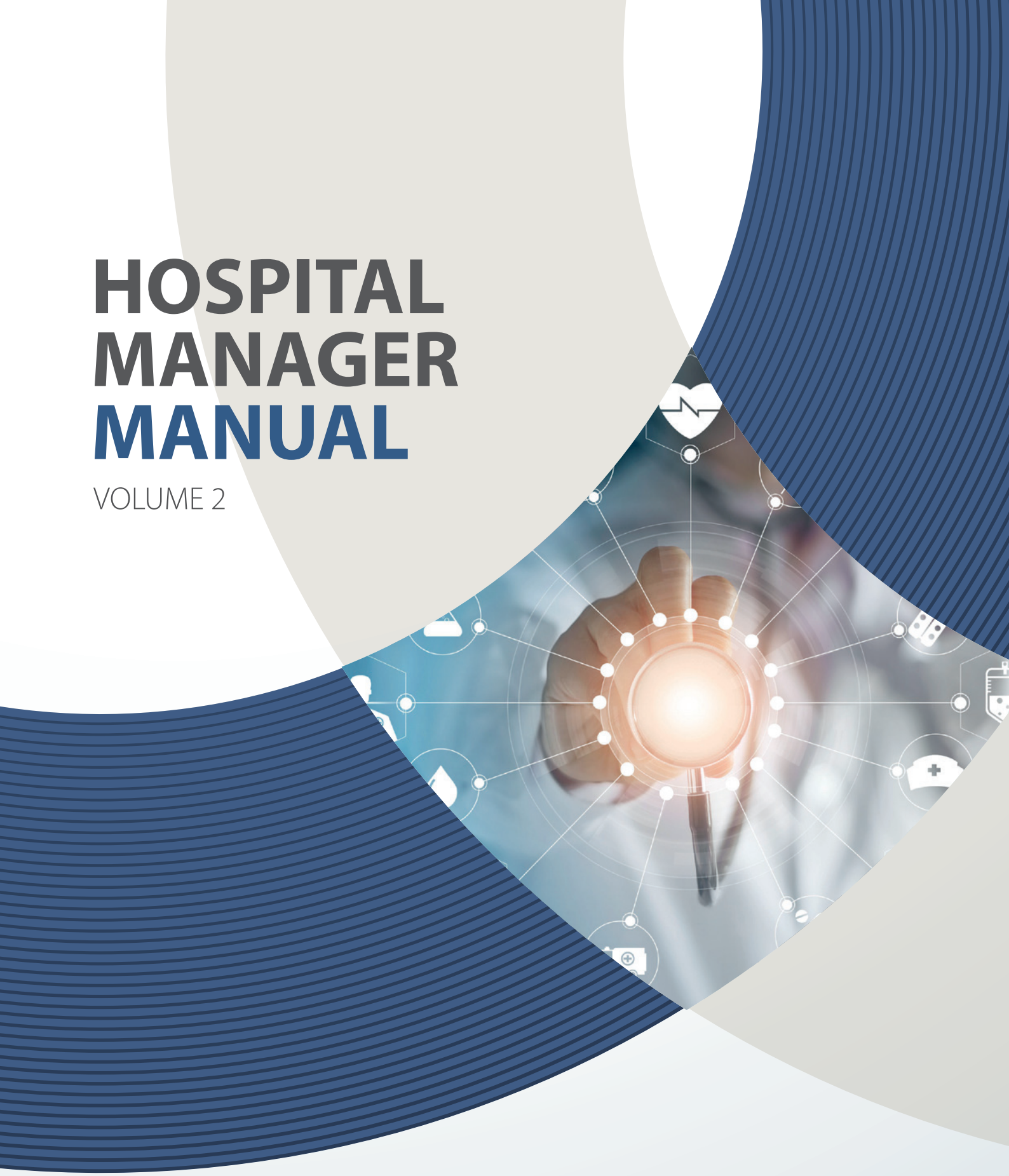
HOSPITAL MANAGER MANUAL

VOLUME 2



FBH
FEDERAÇÃO BRASILEIRA DE HOSPITAIS

HOSPITAL MANAGER MANUAL

VOLUME 2

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ASSOCIATIONS

AHCES - Association of Hospitals, Clinics and Service Providers of the Health Area of Espírito Santo

AHCSEP – Association of Hospitals and Health Homes of the State of Pará

AHEAL – Association of Hospitals of the State of Alagoas

AHECE – Association of Hospitals of the State of Ceará

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AHERJ – Association of Hospitals of the State of Rio de Janeiro

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AHRGS – Association of Hospitals and Health Establishments of Rio Grande do Sul

AHSEB – Association of Hospitals and Health Services of the State of Bahia

ANH – Northeastern Association of Hospitals

APH – Paraibana Association of Hospitals

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PRESIDENT

WORD FROM THE PRESIDENT

DEVELOPMENT AND QUALIFICATION FOR HOSPITALS IN BRAZIL

The Brazilian Hospital Federation (FBH) recognizes that the education, information and training of hospital managers and professionals working in the segment are the main paths for the development and qualification of the hospital network. It was for this reason that, in 2019, we started a new journey, extremely important for the expansion and exchange of experiences, with the presentation of the Hospital Manager's Manual for the whole country.

The first volume of the Hospital Manager Manual presented some of the main themes that are of fundamental importance for understanding different areas that encompass hospital management. And, for this second volume, we brought other fundamental issues to continue the work started with this project, highlighting the information and best practices adopted in the various themes that involve the segment, aiming to be an instrument that helps the manager and the health professionals employees to build an increasingly dynamic, qualified and modern Hospital Sector.

We appreciate the collaboration and partnership of the authors and institutions that participated in the first and second editions of the Hospital Manager Manual, contributing with their expertise to bring strategic and useful information in decision making and in the expansion of new paths and experiences that promote an excellent performance of their activities, to enable an ever better service to patients and users of our hospitals.

Representing such an important segment for people requires a multidisciplinary, technical and strategic vision for the improvement of the Brazilian Hospital Sector. We know that the FBH has built a legacy and a path of many struggles and challenges in more than five decades for the representation and defense of hospitals.

We need to move forward in order to help hospitals and their teams to fulfill their mission, which is also ours, to act towards the best care possible for people. It is necessary to innovate, adding content, new methodologies and technologies to make sure everyone has access to adequate information for the true qualification and development of the Hospital Sector in Brazil.

We hope that this work, built with great dedication by the Federation and special partners, will be used by all managers and professionals in the sector, and together, with the participation of each one of you, we will build a new time for the health of our country!

Adelvânio Francisco Morato

President

FBH
FEDERAÇÃO BRASILEIRA DE HOSPITAIS

PREFACE

THE ART OF ENSURING THE PERFECT OPERATION OF A COMPLEX GEAR

The improvement of the Brazilian health system necessarily involves the preparation of its leaders, especially the actors who are in a strategic position, capable of understanding and adapting to the constant transformations that the sector is subjected to, from there, to provide solutions that strengthen the links of the entire production chain. Hospital management, without a doubt, is one of the key areas in this process.

The hospital, throughout history, has been constituted as an institution of great social appeal, meaning recovery, health and safety. Among citizens from the most different regions of Brazil, the construction of hospital units to serve the population is one of the most demanded policies by residents. This only reinforces the magnitude and historical importance of this valuable social equipment.

Taking care of a patient and taking care of a hospital, however, are not the same thing. The administration of these establishments, for a long time, stopped being a mere family business and started to demand more training and qualification of those who are in charge. This degree of specialization also began to impose on the manager, the incorporation of new skills, especially leadership, to deal with a complex and multiprofessional network of employees, in addition to specific knowledge of new tools and technologies.

In times of unpredictability, such as the one that we see in this period that begins in the Covid-19 post-pandemic, the hospital manager needs to understand that his role must go far beyond being an administrator. He has to be seen by his team of collaborators as a role model, an operation expert of each stage of this enigmatic equipment that is the hospital, someone who has a systemic vision.

Therefore, the manager will start to conceive his work as a mission, as the art of guaranteeing the perfect functioning of a complex gear, since it is in the hospital that we find the highest density of technological modernization, concentration of specialists and technical training of the Health Sector. It is also there that knowledge and research that have historically contributed to the evolution of Medical Sciences and the Health Sector itself are developed.

It should also be noted that the operational complexity, so characteristic of a hospital's gear, is not the only burden that falls on the shoulders of managers. The difficulties in managing hospitals in Brazil need to be understood from the reflexes of the strong crisis, which has plagued the Hospital Sector for over ten years. This crisis has required great resourcefulness from its administrators. It is enough to highlight the scenario of the last decade, marked by the dynamism with which hundreds of hospital establishments were closed and opened across the country.

Between 2010 and 2019, Brazil registered the opening of 1.567 private hospitals and the closing of another 2.127. Therefore, a negative balance of 560 hospitals. If we take into account the scenario of opening and closing hospital beds, the situation is even more worrying.

During this period, hospitals that were opened added 58.813 new beds, while those that closed reduced 92.645 beds.[1] This chart should also serve as a thermometer for a critical analysis of how these managers have acted.

It is a fact that much has been done in recent years for Brazil to consolidate a solid hospital network, with major health centers and internationally recognized specialists. Just notice the number of hospitals that have received Accreditation seals and international certifications to guarantee good services increased considerably, and not only in units located between the states of the Southeast region.

For the construction of this Manual, we started from the observation of a need that the sector pointed out. This publication, therefore, should be added to as many other important tools that are available to contribute to the adoption of good management practices in this essential category to the Health Sector improvement.

In its long history of struggles and achievements, the Brazilian Hospitals Federation (FBH), as a pioneer entity, understood that the production of knowledge, the sharing of strategic content and the development of critical thinking about the functioning of the sector are vectors, without which health could never evolve to the desired degree.

The second volume of the Hospital Manager's Manual is another contribution to the improvement of the actors that are part of the Brazilian health system. It presents themes complementary to the first volume, which were selected taking into account the current moment, marked by the reflexes of an unprecedented health crisis in our recent history.

In the first volume of the Manual, discussions were focused on how excellence in the Health Sector permeates an adequate management of projects, people and processes, in addition to the systemic view, essential to the hospital manager. In this second volume, what is new is the choice of themes that dialogue directly with the post-pandemic historical moment.

In the opening chapters, "Change Management" and "Strategic Planning", concepts and guidelines for the proper management of the health unit are discussed, in addition to the challenges inherent in an area so conducive to changes.

The following themes, "Health Compliance" and "Risk Management", highlight the importance of adopting protocols and guidelines aimed at improving care, administrative and support processes, by identifying possible failures in the unit, and by defining control practices that can mitigate these occurrences.

Sequentially, the chapters "Patient Safety", "Technological Innovation in Health", "Lean in Health" and "Transition of Care to the Extra-Hospital Environment" show how the constant transformations characterize the sector, demand updating and knowledge, concerning the manager, for the adoption of new procedures and the incorporation of innovations that are occurring in the health sphere.

[1] FBH - BRAZILIAN HOSPITALS FEDERATION. **Scenario of Hospitals in Brazil 2019**. Brasília: FBH, 2019.

The Manual concludes with two important chapters. In “Cost Management” - the Achilles heel of the hospital administration - the crisis scenario and the frequent need for new investments resources are taken into account. And, finally, with the last chapter, “Hospitality Management”, we teach how unique leadership is for the excellent care of patients in terms of comfort, hygiene and food.

It is also important to add that the work was organized with the multidisciplinary contribution of authors who have notorious recognition in different fields of activity in the sector. The Manual presents, in its ten chapters, themes that shed light on the development of skills necessary for the good performance of managers in their daily activities, offering qualified and multidisciplinary knowledge on the various fronts of action in the area.

FBH appreciates the participation of each employee, who made it possible to make this construction a tool for knowledge and updating to this class of professionals so essential to the evolution of the Health Sector.

FBH Board.

INTRODUCTION

Andréa Prestes and J. Antônio Cirino

STRATEGY ALLOWING TACTICAL-OPERATIONAL FOR THE DELIGHTMENT OF ALL

In the first volume of the Hospital Manager's Manual published in 2019, we emphasize that excellence in the Health Sector permeates an adequate management of projects, people and processes, and fosters the systemic view, essential to the hospital manager.

In this new work, which stands as the second volume of this important project by the Brazilian Hospitals Federation (FBH) to update and strengthen the more than 4.000 hospitals that make up the FBH's structure, and also the other units that are impacted due to its constructs, we have advanced on other essential themes for the strategic management of health units.

In addition to the challenges imposed by the VUCA[1] world, associated with the complexity inherent in the management of health organizations, that denote the need for continuous adaptation to changing scenarios, at a time when the globe is plagued by a viral disease, a trigger for a revision of concepts and ideas, adapting the strategy is crucial for organizational stability.

The dynamics of the environment tends to be greater than that of organizations, which does not mean that these are static and strategies are not revised with certain frequency, but that changes in the environment are superior to the response capacity of organizations. Organizational inertia tends to be stable between 15 and 20 years, and it is only from disruptive events, called triggering events, that strategic change will be stimulated and new challenges will be put to the test.[2]

With the appearance of Covid-19, hospitals were faced with a "trigger event", characterized as a strategic turning point, with the need for adjustments in the organizational strategy in order to maintain the purpose of saving lives, although in a different way from what has been done so far. Given this, it is crucial to understand that the institutions that achieve good results are the ones that manage to drive the necessary change, through the alignment of the traditional strategic> tactical> operational pyramid.

Top management is responsible for developing and communicating the strategy, which must be simple and carefully disseminated, so that it is understood by all those who face the reality of the health unit, most likely to be executed when it makes sense to whoever is in the "gemba"[3]. No strategy can be effective unless it touches people's hearts and inspires their daily work. It is in this dimension that strategy is seen growing, since it will only be effective if it is aligned with the organization's culture.[4]

In the context of health units, management is normally assigned to a small number of people, who have the responsibility to boost the driving force of institutions and generate synergy between all services. For the management process conducted by this minority to be effective, it is crucial that it undertakes the inclusion of the other actors and provides an opportunity for active participation

[1] VUCA: acronym given to characterize an environment of Volatility, Uncertainty, Complexity and Ambiguity. See more at:MACKEY, S. R. H. **Translating vision into reality**: the role of strategic leader. Carlisle: US Army War College, 1992.

[2] HUNGER, J. D.; WHEELEN, T. L. **Essentials of strategic management**. 5th ed. New Jersey: Pearson Education, 2011.

[3] Gemba means the same as the workplace. See more at: KOENIGSAECKER, G. **Leading Lean transformation in companies.** Porto Alegre: Bookman, 2011. p. 60.

[4] LEE, F. **If Disney ran your hospital: 9 ½ things you would change.** Porto Alegre: Bookman, 2009.

in the decision-making context. We are talking about participatory management, which listens and considers the suggestions outlined and has ordered flows to integrate the perception that comes from the bottom to the top of the organization (bottom-up).

This idea accompanies the concept of industry 4.0[5], and is also associated with marketing 4.0[6], which deal with the potential of new technologies to transform far beyond "things", but also in the way people live, act and work. In this sense, the construction of a single purpose in organizations permeates the inclusive social aspect, with the creation of a new scenario in the horizontal perspective, which makes the transition to digital possible and the idea that doing it "together" develops a feeling of belonging among employees and helps in creating a sustainability strategy for institutions.

Building the strategy with the team that will execute it makes the personification of the heroes to managers and health professionals not necessary, or, if used, it will only be in a playful tone, to strengthen self-esteem. Heroes fight battles daily without knowing if they will survive, following the random course of events. In the hospital context, employees cannot rely on "superpowers", but on qualified and excellent management for the safety of everyone: patients, professionals and others involved. Therefore, there is a need for specific knowledge so that decision making is systematized and results-oriented, from human to human.

In the work of Kotler, Kartajaya and Setiawan,[7]we can still envision an extremely important reflection for person-centered care and humanization in health institutions, the "WOW moment", which is defined as a moment of positive surprise with the services delivered by an organization.

> Companies and brands that focus on product superiority will simply provide satisfaction to their customers. They strive to develop products and services that only meet the needs and wants of customers. However, those that go beyond provide customers with a fascinating experience, not only products and services.[8]

This enchantment needs to guide the reality of the country's health units when focusing, with the available resources, delivering the best personalized experience to patient-clients and this is only possible through a joint effort to make the strategy permeate the actions of each professional and the institution's partners.

This new volume of the Hospital Manager's Manual continues the topics discussed in the first work and calls on all hospital managers to understand their crucial role in promoting safe care for patients, with the use of possible resources to promote an adequate structure for the performance of health professionals, resulting in the enchantment of all the hospital's stakeholders, both those who were attended and those who work there. The current scenario experienced is unique and denotes a

[5] MAGALDI, S.; SALIBI NETO, J. **Management of tomorrow**: everything you need to know about management, innovation and leadership to win the 4th Industrial Revolution. São Paulo: Publishing Company Gente, 2018.

[6] KOTLER, P.; KARTAJAYA, H.; SETIAWAN, I. **Marketing 4.0**. Rio de Janeiro: Sextante, 2017.

[7] Ibidem.

[8] Ibidem, p. 201.

milestone in the timeline in the history of global health, favoring perceptions and changes until then unimaginable. May the mourning brought by the pandemic become strength, so that we can make health an increasingly effective sector!

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KOTLER, P.; KARTAJAYA, H.; SETIAWAN, I. Marketing 4.0. Rio de Janeiro: Sextante, 2017.

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CH. 1
CHANGE MANAGEMENT

Andréa Prestes and J. Antônio Cirino

Goals

- Support change management in the context of the Health Sector;
- Provide hospital managers with tools to manage changes;
- Address safe, effective and sustainable change management.

Change as the only constant

"Of course we are the same people, but notice how your daily life has changed. The routine, habits, places, including the people around you have changed ".[1] This is a reflection of change, as it demonstrates a little of the perception we have about the changes that flood us daily. There is an illusion that, even with everything changing around us, we would still be the same. This can also happen to health units, which, to the detriment of all changes occurring in the external scenario, perceive themselves as the same organizations as before.

From the Latin "mutare", the change starts from this transformational reality, in which we move from point "a" to point "b" and rarely have all the information at disposal to walk this path easily. Despite all the technological advances that help the analysis, we work with scenarios, hypotheses and trends surrounded by multiple known variables, in addition to those not yet imagined. This brings us to the thought that, even if it is not possible to predict the future in its entirety, we can be prepared and instrumentalized for a fast and safe adaptation.

Change is feared. Most people hide under the false pretext of maintaining the status quo, when life itself is fleeting. Everything that is different from the usual, the customs, the previous experiences, can be perceived as a threat. The human being tends to be afraid of what takes away his sense of dominance, of security, making the environment unstable.

Of course, we can ask what would be the spark that works as an ignition for changes in daily life. We are surrounded by micro and macro events that end up being the drivers of the movement of people and organizations. Ordinarily, we do not clearly realize the importance of each small act for the big picture, but there they are: small actions, good or bad, that orchestrate different reconfigurations in the life system.

When working in health units, we must understand that the same experiences generate different impacts among individuals. According to Zourabichvili's premise,[2] experiences are plural, that is, no one experiences an event in the same way as others. Therefore, empathy is important to understand the current situation of each component of the multidisciplinary groups existing in the contexts of care provision. It takes affection and sensitivity so that the changes are seen as an opportunity for improvement and occur in the best possible way.

[1] "*Anacrônico*" music, composed by Pitty.

[2] ZOURABICHVILI, F. **Deleuze**: a philosophy of the event. São Paulo: Publisher 34, 2016.

The Covid-19 pandemic is inevitably an example of a world event and a monster event[3], due to its proportions on a global scale and the characteristic of catastrophe that claimed the lives of so many people. The year 2020 was marked in contemporary history as one that "did not happen", precisely because of the deprogramming of what had been planned, the change in everyone's routine and deaths as the most regrettable factor in this context.

That said, some concerns that can be brought up to support the discussion in this chapter are: it is understandable that the pandemic should disturb various business sectors, but what is the reason it has been so impactful in health systems? Should outbreaks, epidemics and pandemics be presumed, from the point of view of hospitals, and, therefore, would they not be expected to act preventively, with the planning of structured actions to cushion the damages of sudden changes?

These questions are very much in line with the focus of the Hospital Manager's Manual project: training health leaders so that they can effectively conduct scenarios that stand in the context of the Health Sector. The goal is to contribute to the improvement of hospital management so that regardless of the greatness of the challenge, from planning, training and focus, it is possible to achieve great things, even in unusual, surprising and fearful situations.

More and more companies are exposed to challenging scenarios, which demand fast and sure attitudes to adapt to the context. The fact is that we will hardly return to those times when managers had the comfort and the power to decide how and when to change, with the condition to plan the implementation of a certain change.

The theme of change management has emerged and evolved considerably in recent decades. What was previously considered as a punctual and reactive approach after the occurrence of the fact came to be understood by the composition of holistic and structured processes, through a complete set of tools capable of leading the transformation, at the individual and organizational level. This evolution, in recent years, of concepts and practices has led to greater success in achieving goals on time and within budgets.[4]

The ability to change is a condition that reflects a dynamic learning process and continuous adjustment, allowing the organization to thrive in the midst of ambiguity and uncertainty, with the competence to implement the necessary actions.[5] The genuine change is the one that comes from within and is associated with the values of people and organizations. That said, the actions derived from the transformation process will be sustainable if they are aligned with the internal culture, the institution's way of being, according to the structure of its gene. The organizational culture develops from the need to adapt to the external environment and integration with the internal environment, associated with the set of shared values, and, therefore, has a crucial role in the change process.

[3] DOSSE, F. **Rebirth of the event: a challenge for the historian, between Sphinx and Phoenix**. São Paulo: Publisher Unesp, 2013.

[4] THOUGHT **Leadership Article – Enterprise Change Management.** Prosci, [s.d.]. Available at: https://www.prosci.com/resources/articles/ enterprise-change-management-overview. Access in: Aug 23rd. 2020.

[5] BUONO, A. F.; KERBER, K. **Creating a sustainable approach to change: building organizational change capacity**. S.A.M. Advanced Management Journal, v.75, n. 2, p .4-21, 2010.

The mutational capacity involves behavioral and technical aspects in relation to what is being modified. For this process to have a positive effect, leaders have a fundamental role. Hospital managers are expected to retain or develop the competence of change and be prepared to lead this process, with the ability to bring behavioral and mindset changes (mental models), necessary for effective management, from the establishment of a common direction, aligning people and resources, converging to collective commitment.

In project management there is a natural evocation of change management, since each action in this area is understood as a temporary effort that requires the transformation of contexts and, therefore, needs an instrument capable of allowing these changes to take place effectively.[6] It is also essential that the hospital manager has a clear idea of when to use the necessary resources to manage change, in order to optimize the efforts that, in fact, will create a positive impact on the organization.

Despite the particularity of each profile, such as the size and context of the health units, we mention here some examples of situations in which the planning of change is essential for it to happen in a safe and effective way:

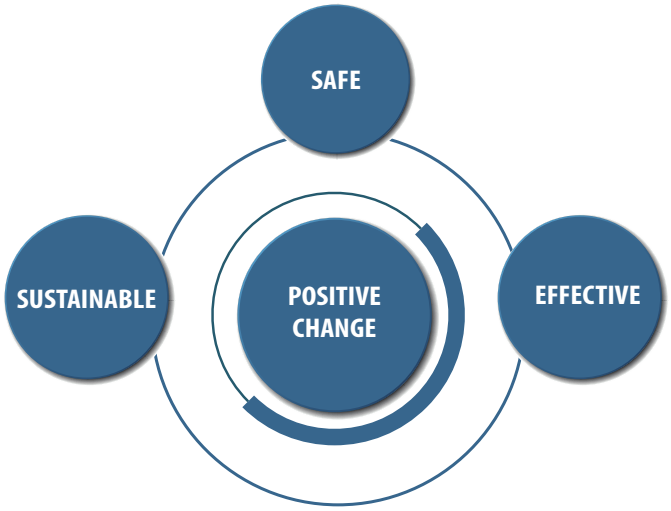
- Implementation of new services/inpatient units;
- Transition from a self-managed process to a partner company;
- Change in the leadership structure at the strategic and tactical level;
- Technological innovations;
- Change of critical points in the institution;
- New legislation;
- Strategic projects.

Change in a safe, effective and sustainable way

Change management, in addition to its multidisciplinarity, presents a powerful set of tools and techniques, and its knowledge is a key point for hospital managers. Thus, it is important that they develop a view of the necessary steps to operationalize this process. Below, we present three of them, which may help in the elaboration of organizational strategies for changes: 1) to strengthen or develop a culture focused on the safety of all aspects inherent to the context: human, financial, image, environmental, integrity, among many others; 2) ensure the effectiveness of each transformation process, with the training of professionals and risk management; and 3) create mechanisms for positive change to become sustainable, that is, incorporated into the institution.

[6] CARLI, E. **Change management applied to projects: change management tools to unite PMO and CMO.** Rio de Janeiro: Brasport, 2015.

Figure 1 - Focus in positive change



Source: Prepared by the chapter's authors.

The application of change management, when based on the pillars of security, sustainability and effectiveness, allows the promotion of what we call positive change, that is, the organization's adequacy to the necessary requirements and foreseen in the good practices in health, providing an environment conducive to ensuring the permanence of changes, much needed in the new post-pandemic reality.

While fighting against Covid-19, several actions were necessary in the face of a negative scenario that demanded an organizational posture capable of mitigating the damages resulting from the theme, strengthening hand hygiene campaigns for health professionals. It is worth noting the importance of this practice and the necessary search for greater adherence on a daily basis, due to the big change that is going on.

Furthermore, for a positive change to occur in an organization, in the face of a negative scenario, in addition to considering the three factors now presented, it is essential that transformation is managed, which can result in some benefits, possible through the Strategy© methodology:

> Clear perception of organizational changes and their benefits. Leadership alignment and commitment. Mobilization awareness and commitment of the teams to the process. Readiness for change. Mitigation of the impacts of organizational transformation. Monitoring expectations when implementing change. Creation of multipliers for the continuity of the transformation process. Resistance reduction. Decreased costs, deadlines and rework. Faster achievement of desired results.[7]

[7] BASSALO, J. **Methodology for managing organizational changes**: practical knowledge guide from Strategy Consulting. Rio de Janeiro: Brasport, 2017. p. 9

The Strategy© methodology is supported by four different perspectives: mobilization, communication, impacts and training. Each perspective allows a oriented vision to the different needs imposed by change management, deriving from some stages of the process, which are approached by Bassalo[8]:

- **Preparation**: from the emergence of change, either through positive or negative situations, the first phase is to understand the scenario and gather the data and information that make it possible to know what we are talking about;
- **Structuring**: after this initial diagnosis, it is essential to plan what will be done, who
- will do it, in what way it will be executed and in what period;
- **Execution**: with the plan ready, make it possible for the planned actions to be carried out and their results to be monitored;
- **Sustainability**: after the main change, it becomes necessary to check how much this scenario had adherence and provide, through new practices, support for the maintenance of the positive change.

