Process:	
Code:	

COD	Risk	Area/Service	Process	Component on the Assets and Subjects Inventory (INPUT - OUTPUT)	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
								 R=P + I
R-01								
R-02								
R-03								
R-04								
R-05								
R-06								
R-07								
R-08								
R-09								
R-10								
R-11								
R-12								
R-13								
R-14								
R-15								
R-16								
R-17								
R-18								
R-19								
R-20								

ANNEX J: Template for the mapping of risks

Area/Service		IMPACT				
		1 Barely noticeable / No areas of scope affected	2 Minor areas of scope affected / Quick response	3 Major areas of scope affected / Unacceptable to the area	4 Stop of operations / Unacceptable to top management	5 Unacceptable to clients / Legal actions required
PROBABILITY	5 more than two occurrences in the last month	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9	Risk Level: 10
	4 two or less occurrences in the last month	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8	Risk Level: 9
	3 two or less occurrences in the past year	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7	Risk Level: 8
	2 No previous occurrence in the institution	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6	Risk Level: 7
	1 No previous occurrence nationally	Risk Level: 2	Risk Level: 3	Risk Level: 4	Risk Level: 5	Risk Level: 6

ANNEX K: Workflow and relevant subjects - assets / Development of a new OTPI

Workflow	STAGE 1		STAGE 2		STAGE 3	
	Inventory Code	Assessment of the new patient	Inventory Code	Proposal and approval of a new OTPI	Inventory Code	Implementation of the proposed OTPI
Benchmark	B1	Authorization for development of an OTPI	B2	Authorization for application of the OTPI	B3	Launched OTPI
INPUTS	I-11	Patient's Clinical Records	I-21	Patients' database	I-31	Database of available therapeutic activities
	I-12	Patient's Personal Information	I-22	Patient's Clinical Information	I-32	Facilities
	I-13	Knowledge/Expertise	I-23	Knowledge/Expertise	I-33	Equipment and Materials
	I-14	Facilities	I-24	OTPI Proposal	I-34	Defined and scheduled OTPI
OUTPUTS	O-11	Updated Clinical Records	O-21	Approved proposal for OTPI	O-31	Products
	O-12	Updated Patients' database	O-22	Updated Clinical Records	O-32	Updated database of available therapeutic activities
	O-13	Authorization for development of an OTPI	O-23	Authorization for application of the OTPI	O-33	Updated patient's database
	O-14		O-24		O-34	Acquired abilities and skills
SUBJECTS	S-11	Patient	S-21	Medical and technical team	S-31	Patient
	S-12	Medical and Technical team	S-22	Occupational Therapist	S-32	Occupational Therapist
	S-13		S-23		S-33	Nursing team
	S-14		S-24		S-34	





ANNEX L: Risk Inventory and P-I Analysis / Development of a new OTPI

COD	Risk	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
R-01	Loss/Theft of patient's clinical records	Operational/ Reputational	3	5	8
R-02	Release of patient's personal information	Operational/ Reputational	3	5	8
R-03	Insufficient team abilities to develop the OTPI	Human Resources/ Reputational	2	4	6
R-04	Unavailability of facilities to celebrate the initial meeting	Operational	2	2	4
R-05	Fail to update patient's clinical records	Operational/ Reputational	5	3	8
R-06	Fail to update patients' database	Operational/ Reputational	5	3	8
R-07	Fail to reach a consensus regarding development of new OTPI	Human Resources/ Operational	4	2	6
R-08	Fail to authorize development of a new OTPI	Operational	3	3	6
R-09	Fail to communicate authorization for development of a new OTPI	Human Resources/ Operational	4	2	6
R-10	Fail to deliver a new OTPI proposal on time	Operational	4	2	6
R-11	Fail to deliver a new OTPI proposal	Operational	3	3	6
R-12	Fail to authorize new OTPI	Operational	3	2	5
R-13	Fail to communicate authorization for new OTPI	Human Resources/ Operational	4	2	6
R-14	Loss/Theft of new authorized OTPI proposal	Operational/ Reputational	3	4	7
R-15	Fail to find available information on therapeutic activities	Operational	3	2	5
R-16	Fail to update therapeutic activities' database	Operational	4	3	7
R-17	Damage to equipment and/or materials	Operational	3	4	7
R-18	Loss/Theft of equipment and/or materials	Operational	3	4	7
R-19	Fail to schedule the recommended therapeutic activities	Operational	3	3	6
R-20	Incident (Fire, flood, ...) during the activities	Operational	2	5	7