The support process is closely linked to the organizational capacity to manage the learning developed with the change implemented. Although there are several discussions about corporate intelligence and intellectual capital, only a few understand what it means to manage the knowledge in institutions. The tradition of Western administration claims that the construction of the useful knowledge occurs with the processing of information obtained through formal and quantifiable data. The view of Japanese managers, for example, is not limited to processing objective data. They seek to use the (sometimes subjective) insights of employees of the company as a whole. They have a more holistic approach to this process of creating knowledge, understanding the organization as a living organism, and not as a machine.[9]

In this sense, figure 2 demonstrates that transformational capacity is based on in the organizational context, in which the culture of continuous learning is based, starting to support the development of new knowledge, which provides opportunities and favors changes in implementations.

Figure 2 - Transformational capacity of health organizations

Source: Elaborated by the chapter's authors based on the concepts of Buono and Kerber (2010)

[8] Ibidem

[9] NONAKA, I. The Knowledge-Creating Company. **Harvard Business Review**, Jul.-Aug. 2007. Available at: https://hbr.org/2007/07/theknowledge-creating-company. Access in: Aug 22nd. 2020.

The company that understands knowledge management as the integration of ideas into ideals enables a continuous process of self-renewal, which makes itself capable of making necessary changes so that they are not only imposed by pressure from the external scenario. The origin of corporate knowledge begins with the individual, who, by sharing his expertise, enables the company to transform the business value.[10]

Kotter[11] presents what he considers the eight steps of change in order to achieve success in this process:

Figure 3 - The eight steps of the change process

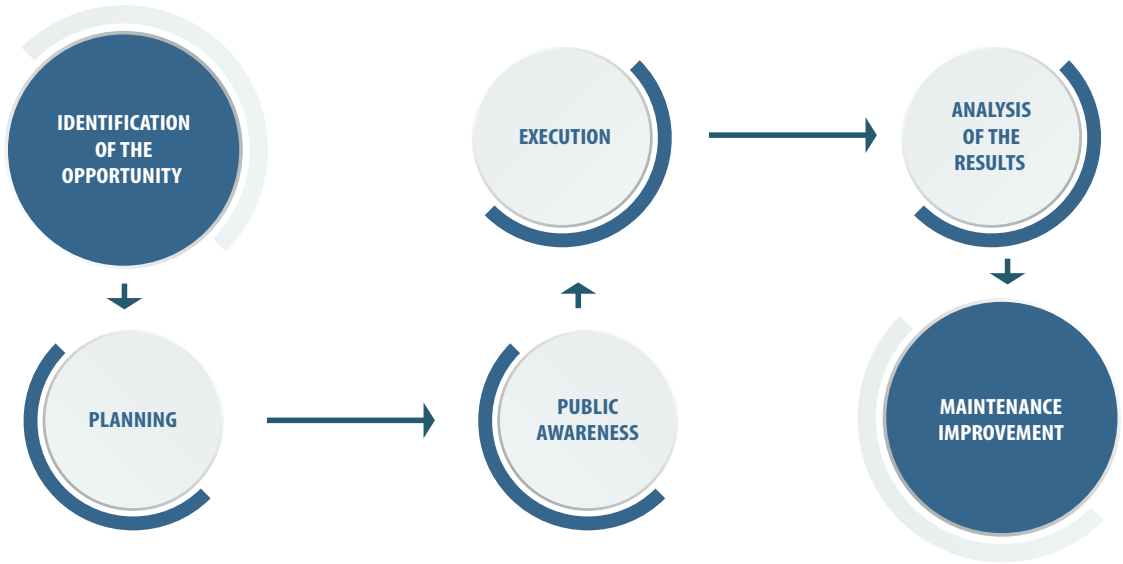
Source: Elaborated by the chapter's authors from Kotter (1996).

[10] Nonaka (2007).

[11] KOTTER, J. P. **Leading Change**. Boston: Harvard Business School Press, 1996. p. 21.

In this model, the author provides an essential view of the theme: the connection with the processes management and with the strategic designations of any organization. From that, considering the structures anchored in this chapter,[12,13] we propose a unified change management system in Health Sector organizations:

Figure 4 - Change management for healthcare organizations



Source: Prepared by the chapter's authors.

The suggested sequence lists important steps, for which we present some necessary practices for implementation:

- **Identification of the opportunity**: the moment when an imminent situation that might have already occurred is perceived and may provide significant changes in the health organization. We chose the term "opportunity" to escape a pessimistic idea of a problem/failure, since some changes can create opportunities for improvement, if well administered. Those considered catastrophic situations should be analyzed to identify opportunities aiming to eliminate or mitigate impacts;
- **Planning**: from the knowledge and structuring of the opportunity, it is necessary to establish a responsible team for conducting the change process, as well as the designation of a leader, and then the survey of financial resources and the necessary material for this activity. From there, systematize the process stages in order to promote a sequential or simultaneous ordering, necessary for the deadlines fulfillment. Probably, before this action, the scenario that emerged was alien to the domains of the health institution. However, from this elaboration, there is a greater control of variables and even if they arise in other situations, such planning would make projection by scenarios minimally possible,14 given the event that created this issue;

[12] Kotter (1996).

[13] Bassalo (2017).

[14] MARCIAL, E. C. Scenario planning in hospital organizations. In: PRESTES, A. et al. (Eds.). **Hospital Manager's Manual.** Brasília: FBH, 2019.

- **Public awareness**: in possession of reasoned planning, a communication plan to the stakeholders of this change becomes necessary, so that they are informed and heard according to their needs. For the success of what was thought, public involvement and active participation are essential. In order to support the definition of actions aimed at each audience, we recommend the mapping[15] of these and, from there, strategies adapted to each profile are created;
- **Execution**: from the creation of the change plan, followed by public awareness, the implementation of actions can begin. When establishing orderly actions, from the planning stage to awareness raising, it is possible that the implementation of the actions occurs fluidly, with more chances of positive results;
- **Analysis of the results:** for the continuity of this process, it is necessary to monitor each result and rotate improvement cycles in order to improve practices. In situations of change, even with a cohesive plan, there are variables that are not fully determined or controllable, which denotes the constant need for monitoring and reassessment;
- **Maintenance Improvement:** the implementation of the changes must be perceived as a project, that is, with a determined date for the beginning and end. In this sense, for the changes to stop being part of a project and become part of the list of processes, it is suggested the systematization of measurement cycles, which will show the correct implementation. Thus, it is expected that the changes will be long-lasting, as they integrate with the usual practices of the health institution.

In general, these steps, like all existing models, are inevitably part of a PDSA cycle[16], and they require constant evaluation and adaptation, based on the lessons learned in each situation experienced by each organization.

[15] CIRINO, J. A. F. Communication.*In*: PRESTES, A. *et al.* (Eds.). **Hospital Manager's Manual.**

[16] **Plan; Do; Study; Act.**

Instrumentalizing change

Considering the proposed steps for managing change, we present, below, a chart that demonstrates the desired products in each stage and the tools for the execution and monitoring of results, which can be useful in this process, depending on the reality and the situation experienced.

Chart 1 - Tools for managing change in healthcare organizations

Stage	Targeted Product	Possible Tools
Identification of the opportunity	Scope of change	Brainstorming SWOT analysis The reason why Ishikawa diagram Voice of the customer (VOC)
Planning	Plan of Change	Sipoc Critical to Customer (CTC) trees A3 PDSA cycle HFMEA Canvas 5W2H GUT matrix
Public awareness	Public management plan	Stakeholders map 5W2H Voice of the customer (VOC) Communication plan
Execution	Actions report	Checklist Gemba walk 5W2H Indicators
Analysis of the results	Analysis report	Control chart Histogram Critical analysis of indicators 5W2H
Maintenance Improvement	Continuity improvement plan	PDSA cycle Sipoc Standardization Flowchart

Source: Prepared by the chapter's authors.

Manage change

According to what was exposed in the course of this chapter, we realized that change is inevitable. Even if we do not cause it, external situations that are beyond our control may arise, which will lead us to transformation. The most positive scenario is one in which it is possible to control changes, even unforeseen ones, through the best risk management practices. The difference will be between acting preventively or reactively.

There are some factors that we have summarized as the key to the success of a change process: the culture focused on continuous learning and knowledge management; leadership, which needs to be aligned with the organizational strategy and endowed with skills capable of managing the transformational process; and planning, providing prior analysis of scenarios, including the management of identified risks. Considering what we have talked about, mainly in the Health Sector, the best way would be to remove the need to constantly achieve success and even leave for the non-place of change, assuming control of one's own destiny as human beings and of the organization in which they operate, precisely when visualizing that even changes can be managed, when we prepare for it.

It is a fact that most health units have always sailed in uncertain waters, used to living on demand, in contingency and, most of the time, "putting out fires". Facing a pandemic scenario, with the imminence of a considerable increase in the tax burden and many other daily challenges in health management, how is it possible for hospitals to overcome the need to "survive", in a situation that they are able to foresee scenarios, plan, implement and sustain positive improvements?

There is no right answer to this approach, not even a miracle recipe capable of resetting an organization from one moment to the next, or even changing the way the hospital manager sees and manages. It is a construction, a structured and constant walk, free from methods or concepts beliefs and attachments. Of course, they are important and necessary, as long as they are adapted to the reality of each organization. However, in addition to them, there is a need for disruptive attitudes and thoughts, guided by the composition of technical knowledge, systemic vision and action. How are good ideas worth it if they are not operationalized?

Even the scenario of Covid-19, which is different from everyday experiences, was not so uncertain a few months after its eruption in Brazil, in 2020, making it possible to predict and analyze its developments with accuracy. What did each health manager do after becoming aware of the variables present in the world that were reorganizing from the chaos caused by the spread of this virus? And how is the vision of these leaders with these new events? We cannot leave the planning for later. The strategic definition of thinking about all the uncertain elements, opportunities and threats, strengths and weaknesses of each institution is not a discussion for "when it is possible", but for the daily and fixed agenda for the economic and financial sustainability of these hospitals.

Since nothing stays the same forever, starting from a notion of constant impermanence,[17] we can assume that there are roads, paths for longer journeys,[18] living as drivers of good practices, good examples and good actions for all, even in challenging situations. The change is there, every day. What are we going to do about it?

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[18] Music "*Tocando em frente*", composed by Almir Eduardo Melke Sater and Renato Teixeira de Oliveira.

CH. 2
STRATEGIC PLANNING

Allan James Paiotti

Goals

- Understand strategy in a historical context;
- Define mission, vision and values as a starting point for strategic planning;
- Demonstrate the importance of strategic planning as a determining factor for survival and differentiation in a competitive environment.

Strategy in a historical context

From the Greek *strategia*, the concept of strategy is historically linked to the military context in the activity of leading the troops. As an example, Sun Tzu[1] (4th century BC), military strategist who wrote the military treaty "The Art of War", shaped concepts that are still relevant today:

> "If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle."[2]

Over the centuries, these concepts have influenced historical characters such as Alexander the Great, Napoleon, Mao Zedong and Winston Churchill, recognized for the strategic ability with which they faced transformational moments of conflict in the world. In the field of administration it was no different: strategic thinking was gradually incorporated into business activity throughout the 20th century, evolving according to the historical context in which it developed.

"The essence of the strategy is to choose what **not** to do!" (emphasis added).[3] Increasingly rapid changes, generational demands, economic and political turbulence and competitive tensions create an environment of volatility, uncertainty, complexity and ambiguity, characterizing the concept of the VUCA[4] world. Nowadays, especially in the hospital segment, having a clear strategy is fundamental to guide the actions that will guarantee competitive advantages and sustainable success for organizations. And for it to be clear, the strategy needs to be connected with your aspirations and your purpose. Here, we begin the journey of strategic planning.

[1] TZU, S. **The art of war.** São Paulo: Publisher *Jardim dos Livros*, 2008.

[2] Ibidem

[3] Phrase by Michael Porter (Ann Arbor, Michigan, 1947), professor at Harvard Business School, with an interest in the fields of Administration and Economics.

[4] VUCA: acronym for volatile, uncertain, complex and ambiguous. Concept used by the American Army since the 1990s to treat dynamic and highly unpredictable environments; started to be applied in the business world in the last decade.

Mission, vision and values

The starting point for strategic planning is the creation of a strong foundation, which supports the organization's purpose: why it exists, where it goes and what makes it unique. These are questions that define its essence and influence the choices that will be made throughout its existence.

With this awareness, modern management has structured an approach to define the support that will guide strategic planning: the organization's mission, vision and values.

Figure 1 - Organizational identity

Source: Elaborated by the author of the chapter.

In the hospital segment, the purpose linked to care and life offers a clear meaning in the definition of the institution's organizational identity. Hospital managers must begin strategic planning with a cycle of discussions involving the most varied stakeholders (for example, advisers, internal leaders, customers, operational staff) to establish, in a clear, simple and objective way, the elements that will guide the planning and the future of the organization. This is the starting point for strategic planning.

Strategic planning

While the strategy is defined by the synthesis of a vision opportunity and differentiation, planning presupposes the adoption of methodologies that allow the development of action plans with defined activities, resources, goals and responsibilities.

More broadly, the strategy shows us where we want to go, ideally with competitive advantages, while strategic planning creates the path to get there, unfolding the different stages of this path in integrated plans that seek to promote synergistic and coordinated movements for the achievement of each planned stage.

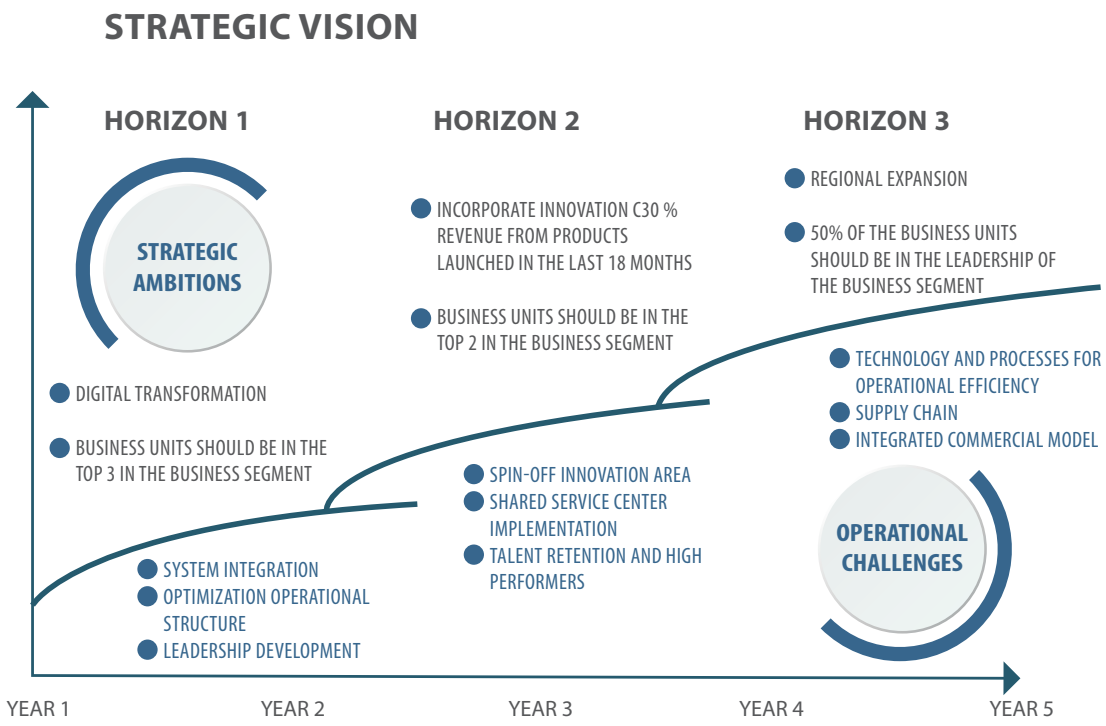
Strategic planning provides elements for the constant critical thinking of the established strategy, consolidating an understanding of the competitive landscape and the differentiating strategic competences of the organization, so that it can offer products and services with competitive advantages.

Figure 2 - Strategic planning cycle

Source: Elaborated by the author of the chapter.

Usually, strategic planning structures the evolution of the strategic vision into horizons, considering a time perspective adequate to the ambition of the vision and to the characteristics of the environment in which it is inserted. Strategic country plans, for example, can be formulated in perspectives of 20 or 30 years. In the business context, considering the hospital segment here, especially in more dynamic economies and subject to more intense fluctuations, which can have a decisive impact on the plans in progress, plans are usually made over a five-year horizon.

Figure 3 - Strategic vision: conceptual model



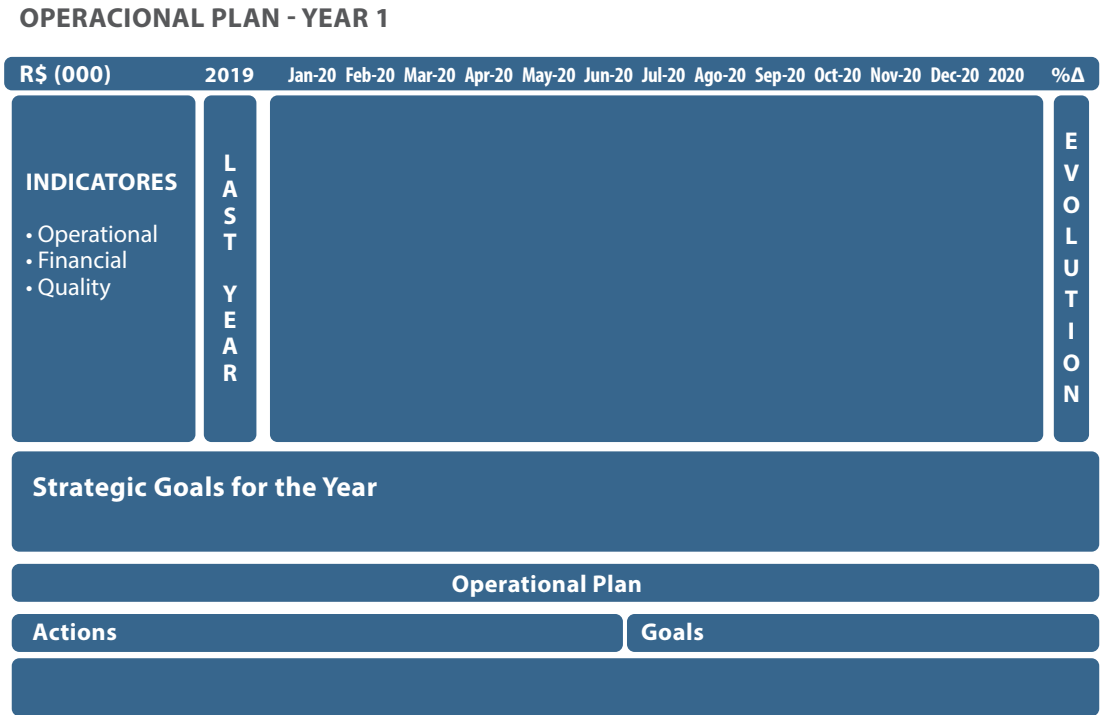
Source: Elaborated by the author of the chapter.

These processes are alive and need to be revisited from time to time for an analysis of adherence to the plans drawn up: new value proposals from the competition, transformations in the profile of the consumer market and changes in the political and economic environment are just a few variables that can impact the current planning and determine measures for correcting, adjusting or changing plans.

A good planning must ensure the consistent unfolding of strategic guidelines into an operational plan, with clear activities and goals to be implemented, seeking to give consistency to execution in the short term - typically focusing on the first year of the ongoing strategic planning.

The operational plan must include operational, financial and quality indicators, with special attention to the assistance and medical aspects, which are different and priority to the hospital segment. These will serve as a reference for monitoring the results obtained in their implementation. Based on the various indicators suggested throughout this chapter, managers must choose those that best suit the reality of their organization, considering their operating segment, management model and available control systems.

Figure 4 - Deployment of the operational plan



Source: Elaborated by the chapter's author

The hospital manager must give due importance to the indicators, as they are critical instruments for the continuous assessment of the defined strategy implementation. They need to be clearly defined, ascertained in a transparent manner and widely debated among the organization's employees, as this is the only way to ensure engagement and collective action in the sought direction.

Strategic planning is a long-term construction. Start with simpler, easier-to-understand plans. Keep evolving in complexity and challenging employees with ambitious and attainable goals. And be amazed by the team's development and how they are overcoming obstacles!

Competitive advantage

Competition is a determining factor for the success of an organization, regardless of its segment. For this reason, an important topic to be considered during the discussions of strategic planning are the elements perceived externally as competitive advantages.

The concept of competitive advantage[5] summarizes the set of attributes that increases the choice of customers for the service or product offered. For example, products derived from objective factors, such as efficiency in processes, costs and know-how, or subjective, such as brand and perception of exclusivity. Such elements create a perception of added value that, if well exploited,

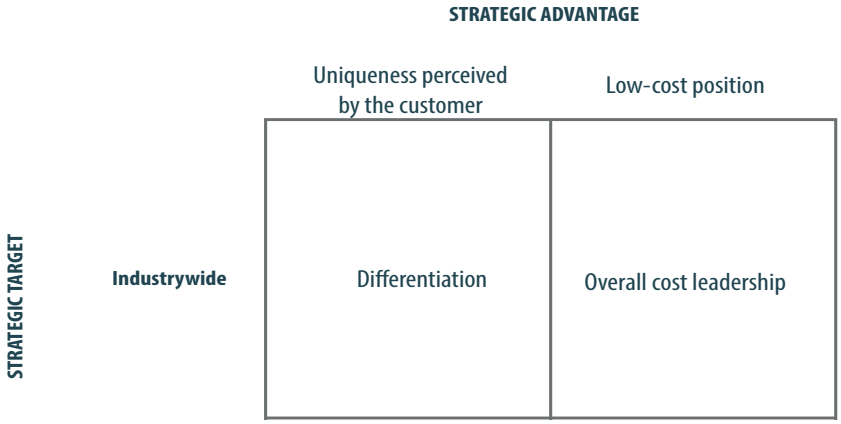
[5] PORTER, M. E. **Competitive advantage**. São Paulo: Publisher Atlas, 1989.

lead to superior performance of the organization when compared to competitors in the same industry or market.

Constantly, but especially in times of deeper change in their sectors, organizations need to question their competitive position in the market. The hospital segment, for example, has been through some major changes in the last decade, with players promoting changes in the competitive dynamics, through consolidation and verticalization movements, or proposing new business models, such as offering bundled services and risk sharing.

In the book "Competitive Advantage" (1985), Michael Porter[6] proposes two alternatives to obtain the competitive advantage: lower cost or differentiation. Associated with the competitive scope, being it of a broader or more restricted performance, essentially three generic strategies can be developed: leadership in costs, differentiation or focus/niche.

Figure 5 - Competitive advantage analysis



Source: Porter (1989).

According to Porter,[7] clearly adopting one of these strategies as the basis for strategic planning is essential for the organization to overcome competition in a sustainable and profitable way.

In order to guarantee sustainable competitive advantage, the business strategy needs to evaluate and prioritize the resources and skills over which it has direct control and guarantee a differential of value creation in the perception of its consumer market.

[6] Ibidem.

[7] Ibidem

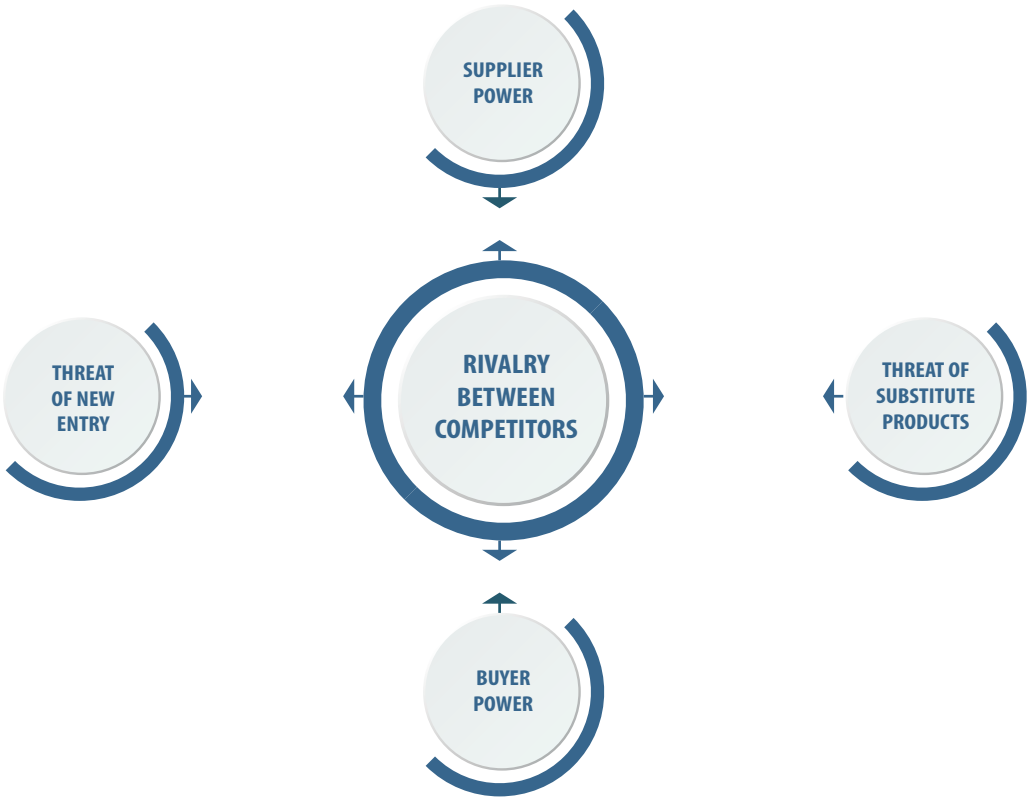
Methodologies and practical applications

In the management studies environment, several models of thinking have been proposed over the past decades as a way to structure and enhance the exercise of strategic planning. Strategy experts, such as Michael Porter, Gary Hamel, Coimbatore Krishnarao Prahalad, Henry Mintzberg, Thomas Wheelen and J. David Hunger, brought objective contributions to the theme, structuring concepts that guide the discussions nowadays.

5 Porter's Forces

Michael Porter[8] proposed a competitive analysis model that analyzes the attractiveness of an industry centered on its competitiveness, considering the threat from new competitors, the bargaining power of suppliers and buyers and the risks of substitute products/services.

Figure 6 - Porter's 5 Forces Model



Source: Adaptation of the chapter's author based on Porter.[9]

[8] Ibidem.

[9] Ibidem.

In the strategic planning process, Porter's model of forces helps to position the company competitively in an environment, considering the forces and threats to which it is subjected. The analysis of the pressure exerted by these forces will help to identify their strengths and weaknesses, as well as opportunities to acquire competitive advantages.

SWOT analysis

The SWOT analysis,[10] acronym for strengths, weaknesses, opportunities and threats, is an approach that guides the identification of internal and external factors in favor and against the organization.

Chart 1 - SWOT analysis

Internal	**Strengths** What are the internal attributes that make the organization unique? What are the differentiating elements of the organization? What promotes competitive advantage?	**Weaknesses** What are the internal weaknesses that limit or prevent the exploitation of forces and/or opportunities? What does the organization do well and should it do better?
External	**Opportunities** Where to focus to maximize success? What is available on the market, but not explored by the organization or competitors?	**Threats** What represents risks for sustainable development? Legal and/or regulatory challenges. Market instabilities, currencies, etc. Technological changes.

Source: Elaborated by the author of the chapter.

The strengths and weaknesses are related to the internal factors of the organization, determined more objectively by the situation and the competitive position of the hospital. This analysis is especially rich, so that the organization can identify and leverage what is positive, while acting to mitigate and improve its weaknesses. Opportunities and threats, on the other hand, are related to external factors and allow the organization to protect itself against risks and to orient itself towards opportunities. Due to the simplicity of applying the methodology, SWOT Analysis is widely used in the strategic planning process to carry out a diagnosis of the health unit and to explore opportunities based on the conditions of its segment and market.

Balanced Scorecard (BSC)

Presented in 1992,[11] by Harvard Business School professors Robert Kaplan and David Norton, the Balanced Scorecard (BSC) is a strategic planning tool that unfolds the strategy into well-defined tasks and goals, with performance indicators of the organization.

[10] Methodology credited to Albert Humphrey, research leader at Stanford University in the 1960s and 1970s.

[11] [10][11]KAPLAN, R. S.; NORTON, D. P. **The Balanced Scorecard**: measures that drive performance. Massachusetts: Harvard Business Publishing, 1992. p. 71-79.

The BSC addresses and unfolds the strategy in four dimensions, seeking to relate it to performance drivers and their respective financial impact.

Figure 7 - BSC dimensions

Source: Elaborated by the author of the chapter.

The methodology proposes the elaboration of structured charts that align the actions with the defined strategic priorities, mobilizing business units, teams and individuals in the organization for a synergistic performance connected to the strategy.

The implementation of the BSC follows a structured approach:

a. **Phase 1 - Establish strategic goals and guidelines:** promotes an alignment between strategic guidelines and the organization's goals, in a long-term perspective;
b. **Phase 2 - Review of processes, from the perspective of the four dimensions of the BSC (financial, customer, internal processes and learning knowledge):** allocates strategic goals and interrelates them, identifying gaps to be addressed strategically or operationally;
c. **Phase 3 - Choice and development of indicators:** definition of the indicators that will be able to measure, objectively, the evolution in the implementation of the strategic guidelines, as we suggested during the chapter;
d. **Phase 4 - Preparation of the implementation plan:** definition of the implementation plan with goals, deadlines, managers and associated indicators.

The BSC considers the organization as a whole, translating its strategic vision into a path to be followed based on goals and deadlines to be achieved, and can enrich the culture of performance management in the hospital sector.

5 Ps

Henry Mintzberg[12] has been a great critic of strategic planning approaches, arguing that, due to its complexity, this process must consider five different perspectives (or 5 Ps):[13]

a. **Plan:** essence of the formal planning process; emphasizes the importance of prior and conscious analysis in the design of the strategic plan. Regular planning cycles or military strategies characterize this perspective;

b. **Pretext:** evaluates strategic moves that can act as an excuse to deceive a competitor. Launching a product or opening a branch just to discourage the movement of competition would be an example of this strategic perspective;

c. **Pattern:** initiatives or processes that create competitive advantages can "emerge" from the day-to-day of the organization. In Mintzberg's view,[14] it is important to actively seek out these cases and work with them as patterns to be incorporated into strategic planning;

d. **Position:** brings the organization's market positioning to the strategic debate. The focus is to explore the allocation and targeting of resources to transform the positioning of the company, its products and services among its competitors, in order to develop a sustainable competitive advantage;

e. **Perspective:** an organization's culture and values influence its strategic choices. Considering these drivers is essential to avoid "self-limiting" or "targeted" strategic planning that can unconsciously guide the organization towards strategic pitfalls.

Mintzberg's proposal allows the combination of the other existing methodologies, by instigating a broader view of the challenges and opportunities to which the organization is submitted. During the planning process, the 5 Ps approach can support the search for information, answers and analysis necessary for the development of strategic planning, in addition to testing strategic proposals regarding their feasibility (and possible risks) of implementation.

Wheelen and Hunger's Strategic Management Model

This model[15] proposes an integrated and structured methodology that addresses the analysis, formulation, implementation and evaluation of the strategy's performance.

[12] Henry Mintzberg (Montreal, Canada, 1939), Canadian academic and author of several books in the Administration field

[13] 5 Ps: plan, ploy, pattern, position, perspective (perspective).

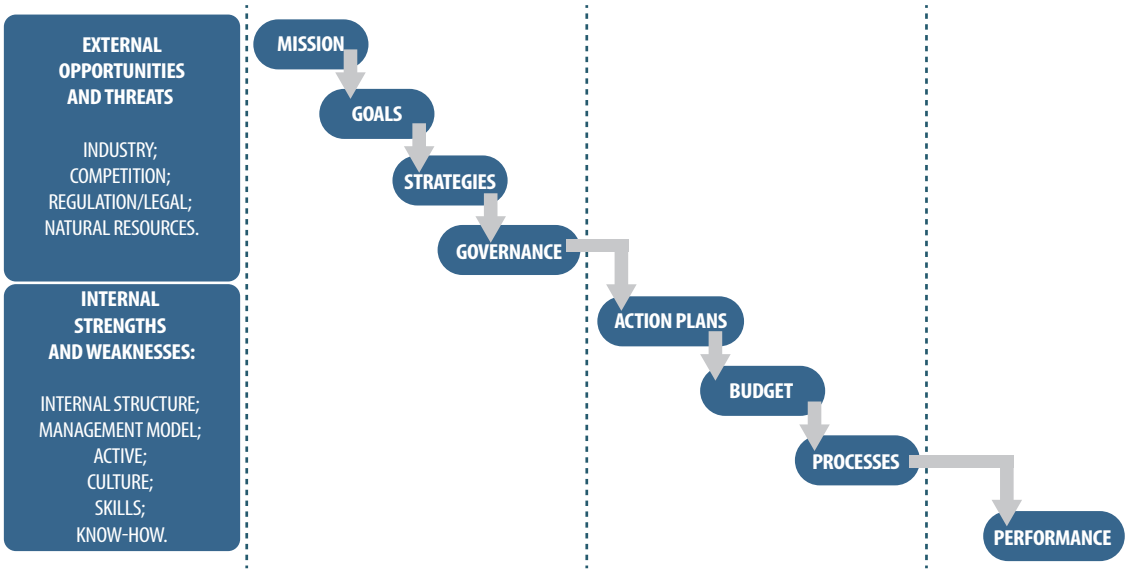
[14] See note 12.

[15] 15 WHEELEN, T. L.; HUNGER, J. D. **Concepts in Strategic Management and Business Policy**. Pearson, 2006.

The Strategic Management Model is organized in four stages, developed in a structured and successive way, according to the specificity, the type of tasks and the goals of each one:

a. **Step 1 - Analysis of the environment:** analysis of the environment in which the organization is involved, consolidating external and internal information that will define the context of the strategy. This analysis should consider natural elements, such as the possible impact of climate changes and natural, political/regulatory, economic, social and technological resources, in addition to those related to the organization's culture, values, structure and resources;
b. **Step 2 - Strategy formulation:** phase in which the organization's mission, objectives, strategies and policies are defined;
c. **Step 3 - Strategic implementation:** focuses on the implementation of defined strategies, considering the necessary plans, budgets and processes;
d. **Step 4 - Evaluation:** measurement and evaluation phase of the results obtained, offering elements for feedback of the cycle.

Figure 8 - Wheelen and Hunger model: conceptual model



Source: Elaborated by the author of the chapter based on the concepts proposed in the methodology.

It is important to consider that all the methodologies presented are used for reflection during the strategic planning process. When understanding the objective of each, the hospital manager can choose a combination between them - and others - to support their choices, always trying to stay focused on the expected result, and not on the methodology used - remember that methodologies are tools to support you in structuring the process, not strict rules to be followed without criteria or identification with the institution.

Indicators - the measure of success

Indicators are critical elements for the success of strategic planning. After all, we only know if we are reaching our goals if we can measure our evolution.

We recommend, in Chart 2, some indicators to be considered by the hospital manager, emphasizing the importance of clearly defined goals as a decisive factor for the success of the plan.

Chart 2 - Possible indicators for strategic management

Operational indicators	
Possible indicators	These indicators reflect the organization's operational performance. In the hospital context, we recommend, non-exhaustively: • Number of procedures; • Average ticket/procedure; • Number of leads;[16] • Conversation rate. Indicators may vary from hospital to hospital, depending on the management model and control systems available.
Calculation format	Objective data extracted from accounting, or internal management reports.
Financial indicators	
Possible indicators	These indicators reflect the organization's financial performance. In the hospital context, we recommend: • Gross revenue; • Net revenue; • Contribution margin; • EBITDA[17] • Operational result.
Calculation format	Dados objetivos extraídos da contabilidade ou relatórios gerenciais internos.

Continues

[16] Potential clients.

[17] EBITDA, acronym for earnings before interest, taxes, depreciation and amortization.

Continuation

Quality indicators	
Possible indicator	These indicators reflect the perception of quality in the hospital, and are directly linked to the healthcare and medical areas. We recommend non-exhaustively: • Customer's NPS;[18] • Waiting time; • Occupancy rate; • Average length of stay; • Hospital infection density; • Readmission fee. • Indicators may vary from hospital to hospital, depending on the organization's focus.
Calculation format	• Waiting time = (waiting time for patients) / (number of visits in the period); • Occupancy rate= (number of patients per day / number of beds per day); • Average length of stay= (patients per day in a given period / departures in the period) x 100; • Hospital infection density= (patients infected in a certain period / total number of patients treated in the same period) x 100; • Readmission rate= (number of readmissions in a given period / total number of patients seen in the period) x 100.
Possible participants in the critical analysis of these data	Board and managers.

Source: Elaborated by the author of the chapter.

It is recommended that the target of these indicators is planned in common agreement between management and the Board of Directors - or a similar power figure of the institution, based on the horizons defined in the strategic planning. On a monthly basis, we can carry out a critical analysis of these data with the Executive Board and the managers involved.

In the hospital context, the indicators to be considered may vary from one institution to another, depending on the strategic focus, the management model and the available management systems. In addition, it is essential that they are linked to the organization's purpose, translating its mission, vision and, especially, its values. Think about the impact this will bring to your organization!

[18] NPS: Net Promoter Score is a customer loyalty metric created by Fred Heichheld in 2003. It is calculated based on the answers to a single question: how likely are you to recommend our company/product/service to a friend? The score for this answer is most often based on a scale of 0 to 10.

Plan to win

"If you don't know where you want to go, any road can take you there."[19] In today's complex world, strategic planning is a vital process for the sustainable development of organizations.

Several methodologies are available, but the essential thing is understanding that the reflection on where we want to go and the planning to get there are fundamental, if not decisive for business success.

It is absolutely critical that strategic aspirations are broken down into tangible action plans and clearly understood by the teams that will be responsible for their implementation. Goals, responsibilities and indicators are essential elements for plans to evolve in an integrated and coordinated manner, always adhering to strategic guidelines.

The time devoted to strategic planning is an investment by the organization in creating a shared vision of its future and the paths to be followed. Strategic plans that produce complex reports lose their effectiveness as they are restricted to high management levels. The result should, ideally, be translated with adequate simplicity, to be captured by all levels of the organization, as the effective involvement of everyone in its implementation enhances the chances of success and its results.

Among hospitals, the emergence of new players seeking differentiation with varied strategies, such as consolidation to gain scale, integrated products and services or new value proposals committed to the result and risk sharing are just some examples of the transformations that are happening.

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[19] Lewis Carroll phrase (1832, Daresbury, United Kingdom-1898, Guildford, United Kingdom), British poet, mathematician and novelist.

CH. 3
COMPLIANCE IN HEALTH

Josenir Teixeira

Goals

- Condense legal information about the compliance program;
- Point out the need for health professionals to know the set of existing legal rules that seeks to prevent the practice of crimes;
- Detail the legal rules that need to be respected by health professionals to avoid committing illegal acts;
- Indicate the minimum actions necessary to implement the integrity program;
- Discuss the history of coexistence rules.

Contemporary theme

The media has always printed dishonest acts practiced by health professionals. Ethical slips; overpriced purchases; thefts of materials, equipment and medicines; embezzlement of public money and several other illicit acts could be listed here to illustrate the statement, as they are the result of people's misconduct or character.

Crimes must be punished. There are a huge number of legal rules that conceptualize and point out the ways of conduct that should be adopted - and those that should be avoided - in order not to practice the illegality defined in them.

In general, we are all aware of what is right and what is wrong, and we know the limits of what we can and cannot do, even if these boundaries are sometimes tenuous.

The correct posture in the practice of professional activities has always been demanded by citizens, and it becomes increasingly relevant and mandatory as we witness so many cases of non-compliance with legal rules.

Some of them imply deviation of public funds or private money, which makes the requirement to act in accordance with the provisions of the current legal norms accentuate and must be on the radar of those who work in the health area, who answered for 8.5% of Brazil's gross domestic product (GDP) in 2019, which ranks ninth in the ranking of countries with the most health expenditures, corresponding to US$ 1.109 per capita.[1]

[1] BRAZIL is the 8th largest health market in the world. Earth, 8 July 2019. Available at: https://www.terra.com.br/noticias/dino/o-brasil e-o-8-maior-mercado-de-saude-do-mundo,4f126aa3fc74c1876e7f0dfd81523c60qii5n85h.html.Accessed in: Jun 26th. 2020.

History of procedural rules

Humanity has created rules to define what is or is not acceptable for practices in relation to commercial, personal, family situations and all the others to which we are exposed while living in society, including the procedural guidelines for their application, that is, the definition of how, when, in what way, in what time and what would be the penalties that their offenders are subject to.

The Hammurabi Code is a set of laws written by King Hammurabi around 1772 BC, and was found in 1901 in the region of ancient Mesopotamia, present-day Iran. This Code is the oldest legal document known. The rigid predictions contained in it have as their main point the rule of the well-known expression "eye for an eye, tooth for a tooth", which constitutes the so-called "law of talion", which consists of the strict reciprocity of crime and punishment ("retaliation" , where the term "talião" comes from).

The Hammurabi Code exists physically. It consists of a round stone of 2.25 m in height and 1.50 m in circumference which is displayed at the Louvre Museum in Paris. In this stone there are 282 articles - and its 3.600 lines - which are the rules of living in the society of the time, but refer practically to the same subjects in which humanity is placed today, such as commerce, family, property, inheritance, slavery and the ways of applying the rigid punishments to transgressors.

The Law of the Twelve Tables consisted of the systematization of Roman legislation that was practiced at the time, around the year 451 BC. Its importance is such that it represents the source of public and private law, with enormous importance and influence for Brazilian law.

More than 2.000 years ago the Romans created general rules for living that must be followed by people, and the subjects that the tables dealt with are the same ones discussed by society in 2020. Namely they are: tables I and II - organization and judicial procedure; table III - rules against defaulters; table IV - homeland power; table V - succession and guardianship; table VI - property; table VII - crimes; table VIII - property rights; table IX - public law; table X - sacred right; tables XI and XII - complementary.

If we turn our eyes to the Bible as an instrument of information, we will see that Moses received directly from God, on top of Mount Sinai (located in Egypt), some rules of humanity procedure known as "The Ten Commandments", which regulates the relationship of the human being with Him and with his neighbor, a set of norms known as "Mosaic Law" or "Mosaic Code", which Christianity propagated and that acquired universal character.

The Ten Commandments are written in the Bible in the Old Testament, in the books of Exodus 20: 2-17 and Deuteronomy 5: 6-21, and are as follows (the text varies depending on the consulted version): 1. You shall have no other gods before Me; 2. You shall not make idols; 3. You shall not take the name of the LORD your God in vain; 4. Remember the Sabbath day, to keep it holy; 5. Honor your father and your mother; 6. You shall not murder; 7. You shall not commit adultery; 8. You shall not steal; 9. You shall not bear false witness against your neighbor; 10. You shall not covet.

There are several other legal norms that provided rules of coexistence between people and that are recorded in history, such as the Code of Manu (written between 1300 and 800 BC), the Code of Theodosius (written in 438 BC), the Gregorian Code (written in 291 BC), the Corpus Juris Civilis (written around the year 529), the Code of Prussia (written in 1792), the Code of Austria (written in 1797) and the Napoleonic Code (written in 1804).

History of Brazilian legal rules

The first Brazilian Constitution was imposed by D. Pedro I in 1824, followed by that of 1891 (Marshal Deodoro da Fonseca), then that of 1934 (Getúlio Vargas), then that of 1937 (Getúlio Vargas), then that of 1946 (Eurico Gaspar Dutra) and 1967 (Humberto Castelo Branco).

Our society is governed by the seventh Federal Constitution, promulgated in 1988 by Ulysses Guimarães, then president of the National Constituent Assembly, with José Sarney as the president of the Republic, at that time. This Constitution provided for the principles that guide the development of the activity of every manager, public or private, and he must act seriously, competently and rigorously and respect the immeasurable legal norms in force.

Here are the principles set out in the 1988 Federal Constitution:[2]

- **Economics** – it is the possibility of promoting results with the lowest possible cost (art. 70);
- **Efficiency** – it is the expected consequence of the correct and adequate performance of functions, duties and/or activities by people from the use of available resources in the best possible way, aiming to obtain positive results and satisfactory quality of services (art. 37);
- **Impersonality** – it is the obligation to treat everyone equally and act in a way that does not identify, discriminate, direct or privilege anyone in the exercise of the activity, the necessary impartiality must be maintained, requiring equal treatment and neutrality, abhorring undue favoritism and restrictions (art. 37);
- **Improbity** – it is the practice of acts or actions with dishonesty, bad character, lack of honor or fairness (art. 37, § 4);
- **Legality** – it is what comes from the law and that is within it (art. 5, item II, and art. 37);
- **Morality** – it is the behavior of the human being within society based on a set of values, norms and notions indicative of what is right or wrong, prohibited or allowed, which constitutes the concept of moral (art. 37);
- **Advertising** – is the public disclosure (without any confidentiality or restriction) of information in general that allows people to have full access to any data of interest to enable them to monitor the development of the activity, the conduct of public agents, and the exercise of inspection on all aspects of business conducted that involve public funds (art. 37).

Transparency was not dealt with expressly in the Federal Constitution, but it stems from the understanding and application of the principle of advertising, and can be framed in its art. 5, items XXXIII, XXXIV, LX and LXXII.

The first Brazilian Civil Code was in force from 1917 (Law No. 3.071/2016) until 2002, when the current version (Law No. 10.406/2002)[3] on January 10th, 2003, came into force.

[2] BRAZIL. **Constitution of the Federative Republic of Brazil**, 1988. Brasília: Federal Senate, 1988.

[3] BRAZIL. Law No. 10.406, of January 10th, 2002. Institutes the Civil Code. ***Diário Oficial da União***, 2002. Available at: http:// www.planalto.gov.br/ccivil_03/leis/2002/l10406.htm. Access in: Jun 26th. 2020.

The Brazilian Penal Code has been in force since 1940 (Decree-Law nº 2.848),4 and already contained in its text the prediction of the crime of passive corruption (art. 317) and active corruption (art. 333), in addition to others that we commonly see to be applied to managers, including health.

The need to be upright is far from new. In fact, the prohibition on corrupting - or letting yourself be corrupted - has been provided for in the Criminal Code of the Brazilian Empire since 1830, 190 years ago.

In 1992, Law 8.429,[5] known as LIA (Administrative Improbity Law), was published, and provides for the sanctions applicable to public agents in cases of illicit enrichment in the exercise of mandate, position, employment or function in the direct, indirect or foundational public administration.

In 1993, Law No. 8.666[6] was issued, known as the Bidding Law, which regulates art. 37, item XXI, of the Federal Constitution, and provides for a series of circumstances and acts that must be avoided by the person who acts in the management of public affairs, including funds, under the penalty of framing these acts as a crime.

In 1998, Law No. 9.613[7] was enacted, which provides for crimes of "laundering" or concealment of assets, rights and values, among other provisions, which was greatly reformulated by Law No. 12.683, 2012.

The Access to Information Law (LAI - Law No. 12.527) was enacted in 2011 and provides for the procedures to be followed by public and private entities mentioned in it "In order to guarantee access to information provided for in item XXXIII of art. 5, in item II of § 3 of art. 37 and in § 2 of art. 216 of the Federal Constitution "(art. 1).[8]

In August 2013, Law No. 12.846[9] was issued, which dealt with the administrative and civil liability of legal entities for the practice of acts against the public administration, known as the Anti-corruption Law, which was regulated by Decree No. 8.420 / 2015.

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[4] BRAZIL. Decree-Law No. 2.848, of December 7th, 1940. Penal Code. ***Diário Oficial da União***, Rio de Janeiro, 1940. Available at: http://www.planalto.gov.br/ccivil_03/decreto-lei/del2848compilado.htm. Access in: Jun 26th. 2020.

[5] BRAZIL. Law No. 8.429, of June 2nd, 1992. Provides for the sanctions applicable to public agents in cases of unlawful enrichment in the exercise of their mandate, position, employment or function in the direct, indirect or foundational public administration and provides for other measures. **Diário Oficial da União**, Brasília, 1992. Available at: http://www.planalto.gov.br/ccivil_03/leis/l8429.htm. Access in: Jun 26th. 2020.

[6] BRAZIL. Law No 8.666, of June 21st, 1993. Regulates art. 37, item XXI, of the Federal Constitution, establishes rules for public tenders and contracts and provides other measures. **Diário Oficial da União**, Brasília, 1993. Available at: http://www.planalto. gov.br/ccivil_03/leis/l8666cons.htm. Access in: Jun 26th. 2020.

[7] BRAZIL.Law No. 9.613, of March 3rd, 1998. Deals with crimes of "laundering" or concealment of assets, rights and values; preventing the use of the financial system for the illicit activities provided for in this Law; creates the Financial Activities Control Council - COAF, and provides other measures.**Diário Oficial da União**, Brasília, 1998. Available at: http://www.planalto.gov.br/ccivil_03/Leis/L9613.htm. Access in: Jun 26th.

[8] BRAZIL.Law No. 12.527, of November 18th, 2011. Regulates access to information provided for in item XXXIII of art. 5, in item II of § 3 of art. 37 and in § 2 of art. 216 of the Federal Constitution; amends Law No. 8.112, of December 11th, 1990; repeals Law No. 11.111, of May 5th, 2005, and provisions of Law No. 8.159, of January 8th, 1991; and provides other measures. **Diário Oficial da União**, Brasília, 2011. Available at: http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2011/lei/l12527.htm. Access in: Jun 26th.

[9] BRAZIL. Law No. 12.846, of August 1st, 2013. Provides for the administrative and civil liability of legal entities for the practice of acts against public administration, national or foreign, and provides other measures.**Diário Oficial da União**, Brasília, 2013. Available at: http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2013/lei/l12846.htm. Access in: Jun 26th.

This law defined the harmful acts practiced against the public administration that give rise to punishment and the imposition of fines on legal entities and their agents who breached this set of rules, in addition to providing mitigation for companies that have "internal integrity procedures", known as compliance, which aim to standardize the attitudes of the people who work within the company to make them act in an integral manner in the development of their daily actions, having as a guide the regularity of their performance in all its aspects, with full compliance to legal rules.

Law No. 12.846/2013 provides that "will be taken into account when applying sanctions" (art. 7) to those who violate: "the existence of internal mechanisms and procedures for integrity, auditing and incentive to report irregularities and the effective application of ethics and conduct codes within the scope of the legal entity" (art. 7, item VIII) .[10]

Decree No. 8.42/2015[11] provides that there is no point in the development of a general, theoretical compliance program by health entities, as:

> The integrity program must be structured, applied and updated according to the current characteristics and risks of the activities of each legal entity which, in turn, must guarantee the constant improvement and adaptation of the referred program in order to ensure its effectiveness (art. 41, sole paragraph).[12]

The National Supplementary Health Agency (ANS) issued a Normative Resolution (RN) No. 443[13] on February, 25th 2019, which provides for the adoption of minimum corporate governance practices, with an emphasis on internal controls and risk management for the solvency of health care plan operators.

Brazil's position in the World Corruption Perception Index

Brazil occupied the 76th position in the world corruption perception index released in 2015, with its close companions, at that time, Bosnia, India, Tunisia, Burkina Faso and other nations less prominent and less inspiring on the global stage.[14]

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[10] *Idem*.

[11] BRAZIL. Decree No. 8.420, of March 18th, 2015. Regulates Law 12.846, of August 1st, 2013, which provides for the administrative accountability of legal entities for the practice of acts against public administration, national or foreign, and other measures. **Diário Oficial da União**, Brasília, 2015. Available at: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/ decreto/d8420.htm. Access in: Jun 26th, 2020.

[12] Idem.

[13] BRAZIL. National Supplementary Health Agency. **Normative Resolution (RN) No. 443, of January 25th, 2019**. which provides for the adoption of minimum corporate governance practices, with an emphasis on internal controls and risk management for the solvency of health care plan operators. Brasília: ANS, 2019. Available at: http://www.ans.gov.br/component/ legislacao/?view=legislacao&task=TextoLei&format=raw&id=MzY3MQ==. Access in: Jun 26th, 2020.

[14] INTERNATIONAL TRANSPARENCY. **Corruption Perception Index 2019.** [S.l.]: Transparência Internacional, 2020. Available at: https://transparenciainternacional.org.br/ipc/?utm_source=Ads&utm_medium=Google&utm_campaign=%C3%8Dndice%20de%20Percep%C3%A7%C3%A3o%20da%20Corrup%C3%A7%C3%A3o&utm_term=Ranking%20da%20 Corrup%C3%A7%C3%A3o&gclid=Cjw

In 2018, Brazil fell nine positions and occupied the 105th place, its worst result since 2012.

In 2019, the country fell one more position and came in 106th place among the 180 countries evaluated.

The historical evolution of Brazil in the ranking of corruption perception, released by International Transparency,[15] is as follows: 2012 (69th position), 2013 (72nd), 2014 (69th), 2015 (76th), 2016 (79th), 2017 (96th), 2018 (105th) and 2019 (106th).

The corporate world, including health care, requires its administrators to take quick actions, innovative practices, efficient results and expressive surplus, even if, for this, they use their personal influence or economic power, which may conflict with the rules of integrity program that contains principles that must be unconditionally respected.

In March 2014, the Federal Supreme Court concluded the criminal action judgment (No. 470), which became known as Mensalão. We barely recovered from that impact and in the same month of March 2014 there were news about an even bigger scandal, discovered by an investigation conducted by the Federal Police, supervised by the Federal Public Ministry and chaired by the Federal Justice, known as Operação Lava Jato, that still continues to this day, in its various branches.

It is undeniable that, in recent years, Brazilian society has experienced different sensations than usual. The results of various police operations made citizens feel that things would change significantly thereafter, which will be confirmed or not by the events that we see daily.

The history here was made to demonstrate to the reader that the change in posture and the need to act as provided for in the various legal rules in force have to come from people, individually and collectively, because the rules must be fulfilled by themselves. There is no point in producing laws if citizens do not understand their role as they are the main characters in this scenario.

What is compliance?

The term compliance comes from the English verb to comply and means to act according to the legal, moral, ethical and conduct rules in the face of situations experienced by people, commercially, professionally and personally speaking.

The most practical concept of compliance is provided for in Decree No. 8.420/2015,[16] which regulates Law No. 12.846/2013 and defines an integrity program, a name given by Brazilian law to that term in English. The device is written as follows:

> Art. 41. For the purposes of this Decree, an integrity program consists, within the scope of a legal entity, of the set of internal integrity mechanisms and procedures, audit and incentive to report irregularities and in the effective

[15] *Idem.*

[16] Brazil (2015).