ANNEX M: Workflow and relevant subjects - assets / Daily distribution of medicine

Workflow	STAGE 1			STAGE 2			STAGE 3		
	Inventory Code	Collection of electronic prescriptions from nurseries	Inventory Code	Assignment of medicine to nurseries	Inventory Code	Distribution of requested medicine	Inventory Code	Reception of confirmed deliveries to nurseries	
Benchmark	B1	Full list of requested medicine	B2	Internally distributed medicine	B3	Reception of confirmed deliveries to nurseries			
INPUTS	I-11	Electronic prescriptions per patient	I-21	Full inventory of available medicine	I-31	Individual carts per nursery (for transportation)			
	I-12	Full compendium of prescriptions per nursery	I-22	Summary of all requested medicine and patients	I-32	Assigned and grouped medicine per nursery			
	I-13	Software for electronic prescriptions	I-23	Sterile and clean deposits for medicine	I-33	Authorization for delivery of medicine			
	I-14	Full inventory of available medicine	I-24	Personal laboratory equipment	I-34	Summary of assigned medicine to be delivered			
	I-15		I-25	Received new supplies	I-35				
	I-16		I-26	Facilities	I-36				
OUTPUTS	O-11	Summary of all requested medicine and patients	O-21	Lists of fulfilled and unfulfilled prescriptions per nursery	O-31	Confirmation of medicine reception in nurseries			
	O-12	Authorization of head of pharmaceutical services	O-22	Assigned medicine in the available space per nursery	O-32	Fulfilled prescriptions by nursery			
	O-13	Request order of not available medicine	O-23	Updated full inventory of available medicine	O-33	Assigned and grouped medicine per patient			
	O-14	Updated inventory of medicine	O-24	Confirmation of reception of new medicine	O-34				
	O-15		O-25	Communication of fulfilled and unfulfilled requests	O-35				
SUBJECTS	S-11	Doctor	S-21	Head of pharmaceutical services	S-31	Nursery staff			
	S-12	Head of Pharmaceutical Services	S-22	Employee of pharmaceutical services	S-32	Internal distributor			
	S-13	Employee of pharmaceutical services	S-23	Internal medicine provider (SCMP)	S-33				





ANNEX N: Risk Inventory and P-I Analysis / Daily distribution of medicine

COD	Risk	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
					
R-01	Wrongfull introduction of prescription to the system	Operational	3	5	8
R-02	System failure on collection of prescriptions per nursery	Operational	3	4	7
R-03	Insufficient team abilities to define prescription	Human Resources/ Reputational	2	4	6
R-04	Unavailability of access to the prescription system	Operational	3	4	7
R-05	Fail to retrieve information on full inventory	Operational	3	3	6
R-06	Fail to develop a full summary of requested medicine	Operational	3	3	6
R-07	Fail to authorize distribution of medicine	Operational	2	3	5
R-08	Fail to assign required medicine on time	Operational	3	3	6
R-09	Fail to update inventory's database	Operational	3	3	6
R-10	Unavailability of deposits for medicine storage	Operational	3	2	5
R-11	Unavailability of personal laboratory equipment	Operational/ Reputational/ Compliance	3	5	8
R-12	Unavailability of required medicine	Operational	3	4	7
R-13	Loss/Theft of equipment and/or materials	Operational/ Reputational	2	4	6
R-14	Incident (Fire, flood, ...) during the activities	Operational	2	4	6
R-15	Uncompleted delivery of medicine	Operational	3	4	7
R-16	Work accident on handling operations	Operational	2	4	6
R-17	Damage to equipment and/or materials	Operational	2	4	6

ANNEX O: Workflow and relevant subjects - assets / Admission of a new user

Workflow	STAGE 1			STAGE 2			STAGE 3		
	Inventory Code	Inventory Code	Inventory Code	Inventory Code	Inventory Code	Inventory Code	Inventory Code	Inventory Code	Inventory Code
Benchmark	B1	B2	B3						
INPUTS	I-11	I-21	I-31	Fulfilled application for the daycare center	Inclusion of the user to the waiting list	Sign of contract for daycare center services	Communication of availability of new vacancy		
	I-12	I-22	I-32	Communication of interest from the user/client	Fulfilled application of new user/client	Communication of availability of new vacancy	Database of users/clients on waiting list		
	I-13	I-23	I-33	Template for the application of new user/client	Knowledge/Expertise	Database of users/clients on waiting list	Confirmation of interest of new user/client		
	I-14	I-24	I-34	Patient's clinical records	Facilities	Confirmation of interest of new user/client	Contract with new user/client		
	I-15	I-25	I-35	New user/client personal contact information	Database of users/clients on waiting list	Contract with new user/client	Database of daycare center users		
	I-16	I-26	I-36						
		O-11	O-21	O-31					
OUTPUTS	O-11	O-21	O-31	Full information on application process	Results on evaluation of new user/client	Signed contract with new user/client			
	O-12	O-22	O-32	Full information on services and costs	Decision on pre-admission of new user/client	Communication of new user/client starting date			
	O-13	O-23	O-33	Fulfilled application of new user/client	Updated database of users/clients on waiting list	Updated database of users/clients on waiting list			
	O-14	O-24	O-34		Communication of decision to user/client	Updated database of daycare center users			
	O-15	O-25	O-35						
SUBJECTS	S-11	S-21	S-31	New user/client	Head of daycare center	New user/client			
	S-12	S-22	S-32	Employee of daycare center	Doctor	Employee of daycare center			
	S-13	S-23	S-33		Psychologist	Head of daycare center			





ANNEX P: Risk Inventory and P-I Analysis / Admission of a new user

COD	Risk	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
					
R-01	Fail to register new user/client interest on the service	Operational/ Reputational	3	4	7
R-02	Unable to provide full information on the process	Operational/ Reputational / Strategic	3	3	6
R-03	Loss/Theft of patient's clinical records	Operational/ Reputational	2	5	7
R-04	Loss/Theft of patient's personal information	Operational/ Reputational	2	5	7
R-05	Unable to meet new user/client requirements	Strategic	4	4	8
R-06	Incapability of new user/client to meet costs of the service	Strategic	4	3	7
R-07	Loss/Theft of new user/client application	Operational/ Reputational	2	5	7
R-08	Insufficient team abilities to take on the evaluation	Human Resources/ Reputational	2	4	6
R-09	Incident (Fire, flood, ...) during the activities	Operational	2	4	6
R-10	Loss/theft of waiting list database	Operational/ Reputational	2	5	7
R-11	Unable to authorize the inclusion of a new patient in the waiting list	Operational/ Reputational	4	3	7
R-12	Fail to update the waiting list database	Operational	3	2	5
R-13	Fail to communicate the decision of pre-admission	Operational/ Reputational	2	2	4
R-14	Unavailability of new vacancies	Reputational/ Strategic	4	3	7
R-15	Desinterest of new user/client on joining the institution	Strategic	3	3	6
R-16	Fail to update the users database	Operational	3	3	6
R-17	Fail to schedule the starting date	Operational	3	3	6
R-18	Fail to sign the contract in time	Operational	4	5	9




ANNEX Q: Workflow and relevant subjects - assets / Request for patient interdiction