> application of ethics codes and conduct, policies and guidelines in order to detect deviations, fraud, irregularities and illegal acts against the national or foreign public administration.
>
> Single paragraph. The integrity program must be structured, applied and updated according to the current characteristics and risks of the activities of each legal entity which, in turn, must guarantee the constant improvement and adaptation of the referred program in order to ensure its effectiveness.[17]

It can be seen that Brazilian law focuses on the legal entity and gives it civil and administrative strict liability for the illegal acts that its members (officers or employees) may commit.

Supreme Federal Minister Luís Roberto Barroso stated that:

> In essence, compliance means the observance of legal norms and applicable regulations, as well as general ethical values, specific codes of conduct for a specific industry and the legitimate expectations of society. The term also encompasses programs to encourage such conducts.[18]

In the compliance program,

> Conduct rules are stipulated to be followed, in order to ensure the respect to legality, transparency, as well as the absence of collusion with any type of infraction practiced by employees or representatives of society. Care is taken to adopt systems to ensure the proper functioning of the corporate environment in light of not only the internal policies of each company, but also the legal rules in force.[19]

The integrity or compliance program is a document that must be prepared by companies to regulate the creation, implementation, guidance, training and supervising the adoption and application of ethical attitudes and the practice of lawful acts and in good faith that are inherent to corporate governance and transparency. It aims to mitigate the occurrence of illicit acts practiced by its employees and administrators, and such program should identify rules, standards of conduct, routines and objective criteria to prevent and manage the risks of responsibility inherent to the activities developed by the companies and arising from the non-compliance with legal obligations.

[17] *Idem.*

[18] BARROSO, L. R. Preface. In: CUEVA. R. V. B.; FRAZÃO, A. (Coords.). Compliance: perspectives and challenges of compliance programs. 3.reprint. Belo Horizonte: Forum, 2018.

[19] GUARAGNI, F. A. Principle of trust in Criminal Law as an argument in favor of corporate bodies in a position of command and compliance: relationships and possibilities. In: GUARAGNI, F. A.; BUSATO, P. C. (Coords.). Compliance e Direito Penal. São Paulo: Publisher Atlas, 2015, p. 74.

What is the applicability of health compliance?

Companies and entities that work in the health area are under the same legal rules as other legal entities. Some also have more specific rules to be complied with because they have public bonds that require them to adopt practices in this regard, in addition to many maintaining legal relationships with political entities or public bodies and receiving money transfers from municipal, state or federal government, such as through the Unified Health System (SUS), for example. Not only the companies and entities that work in health, but also the individuals who work in them, are subject to the application of all legislation if their activities are different from what is expected and fall within the illicit practices described in it, as the professionals equate to a public servant (or employee) when public funds are involved.

See below what the Superior Court of Justice ruled on four occasions:

> In the path of thought of this House, the medical professional who participates in the Unified Health System, through an agreement or contract, fits the provision of art. 327 of the Penal Code, that is, the professional is considered a civil servant by comparison.[20]

> Physicians and administrators of private hospitals participating in the Unified Health System perform Public Administration typical activities, through public law contract or agreement, under the terms of § 1 of art. 199 of the Republic Constitution, thus equating to a public official for penalties, pursuant to § 1 of art. 327 of the Penal Code.[21]

> The concept of civil servant, for criminal purposes, fits everyone who exercises public function, temporary or permanent, against payment or free of charge, even if it is delegated. Intelligence of art. 327 of the Penal Code, recommended even before the advent of Law no. 9.983/2000. Administrators of SUS-affiliated hospitals and doctors who care for patients insured by this Autarchy are inserted in this conception, for exercising delegated public function.[22]

> Hospitals and doctors affiliated with SUS that, in addition to exercising delegated public function, administer public funds, are active subjects of acts of administrative improbity.[23]

[20] BRAZIL. Superior Justice Tribunal. Appeal in Habeas Corpus No. 12.405 / SC. Rapporteur: Minister José Arnaldo da Fonseca. **Journal of Justice**, Oct 2nd. 2003.

[21] BRAZIL. Superior Justice Tribunal. Special Resource No. 331.055 / RS Rapporteur: Minster Paulo Medina. **Journal of Justice**, Aug 2th. 2003.

[22] BRAZIL. Superior Justice Tribunal. Appeal in Habeas Corpus No. 15.081/RS. Rapporteur: Minister Jorge Scartezzini. **Journal of Justice**, May 24th. 2004.

[23] BRAZIL. Superior Justice Tribunal. Special Resource No. 495.933/RS. Rapporteur: Minister Luiz Fux.**Journal of Justice**, Sep 23rd. 2002.

The rules inherent to corporate governance, the performance of boards (tax, administration, advisory, deliberative, etc.), transparency and all other administrative and managerial tools that are currently required by authorities, partners, associates or any other person who is interested in the development of the activities of legal entities working in health must be created, applied, increased and required including the integrity program.

The integrity program will have the same importance as the quality certifications obtained by companies operating in health, with the creation of bodies that will analyze its content, attest to regularities under the light of some ideal model and charge annuities for their renovation.

There are two books,[24] [25] out of many, that illustrate the intentional maintenance of managerial disorganization in order to take illicit advantage of the situation and that we indicate for the reader to see the consequences of circumstances that must be avoided.[26]

Regardless of any circumstance, the suggestion is made so that the reader knows the situations described and acts to prevent his professional activity from slipping into the facts described in them, which, hypothetically or not, does not interest us here.[27] [28]

The elaboration of a compliance program

It is understood that the need for unrestricted, full and unconditional compliance with legal rules is not optional, but mandatory, and it must be understood that the integrity program is not limited to the writing of a document with content covering the details presented here.

The elaboration of the program, written after overcoming an intense and detailed internal and specific analysis of the company and the risks involved in its activity, is only one step, among many, to achieve the goal intended with its implementation.[29]

This is also why it is called a "program", suggesting planning, organization, method, execution and continuity, which should be prolonged and constantly reviewed, adapted and adjusted to any changes that occurred during the course.

In the compliance program, all the procedural rules created by the company so that they are consolidated and in line with the central idea of that document, such as the indispensable conduct code, must be brought together - and become an integral part of it and must follow this guideline.

[24] REZENDE, W. **Station clinics:** behind the scenes of the largest public hospital in Latin America.São Paulo: Author's edition, 2007.

[25] RAMOS, P. L. G. **The prosthesis mafia:** a health threat. São Paulo: Évora, 2016.

[26] We are not making any value judgments about individuals or companies and the situations described in the books, not least just because there are those who challenge the authors.

[27] Rezende (2007).

[28] Ramos (2016).

[29] Ricardo Villas Bôas Cueva, mentioning Mendes (2018), says that "A façade program, which does not meet the minimum requirements or which only formally fulfills them, may in fact result in penalties greater than those that would be applicable in its absence" (CUEVA; FRAZÃO, 2018).

Time is invested between the beginning of the work and the final writing of the integrity program, which vary according to the size of the company, the number of employees, branches, the services provided and the series of factors that imply the necessary time for it to be designed in a way that faithfully meets the scenario of those who intend to implement it correctly.

Decree No. 8.420/2015 conceptualized the integrity program in its art. 41 and predicted the impossibility of its inertia, a point highlighted here because it is essential for the effectiveness of the intended one, because, if not, time, energy and money will be lost:

> Art. 41. [...]
>
> Single paragraph. The integrity program must be structured, applied and updated according to the current characteristics and risks of the activities of each legal entity, which in turn must ensure constant improvement and adaptation of the referred program, aiming to ensure its effectiveness.[30]

The integrity program - or compliance program - is a dynamic document that must be prepared for each individual company and created based on the result of the analysis of its own risks, arising and inherent to the development of its activity. In other words, the objective of the integrity program is to avoid committing infractions or violations of legal rules in general, through the awareness of employees and administrators, their training, evaluation and monitoring, which implies the establishment of the culture that it wants to practice and develop within the company.

Wagner Giovanini points out that:

> By choosing to follow the path of integrity, a company undertakes, before its employees and society, to only engage in honest business. This inviolable principle does not succumb to any kind of temptation, even in very financially advantageous conditions.[31]

The risks to which the company, its employees and administrators are subject are several, according to Ricardo Villas Bôas Cueva:

> The liability risks for the company and its administrators are multiple and involve not only the illicit acts related to anti-corruption rules, but also extending to antitrust law, trademark and patent law, unfair competition law, labor law, tax law, protection of personal data, environmental law and criminal law, among others.
>
> These risks naturally increase according to the sectorial and territorial scope of the company's activities.[32]

[30] Brazil (2015).

[31] GIOVANINI, W. Compliance and anti-corruption programs: importance and essential elements.In*:* DE PAULA, M. A. B.; DE CASTRO, R. P. A. (Coords.). **Compliance, risk management and fighting corruption:** integrity for development. 2. ed. Belo Horizonte: Forum, 2020.

[32] CUEVA, R. V. B. Functions and purposes of compliance programs. In: DE PAULA, M. A. B.; DE CASTRO, R. P. A. (Coords.). C**ompliance, risk management and fighting corruption**: integrity for development.2. ed. Belo Horizonte: Forum, 2020.

The rules internalized by the company can and should be extended to its partners, suppliers and service providers in general, aiming, also, to improve the relationships and to make the contact of it only with those who have the same attunement to act with regularity and act in accordance with the legal rules applicable to society in general and that specific segment of activity.

This objective must be materialized in the integrity program, which will identify the objective criteria and the practical conduct that must be adopted, internalized and fulfilled by everyone - employees and management - in the development of their activities, in all sectors.

The more the integrity program faithfully portrays the reality and specific challenges of the company in which it is implemented, the more efficient will be its observance by all, with the consequent achievement of the objective, which is to make everyone obey the legal rules applicable to the business and avoid any misconduct that may imply financial, material or reputational (moral) losses.

The elaboration of the compliance program in a detailed and specific way for the company, based on the assessment of risks inherent to its business, will allow the standardization of attitudes and behaviors, as well as achieving a higher quality in the services delivered to its customers.

Compliance program elements

Doctors have created several elements as basic premises for an integrity program to be effective. The indication and definition of which would be most appropriate varies according to their writings.

It was decided to mention what is provided for in Decree nº 8.420/2015 to indicate parameters for assessing applicability and evaluating the criteria contained in an integrity program, which was written as follows:

> Art. 42. For the purposes of the provisions of § 4 of art. 5, the integrity program will be evaluated, regarding its existence and application, according to the following parameters:
>
> I. commitment by the responsible management of the legal entity, including the councils, evidenced by the visible and unequivocal support for the program;
>
> II. standards of conduct, code of ethics, integrity policies and procedures, applicable to all employees and administrators, regardless of their position or function;
>
> III. standards of conduct, code of ethics and integrity policies extended, when necessary, to third parties, such as suppliers, service providers, intermediary agents and associates;
>
> IV. periodic training on the integrity program;

V. periodic risk analysis to make necessary adaptations to the integrity program;

VI. accounting records that fully and accurately reflect corporate transactions;

VII. internal controls that ensure the prompt elaboration and reliability of corporate financial reports and statements;

VIII. specific procedures to prevent fraud and illicit activities in the context of bidding processes, in the execution of administrative contracts or in any interaction with the public sector, even if intermediated by third parties, such as payment of taxes, subjection to inspections, or obtaining of authorizations, licenses, permissions and certificates;

IX. independence, structure and authority of the internal body responsible for the application of the integrity program and inspection of its compliance;

X. complaints channels, open and widely disseminated to employees and third parties, and mechanisms designed to protect wholesome complaints;

XI. disciplinary measures in case of violation of the integrity program;

XII. procedures that ensure the prompt interruption of detected irregularities or infractions and the timely remediation of the damages generated;

XIII. appropriate procedures for contracting and, as the case may be, supervision of third parties, such as suppliers, service providers, intermediary agents and associates;

XV. continuous monitoring of the integrity program in order to improve it in preventing, detecting and combating the occurrence of harmful acts provided for in art. 5 of Law No. 12.846, of 2013; and

XVI.Transparency of the legal entity regarding donations to candidates and political parties.

§ 1 In assessing the parameters referred to in this article, the size and specifics of the legal entity will be considered, such as:

I. the number of employees and collaborators;

II. the complexity of the internal hierarchy and the number of departments, boards or sectors;

III. the use of intermediary agents as consultants or commercial representatives;

IV. the market sector in which it operates;

> V. the countries in which it operates, directly or indirectly;
>
> VI. the degree of interaction with the public sector and the importance of government authorizations, licenses and permissions in its operations;
>
> VII. the number and location of legal entities that make up the economic group; and
>
> VIII. the fact of being qualified as a micro or small business.
>
> § 2 The effectiveness of the integrity program in relation to the harmful act subject to investigation will be considered for the purposes of the assessment referred to in the caput.[33]

The integrity program is dynamic, has a continuous life and must be present in the daily life of the company, its managers and employees, and serve as a guide and an indicator of behavior for the development of its business, under penalty of being useless to the intended purpose and useless as mitigating the eventual application of punishments to those involved.

How should the health manager act to comply with the procedure rules?

The elaboration of the compliance program, or internal integrity procedure, has been legally required since at least 2013, and is inexorable.

The compliance program must be specifically designed for the company based on its history, reality, internal culture, size, number of employees, area of activity, type of activity developed, management bodies, regulatory environment in which it is inserted, relationship with stakeholders (customers, employees, suppliers, service providers, competitors, etc.), control tools existing or to be built, involvement with environmental, social and ethical issues and the geographic location of its operation, among several other factors to be observed.

A lot of time must be devoted to the detailed and accurate survey of this information, as it will subsidize the detailed planning of the integrity program, which will precisely indicate the risks of the activity carried out, the stamping and culture of the company and its relentless pursuit of acting in accordance with the legal and moral rules required of the people who compose society, including corporate.

The integrity program - or compliance - made without being based on the company's naked reality is doomed to failure because it is inapplicable, which may attract its subjection to heavy administrative fines of up to 20% of its gross annual revenue, with a limit of R$ 60 million, and the personal and individual responsibility of managers regardless of whether they acted out of guilt or intentionally, as provided for in the Anti-Corruption Law.

[33] Brazil (2015).

It is necessary to be concerned and act to adopt measures aimed at the unconditional compliance with the legal rules in business, with the elaboration of the compliance program being a good way to achieve this goal.

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CH. 4
RISK MANAGEMENT

J. Antônio Cirino

Goals

- Understand risk management as an essential methodology for the management of health services, for the prevention and control of damage;
- To substantiate the bases of risk management in Brazil and in the world, providing an expanded view of this topic;
- Present tools, techniques and metrics for the practice of health risk management.

From contingency to prevention

We are not always aware, but most of our daily practices are ways to prevent risks. Even on a personal level, measures such as brushing your teeth after each meal, eating every 3 hours, exercising and sleeping 8 hours are ways to prevent flaws in your body, such as cavities, malnutrition, physical inactivity and stress/tiredness, for example.

The human body acts constantly to manage the possible errors that may occur, emitting signals that can be perceived by us to search for the root cause, acting directly on these risk factors, as well as when the eyelids are shaking, in reference to a possible increase in blood pressure. In this sense, health units, as a living organizational body, must also act through their mechanisms to prevent failures, based on controls established and managed by the humans who work in them.

According to the National Accreditation Organization (ONA),[1] risk is the "probability of an event that affects the integrity of the patient, the health team, the community, reputation, structure, financial stability or organizational functioning [...]". Thus, we realize that there is a different scope when discussing health risks, since, in addition to the possible traditional administrative / environmental / occupational / financial / communicational failures, there are still a variety of events specifically inherent to patient care. According to Avalos,[2] "the transcendence of risk, in the context of the study of internal control, is based on its probable manifestation and the impact it can cause [...]".

For the proper risks management in a health institution, it is crucial to establish "a systematic process of identification, evaluation and take measures to prevent or manage clinical, administrative, occupational, financial, reputation, structure and legal risks",[3] understood as risk management.

The big issue is that professionals, in the variety of sizes and profiles of health service structures, have a constant need to "put out fires" in the workplace, that is a constant use of effort to correct errors, attributing a false sense of urgency. The ideal for an adequate allocation of human, financial and input resources is to work preventively, reducing contingent triggers and the emotional, physical and financial impact of feeling like you are "killing a lion" everyday.

[1] ONA – NATIONAL ACCREDITATION ORGANIZATION. **Manual of organizations providing health services.** São Paulo: ONA, 2018. p. 143.

[2] AVALOS, J. M. A. **Audit and risk management.** São Paulo: Saraiva, 2009. p. 65.

[3] ONA (2018, p. 140).

These phrases are present in the routine of a health unit, in which employees get used to working in a continuous emergency mode, when, not always, this is the service profile of the unit, even in this scenario, since the "emergencies" themselves are subject to planning for quality health care.

Risk management is a methodology for preventing and controlling chaos. Considering that there is a natural tendency to disorder, starting from a new condition, the actions to mitigate the risks are daily and continuously depend on a constant monitoring of the top management of the health units to ensure its effectiveness. Risk management should be the hospital manager's priority agenda for the proper administration of the hospital as a company, focusing on patient care and employee safety as the main actors in this process of caring and being cared for.

For this reason, the most important conclusion that the Health Sector can undertake today is the transformation of awareness focused on contingency and emergency practices for a view to prevent these risks, adequate controls, short, medium and long term planning, providing greater security for the patient, the collaborator, as well as the effectiveness of clinical and organizational results.

Although central to the Health Sector, risk management was not born as a management in hospital units. It has great strength in other areas, such as aviation, for the prevention of risks inherent to aerial procedures,[4] but it was present long before that, as mentioned by Bernstein,[5] from Ancient Greece; with the development of mathematics and the study of probabilities it was possible to discuss the risk. Sequentially, games of chance, the financial market and the development of internal control practices provided opportunities for a vision aimed at mitigating damage of all kinds.

Castiel, Guilam and Ferreira[6] also recall that, "during World War II, in the field of engineering, the theme received a strong impulse due to the need to estimate damages resulting from the handling of hazardous materials (radioactive, explosives, fuels)". The authors contribute to visualize that the discussion of risks is present in the economic sciences; in epidemiology, to understand communicable diseases; in engineering, with the intervention of structures in the environment, for example; and in the social sciences, by looking at risk from a more qualitative point of view.

Historically, we still have a conceptual framework for internal control, such as the Sarbanes Oxley Act, in the United States, in 2002, and the publication of the report of the Committee of Sponsoring Organizations (Coso) of Treadway Commission - National Commission on Fraudulent Financial Reporting:

> The Coso report looks positive because it promotes relative standardization in the application and universal understanding of the internal control system of companies, a fundamental element in the governance of the entity, and in ensuring the achievement of objectives. We propose the implementation of the Coso, supplemented by the application of the proposed risk calculation formula by the Coso report from Canadian auditors.[7]

[4] We recommend reading the "Aviation Risk Management Guide", from the National Civil Aviation Agency(*Anac*). Available at: https://www.anac.gov.br/noticias/2019/anac-disponibiliza-guia-de-gerenciamento-de-riscos-para-a-aviacao. Access in: February 16th, 2020.

[5] BERNSTEIN, P. L. **Challenge to the Gods:** the fascinating history of risk. Rio de Janeiro: Campus, 1997.

[6] CASTIEL, L. D.; GUILAM, M. C. R.; FERREIRA, M. S. **Taking the risk**: uan introduction to health risks.Rio de Janeiro: Publisher Fiocruz, 2010. p. 15.

[7] Avalos (2009, p. 51).

According to Avalos,[8] this report highlights the pressing need for top management [,] like the rest of the organization [,] to fully understand the importance of internal control [...] ". This has a direct impact on the risks management in the institutions, which are now discussed in terms of health, considering the direct insertion of the strategic level when issuing guidelines for the prevention of failures.

In health,[9] more specifically, it went from Hippocrates with the "*primum non nocere*" (first, do no harm), through Ignaz Semmelweis and Florence Nightingale, in the 19th century, with the beginning of the discussion about hand hygiene and precautionary practices, and Avedis Donabedian, in the 20th century, when working with quality assistance and thinking about the triple components: structure, process and outcomes and the creation of institutes and legislation that, from then on, enabled to reach the moment of thinking for prevention. In Brazil, we can go back to the creation of sentinel hospitals, since 2001, with practices that led to the promulgation of the National Program for Patient Safety in 2013. This theme will be further explored in the "Patient Safety" chapter of this manual.

Before proceeding, it is also crucial to understand some concepts that, regardless of the methodology we use, will be present in our discussions:

- Risk/failure mode: it is what can go wrong;
- Effect/impact/consequence: what happens if it goes wrong;
- Risk factors/causes: signs and evidence that the error may happen;
- Control practices: what to do, continuously, to prevent the error from happening;
- Contingency: what to do when the error occurs to reduce/mitigate/control the damage.

These words will be used in the next topics on a recurring basis; therefore, it is crucial to distinguish them for the proper assimilation of the discussion.

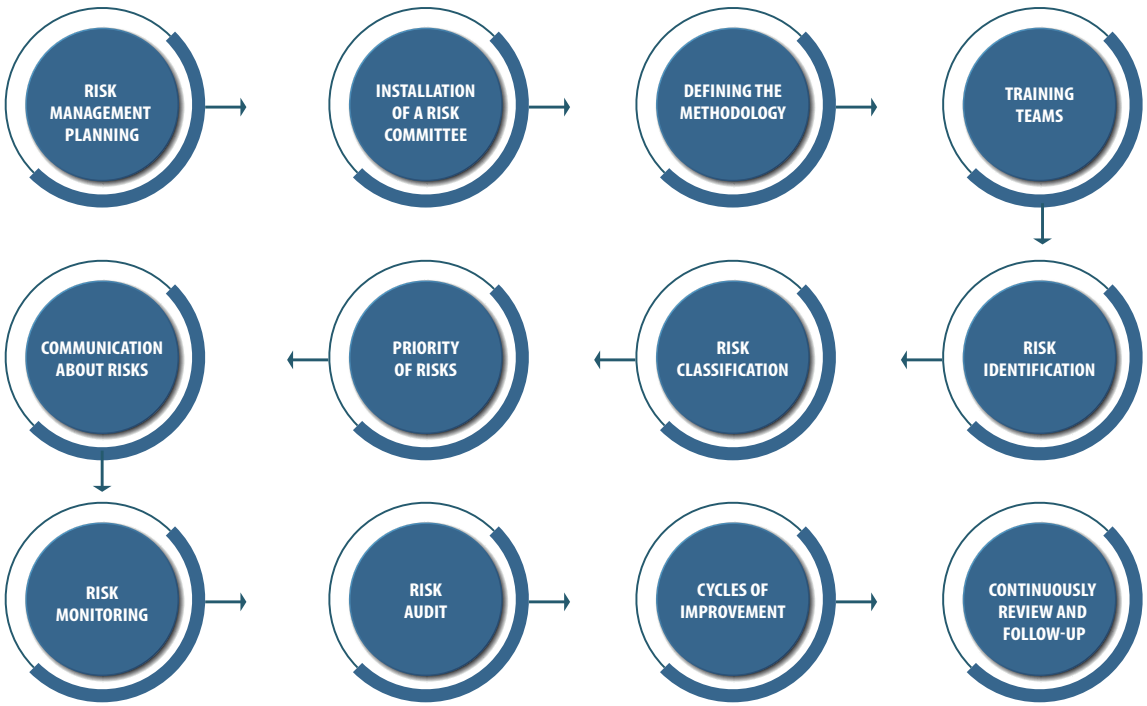
[8] Ibidem, p. 54.

[9] NASCIMENTO, J. C.; DRAGANOV, P. B. History of quality of patient safety. **Hist Enferm Rev Eletronica** [internet], v.6, n. 2, p. 299-309, 2015

Deploying and implementing risk management

Risk management goes through some main stages, from which we will present the most common practices used in health units at each of these moments, without the intention of exhausting the possibilities.

Figure 1 - Risk management steps



Source: Elaborated by the author of the chapter.

For the proper implementation of risk management, we suggest some phases, which go through reasoned planning, the monitoring of senior management, the establishment of a multidisciplinary committee to conduct the work, the choice of one or more methodologies that should be adapted to reality and to the hospital context, for the training of teams at a strategic/tactical/operational level, for the identification and classification of risks.

From there, we started the implementation phase, with the communication of the identified risks and their forms of control; monitoring their occurrences and contingencies; the periodic undertaking of risk audits and the creation of action plans to improve risk management; and constant review and monitoring by the various sectors of the risk committee and senior management.

Risk management planning

What are the objectives that are sought to be achieved with the implementation of risk management? At this stage, it is crucial to understand what the organization intends to achieve with the establishment of this vision for risk prevention and how it can get there.

In addition to the objectives, another important factor is the identification of the people who will be involved and what responsibilities are attributed to them on a daily basis. Next, we will talk about the committee structure that can be developed, but there is also a specific hierarchical assignment to be established: which sector/management/board of directors/superintendency will hold the risk management activity? All areas of the hospital have co-responsibility in this management, but there is a need for a structure defined and declared as having the autonomy to manage the theme in the health institution, with deliberation for the committee or with the support of the committee, depending on how you intend to standardize these activities.

In this first moment, we must also understand the functioning of all the next stages of the implantation and implementation phases: what minimum structure do we want for the committee and how often are the meetings scheduled? How are we going to enable teams to start risk management and how are we going to update them continuously? What directions do we want to go through with risk communication? How often will we carry out the risk audit and how to perform it? How often will we review the identified risks and what will be the form of monitoring? How will senior management monitor the results of the events and the improvements made? These are some of the essential questions of definition in this stage so that the next ones have a planned basis for its execution.

Establishment of a risk committee

The structure of the risk committee is recommended in order to obtain multidisciplinary management in risk prevention. Despite its importance, it is optional and should be evaluated in the format of the structuring of activities that the health organization performs.

If you choose to install it, it should be understood as a grouping of themes currently discussed such as the Internal Accident Prevention Commission, the Multidisciplinary Nutritional Therapy Team, the Transfusion Committee, the Health Care-Related Infection Control Commission, the Waste Management Commission, the Patient Safety Center, the Death Verification Commission, the Medical Record Review Commission, the Compliance Center, among other conglomerates that are dedicated to prevention, be it environmental risks or organizational, clinical and administrative risks, for example.

The idea is to demonstrate that the risk theme already exists and is historically handled in organizations, but with diffuse strands and forms of action that deserve an order and standardization. In this sense, while maintaining these traditional structures, the risk committee can count on people representing these topics to define the methodology and actions to be undertaken in the health service. At least one professional from each area/theme, with different backgrounds, is essential, allowing a transdisciplinary look to achieve maximized results.

The minimum periodicity recommended for meetings is monthly, due to the assignment of activities, and, at most, quarterly, depending on how the assignments are shared with a service directly responsible for this management, for example. Each organization must plan its meetings according to the need to discuss and monitor the obtained results.

The committee's main duties are to: define the risk methodology; order and standardize the training of health unit teams; define communication formats and the periodicity for reinforcements; receive requests for revision/update; plan risk audits and organize its execution; validate and contribute to improve action plans; as well as, depending on the institution, also decide on the contingencies and the monitoring of the occurrence of certain risks in order to plan new control practices to be disseminated in the institution.