Workflow	STAGE 1			STAGE 2			STAGE 3		
	Inventory Code	Decision on initiating interdiction process	Collection of information that suggests need of interdiction	Inventory Code	Decision on interdiction of the patient	Development of the formal petition for interdiction	Inventory Code	Decision on interdiction of the patient	Presentation of full report on patient status
Benchmark	B1	Decision on initiating interdiction process		B2	Decision on interdiction of the patient		B3	Decision on interdiction of the patient	Delivered full report to judge office
INPUTS	I-11	Communication on patient's signs of incapability		I-21	Patient's clinical records		I-31	Decision on interdiction of the patient	
	I-12	Knowledge/Expertise		I-22	Knowledge/Expertise		I-32	Patient's clinical records	
	I-13	Facilities		I-23	Communication on initiation of the process		I-33	Collection of full documentation of the patient	
	I-14	Patient's clinical records		I-24			I-34	Report on social situation of the patient	
	I-15			I-25			I-35		
	I-16			I-26			I-36		
OUTPUTS	O-11	Evaluation of patient's condition		O-21	Signed petition for interdiction		O-31	Confirmation of reception of the report	
	O-12	Decision on initiating interdiction process		O-22	Confirmation of reception of the request		O-32	Communication on conclusion of the process	
	O-13			O-23	Decision on interdiction of the patient		O-33		
	O-14			O-24			O-34		
	O-15			O-25			O-35		
SUBJECTS	S-11	Patient		S-21	Doctor		S-31	Social worker	
	S-12	Doctor		S-22	Social worker		S-32	Judge	
	S-13	Social worker		S-23	Head of institution		S-33		
	S-14	Psychologist		S-24	Public Ministry		S-34		




ANNEX R: Risk Inventory and P-I Analysis / request for patient interdiction

COD	Risk	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
					
R-01	Fail to identify signs of incapability	Operational	3	3	6
R-02	Insufficient team abilities to conclude incapability	Operational/ Reputational	2	4	6
R-03	Loss/Theft of patient's clinical records	Operational/ Reputational	2	5	7
R-04	Fail to reach a consensus regarding incapability	Operational	3	3	6
R-05	Fail to communicate decision on initiating interdiction process	Operational	2	3	5
R-06	Fail to deliver interdiction petition on time	Operational	2	4	6
R-07	Denial of patient interdiction request	Operational/ Reputational	3	2	5
R-08	Fail to provide full report on time	Operational/ Reputational	2	4	6

ANNEX S: Workflow and relevant subjects - assets / Filing of deceased patient’s clinical records

	STAGE 1	STAGE 2	STAGE 3
			
	Inventory Code	Inventory Code	Inventory Code
Benchmark	B1	B2	B3
INPUTS	I-11	I-21	I-31
	I-12	I-22	I-32
	I-13	I-23	I-33
OUTPUTS	O-11	O-21	O-31
	O-12	O-22	O-32
	O-13	O-23	O-33
SUBJECTS	S-11	S-21	S-31
	S-12	S-22	S-32
	S-13	S-23	S-33
	S-14	S-24	S-34
	Signed death declaration	Clinical records removed from nursery	Clinical records stored in archive
	Communication on patients signs of death Knowledge/Expertise Facilities	Patient's clinical records Facilities Declaration of patient's death	Facilities Patient's clinical records Available archive space
	Evaluation of patient's condition Declaration of patient's death	Updated clinical records Communication of removal of patient's clinical records	Stored death patient's clinical records Update of the general archive database
	Patient Doctor Nurse Head of patient management	Nurse Head of patient management	Head of patient management Worker of archive

ANNEX T: Risk Inventory and P-I Analysis / Filing of deceased patient’s clinical records