Definition of the methodology

There are several methodologies and tools for risk management. In health, some are more usual, which we present below in order to offer an overview to the hospital manager so that they can support the decision. It is important to emphasize that there is no better or worse, but different possibilities from the scenarios that might become possible.

Chart 1- Risk management methodologies

Methodology	Description
Analysis of root cause	Retrospective risk analysis methodology in order to, after the occurrence of events and failures, seek improvements to avoid recurrences. Its use is recommended as a complementary tool focused on adverse events, but not directly as an expanded risk management methodology.
London Protocol	Also applied retrospectively, it is an analysis that makes it possible to develop a just culture and a broader view of the causes that led to error, verifying the contributing factors in the organizational spheres that led to the failure of a human being. The improvements implemented are not only aimed at training a professional, but also at improving the context of carrying out the failed activity.
Failure mode and effect analysis	Failure Mode and Effect Analysis (FMEA) works prospectively, that is, acts in the identification of risks for their prevention through control practices already defined. Builds a framework of possible risks and classifies them based on its severity/ probability of occurrence and its form of detection, then using three quantities through the NPR - number of risk prioritization for the definition of the conduits for the failure at low, medium or high level.
Impact and Probability Matrix	It acts prospectively; its main difference is that it uses two quantities: impact and probability, providing the opportunity to create a matrix that positions the risk between low, medium or high so that the health service sectors can visualize the movement of this possibility of failure over the period, based on compliance with control practices.
Preliminary risk analysis	Prior analysis that promotes the identification of risks linked to the institution's mapped processes,with a focus on building barriers effectively connected in the process undertaken, so that each product/service generated is contemplated. For each possible danger/threat, list the inherent vulnerabilities and damages, checking what are the essential preventive measures to avoid the error.

Source: Elaborated by the chapter's author based on Anvisa[10] and Avalos.[11]

[10] BRAZIL. National Health Surveillance Agency. **Risk Management and Investigation of Adverse Events Related to Health Care**. Brasília: Anvisa, 2017.

[11] Avalos (2009).

Considering that each professional may have experienced a different methodology in previous activities, it is essential that hospital managers allow the alignment of these concepts and the use of ideas and good actions that can help the implementation.

The ideal is not to discard any strategy, since they can directly contribute to the structuring of the proper method to think about the risks of the health unit. It must be clear that despite the use of predefined/recommended methodologies, these can be adapted to the context in which these are inserted for better adherence, provided that the decisions are substantiated.

For the choice between prospective or retrospective methodology, a combination of both is recommended, so that they are complementary: think preventively, but, if the error occurs, investigate its causes and improve prevention control practices in a feedback.

Now that we understand the possible methodologies for risk management, it is essential to learn the quality tools that make it possible to take action on possible failures to improve processes.

Chart 2 - Risk management tools

Tool	Description
Brainstorming	A storm of ideas is expected in this common tool in several quality management scenarios. The proposal is to undertake a meeting providing a useful space for suggestions and perceptions and, only afterwards, the manifestations are ordered and structured aiming at an effective improvement.
Ishikawa Diagram	Also called "fish bone", due to its visual format that resembles the name, the search is to understand which factors affect within the categories of labor, methods, environment, mediation, machinery and equipment and materials. From these words, we can glimpse an expanded view of the failure context to propose innovations in the processes.
5 questions phase	The technique that refers to a child in his early years, still curious to understand the world, which asks, with each answer, a new "why?". Thus, it is proposed to delve into at least five question phases, in order to identify the motivation for the occurrence of a failure, in search of the original cause and which can minimize the effects of this error.
Depose	Related to the analysis of the terms Design, Equipment, Procedures, Operators, Supplies and materials, and Environment, Depose can also be used in connection with the Ishikawa diagram, to evaluate the process and its design, the equipment and its operators, the inputs and materials present and the environment in which this procedure is undertaken, asking specific questions in each one of these scenarios to highlight issues still relevant to analysis.
Bow tie	Because it's design resembles a bow tie, it has, at its core, the objective of understanding what are the probable causes for a failure and its consequences, causing the planning of safety barriers/protection practices and in a plan to mitigate possible developments.

Source: Elaborated by the author of the chapter based on Anvisa.[12]

[12] Brazil (2017).

From the connection of these methodologies with these tools, we can understand the risks for the construction of sustainable improvements.

Training teams

The more people trained in the health unit's risk management methodology, the better, ensuring greater permeability of concepts in the areas and different teams, enabling the construction of a solid and unified safety culture.

As a first step, it is recommended to organize a workshop with a complete explanation of the methodology and activities that demonstrate the practical application of each of the construction phases. This initial moment must be directed to the leaders of the areas, contemplating their multipliers and reference professionals in each process, for a comprehensive training in risk management.

With this primary training, doubts and concerns will arise regarding risk management that can be resolved by consulting the risk committee or the sector that coordinates the theme in each process/area. This consultancy has an active role in the perception of risks, of the next steps that we envision the future, with the identification, classification and prioritization of risks. Not all professionals will assimilate these concepts immediately; therefore, consultancy/advisory becomes a crucial moment to assist them in connecting what has been learned as a methodology with what is developed in the practice of their processes.

After this first phase, it is essential to establish a calendar of updates on the topic of risks with the teams and also to enable new moments of consultancy, when identifying flaws that were not previously covered or even for more complex proposed revisions during audits.

Risk identification and classification

Once the teams are trained, it's time to start identifying the risks inherent in their processes. This is a crucial step, as all risk management will be based on this material, and what is not listed at this time may, inevitably, not be prevented in the day-to-day of the organization. Therefore, we suggest that the areas unfold and replicate, with the various shifts and teams that work in this activity, the knowledge they have received, so that more people can contribute and point out the flaws that are inherent to the activities they routinely undertake.

At first it will be a brainstorm but, in a second moment, it needs a more refined vision, even if one risk does not influence the other. For example: is failure in hand hygiene a risk or a factor/cause for infections? This will depend on the institution's approach and how it wants to deal with each theme, considering that the risks tend to interact with each other.

When knowing what faults are possible in our processes, we need to categorize these, helping these to be comprehensively perceived in the unit. Risk classification should consider its nature and the coping strategies for each. This definition must be from the health institution itself, despite the existence of examples and cases considering the different scenarios and contexts presented in the country. We should not confuse the patient's "risk rating" for emergency care, for example, with this step. They are different activities.

The nature of the risk can be verified by categories more or less common among the methodologies used in health for the management of failures, the most present being: administrative; environmental; assistance; financial; image/reputation; information; and legal.

Risk prioritization

When visualizing the general picture of health service risks, it is necessary to understand that there is no standard quantity; it depends on the format, methodology and definitions of classification carried out by the hospital committee and senior management. However, it is necessary to establish prioritization of risks to management. This activity basically contemplates a GUT Matrix (Gravity x Urgency x Trend), but, in a way, adapted for each type of methodology. The most indicated is that the chosen form for this prioritization can contemplate a chart that results in the definition of risk as high, medium or low, allowing a different know-how to handle each risk.

Despite the different attitudes between each methodology, what is common between them, usually, is the suggestion of a traffic light categorization, when there are many risks mapped:

- **High (red):** immediate improvement action plan and mandatory indicator control; monthly monitoring by the committee and senior management;
- **Medium (yellow):** medium-term improvement action plan (up to three months) and desirable indicator control; bimonthly monitoring by the committee and senior management;
- **Low (green):** long-term improvement action plan (up to six months) and optional indicator control; quarterly monitoring by the committee and senior management.

If the institution has not identified many risks, these deadlines can be reduced for better control and management of failures. When finding the result of this prioritization, it is important that the practice of acting differently for each type of risk (high, medium or low) is evident to the team, the committee and the top management, since the effort is to deal with priority, among the results of the calculations, greater severity x probability of occurrence with less possibility of detection, for example, varying for each type of risk.

Risk communication

Risk communication starts at this point, but it is an ongoing process. It is recommended that the risk management approach maintain the seriousness of the topic, although it can still seek recreational elements to transform the subject into something more palatable for employees who will need to understand and multiply the discussion, both with their colleagues and with patients-customers towards a shared security barrier. We reinforce that "communication is essential to take care of people and achieve good results".[13]

Another important issue to communicate the risks is to be able to present their status. This happens with the creation and dissemination of the risk matrix. Some methodologies that use two quantities (probability x impact, for example) generate a matrix. Others do not allow the creation

[13] CIRINO, J. A. F. Hospital Communication Management. Curitiba: Appris, 2018. p. 21.

of a visual element X and Y, but, even so, we can create charts or layouts that make it possible to share what the risks of that process are and how they are going to be prioritized as high, medium or low risk.

The pre-audit risk periods, internal or external, are crucial to reinforce this communication, seeking to strengthen the concepts and places for access to information.

Risk monitoring

With the beginning of the risk management cycle, it is necessary to start monitoring it simultaneously. After important steps have been completed, such as establishing control practices, identifying risks and contingencies, what is the next step?

All this systematization must be transformed into action in the health service daily routine. Risk management should be one of the main daily activities for hospital managers and health professionals. What do you and your team do, every day, to prevent the high-probability risk from actually happening? It is under this premise that the work around risks is based: it is a continuous effort to mitigate the possibility of a spark turning into a fire.

The leader of each process is a day-to-day auditor, and must constantly monitor risk management in his area, the effectiveness of corrective actions in control practices, or even if the construction of new practices should be considered and planned.

Risk audit

When experiencing the first cycle, the risk audit begins. Each institution defines the frequency in which it will move from one cycle to the next. At a minimum, a quarterly period is recommended, and at most, a semester period, to see the impact of the improvements made.

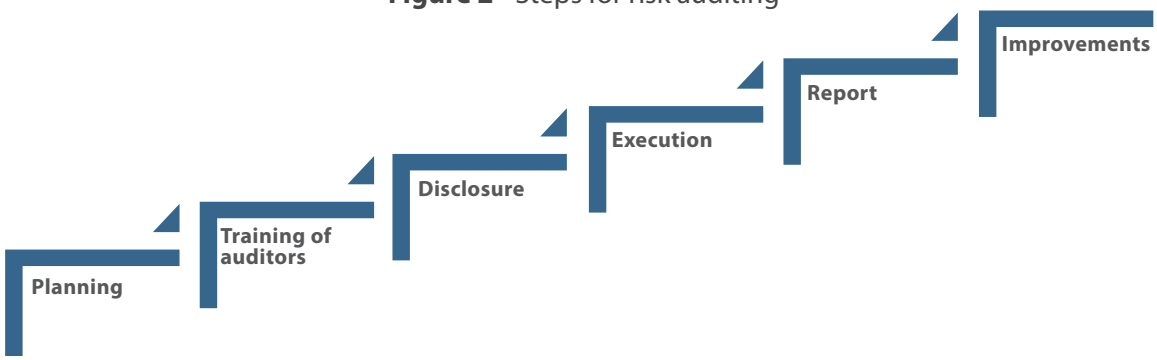
In this sense, the audit serves to end a cycle and start a new one, directly evaluating each control practice implemented for risks, compliance and possible opportunities for process improvement.

What is intended in a risk audit for the "fall" failure mode, for example, is to understand if the basic patient safety protocol is implemented, enabled, if the patient has the risk highlighted on his identification bracelet, if the Morse scale is applied, if the patient and the companion know about this risk and how to help as a barrier, if the bed and stretcher railings are raised , if the floor is wet and has risk identification, among other requirements proposed by the leader of the partnership process with the Patient Safety Center to monitor the management effectiveness.

A few steps before, it is the committee's role to plan this audit, with the expected rigor in a process of this nature. As a result, it is necessary to define and train the team of internal risk auditors. These professionals must be observant, perspicacious, with an educational inclination, systemic view and extremely ethical in their postures.

It is not easy to gather all the necessary qualities in a team of auditors from the beginning; therefore, it may be necessary, in addition to an introductory course, to accompany the first class by professionals already working in the area who can instruct them during the audit. At each new cycle, the auditors from the previous stage can join the new auditors, which will enable the formation of a large group, which is able to be activated for each need.

Figure 2 - Steps for risk auditing



Source: Elaborated by the author of the chapter.

The number of professionals per audit should be planned based on the evaluation schedule: how many processes and risks need to be evaluated? How much time will be devoted to each risk? In general, at least three days of auditing in large units and at least one or two days in small and medium-sized units are recommended, starting with a formal opening and ending with a meeting to present the overall results.

Improvement cycles

Based on the risk audit report, the improvement proposition phase begins, thus turning the cycle around. Risks are moved based on the results of the audit, and it is up to the institution to define the criteria for increasing or decreasing the probability of the occurrence of a failure. This is commonly done based on the compliance percentage of risk control practices, which can move the probability / occurrence of this failure, causing it to be less or more likely to happen, depending on the type of prioritization methodology adopted.

When moving for compliance, we will then know if the risk is high, medium or low, and this categorizes it within the standard of the action plan/indicator required by the health institution to provide the improvements before the next audit and in a timely manner so that positive changes can be seen in the process.

In this step, the use of the traditional action plan (containing what has to be done, the person in charge, the start and end deadlines and the necessary resources - local, financial, human and inputs) is the best tool for monitoring, making it possible, with the use of PDSA (Plan, Do, Study and Act), to run a cycle of continuous improvement.

Continuous review and monitoring

Finally, concurrently with the completion of the cycle, the time for reviewing the risks must be officially established. From the audit, the points that have not been well structured will be perceived and will require a new look at the practices to control this risk, demanding a review.

Not only in this period, but any time the process is changed, it becomes necessary to request an update of the risk management process, to be validated with the committee. The only circumstance in which the review is not recommended is from the moment when the audit rites have already started, since the evaluators will study the existing risks, and any change in that period may lead to errors.

These are the steps for establishing risk management, from its conception to practices, which are continuous with each new opened cycle. When healthcare teams are able to shape their role in risk management from a preventive and proactive perspective, it will be possible to significantly impact the reduction of adverse events and failures resulting from health processes.

Measuring and standardizing risk management

We started this topic with the proposal of an indicator that assesses the proportion of high risks that the hospital manages, aiming to reduce this amount to an acceptable percentage for its adequate control.

Chart 3 - Parameterization of the risk proportion indicator with high probability of occurrence

Indicator name:	Risk rate with high probability of occurrence
Data to be collected:	Result of risk cycles, with the proportion of high risks
Recommended data closing period:	Depending on the periodicity of the risk cycle (half-yearly, for example).
Calculation format:	Risks categorized as high x 100. Total identified risks
Recommendations for goal setting and the direction (inversely or directly proportional):	The target should be defined based on what the institution considers to be feasible in terms of the percentage of risks with a high probability of occurrence. It is understood that the lower this percentage is, the better, since this type of risk requires more accurate control practices monitored directly by senior management. We suggest evaluating the history of the first cycles for this definition.
Possible participants in the critical analysis of these data:	Risk Committee, process leaders with high risks, senior management.

Source: Elaborated by the author of the chapter.

In order to contribute to the risk audit that the health institution will undertake, we propose a minimum standard for the construction of a checklist and a subsequent report of this assessment.

Chart 4 - Checklist/report for risk audit

Analysis requirements	Evaluation (C= compliant and NC=not compliant)	Recommendations (mandatory auditors' observations, for NC and desirable for C)
Management		
Does the team know the institution's risk management methodology?		
Does the team know how to present the risks of the process?		
Does the team monitor the risks?		
XYZ risk control practices (specify which will be evaluated in this process and create a table for each one, listing control practices below).		
Control practice 1		
Control practice 2		
Control practice 3		
Contingency of XYZ risk		

Source: Elaborated by the author of the chapter.

We stress that the use of this framework will depend on the methodology adopted and the way in which the risk committee will conduct these practices in the organization. In addition, Anvisa's[14] notebook on "Risk Management and Investigation of Adverse Events Related to Health Care" has other templates that can be consulted.

Prevention

The most important thing in risk management for health institutions is to learn to practice prevention. The best risk management is the one that reduces errors to a minimum; thus, the effort is substantially less than that of mitigating the damage, in addition to the ethical and social stance towards the people who are cared for by health professionals. Preventing is a way of being in charge while assisting those who seek assistance in health units, making it possible for the cost versus benefit of these procedures to be the best possible, in all areas.

The implementation of a culture of prevention is possible with the construction of a close and careful relationship between health professionals and risk management capable of realizing the avoidance of failures, becoming a daily agenda for each discipline that works in the health

[14] Brazil (2017).

units. Based on this, it is possible to educate patients, companions and visitors on issues related to prevention, so that they become effective barriers to provide security.

We believe that the health institution, with risk management, can enjoy good organizational/administrative health by implementing practices that reduce financial and image losses, including control practices that make it possible to keep the unit healthy. For this, it is essential that the processes of this health service are mapped and contracted, so that the risks are identified and associated with the procedures that relate them and the impact that they can cause in the delivery of its activities.

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CH. 5
PATIENT SAFETY

Péricles Góes da Cruz and Gilvane Lolato

Goals

- Present patient safety concepts;
- Explain the importance of management by processes, risks and results for patient safety;
- Demonstrate the strategies of the National Patient Safety Program (NPSP);
- Describe the role of the Patient Safety Center (PSC) and its responsibilities;
- Discuss the notification flow and the need for a culture change in healthcare organizations.

Patient safety and the reduction of unsafe acts

According to the World Health Organization (WHO), in a document published in 2009, the concept of patient safety refers to reducing the risk of unnecessary harm associated with health care to an acceptable minimum.[1]

These unnecessary damages are known as adverse events, which, in turn, are unintentional damages resulting from the care provided to the patient, unrelated to the natural evolution of the underlying disease. Mandatorily, they cause measurable injuries in the affected patients, death or prolonged hospital stay. The importance of adverse events lies in the indication of failures in patient safety, reflecting the marked distance between real care and ideal care.

The "acceptable" failure refers to what is feasible in view of current knowledge, available resources and the context in which assistance was provided in view of the risk of non-treatment or other treatment. Thus, patient safety is the reduction of unsafe acts in care processes and the use of the best practices described in order to achieve the best possible results for the patient. It is the act of avoiding, preventing and improving adverse events in the care provided to the patient.

Planning and surveying the organization's objectives in relation to patient safety are crucial to establishing the Patient Safety Policy, which consists of defining guidelines such as: drawing up a plan for patient safety; elaborating and disseminating security protocols; training of the teams involved; notificating and handling incidents and adverse events, as well as feedback and dissemination; patients' rights and duties; and elaborating informed consent. The policy needs to be aligned from the top management to the leaders and followers, so that the process of implantation and monitoring is effective.

[1] WHO – WORLD HEALTH ORGANIZATION. The Conceptual Framework for the International Classification for Patient Safety. Genebra: WHO, 2009. v1.1. (Final Technical Report and Technical Annexes). Available at: https://www.who.int/patientsafety/taxonomy/icps_full_report.pdf. Access in: May 19th 2020.

Major initiatives for patient safety

The story about patient safety is robust and has the participation of big names who contributed so that it could have striking initiatives and increasingly improve the processes of health organizations, and thus reduce adverse events.

- 1818-1865: Dr. Ignaz Semmelweis, a pioneer in antiseptic procedures, made the relationship between puerperal fever and the obstetric examination performed by students who had come from anatomy class and manipulated the corpse. With hand washing, mortality decreased from 18% to 1%;
- 1855: Florence Nightingale (1820-1910),[2] pioneer in the treatment of wounded guerrillas during the Crimean War. She also contributed in the field of statistics, being a pioneer in the use of methods of visual representation of information, with sectorial graphics, clinic management and nursing professionalization in England;
- 1966: Avedis Donabedian (1919-2000),[3] published the seven pillars of quality:
  - Efficiency;
  - Acceptability;
  - Legitimacy;
  - Equity;
  - Optimization;
  - Cost.
- 1999 - "To err is human": the United States Institute of Medicine (IOM),4 published a book-report with the title "To err is human: building a safer health system");
- 2001 - "Crossing the quality chasm":[5] quality problems usually occur not because there is a lack of knowledge, but because of fundamental flaws in the ways in which care is organized.

The subject of patient safety gained a lot of relevance after the release of the IOM report "To err is human", in 1999. This report pointed out that about 100.000 people died in hospitals each year victims of adverse events in the United States. This high incidence resulted in a higher mortality rate than that attributed to patients with HIV positive, breast cancer or being run over.

[2] FRELLO, A. T.; CARRARO, T. E. Contributions of Florence Nightingale: an integrative literature review. **Writer Anna Nery**, v. 17, n. 3, p. 573-579, jul.-sept. 2013.

[3] DONABEDIAN, A. The seven pillars of quality. **Arch Pathol Lab Med**, v. 114, p. 1115-1118, 1990.

[4] KOHN, L. T.; CORRIGAN, J. M.; DONALDSON, M. S. (Eds.). **To err is human**: building a safer health system. Washington: National Academy Press; IOM, 1999.

[5] IOM – INSTITUTE OF MEDICINE. **Crossing the quality chasm**: a new health system for the 21st Century. Washington: IOM, 2001.

In different researches, 17 to 24 definitions of health errors and 14 adverse events were found, and this motivated the WHO to develop the International Classification of Patient Safety - ICPS, in 2004,[6] to standardize and organize the concepts and definitions of patient safety to be used by health organizations, in addition to proposing measures to reduce risks and mitigate adverse events.

It was no different in Brazil. Several initiatives were highlighted, such as the Proqualis portal of the Oswaldo Cruz Foundation (Fiocruz),[7] that has a relevant role in the dissemination of knowledge in the areas of clinical information and patient safety. In 2006, the first International Forum on Patient Safety and Medication Error was held, organized by the Minas Gerais Association of Pharmacists,[8] in Belo Horizonte, and in 2013, the NPSP (Ordinance No. 529, of April 1st, 2013)[9] was instituted by the Ministry of Health and the National Health Surveillance Agency (Anvisa), as well as the Collegiate Board Resolution (RDC) No. 36, of July 25th, 2013, which promulgates actions for patient safety.[10]

The safety culture

The world began to reflect differently on patient safety after IOM's publication "To err is human" in 1999. Health professionals began to question how irreparable errors were being treated. It is as if we are waiting for the error to happen, standing still and without action.

The line between acceptable and unacceptable errors was a fine one, and we definitely needed to review a whole safety culture as an essential requirement to improve the quality of care in health. The need for change was necessary for leaders and for the most diverse health professionals who were in charge of care. Thus, we started a movement to implement quality management and patient safety in a different way, so we cannot talk about patient safety without having the processes structured, the risks identified, with their barriers and results to monitor the performance of clinical processes and outcomes. Patient safety consists of implementing actions that can promote the identification of failures and continuous improvement of processes, thus preventing damage from reaching the patient.

6 WHO – WORLD HEALTH ORGANIZATION. **Conceptual framework of the International Patient Safety Classification.** Lisboa: OMS, 2011. Available at: https://proqualis.net/relatorio/estrutura-conceitual-da-classifica%C3%A7%C3%A3o-internacional-de-seguran%C3%A7a-do-paciente. Access in: May 5th 2020.

7 FIOCRUZ – *FUNDAÇÃO OSWALDO CRUZ*. **Proqualis.** [S.l.]: [s.d.]. Available at: https://proqualis.net/. Access in: May 5th 2020.

8 *AMFAR* – MINAS GERAIS ASSOCIATION OF PHARMACEUTICALS. **Institucional**. Prados: Amfar, [s.d.]. Available at: http://www.amfar.com.br/amfar_novo/. Access in: May 5th 2020.

9 BRAZIL. National Health Surveillance Agency. Ordinance No. 529, of April 1st, 2013.Institutes the National Patient Safety Program (NPSP). ***Diário Oficial da União***, Brasília, 2013. Available at: https://www20.anvisa.gov.br/segurancadopaciente/index.php/legislacao/item/portaria-529?category_id=220. Access in: May 5th 2020.

10 BRAZIL. National Health Surveillance Agency. *RDC* No. 36, of July 25th 2015. Institutes actions for patient safety in health services and takes other measures. ***Diário Oficial da União***, Brasília, 2015. Available at: https://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2013/rdc0036_25_07_2013.html. Access in: May 5th 2020.

Process management

The processes have always existed, but fragmented and without interaction. With the need to generate added value for the end customer, management by processes brought several benefits, such as: focus on activities that add value; standardization of simple and effective activities; greater interaction and systemic vision for the organization; positive synergy between the teams to implement innovations; team development, through continuous learning; support for the development of the organizational strategy; support to the leader for decision making through performance indicators in the processes; and greater engagement of professionals, enabling the identification of points at which there may be waste or delay.

With process management, it is possible to: reduce variability, costs and waste; reduce the occurrence of avoidable risks; obtain customer satisfaction; and, still, implement the strategies in the operation and in the dissemination of the company's vision, mission and values.

Risk management

Risk management performs an assessment of the organizational structure, verifying existing processes and their bottlenecks. Roles and responsibilities need to be clear so that resources are allocated appropriately, and communication is effective at all stages of the implementation of risk management. The identification of risks, both in work and organizational processes, is crucial to recognize the risks that can prevent an organization from achieving its goals. For this identification, it is important to take into account the process approach. Risk management can be based on the inputs and outputs of processes, but mainly focusing on activities that can affect its performance, taking into account its causes, impacts, tangible and intangible sources, limitations and changes .

Process results management

The management of process results consists of assessing their performance in an objective, aggregating and periodic manner. Results can be evaluated and monitored through indicators, audit reports and identification (or notification) of failures that occur in activities. Each process has its product, that is, its delivery and, as a consequence of this delivery, an expected result. This only becomes an aggregator for the team as soon as the leadership provokes analysis and reflection together. In this way, the different ideas complement each other to achieve a single objective: the expected effect, which will culminate in the organization's result, which is the assistance provided safely, considering health and satisfaction with standards and expectations.

National Patient Safety Program (NPSP)

Brazil, through Ordinance GM/MS No. 529/2013, instituted, in 2013, the NPSP. This is responsible for several educational initiatives, in research, in the development of a specific taxonomy and tools and launching campaigns, such as "Hand Hygiene" and "Life Saving Surgery", for example. The program aims, in particular, to prevent, monitor and reduce incidence of adverse events in the services provided, promoting improvements related to patient safety and quality in health services in the country, through the mandatory constitution of PSCs in health services.

Patient safety protocols

Following, six basic patient safety protocols were published by the Ministry of Health, Anvisa and Fiocruz:

1. Correctly identify the patient:

It has the purpose of ensuring the correct identification of the patient, in order to reduce the occurrence of an incident, ensuring that the care is provided to the person for whom it is intended. Interventions are:

- Identify the patient;
- Educate the patient;
- Patient participation;
- Educate family members.

Examples of indicators for monitoring:

- Number of adverse events and errors/failures in patient identification;
- Proportion of patients seen at the health institution correctly identified.

2. Improve communication between health professionals:

Communication within institutions has been a factor of much discussion, because, when not done properly, it can be the cause of many adverse events. It is one thing to tell the professionals to speak, it is another to equip them to do so productively. It is very important that we have consistent tools to ensure effective communication.

3. Improve safety in prescription, use and medication administration:

Its purpose is to promote safe practices in the use of medicines in health facilities.

Interventions are:

- Promote safe practices in the use of medicines in health facilities;
- Indication, calculation of doses and quantities of drugs;
- Dosage, dilution, speed, infusion time and route of administration;
- Verbal prescriptions;
- Patient transition points;
- Safe prescription of potentially dangerous or highly surveillance drugs;
- Electronic support for prescription.