COD	Risk	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
					
R-01	Fail to identify signs of death on time	Operational	3	4	7
R-02	Insufficient team abilities to conclude death	Operational	2	4	6
R-03	Fail to declare death in time	Operational	3	3	6
R-04	Loss/Theft of patient's clinical records	Operational/ Reputational	2	5	7
R-05	Fail to update patient's clinical records on time	Operational	3	4	7
R-06	Fail to communicate the decision to remove clinical records	Operational	2	3	5
R-07	Fail to update nursery's database	Operational	3	3	6
R-08	Unavailability of space in the archive for incoming documents	Operational	2	2	4
R-09	Fail to update general archive database on time	Operational	3	3	6

ANNEX U: Workflow and relevant subjects - assets / Supply of materials to nurseries

BENCHMARK	STAGE 1		STAGE 2		STAGE 3	
	Inventory Code	Description	Inventory Code	Description	Inventory Code	Description
	B1	Collection of Supply Requests from nurseries	B2	Internally distributed available materials	B3	Reception of confirmed deliveries to nurseries
INPUTS	I-11	Need of internal nursery supplies	I-21	Full inventory of available material	I-31	Transport
	I-12	Nursery's list of required material	I-22	Summary of requested supplies and requesters	I-32	Personal safety equipment
	I-13	Authorization of head of nursing staff	I-23	Facilities	I-33	Assigned and grouped materials per nursery
	I-14		I-24	Personal working equipment	I-34	Authorization for delivery of materials
	I-15		I-25	Personal safety equipment	I-35	Summary of assigned supplies to be delivered
	I-16		I-26	Received new supplies	I-36	
OUTPUTS	O-11	Summary of all requested supplies and requesters	O-21	Lists of fulfilled and unfulfilled requests per nursery	O-31	Confirmation of supplies reception in nurseries
	O-12	Authorization of warehouse manager	O-22	Assigned supplies in the available space per nursery	O-32	Fulfilled needs by nursery
	O-13	Purchasing order of not available supplies	O-23	Updated full inventory of available material	O-33	Update of internal inventory in nurseries
	O-14	Full inventory of supplies	O-24	Confirmation of reception of new material	O-34	
	O-15		O-25	Communication of fulfilled and unfulfilled requests	O-35	
SUBJECTS	S-11	Warehouse Manager	S-21	Warehouse manager	S-31	Nurse managers (per nursery)
	S-12	Head of the nursing staff	S-22	Warehouse employees	S-32	Internal distributor
	S-13	Nurse managers (per nursery)	S-23	Provider	S-33	Nursery staff

ANNEX V: Risk Inventory and P-I Analysis / Supply of materials to nurseries

COD	Risk	Risk Category	Probability (1-5)	Impact (1-5)	Risk Level
R-01	Unavailable information of internal nursery inventory	Operational	4	2	6
R-02	Fail to identify the needs of the nursery inventory	Operational	4	2	6
R-03	Fail to submit the nursery inventory request on time	Operational	3	2	5
R-04	Error on determining the exact inventory need of the nursery	Operational	4	3	7
R-05	Fail to deliver the authorization for nursery's supply request on time	Operational	3	3	6
R-06	Loss/theft of nursery's list of required material	Operational// Reputational	3	3	6
R-07	Fail to submit the summarized internal supply request on time	Operational	3	3	6
R-08	Fail to deliver the authorization for full internal supply request on time	Operational	3	3	6
R-09	Unavailability of material in the inventory	Operational	4	3	7
R-10	Fail to deliver the external purchasing order on time	Operational	3	3	6
R-11	Loss/theft of materials and supplies at the warehouse	Operational// Reputational	3	4	7
R-12	Loss/theft of the summarized internal supply request	Operational// Reputational	3	3	6
R-13	Incident (Fire, flood, ...) in the warehouse	Operational	2	4	6
R-14	Unavailability of personal working equipment	Operational// Reputational// Compliance	4	4	8
R-15	Unavailability of personal safety equipment	Operational// Reputational// Compliance	4	4	8
R-16	Uncompleted delivery of supplies by provider	Operational	4	3	7
R-17	Work accident on handling operations inside the warehouse	Operational	3	5	8