Examples of indicators for monitoring:

- Number of adverse events and errors / failures in patient identification;
- Error rate when prescribing medications.

4. Ensure surgery at the correct intervention site, procedure and patient:

The purpose of this protocol is to determine the measures to be implemented to reduce the occurrence of incidents, adverse events and surgical mortality, making it possible to increase the safety when performing surgical procedures, in the correct place and in the patient, through the use of the Safe Surgery Checklist developed by the WHO.

- The Checklist divides the surgery into three phases:
  1. Before anesthetic induction;
  2. Before the surgical incision;
  3. Before the patient leaves the operating room.

Some examples of indicators for monitoring:

- Percentage of patients who received antibiotic prophylaxis at the appropriate time;
- Number of surgeries in the wrong place;
- Number of surgeries on the wrong patient;
- Number of wrong procedures;
- In-hospital surgical mortality rate adjusted for risk;
- Checklist membership fee.

5. Hand hygiene to prevent infections:

Its purpose is to institute and promote hand hygiene in health services in the country in order to prevent and control infections related to health care, aiming at the safety of patients, health professionals and all those involved in the patient's care.

Hands must be sanitized at essential and necessary times according to the flow of care to prevent infections related to health care, caused by cross-handed transmission. There are five recommended moments:

- Before touching the patient.
- Before performing a clean/aseptic procedure.
- After the risk of exposure to body fluids or excretions.
- After touching the patient.
- After touching surfaces close to the patient.

An example of an indicator for monitoring:

Adherence percentage: number of hand hygiene actions performed by health professionals/ number of opportunities for hand hygiene, multiplied by 100.

6. Reduce the risk of falls and pressure injuries:

- It aims to reduce the occurrence of falls and pressure injuries in patients. Multicomponent interventions tend to be more effective in preventing falls. These interventions include:

Risk assessment;

- Identification of the patient with the risk through signs at the bedside or bracelet;
- Scheduling of personal hygiene care;
- Periodic medication review;
- Attention to footwear used by patients;
- Education of patients and professionals;
- Among others.

Some examples of indicators that we can consider:

- Proportion of patients with risk assessment performed on admission;
- Number of adverse events with damage;
- Number of adverse events without damage.

Patient Safety Center (PSC)

RDC No. 36, of July 25th, 2015,[11] instituted actions for patient safety in health services through PSCs. These must be structured in public, private, philanthropic, civil or military health services, including those that carry out teaching and research actions. Thus, not only hospitals, but clinics and specialized diagnostic and treatment services must have PSC, such as, for example: dialysis services, endoscopy services, radiodiagnostic services, nuclear medicine services, radiotherapy services, among others.

Individualized offices, clinical laboratories, mobile services and home care are excluded from the scope of this standard. They are also excluded from the scope of the RDC No. 36/2015 services of interest to health, such as long-term care institutions for the elderly and those that provide care services to people with disorders resulting from the use, abuse or dependence on psychoactive substances. But it is worth noting that, even organizations that do not have an obligation to constitute an PSC, it is a good practice to do so, as these are actions that contribute to safety in patient care.

It must be constituted by a multiprofessional team, minimally composed by doctor, pharmacist and nurse, and trained in concepts of quality improvement, patient safety and risk management tools in health services. Preferably, the PSCshould count on the participation of members of the organization who know the work processes well and who have a leadership profile. The board is responsible for the nomination and composition of the PSC, giving its members authority, responsibility and power to carry out the actions of the Patient Safety Plan (PSP).

PSCs are responsible for preparing the PSP, which should point out and describe the strategies and actions defined by the health service to carry out the stages of promotion, protection and mitigation of incidents associated with health care, from admission to transfer, discharge or death of the patient in the health service. It is also important that the PSC integrate the different instances that work with risks in the institution, considering the patient as the subject and final object of health care. The PSC aims to:

- Continuous improvement of care processes and the use of technologies in health;
- Systemic dissemination of the safety culture;
- Articulation and integration of risk management processes;
- Guarantee of good health service operating practices within its scope.

Patient Safety Center Competencies

The RDC has also established some competencies for the PSC, such as:

- Implement patient safety protocols and monitor their indicators;
- Develop actions for integration and multiprofessional articulation in the health service;
- Develop, deploy, disseminate and keep the PSP updated;
- Promote actions for risk management in the health service;

[11] See Brazil (2015).

- Promote mechanisms to identify and assess the existence of non-conformities in the processes and procedures performed, including those involved in the use of equipment, medicines and supplies, and propose preventive and corrective actions;
- Monitor the actions linked to the PSP;
- Establish barriers to prevent incidents in health services;
- Develop, implement and monitor training programs on patient safety and quality in health services;
- Analyze and evaluate data on incidents resulting from the provision of health services;
- Share and disseminate to the management and health service professionals the results of the analysis and evaluation of data on incidents related to health care resulting from the provision of the health service;
- Notify the National Health Surveillance System (SNVS) of adverse events arising from the provision of health services and monitor health alerts and other risk communications issued by health authorities.

The Patient Safety Plan (PSP)

The PSP must establish risk management strategies and actions, according to the activities developed by the health service. The document should point out risk situations and describe the strategies and actions defined by the health service for the management of failures aimed at the prevention and mitigation of incidents, from admission to transfer, discharge or death of the patient in the health service. It is essential that process mapping is used so that the PSP is based on the reality of the process.

From the implementation of the PSP, it is crucial that the PSC carry out evaluations considering the following items:

- Identification, analysis, evaluation, monitoring and communication of risks in the health service, in a systematic way;
- Integration of the different risk management processes developed in health services;
- Implementation of protocols established by the Ministry of Health;
- Patient identification;
- Hand hygiene;
- Surgical safety;
- Safety in the prescription, use and administration of medicines;
- Safety in the prescription, use and administration of blood and blood components;
- Safety in the use of equipment and materials;
- Maintain an adequate record of the use of orthoses and prostheses when this procedure is performed;
- Fall prevention of patients;

- Pressure injury prevention;
- Prevention and control of adverse events in health services, including healthcare-related infections;
- Safety in enteral and parenteral nutritional therapies;
- Effective communication between health service professionals and between health services;
- Encourage the participation of the patient and family in the assistance provided and in the promotion of a safe environment.

Notification flow

The basis for a PSP is the notification systems, as this way, we are able to identify the flaws and propose improvements for the processes. Notification systems originate from industries, in particular, aviation and nuclear energy. In health organizations, it is part of risk management, within the PSP, to identify adverse events, near miss and risky circumstances.

For the notification to be truly aggregating, we need to have a fair culture, in which leaders and followers will act through a transparent and continuous improvement process. The notification has the following steps: registration, evaluation, analysis, verification, feedback, communication and dissemination of learning from notifications.

It is important to ensure the confidentiality of professionals in the notification process to generate continuous learning, as well as the identification of active and latent failures. Active failures are those that happen on the front line, and latent ones are those that depend on culture and organizational influences, as well as identifying more severe or serious events.

Incident reporting is the primary method for generating alerts and signals regarding the provision of quality healthcare. However, only 1% of incidents are reported by health professionals. Literature data indicate that about 10% of serious adverse events are identified through voluntary notification.[12]

To ensure a reliable process, we need to ensure that there is also an active search for notifications to be a complement to the reports. As strategies for active search, we have mandatory commissions, which, with a group of participating professionals, carry out death analyzes, medical records and process audits, among other actions, which end up being the source of many event notifications.

It is necessary to raise the awareness of the professionals involved in the voluntary notification process, since it is still responsible for the smallest number. But, for that to happen, we need to change the organizational climate, strengthening the safety culture, encouraging other behavioral attitudes, mainly of the top employees, responsible for most notifications.

[12] BEVILAQUA, A. **Patient Safety Unit and notification flow.** São Paulo: *ONA*, 2020. (Série 20 anos da *ONA*).

A culture of safety depends on behaviors and attitudes, and in order to change them, it is important that we have prepared leadership with positive influence, in addition to an aggregating work environment, transparency at times when we need to listen to our teams, as well as give feedback in a systematic way. The safety culture also needs to be based on the organizational culture, which is formed by the institution's values. Therefore, teams need to be involved and, mainly, committed, to experience these values and the organization's mission.

Another very critical point that directly impacts this process is the maturing of immediate leadership and senior management in the registration, analysis and feedback of notifications, as we still have many flaws in the application of a fair culture. Understanding that the focus of the notification needs to be the processes, not the people, is the first step towards a major change.

Notification has many advantages, such as: identifying flaws in processes; immediate feedback; aggregates for learning; enables access to patient information that might not be in medical records; identification of failures in adhering to security practices; rapid detection; agile information for decision making.

However, it also has some limitations, which are: unresponsive to the identification of adverse events; and difficulty in extracting adequate and practical information amid the large volume of data collected.

In the notification flow, it is also important to include technovigilance, hemovigilance and pharmacovigilance. Although, many times, the information, as well as those responsible, are different from the notification of failures, it is important that the PSC is involved in this context.

According to Anvisa:

> Technovigilance is the system for surveillance of adverse events and technical complaints of health products in the post-marketing phase, with a view to recommending the adoption of measures that guarantee the protection and promotion of the population's health. Technovigilance aims at the sanitary safety of products for post-marketing health (Equipment, Materials, Medical-Hospital Articles, Implants and Products for Diagnostic Use "in-vitro"). Hemovigilance is the set of surveillance procedures that covers the entire blood cycle, with the objective of obtaining and making available information on adverse events that occurred in the different stages of the process. Pharmacovigilance is defined as "the science and activities related to problems in use of medicines".[13]

After the failure has been identified and registered, the notification must be sent to those responsible for the analysis, who need to be trained to analyze the root cause and define the action plan. In the analysis stage, it is important that everyone involved participates to guarantee a solid improvement.

[13] BRAZIL. National Health Surveillance Agency. **Technovigilance:** concepts and definitions. Brasília: Anvisa, [s.d.]. Available at: http://portal.anvisa.gov.br/tecnovigilancia. Access in: May 5th 2020.

It is very important to find the root cause to ensure the effectiveness of the action plan. Some tools can assist the analysis, such as the cause and effect diagram, also known as the Ishikawa diagram (or fishbone); and brainstorming. And, for adverse events, the recommendation is the London Protocol, as it brings a very consistent investigation flow to the PSC and those responsible.

For the action plan, the most recommended tool is the 5W2H, considering the items "what", "who", "when", "how", "how much", "where" and "why". The most used are: "what", "who" and "when".

A cause analysis consists of bringing the opportunity for improvement in processes, which occurs when we learn the creative combination between specific knowledge and the science of improvement.[14]

In order for us to improve the ability to identify and make a change that results in improvement, we must expand knowledge about the specific subject and understand the process in question, which can be deepened through the collected data, which, after a discussion, will be transformed into information and will guide us towards possible changes.

Every identified change, before being implemented in the organization as a whole, must be tested, so that we are sure of its viability. Therefore, identify the change, test on a small scale, collect results, study them and analyze them so that later, with positive results, you can increase your scale of implementation of the change.

Training and continuing education

The continuous training of the team to adhere to the processes and procedures within the organizations is crucial for their implementation and support. Training leaders and top professionals should be considered a major investment.

Supervision and continuing education will make a complete difference to the results not only of the processes, but for the organization as a whole. However, we also need to understand that we are no longer at the moment when bringing employees together in the auditorium will be enough to achieve satisfactory results. What will bring promising results is the continuity of the training and the updating at the edge of the bed, at the end, in production, together with employees.

Searching for methodologies that adapt to the reality and profile of professionals is one of the ways. According to the publication "Crossing the quality chasm", from 2001,[15] quality problems generally occur not because of lack of knowledge, efforts or goodwill for health care, but because of fundamental deficiencies in the ways in which care is organized.

[14] LANGLEY, G. J. et al. Improvement Model: a practical approach to improve organizational performance. Campinas: *Mercado de Letras,* 2011.

[15] See IOM (2001).

It is necessary to make it clear to employees what results are expected from them and what they are inserted in. Know the profiles of the teams so that, through individual skills, we can work consistently, and thus obtain positive results.

We also need to define methods, as we are human beings and sometimes we look for shortcuts. According to William Glasser's Learning Pyramid,[16] our current learning process guarantees only 50% of the teaching reception, as it is as follows:

- Teacher-centered;
- Content writer;
- Monotonous and tiring;
- Memory dependent;
- Fragmented;
- The basic "nobody deserves" cycle.

It's time to reverse. Do not speak if you can demonstrate, and do not demonstrate whether professionals can do it themselves. If a class/lecture is the method of choice, plan an interaction between professionals and a discussion. For group activities, include:

- Group dynamic;
- Share their own stories;
- Listening to patients' stories;
- Learning from peers (professionals);
- Develop multiple perspectives;
- Learn to work as a team and develop communication skills.

Do simulations and create clinical scenarios to further promote interaction between students. Use the role play; thus, it will sensitize professionals to the roles within health organizations such as patients, managers and society, in addition to activating sensations and senses, vision and hearing.

And be sure to evaluate. Reflect on the way you are promoting teaching within health organizations, evaluate the effectiveness of training, evaluate its applicability in practice, check how much the teaching is adding to the professionals' daily lives and check the distance between what is being taught and practice on a daily basis.

The intuitive, dynamic and aggregating learning route is a relevant factor for the realization of learning in a qualitative and collaborative way, in addition to ensuring, mainly, the satisfaction of health professionals.

Patient safety depends on the engagement of all professionals and stakeholders, but also on the consistent interaction between processes. And in order to be able to monitor and evaluate patient safety, we need reliable results that clearly demonstrate the performance of processes and organizational culture.

[16] William Glasser's Learning PYRAMID. Ceesd – Building Inclusion, [s.d.]. Available at: http://www.ceesd.org.br/piramide-de-aprendizagem-de-william-glasser/. Access in: May 5th 2020.

Metrics and tools

» **Notification form:**

Chart 1 - Minimum items that must be included in the notification analysis form

Notifying	Date:
Notified	Date:
Instance name	
Source	
Process	
Detection	
Immediate action	
Description	
Root cause analysis	
Action (what)	
Responsible for the action	
Deadline for the action	

Source: Prepared by the chapter's authors.

Promoting patient safety

Patient safety is the heart of all discussions by committees, commissions, health professionals, courses, continuing education, accreditation methodologies and strategies of health organizations. In this chapter, we understand that, in order to promote patient safety, structured processes, defined results, managed risks, a consistent program, a monitoring committee, safety protocols in place, recording of failures to identify opportunities for improvement, constant training and development, as well as team recognition.

Coordinating all these phases requires good planning, persistence, observation, knowing how to listen to colleagues and, especially, patients and their families. Always encourage continuous learning, knowing that we are human beings and that the failures will exist, but that we need to manage them, as this is the crucial point for sustaining patient safety in our healthcare organizations.

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CH. 6
TECHNOLOGICAL INNOVATION IN HEALTH

Paulo Salomão

Goals

- Explore the concept of technological innovation in health;
- Address the reasons for the adoption of technological innovations in health;
- Identify the main themes of technological innovations in the health area;
- Present the innovations that should be on the agenda of the health manager;
- Present trends and priorities for investing in innovation.

Understanding the meaning of technological innovation in health

We consider it prudent to start this chapter with a brief explanation of its title, aiming to lead the reader to make important considerations about the subject that will be approached.

Let's look at the three parts of the title: "Innovation", "technological", "in health". Many have spoken and written about innovation, but few know the origin and developments of this concept. Etymologically, the word "innovation" is the conjunction of two Latin terms, in and novare, which mean "in new". Therefore, we can say that innovation is the creation or transformation of something already existing into something new. And what is the importance of innovation?

Adam Smith, an 18th century English philosopher and economist, believed that the wealth of nations resulted from the work of individuals who, driven by their own interest, promoted the economic growth and innovation.[1] In the 20th century, Joseph Schumpeter, economist and scientist Austrian politician, elaborated the theory of economic development and pointed out five types of innovation: new good, new method, new market, new source of raw material and new structure of organization. According to Schumpeter, for the economy to come out of a state of equilibrium, something new must significantly change previous conditions of equilibrium. In one of his best-known and most influential books to date, Schumpeter introduces the term "creative destruction" to say that entrepreneurial innovation is the driving force behind long-term economic growth, even if it destroys companies with some degree of monopoly.[2]

Despite Smith and Schumpeter being economists, it is clear from their arguments that there is a bilateral relationship between innovation and performance (in these cases, economic). That is, to leave a state of lethargy, it is necessary to innovate and, in doing so, new wealth is generated. This thought about the result of innovation gains weight in the quotes of three great executives.

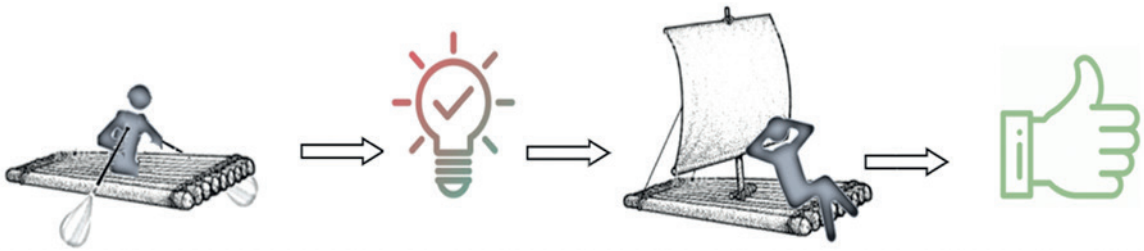
[1] SMITH, A. **An inquiry into the nature and causes of the wealth of nations.** Delhi: Atlantic Publishers & Dist, 2008. v. 2.

[2] SCHUMPETER, J. A. **Capitalism, socialism and democracy.** New York: Harper & Brothers, 1950.

For Baldwin and Gellatly, British, "innovation is the successful exploitation of new ideas".[3] Peter Drucker, Austrian, informs that "innovation is the ability to transform something that already exists into a resource that generates wealth".[4] Geoff Nicholson, American, is more categorical when he says that "innovation is turning knowledge into money".[5] Considering the possibility of innovation even in non-profit organizations, we chose to use the term success instead of resources or money.

So when we think about innovation, we need to go beyond just reciting a business mantra. From what has been exposed so far, we can say that innovation is the action of creating or renewing an existing thing, so that it brings more success. Figure 1, below, can help to clarify this concept.

Figure 1 - Graphic representation of innovation



Source: Elaborated by the author of the chapter.

Based on the above, we can take the next step and narrow the scope of the work. As previously proposed, we will focus our search on "technological innovation".

We saw that Schumpeter classifies innovation in five types: good method, market, source of raw material and organizational structure. However, as with any form of classification, regardless of the subject, it undergoes changes, regroupings and exclusions over time. This is because new knowledge, new practices or new consensus are emerging. Many authors have replaced the terms "good" and "method" with "product" and "process", respectively, and define them as the basis of technological innovation. As defined by the Brazilian Institute of Geography and Statistics (IBGE), for example, "technological innovation is defined by the introduction of a technologically new product (good or service) to the market or substantially improved or by the introduction, in the company, of a technologically new or substantially improved production process ".[6]

[3] BALDWIN, J. P; GELLATLY, G. **Innovation strategies and performance in small firms.** Cheltenham: Edward Elgar Pub, 2003.

[4] DRUKER, P. F. **Innovation and entrepreneurial spirit**. São Paulo: Publisher Pioneira, 1987.

[5] IMPERIAL COLLEGE LONDON. **Alumni Stories – Geoffrey Nicholson.** London: Imperial College London, [s.d.]. Available at: https://www.imperial.ac.uk/alumni/alumni-stories/geoffrey-nicholson/. Access in: May 25th 2020.

[6] IBGE – **BRAZILIAN INSTITUTE OF GEOGRAPHY AND STATISTICS**. Support Manual for Completing the Technological Innovation Survey (Pintec). Rio de Janeiro: IBGE, 2004.

There are several definitions for technological innovation, but we will stick with just one more. Decree No. 5.798/2006, which regulated Law No. 1.,196/2005 (*Lei do Bem*), defines technological innovation as:

> Designing a new product or manufacturing process, as well as adding new features to the product or process that implies incremental improvements and effective gain in quality or productivity, resulting in greater competitiveness in the market.[7]

Now, focusing on just one type of innovation, we can say that technological innovation is the action of creating or renewing an existing product or process, so that it brings more success.

Finally, having the concept and chosen the type of innovation, we introduce the third part of the title to outline the application of this new idea. For that, we use the definition of the World Health Organization (WHO), which states that "health technology is the application of knowledge and skills organized in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve the quality of life" (our translation).[8]

We then closed our concept, and we can say that technological innovation in health is the action of creating or renewing products (devices, systems, medicines, etc.) and processes (services, communications, etc.) that already exist to solve a health problem and improve the quality of life.

Motivation and challenges

Technological innovation in the health field is a rapidly growing field and with very promising results when applied to clinics, hospitals, laboratories, health plans, patients or even to society in general.

There are many arguments to justify the use of innovative technologies in health, including the reduction of operating costs (even discounting the amounts invested), the optimization of time, greater productivity, functional convenience, competitive advantage, patient autonomy.[9]

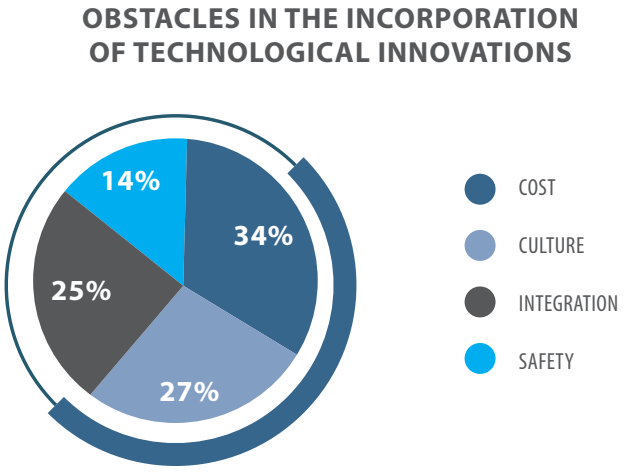
[7] BRAZIL. Presidency of the Republic. Civil House. Decree No. 5.798, of June 7th 2006. Regulates tax incentives for technological research and technological innovation development activities, as dealt with in arts. 17 to 26 of Law No. 11.196, of November 21st, 2005. ***Diário Oficial da União***, Brasília, 2006.

[8] WHO – WORLD HEALTH ORGANIZATION. **Health technology.** [S.l.]: [s.d.]. Available at: https://www.who.int/health-technology-assessment/about/healthtechnology/en/. Access in: July 10th. 2015.

[9] MORSCH, J. A. Innovation in healthcare: 9 new technologies and trends. **Morsch Telemedicine**, March 15th. 2019. Available at: https://telemedicinamorsch.com.br/blog/inovacao-na-area-da-saude. Access in: April 16th. 2020.

On the other hand, the health innovation process is not trivial. In 2019, *Medicina S/A*[10] conducted a survey with CEOs and technology managers from 250 Brazilian private hospitals about the intention to invest in technological innovations, and they pointed out as main difficulties the cost, the culture for customers and employees, the difficulties of systems integration and safety concerns. See chart 1, below.

Chart 1 - Difficulties to implement technological innovations in hospitals



Source: Elaborated by the author of the chapter based on *Medicina S/A* (2019).

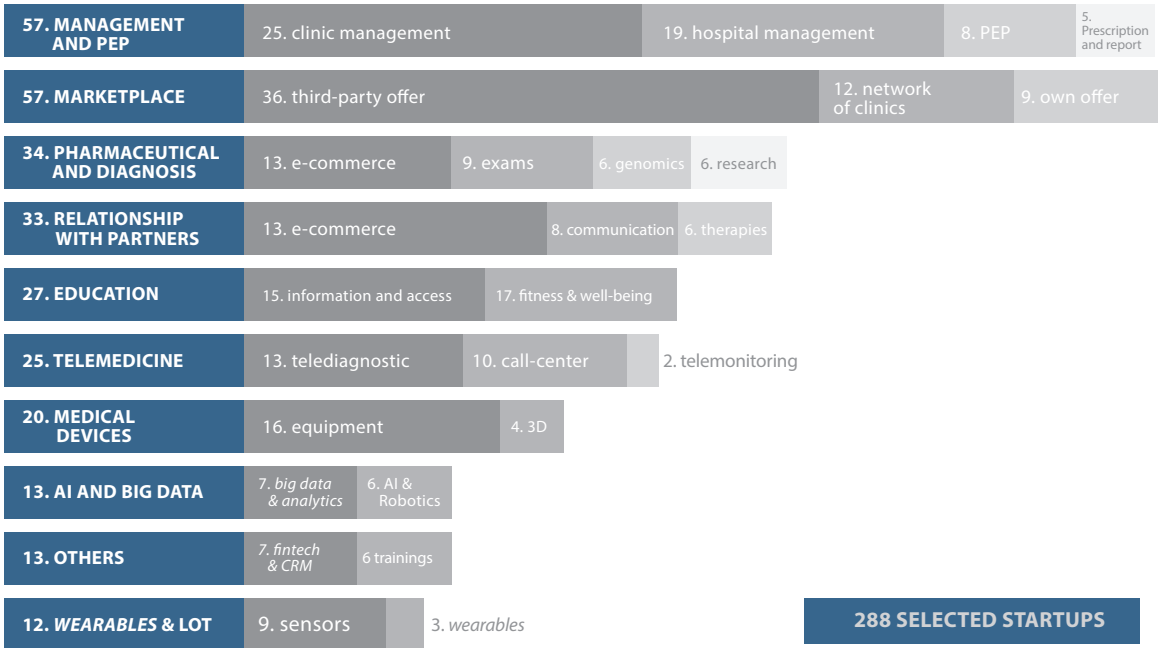
The integration of health data is also pointed out as one of the main obstacles to the implementation of technological innovations in the sector, as evidenced in a debate promoted by E*xame Fórum Saúde*.[11] The gathering of a clinical history of patients is the key to a revolution of technological innovations, but, at the same time, it is a great challenge to be overcome.

[10] 85% OF HOSPITALS intend to invest in ICT. ***Medicina S/A***, Digital Health, May 21st 2019. Available at: https://medicinasa.com.br/investimento2019/. Access in: April 26th. 2020.

[11] CERIONI, C. Data integration is a challenge for the application of new technologies in health. **Exame Fórum Saúde**, Jne 14th 2019. Available at: https://exame.abril.com.br/brasil/integracao-de-dados-o-principal-desafio-para-aplicacao-da-tecnologia-na-saude/. Access in: April 26th. 2020.

The good news is that a report released by the consultancy KPMG points out that there are 288 startups in Brazil nowadays focused on the health tech segment and with many solutions for technological innovations.[12] See how they are distributed in figure 2, below.

Figure 2 - Distribution of startups by category



Source: Distrito - Healthtech Mining Report (2018).

Where to start?

We begin this chapter by saying that many have spoken and written about innovations; therefore, there is a lot of material available, many lectures or webinars, many investors looking for health startups. If, on the one hand, it helps to understand the scenario, on the other, it can frustrate or generate doubts, due to the great diversity of proposed solutions. Health facility managers often ask themselves: where do I start? What is the best solution?

In order to produce differentiated, assertive and well-grounded content to assist decision makers, we have created our own methodology to search for the main trends in technological innovation in health.

We started by searching the internet for ten sites/articles in Portuguese and ten other sites/articles in English with the terms "technological innovation in health" and its variations ("technology", "health", "technological"). In that choice for inclusion of references, we made three decisions:

[12] DISTRITO. **Healthtech Mining Report**. São Paulo: Distrito, 2018. p 17. Available at: https://assets.kpmg/content/dam/kpmg/br/pdf/2018/06/br-healthtech-mining-report-2018.pdf. Access in:April 26th. 2020

- We prioritize searching the Internet instead of books or printed reference materials, or even academic publications. The decision is due to the fact that the innovation has a "limited expiration date". What is considered innovation nowadays may not be tomorrow, and the period for publishing more elaborate academic texts can blur our view of what is really being developed;
- We chose websites in Portuguese and English to check for differences between the perceptions and applications of innovations in Brazil and the United States. The objective was to identify whether the possible difference in the search lists is due, in addition to the cultural factor, to waves of innovations that have already been present there and have now arrived here, or if the innovation that is there is not yet being discussed here;
- We avoid including references that are linked to companies or commercial products because this would certainly bias our assessment.

Then, for each of the 20 sites, we collect the proposed themes, such as innovation. Some suggested only three themes, while others presented 12. Many of these themes were repeated on several websites, and others were cited exclusively.

In the next step, we unified similar themes, but with different or more comprehensive names (eg.: some mentioned big data and analytics, internet of things/wearables). In total, 19 different topics were addressed for the 20 sites consulted.

Finally, we count the number of times that the themes were mentioned and classified them in descending order (the most cited appear first). We added a column to sort them by type of innovation.

We omit the complete table, which contains the addresses of the sites, for space reasons, but it is available from the producers of this Manual. The synthetic result of this research is reproduced in table 1 below:

Table 1 - Number of citations for innovation themes in the 20 sites

Themes	Website quotations (portuguese)	Website quotations (english)	Total quotations	Type of innovation
Artificial Intelligence	8	9	**17**	**Product**
Telemedicine	6	6	**12**	**Process**
Internet of things	7	4	**11**	**Product**
Virtual reality	6	3	**9**	**Product**
Big data	6	3	**9**	**Infrastructure**
Applications	1	6	**7**	**Product**
Blockchain	2	4	**6**	**Infrastructure**
Interoperabillity	3	3	**6**	**Infrastructure**
3D printing	2	3	**5**	**Product**
Genomics	3	2	**5**	**Product**
Cloud computing	2	2	**4**	**Infrastructure**
Nanomedicine and biosensors	1	2	**3**	**Product**
Process management	2	1	**3**	**Process**
Logistics and delivery	0	3	**3**	**Process**
Chatbots	0	3	**3**	**Process**
Medical records/scanning	2	1	**3**	**Process**
Security and LPPD	2	1	**3**	**Process**
Patients and protagonists	2	0	**2**	**Process**
Health tech startups	2	0	**2**	**Process**

Source: Elaborated by the author of the chapter.

We decided to discuss with more details only the topics that were mentioned in more than 30% of the sites to ensure their relevance. Therefore: artificial intelligence, telemedicine, internet of things, virtual reality, big data, applications, blockchain and interoperability.

Of these, the three that refer to the necessary infrastructure to support other technologies were grouped into a single subsection. The other 11 technological innovations in health (cited in less than 30% of the websites consulted) were briefly covered in a separate section, allowing a very comprehensive view of the topics being discussed by managers, analysts and consultants.

Eight technologies you can't ignore

In this section of the chapter, we individually present the five technologies referring to products and processes (artificial intelligence, telemedicine, internet of things, virtual reality and applications) and, grouped together, the three infrastructure (big data, interoperability and blockchain). We structured the themes in three parts: definition, context and application. We do not mention at any time commercially available products or services.

Artificial intelligence:

Definition:

There are numerous definitions for the term "artificial intelligence", which have evolved as new possibilities for its application have emerged. We chose to collect parts of the definitions proposed by other authors and risk to formulate a new one. According to Fernandes,[13] the word "intelligence" comes from the Latin and is composed of two parts: inter (between) and legere (choosing). Therefore, intelligence is the ability to choose. Rosa[14] clarifies that "artificial" is simply everything that is made by man. Finally, we can quote Silva and Vanderlinde,[15] who highlights how characteristics of human intelligence: understanding of language, learning, reasoning, problem solving. In this case, we can elaborate the following definition: artificial intelligence is the part of computer science that seeks to provide equipment with systems that resemble the behavior of human intelligence.

Context:

Artificial intelligence has been widely used in medicine. In a very interesting work produced by authors from the Federal University of Piauí (UFPI), Meneses et al.[16] state that this area is expected to further develop in the coming years, based on the lifting of registered patents on artificial intelligence. Some of the tasks assigned to artificial intelligence systems are: language comprehension, pattern recognition, reasoning, choice, problem solving and learning.

[13] FERNANDES, A. M. R. **Artificial Intelligence**: general notions. Florianópolis: Visual Books, 2003.

[14] ROSA, J. L. G. **Fundamentals of artificial intelligence.** Rio de Janeiro: LTC, 2011.

[15] SILVA, B. M.; VANDERLINDE, M. **Artificial intelligence, machine learning.** Florianópolis: UFSC, [s.d.]. Available at: https://egov.ufsc.br/portal/conteudo/intelig%C3%AAncia-artificial-aprendizado-de-m%C3%A1quina. Access in: April 29th. 2020.

[16] MENESES, F. G. A. et al. Scientific and technological prospecting for the use of artificial intelligence in the health area. In: INTERNATIONAL SYMPOSIUM ON TECHNOLOGICAL INNOVATION, 8., 2017, Aracaju. **Anais** [...]. Aracaju: ISTI, 2017. Available at: https://www.researchgate.net/publication/321311213. Access in: April 29th. 2020.

Application:

Within the segment of artificial intelligence that analyzes a large amount of data to establish patterns and correlations, some experiences were developed around post-traumatic stress disorder (PTSD). Chiavegatto Filho[17] cites a study by World Mental Health, which analyzed data from 24 countries and, using machine learning techniques, assembled 20 risk groups for PTSD. In the highest risk group, more than half presented PTSD.[18]

Another important example of the use of artificial intelligence in pattern recognition (in this case, in images) is the algorithm created by scientists at Stanford University, which proved to be as effective as dermatologists in detecting anomalies and pathologies such as skin cancer.[19]

Naturally, these scientific algorithms used by artificial intelligence are even more assertive when the amount of information available is greater.

Telemedicine

Definition:

A good job in the elaboration of a definition of telemedicine was done by Nettle, Louzada and Costa,[20] who gathered other definitions, such as those of WHO, American Telemedicine Association (ATA), National Aeronautics and Space Administration (Nasa) and Telemedicine Information Exchange (TIE):"(...) use of electronic means of communication for the transmission of information and medical data (...) from specialized centers to regions that do not have satisfactory medical assistance".

We understand that, in the last decade, there has been a significant evolution in telemedicine applications, and we can also extend its definition to: telemedicine is the use of digital media for the exchange of information between health professionals or to provide care for a patient in different places.

Context:

The usefulness of this resource for remote assistance is so great that an extensive and comprehensive review of standards and conduct was necessary to maintain security and quality in the exchange of this information. Many countries have already regulated its use, as can be seen in figure 3 below. Brazil has significantly evolved in the discussion of this topic, and we hope that its regulation will take place very soon.

[17] CHIAVEGATTO FILHO, A. D. P. Use of big data in health in Brazil: perspectives for the near future. **Epidemiol. Serv. Saúde, Brasília**, v. 24, n. 2, p. 325-332, 2015. Available at: https://www.scielosp.org/pdf/ress/v24n2/2237-9622-ress-24-02-00325.pdf. Access in: May 11th 2020.

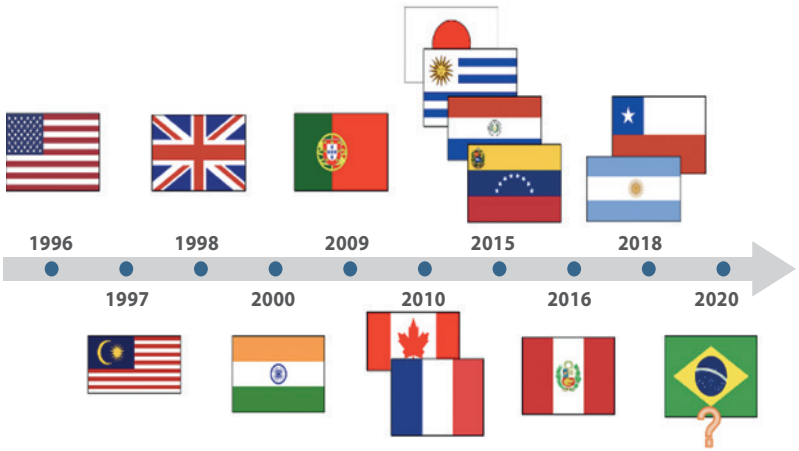
[18] KESSLER, R. C. et al. How well can post-traumatic stress disorder be predicted from pre-trauma risk factors? An exploratory study in the WHO World Mental Health Surveys. **World Psychiatry,** v. 13, n. 3, p. 265-274, 2014.

[19] ROSA, B. L. **Health management:** challenges in the face of rising costs and the technological revolution. 2019. Monograph (Bachelor of Business Administration) - *Universidade Federal Fluminense*, Niterói, 2019.

[20] URTIGA, K. S.; LOUZADA, L. A. C.; COSTA, C. L. B. Telemedicine: an overview of the state of the art. In: BRAZILIAN CONGRESS ON HEALTH COMPUTERS (*CBIS*), 4., 2004, São Paulo. **Anais** [...]. São Paulo: Unifesp, 2004. Available at: http://telemedicina.unifesp.br/pub/sbis/CBIS2004/trabalhos/arquivos/652.pdf. Access in: April 30th. 2020.

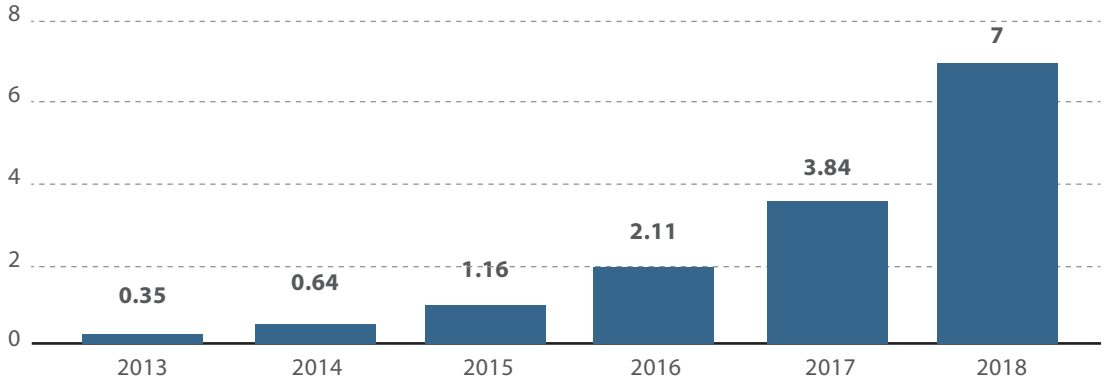
It is also possible to evaluate the acceptance of telemedicine by the number of patients seen worldwide using this technology, as estimated by IHS Markit Technology and shown in Graph 2.

Figure 3 - Telemedicine legalization schedule



Source: Elaborated by the author of the chapter.

Graph 2 - Estimated number of telehealth patients (million)



Source: IHS Markit Technology.[21]

Application:

The number of telemedicine applications has grown annually. In 2019, the Federal Council of Medicine (CFM), when the Resolution No. 2.227/2018, revoked exactly one month later,[22] defined

[21] IHS MARKIT TECHNOLOGY. Telehealth Report 2014. London: IHS, 2014. Available at: https://technology.informa.com/api/binary/470351?attachment=true. Access in: May 25th 2020.

[22] CFM – FEDERAL COUNCIL OF MEDICINE. *CFM* Resolution No. 2.227/2018. Defines and disciplines telemedicine as a way of providing medical services mediated by technologies. ***Diário Oficial da União***, Brasília, 2019a. Available at: https://sistemas.cfm.org.br/normas/visualizar/resolucoes/BR/2018/2227. Access in: May 1st 2020.

the purpose of telemedicine as "assistance, education,[23] research, disease and injury prevention and health promotion", and classified the applications in teleconsultation (medical consultation), teleinterconsultation (exchange of information between doctors), telediagnosis (issuing reports), telesurgery (surgical procedure) , teleconference (for teaching and training), telescreening (symptom assessment and patient orientation), telemonitoring (surveillance of health or disease parameters), teleorientation (health declaration for adherence to health plans), teleconsulting (consultancy between doctors, managers, professionals and workers).

In a very rich publication of international evidence of the experiences and impacts of using telemedicine,[24] the Institute for Supplementary Health Studies (IESS) describes several worldwide examples of telemedicine, as shown in Chart 1 below.

Chart 1 - Summary of some country experiences with telemedicine programs

Country	Program	Goal
China	Teleconsultation	Connect 249 specialized hospitals in 112 rural cities with some highly specialized urban hospitals, aiming to improve the diagnosis of neoplasm and cardiovascular diseases.
Bangladesh	Teleconsultation	Provide medical consultations, via the internet, by qualified doctors for patients visiting rural community clinics and in remote regions.
Mexico	Teleconsultation and telediagnosis	Perform breast cancer screening and diagnosis in women from 50 to 69 years, to decrease the mortality rate for this illness. A network of 30 sorting sites was created in 11 states interconnected, via the internet, to two exam "interpretation centers".
United States	Teleconsultation	Carry out oncology consultations with Veterans Affairs Healthcare System beneficiaries, who live in interior regions, with an oncology specialist located in a specialized clinic in a big center. The patient only travels to the clinic when there is a need for surgery or a procedure.
Albany	Teleconsultation	Reduce travel by patients with severe traumatic brain injury to the trauma center in the country, in its capital. The objective is to carry out procedures in a timely manner to improve the patient's health outcome and reduce the financial costs for the patient, the family and the health system, generated by the displacement.
Norway	Tele-ECG and teleconsulting	Reduce treatment time for myocardial infarction in emergency situations. Ambulances are provided with equipment to capture and transmit ECG images to the hospitals where cardiologists will provide counseling.
Australia	Teleconsultation	Improve access to specialists, with reduced time and expenses involved in traveling to major cities.

Source: Adapted by the author of the chapter based on *IESS* (SILVA, 2019).

[23] CFM – FEDERAL COUNCIL OF MEDICINE. *CFM* Resolution No. 2.228/2019. Repeals *CFM* Resolution No. 2.227, published in the *D.O.U.* February 6th, 2019, Seção I, p. 58,which defines and disciplines telemedicine as a way of providing medical services mediated by technologies, and expressly restores the effectiveness of the Resolution *CFM* No. 1.643/2002, published in the *D.O.U.* of August 26th, 2002, Section I, p. 205. ***Diário Oficial da União***, Brasília, 2019b. Available at: https://sistemas.cfm.org.br/normas/visualizar/resolucoes/BR/2019/2228. Access in: May 1st 2020.

[24] SILVA, A. R. A. **Does telemedicine benefit the health system? International evidence of experiences and impacts.** São Paulo: *IESS*, 2019. (Text for Discussion, n. 74). Available at: https://www.iess.org.br/cms/rep/td-74-telemedicina.pdf. Access in: May 1st 2020.

Telemedicine is also present in several centers in Brazil, despite the lack of complete regulation. All users have attested to its usefulness and effectiveness. Naturally, it is necessary to review the relevant and related conducts to their use.

3. Internet of things:

Definition:

Probably the term "internet of things" (IoT), was used for the first time more than 20 years ago, but it only became popular at the turn of the century, after the publication of an article by the Massachusetts Institute of Technology (MIT), as found Silveira Junior e Moura.[25] In a very compact but understandable way, we can say that internet of things is a network of devices connected to the internet. Several authors have proposed architectural models for implementing IoT. A simple and sufficient structure for our understanding was pointed out by Rodrigues Neto,[26] when dividing the internet of things structure into three main layers: physical devices (equipment capable of connecting directly to the internet, without the need for an intermediate computer), communication channels (how to send this data to servers, using the "cloud") and data analysis (systems responsible for evaluating the information and passing it on to a specialist or making decisions automatically).

Context:

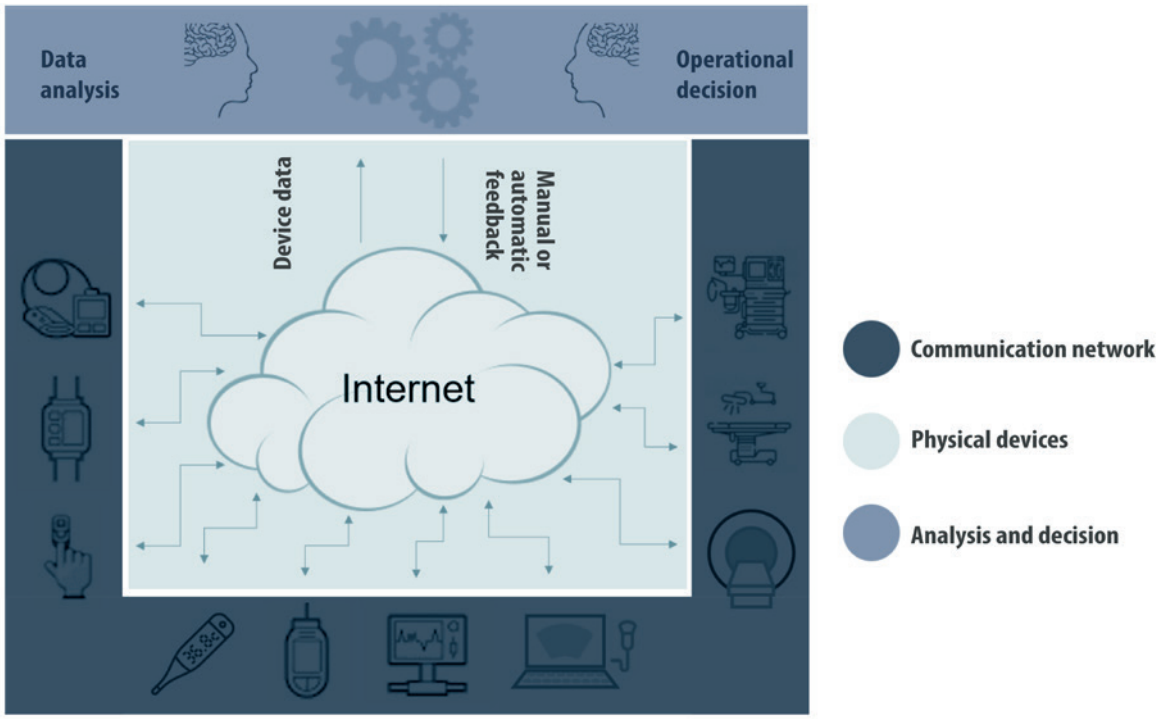
Equipment has been used for a long time to monitor patients and can respond with visual or audible alerts when the parameters captured by the sensors are out of the established range. Just look at the rooms in Intensive Care Units (ICUs), for example. There, we find monitors of electrocardiogram, heart rate, oxygen saturation, central venous pressure, arterial pressure and temperature, which can be viewed not only from the patient's room, but also from a monitoring center. By coupling devices capable of connecting this equipment to the internet, it is possible to send the collected data to a large repository and apply decision-making algorithms to adjust the operation of the equipment.

[25] SILVEIRA JUNIOR, W. P.; MOURA, L. G. L. IoT communication applied to health through personal monitoring devices. **Interdisciplinary Scientific Journal**, v. 5, n. 3, p. 74-87, 2018. Available at: http://revista.srvroot.com/linkscienceplace/index.php/linkscienceplace/article/view/555/0. Access in: May 2nd 2020.

[26] RODRIGUES NETO, E. C. **Study on IoT applications in the medical field.** 2020. Monograph (Bachelor of Electronic Engineering) - Federal University of Santa Catarina, Florianópolis, 2020. Available at: https://repositorio.ufsc.br/handle/123456789/204169. Access in: May 2nd 2020.

Figure 4 below illustrates the internet of things in medicine.

Figure 4 - Representation of the basic structure of the internet of things in medicine



Source: Elaborated by the author of the chapter.

Application:

In addition to the examples already mentioned with medical equipment in the ICU room, there are numerous applications of IoT technology using wearables. Some of these accessories, such as watches, shoes, bracelets, clothes (device layer), have "default" IoT and use a bluetooth connection with cell phones (connection layer) to send relevant information about the user's health. Rodrigues Neto[27] collected some studies already carried out with wearables:

» Monitoring vital signs:[28]

An ECG signal monitoring system, using biomedical sensors to measure heart and pulse rate, body temperature and oxygen saturation.

» Heart attack prevention:[29]

A system for the prediction of heart attacks by monitoring the heart rate and body temperature of the individual.

[27] Ibidem, p.19-39.

[28] ISLAM, M. S. et al. Monitoring of the human body signal through the internet of things (IoT) based LoRa wireless network system. **Applied Sciences**, v. 9, n. 9, p. 1867-1884, 2019.

[29] ELSAADANY, Y.; MAJUMDER, AKM J. A.; UCCI, D. R. A wireless early prediction system of cardiac arrest through IoT. In: ANNUAL COMPUTER SOFTWARE AND APPLICATIONS CONFERENCE (COMPSAC), 41., 2017, Turin. **Annals** [...]. Turin: IEEE, 2017.

» Aldehyde sensor for asthma patients:[30]

A system capable of measuring the exposure of patients with asthma to formaldehyde (simpler aldehyde), which irritates the airways and can foster asthma attacks.

» Fall detection:[31]

A fall detection system using the accelerometer of a smartphone, with an algorithm capable of discerning falls from routine activities, such as sitting, jumping and walking.

» Monitoring of Parkinson's patients:[32]

A system to monitor patients suffering from Parkinson's disease, using sensors that observe gait patterns, tremors and general activity levels.

» Contact lenses:

A system that monitors the glucose levels of patients with diabetes through their tears.

4. Virtual reality

Definition:

In general, we can say that any reality is virtual, since it can be a representation created by our brain after processing the signals captured by our sensory organs. But, leaving aside this concept of scientific-philosophical fiction, we can adapt two definitions, one given by Barilli, Ebecken and Cunha[33] and the other by Sabbatini,[34] and to say that virtual reality is an interface technique that allows the sensation of immersion and interaction of a person in a three-dimensional environment generated by computer and multisensory peripherals.

Distinguishing this concept a little more, a high performance computer generates a virtual environment with scenery and objects that can be perceived in a three-dimensional way, through immersion helmets with stereoscopic glasses and 8D sound, explored as you walk using technological shoes, with wheels and mats, and manipulated by means of haptic gloves, with sensors of touch and force.

[30] LI, B. et al. A wearable IoT aldehyde sensor for pediatric asthma research and management. **Sensors and Actuators B Chemical,** v. 287, p. 584-594, 2019.

[31] TRAN, H. A.; NGO, Q. T.; TONH, V. A new fall detection system on android smartphone: application to a SDN-based IoT system. In: INTERNATIONAL CONFERENCE ON KNOWLEDGE AND SYSTEMS ENGINEERING (KSE), 9., 2017, Hue. **Annals** [...]. Hue: IEEE, 2017.

[32] PASLUOSTA, C. F. et al. An emerging era in the management of Parkinson's disease: wearable technologies and the internet of things. IEEE J. **Biomed. Health Inform**., v. 19, n. 6, p. 1873-1881, 2015.

[33] BARILLI, E. C. V. C.; EBECKEN, N. F. F.; CUNHA, G. C. Virtual reality technology as a resource for distance public health training: an application for learning anthropometric procedures. **Collective Health and Science**, v. 16, n. 1, p. 1247-1256, 2011. Available at: https://scielosp.org/article/csc/2011.v16suppl1/1247-1256/. Access in: May 3rd 2020.

[34] SABBATINI, R. **Virtual reality and medicine.** [s.d.]. 47 slides. Available at: http://www.sabbatini.com/renato/slides/realidade-virtual.pdf. Access in: May 3rd 2020.

Context:

Virtual reality is not a recent term. In fact, it was used for the first time in the 19th century to create illusory situations in the theater. In the middle of the twentieth century, a first mechanical machine, called Sensorama (figure 5) already allowed to see short films with the sensation of 3D images, wind, smell and seat inclination.

Figure 5 – Sensorama

Source: Virtual Reality for Dummies.[35]

With the evolution of computers, software and peripheral devices, this technology has undergone several innovations and applications in various areas of human knowledge, such as entertainment games, flight simulators, education and culture, individual or corporate training, marketing campaigns and, in particular, it gained interest and development in medicine. Figure 6 shows the state of the art of some of the peripherals used in virtual reality.

Figure 6 - Devices for virtual reality

Source: Elaborated by the author of the chapter.

[35] VIRTUAL reality. Virtual Reality for Dummies, [s.d.]. Available at: https://vrdummies.org/virtual-reality/geschichte/. Access in: May 11th 2020.

Application:

The health area is one of the most promising in the application of virtual reality technology and can be used for training procedures, education, rehabilitation, and collaborative work.

» Training:

The use of VR for training medical professionals and students in surgical procedures has numerous advantages, such as, for example, low costs, possibility of repetition and, mainly, elimination of risks for the patient.

» Pain treatment:

Diverting the patient's attention from the focus of the pain has shown very positive palliative results, such as immersing children in pleasant virtual environments at the time of vaccination.

» Education:

Several applications offer an immersion in atlas of human anatomy and pathophysiology, providing information about anatomical structures, allowing the manipulation of organs and enabling the visualization of tumor growth.

» Rehabilitation:

Through a library of activities, it encourages patients with Parkinson's, amputees or those who have had a stroke, to practice compromised body movements. In addition, it allows the therapist to access movement data.

» Fighting phobias:

Immersion in environments that simulate reality helps individuals to react in circumstances that cause them discomfort and to overcome phobias such as fear of heights, spiders, tight places, etc.

5. Applications:

Definition:

We found several definitions for applications in the researched articles and, almost always, it refer to mobile technology, that is, notebooks, tablets and smartphones. So, these apps (or mobile apps) can be defined as software installed on a mobile device for a specific purpose. In the context of health, there is the expression mobile health or mHealth, that are systems installed on mobile devices to improve the health management of an individual or a population.

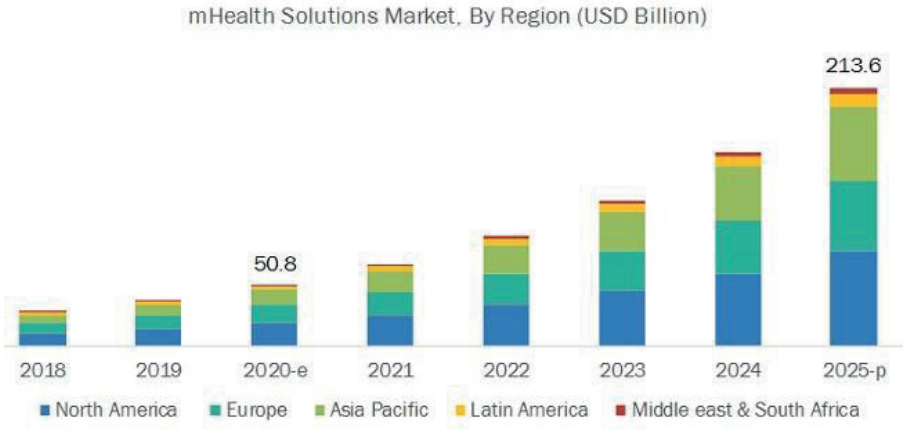
These applications can use the internet connectivity component, available on mobile devices, depending on their purpose.

Context:

It is natural to understand the reasoning for the growth in the number of applications based on three parameters: cellphone index per inhabitant, areas of interest and developer companies. Increasing any of these parameters causes the number of applications offered on the market to grow as well. Only in the health area, according to Gomes et al.,[36] "the number of mHealth applications available to consumers exceeds 165.000 "(other publications point to more than 300.000).

In a very thorough study, Markets and Markets, a company specializing in opportunity research, points to a worldwide market of USD 213.6 billion for mHealth solutions,[37] a Composite Annual Growth Rate (CAGR) of 33.3% between 2020 and 2025 (graph 3). Figure 7 allows you to identify which categories of mHealth are being invested.

Graph 3 - Market for mHealth solutions, by region (in billion USD)



Source: Markets and Markets (MHEALTH..., 2020).

Another important factor to be considered is the entry of 5G technologies (5th generation of the mobile internet) and the increase in IoT devices (already mentioned above) in the coming years. This combination of technologies should expand the use of mHealth for connected solutions, in relation to applications installed on devices, but which do not connect to the internet.

Application:

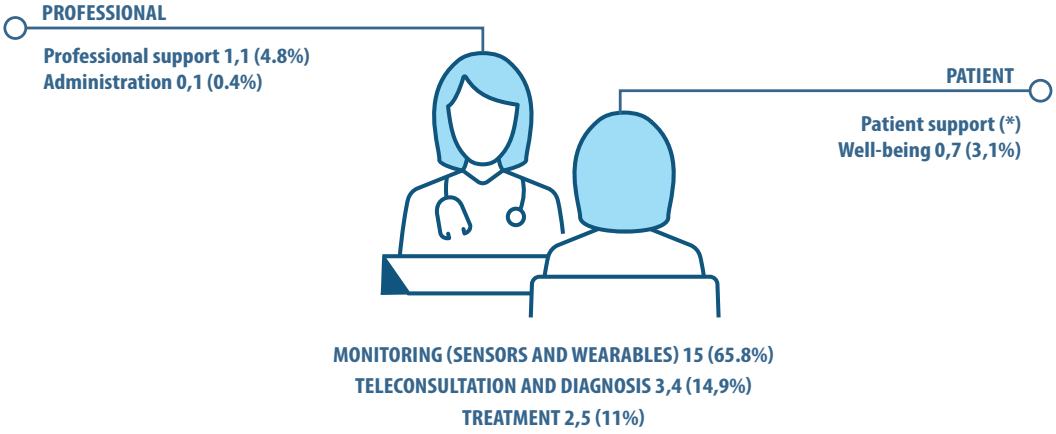
Considering the fact that the mobile device is personal, mHealth has been exploring solutions centered on the individual (patient, health professional), providing a personalized experience and empowering patients to take care of their own health.

[36] GOMES, M. L. S. et al. Evaluation of mobile applications for health promotion of pregnant women with pre-eclampsia. **Acta Paul. Enferm**., São Paulo, v. 32, n. 3, p. 275-281, 2019. Available at: http://dx.doi.org/10.1590/1982-0194201900038. Access in: May 4th 2020.

[37] MHEALTH Solutions Market. **Markets and Markets**, 2020. Available at: https://www.marketsandmarkets.com/Market-Reports/mhealth-apps-and-solutions-market-1232.html. Access in: May 5th 2020.

In view of the gigantic range of mHealth solutions, we chose to group them into categories and indicate the size of that market, according to a survey by Pricewaterhouse (PwC) and reported by Wearables Health Solutions,[38] as shown in figure 7.

Figure 7 - mHealth categories and investment value (in billion USD)



Source: Elaborated by the author of the chapter based on PwC Analysis (2017 apud INVESTOR ..., 2020).

6. Technological infrastructure innovations:

We now present, together, the other three technologies that we have defined for infrastructure (big data, interoperability and blockchain).

Big data is a technology that allows the collection and use of a huge number of information, and it is essential to support at least two other technologies already mentioned: artificial intelligence and telemedicine. Artificial intelligence because the "learning" of any algorithm used by these systems becomes more refined as the sample number is larger. For example, if we had only two cases of patients infected with the coronavirus (Covid-19) and one of them died, we would certainly not be able to identify risk groups or prevention methods. Teleconsultation can also be more effective and efficient if, during the care of a patient, the doctor has the results of the last exams (done in different laboratories), the discharge summary of the last hospitalization, the list of drugs in use or the information allergies, for example.

Naturally, the construction of relevant big data depends on the quality of the information entered by the health professional and the storage standard of that information, to facilitate their recovery and understanding. This is where interoperability technology comes in, which is the ability for different systems to work together. For this to happen, it is essential that the systems, or some intermediate mechanism, translate the contents stored in a standard that can be interpreted by others. In health, a lot of data can be exchanged between systems: diagnoses, prescription drugs, requested tests, results of these tests, clinical history, images, etc. For each piece of information, there is a specific "interpreter". A very simple example is the International Classification of Diseases (ICD), which standardizes how to register the diagnosis.

[38] INVESTOR Information. Wearable Health Solutions, 2020. Available at http://www.wearablehealthsolutions.com/investor-information/. Access in: May 5th 2020.

Finally, we present the latest technological innovation in health, previously selected and probably because it is the most recent, still with some gaps that need to be filled. Blockchain is a technology of records distributed and shared on a computer network, with an audit trail for all transactions. Two immediate advantages of using this technology in health are: first, the health records of any patient are already distributed by the providers that attended him, so it is not necessary to join them in a big data to have a complete view of the clinical history of this patient - just connect the records (distribution and sharing); second, the interconnection forms a single chain of all systems that collaborated with the construction of the patient's history, so that any authorized change of information in any node is reflected in the entire chain, guaranteeing data integrity (security). On the other hand, the question remains how to apply analytics or artificial intelligence in distributed systems. Of course, there is some evolution in this direction, but it is still very incipient.

Other technologies you also need to know

When adopting infrastructure technologies (big data, interoperability and blockchain), we strongly recommend the use of cloud computing, technology listed at the beginning of the chapter. This means that there is no need to purchase computers with large processing and storage capacities or the construction of special rooms to house them. Of course, governance is the responsibility of the contracting institution, but the equipment and resources can, and, most of the time, should be outsourced, ensuring updating and scalability at much lower costs.

Some technological innovations go unnoticed or are overlooked in the face of those that look like science fiction. This is the case, for example, of the management, purchasing, inventory of inputs and medications systems (one of the websites consulted even mentions logistics and delivery systems) etc. If well implemented, these systems can generate big savings over the course of a year. These technologies are likely to need a new outfit and a little spotlight. This can be done through dashboards with some savings or performance indicators, placed in strategic locations for managers to see. Another technology that has no longer attracted attention, despite still being a major headache for many, is the medical record electronic device (PEP). Several offices, outpatient clinics, clinics and hospitals have already adopted a product for the patient's clinical record, the prescription of medications, the request for exams. The PEP will probably only gain new momentum when it incorporates interoperability buses, capable of displaying information from sources other than the doctor, such as wearables, chatbots, telemedicine support products, among others.

On the other hand, there are technologies that really impress. A very current example is 3D printers. The two major innovations in relation to conventional printers are a third axis of movement of the printhead and the material used (powder, gel, plastic or metal filament, titanium and biotint), which is deposited in successive layers until it forms an object. They can be used to materialize the results of imaging exams (radiography, resonance, tomography), allowing better visualization and surgical planning; in the manufacture of prostheses customized or face reconstruction; and, in the future, in the printing of organs for transplantation using biological materials.

It is also essential to mention that a very important application of new technologies in health is aimed at the treatment of diseases, particularly through genomic therapy. Since the mapping of the human genome (1990-2003), it has been possible to identify more than 1.800 disease genes. These studies have helped in the development of vaccines and drugs, in addition to predicting the development of certain diseases in an individual and indicating personalized treatments. When we talk about genetic diseases, we are dealing with an order of magnitude called a nanometer (one billionth or 10-9 meters). That is where the term nanomedicine comes from, which is the use of nanoparticles, biosensors or nanorobots to prevent, diagnose and cure diseases. These biosensors are composed of three different parts: the biological sensor (tissues, microorganisms, organelles, enzymes, nucleic acids, etc.), which connects with the target of the study; the transducer, which transforms the result of the connection into a signal that can be more easily read; and the reader, who is able to process and display these signals. Nanorobots, on the other hand, could be introduced into the human body to search for and destroy cancerous or virus-infected cells. The possibilities of nanomedicine are huge!

An important point that can be observed is that a good part of the technologies has led to the empowerment of patients. Telemedicine, internet of things, applications, are examples of facilitators and stimulators of the patient's involvement in the care of their own health, since they allow a greater interaction with medical devices and information.

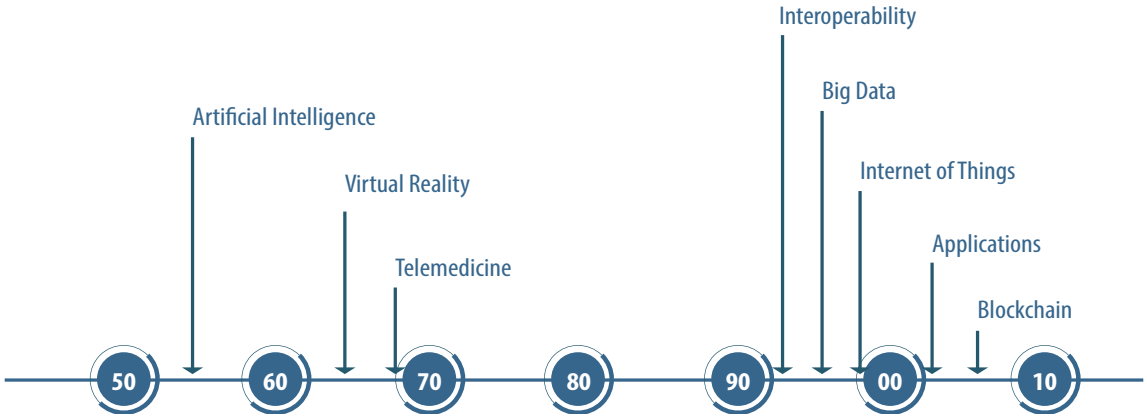
The General Data Protection Act (LGPD)[39] also gives to patients the ability to decide whether, who and when someone can access their medical history. Within this same line of thought, chatbots have become the word of the day in recent months. Some are even betting that they came to replace apps. The idea behind this technology is not new: smart digital assistants capable of understanding human needs. Endowed with the ability to recognize speech or a question in writing, chatbots can facilitate scheduling an appointment (just ask when is the best day and time for your appointment), improve patient engagement for a given treatment (remembering medications and diets), among many other applications .

Trends and priorities

Figure 8 places the eight technological innovations that we discuss in this chapter in a timeline. Of course, it is not easy to set an exact date for the appearance of these technologies because, by definition, they are improvements to previous products or processes. Take the case of telemedicine, for example, which, at the time of World War II, was already used for guidance from rear doctors to front doctors. So, when possible, we look for dates when the terms were coined.

[39] BRASIL. Presidency of the Republic. Law No. 13.709, of August 14th 2018. General Law on Protection of Personal Data (LGPD). ***Diário Oficial da União***, Brasília, 2018. Available at: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/lei/L13709.htm. Access in: Feb 26th. 2020.

Figure 8 - Decade of the appearance of some technological innovations in health



Source: Elaborated by the author of the chapter.

Of course, it makes no sense to think that it is necessary to implement all these technologies, but to identify what is most important for each situation. To assist this decision, we made some recommendations on its uses, particularly in hospitals, as shown in Chart 2.

Chart 2 - Main technologies and recommendations

Technology	Recommendation	Note
Artificial Intelligence	Very useful for research, diagnostics and prevention	It only makes sense along with big data
Virtual Reality	Expands service reach and reduces costs§	Depends on regulation
Telemedicine	Mainly for home care and remote monitoring	Other than that, for individual management
Internet of Things	Excellent for education and treatment of some phobias	Essential for teaching hospital
Big data	Only if artificial intelligence and interoperability are used	Hospital groups should sponsor big data projects
Applications	Patient loyalty and institutional content	Other than that, each individual chooses what he wants
Blockchain	At the moment, more important for audit and security trails than for clinical records	Technology still in the beginning
Interoperability	Important when there is information from several different systems (internal or external)	Hospital groups should have interoperability projects

Source: Elaborated by the author of the chapter.

We believe that the main investments at that moment (more cultural and process than financial) should go to telemedicine. There will be a great opportunity in the next two years after its regulation.

Another great opportunity is the implementation of big data and interoperability between partner hospitals. The volume of information generated will bring extraordinary results for health in Brazil, in general.

Health techs, health technology startups, can be excellent options to take to the negotiating table and mature these ideas before investing. In addition, the Brazilian scenario has proved to be one of the most promising for the implementation of new health technologies in the coming years.

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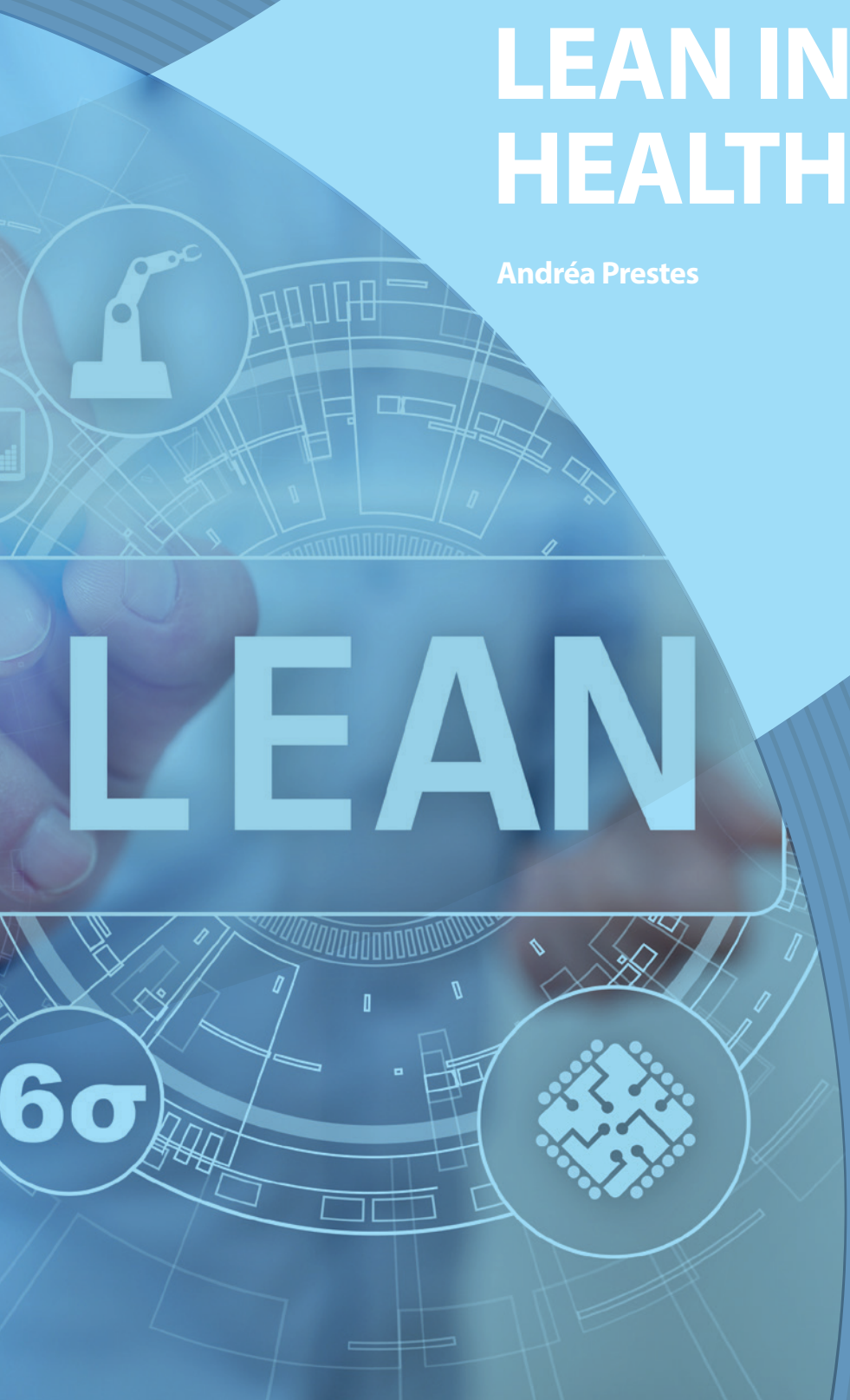
CH. 7
LEAN IN HEALTH

Andréa Prestes



Goal

- Present Lean, its origin and its applicability in the health area;
- Expose the importance of leadership for the creation of Lean Thinking;
- Approach the Lean culture as a factor of sustainability of the results.

Introduction to Lean

The Lean Thinking came about as a result of the Toyota Production System (TPS) practices and great results. Its creation is attributed to the Toyota engineer Taiichi Ohno, in Japan after World War II. The focus was on eliminating waste in order to respond to the same conditions faced by most companies today: the need to have fast and flexible processes capable of offering customers what they want, when they want, with the highest quality and an attractive cost.[1]

The philosophy of Lean production started to be widely disseminated and recognized from the book "The Machine that Changed the World", published in 1990. The result of a five-year study on the future of the automobile, carried out by researchers from the Massachusetts Institute of Technology (MIT), had a major impact on the global automotive sector by demonstrating that Japanese companies led by Toyota were commanding the market going from the excellent results obtained with the adoption of a new production and business system, Lean.[2]

Lean seeks to completely eliminate the loss by removing what does not contribute to the progress of the process, eradicating that does not add value.[3] It is a management philosophy that favors a systemic view of the production chain, in which processes are organized to facilitate the identification and elimination of waste and the maintenance of only what adds value. It is structured based on the sequential ordering of activities, so that they flow without interruption. At the beginning, Lean was restricted to the automotive industries, as there was an understanding that it was feasible only in the production systems of this type of company. Over the years, it has gained space in other segments, such as government services and health care.

Organizations, in general, sought to unravel the secret of Toyota's Lean production, which became a global movement, along the lines of what happened with total quality in the 1980s.[4]

Lean Thinking - in addition to being based on technical issues, such as the use of tools and working methods with a view to reducing waste, is structured in the strength of leadership for the good conduct of people. Qualified leaders, able to use the available tools with recognized skill and, also, mobilize and develop people, make continuous improvement their daily reality, optimizing

[1] LIKER, J. K. **The Toyota model**: 14 management principles from the world's largest manufacturer. Porto Alegre: Bookman, 2015.

[2] WOMACK, J. P; JONES, D. T.; ROOS, D. **The machine that changed the world:** based on the Massachusetts Institute of Technology study on the future of the automobile. 10th reprint. Rio de Janeiro: Elsevier, 2004.

[3] SHINGO, S. **The Toyota production system**: the point of view of production engineering. Porto Alegre: Bookman, 1996.

[4] LIKER, J. K.; COMVIS, G. L. **The Toyota model of Lean leadership:** how to achieve and maintain excellence through leadership development. Porto Alegre: Bookman, 2013.

processes and people simultaneously.[5] It is important to mention that Lean has been used a lot in association with Six Sigma, because it is a method for promoting managed changes, using the detection and resolution of problems to prevent errors, with the reduction of variation. With the use of its management practices, it moves the organization towards the reduction of failures, considering the current error rate as the starting point, with a goal to reduce the occurrence opportunities.[6]

The goal of the entire Lean initiative must be to create value for the patient. A new organizational culture focused on continuous improvement must be developed, with top management as a promoter and driver of change. An intense journey of organizational development must be initiated, to promote new paradigms to the traditional mentality of assistance. It is a long and challenging process, much broader than just the use of techniques, tools and principles, since "it is only possible to maintain the gains of a Lean approach with a relentless focus on the continuous improvement of all the processes ".[7]

There are several cases with excellent results in renowned hospitals around the world arising from Lean. In Brazil, the initiatives are few and incipient, challenging even more the managers who want to start the implantation in their health units. The spread of Lean in the country has received a valuable contribution to the project of the Ministry of Health and *Hospital Sírio Libanês*, which, since 2017, has worked overcrowding in the emergencies of public hospitals across the national territory, expanding positive results through Lean Thinking.

The purpose of this chapter is to bring Lean as a competitive factor to the management of health institutions. We intend to highlight, mainly, the need for strategic alignment, with the inclusion of Lean in institutional objectives, as well as the development and appreciation of people as an essential factor in promoting Lean Thinking and in creating the institutional Lean culture. It seeks to present, in a simple and easy way, the central idea, so that hospital managers have theoretical and practical support, without the intention of exhausting the approaches, describing a script or conducting a literature review on the topic.

Lean to the hospital manager

Health management has been a challenge in most countries in the world, affected by several factors that increase the cost, at the same time that financial restrictions are increasingly present. In this scenario, hospital institutions are greatly impacted by the population's increasingly growing needs, while financial resources are decreasing. There are many obstacles to promote the proper operation of these institutions, which, due to their nature of service, are recognized for the great associated complexity.[8][8]

[5] Ibidem.

[6] BARRY, R.; MURCKO, A.; BRUBAKER, C. **The Six Sigma book for healthcare:** improving outcomes by reducing errors. Chicago: American College of Healthcare Executives, 2002.

[7] LIKER, J. K.; OGDEN, T. N. **The Toyota crisis:** how Toyota faced the challenge of recalls and the recession to resurface stronger. Porto Alegre: Bookman, 2012. p. 13.

[8] PRESTES, A. et al. (Orgs.). **Hospital manager's manual**. Brasília: Brazilian Hospitals Federation, 2019.

Improving health outcomes has been one of the main topics discussed in the scope of hospital management, in which the quality factor is being sought not only in the sense of clinical outcome, but also at cost-effectiveness with the addition of value, without damage being caused to patients. Studies to reduce costs consume a lot of energy and time for managers who constantly work towards this goal. About this, Lean can be an important contribution for these professionals, since Lean hospitals focus on reducing waste instead of reducing costs, focusing on the value they deliver to patients, and even with less effort,[9] providing a different way of looking at them; by not looking directly at them, they come to see them as the result of all systems and processes.

The Lean approach contributes to greater efficiency in the costs of the operation, as it focuses on the institution's processes. In this sense, it becomes a substantial aid for people to invest in processes, working to eliminate waste continuously, promoting rationalization (instead of containment) in the use of resources, with greater and sustainable gains in the long term for the hospital.

Because it is "a set of tools, a management system and a philosophy that can change the way hospitals are organized and managed",[10] the first step in implementing Lean should be the development of the vision of hospital managers, process leaders or specific areas, to understand that philosophy brings with it principles that serve as guidelines for the continuous operation of health units.

Creating value from the customer's perspective

To start the development of Lean Thinking, it is necessary to work with the specification of value. Much has been said about health value, but there are few definitions of its meaning. To start Lean Thinking, we need to understand the value from the customer's perspective.[11] Most organizations and health professionals are not used to seeing from this angle, sometimes causing a summary understanding that health value is just about minimizing the costs associated with care, distorting the main purpose.

The value in health "can only be measured based on the cycle of care, and not as a procedure, service, consultation or examination in isolation".[12] Thus, it should be understood as the results achieved through the assistance provided. In summary, the value in health can be defined as the result in relation to costs, which means that it encompasses efficiency.[13]

[9] GRABAN, M. **Lean Hospitals**: improving quality, patient safety and employee engagement. Porto Alegre: Bookman, 2013.

[10] Ibidem, p. 4.

[11] Ibidem.

[12] PORTER, M. E.; TEISBERG, E. O. **Rethinking health:** strategies to improve quality and reduce costs. Porto Alegre: Bookman, 2007. p. 22.

[13] Ibidem.

Elimination of waste

For more value to be added, waste must be eliminated. In Japanese, waste means "change". It refers to any activity that consumes resources without generating value: correction of errors, production above demand, processes that are not necessary, movement and transportation without purpose (people or items), products or services that are at odds with the needs of customers.[14]

Health waste can be considered as everything that happens in the day-to-day work that generates problems and annoyances, interfering in the provision of care to the patient. Interruptions during the execution of activities, communication errors, unnecessary travel and unnecessary overtime are examples of waste.[15]

There are eight types of waste that we seek to eliminate with Lean: overproduction; waiting time; unnecessary transport or handling; overprocessing or incorrect processing; excess stock; unnecessary movement; defects; and waste of employees' talent.[16] We will approach each one, adapted to the health context, with some examples:

1. Overproduction: producing even when there is no demand, bringing wasted hours of work, material, generating stock above what is necessary. Examples: sterilization of trays or packages of instruments beyond what is necessary, causing loss of stability and the need for reprocessing; producing more meals than the number of hospitalized patients, causing an increase in rest-intake;
2. Waiting time: waste of time between one stage and another of the process, in which employees or even patients need to wait to be served, triggering internal bottlenecks. Examples: Material and Sterilization Center (MSC) having to wait for the delivery of the surgical field to perform the sterilization process; Surgical Center, in turn, has to wait for the delivery of the surgical field by MSC to start the procedures; patients waiting at the reception to be attended; waiting for the patient in the emergency room to have a bed, among others;
3. Transport: moving items or people unnecessarily. Examples: transporting patients to take an exam at a different time than scheduled; laboratory technician that have to go several times to the same specialty clinic for collections requested at different times; maid making several deliveries to the same location due to lack of planning;
4. Overprocessing or incorrect processing: performing unnecessary activities, in excess, or even having to repeat them. Examples: exams that are unnecessary or frequently above mandatory; collection of laboratory samples; therapy sessions in excess or longer than expected;
5. Excess inventory: items stored above what is necessary. Examples: items stored in the nursing stations in addition to the volume suitable for use; emergency carts with greater number of items in useless presentations; materials and medicines purchased and stored in volumes beyond what is necessary, generating more space and money spent;

[14] WOMACK, J. P; JONES, D. T. **The lean mindset in companies:** eliminate waste and create wealth. 6th reprint. Rio de Janeiro: Elsevier, 2004.

[15] Graban (2013).

[16] Liker (2015).

6. Unnecessary movement: any useless movement or displacement that employees perform during work and that generates a loss. Examples: movements in the nursing stations to locate the items intended for dressings patients; commuting to look for some product that should be stored in the workplace, but is missing; disorganization of the workplace, causing repeated searches for "lost" items;
7. Defects: everything that was done badly, causing damage, or that needs to be corrected, generating rework. Examples: reoperation due to errors; incorrect assembly of medication kits for patients; reprocessing of clothes due to the existence of stains after washing;
8. Talent: waste of competence that the employee has to offer, is willing to deliver and the company disregards it. Examples: use of professionals' time for unnecessary activities; not using ideas to generate internal improvement for the institution; not listening to people and not integrating them into projects; high-capacity employees allocated to jobs that underuse their knowledge.

The waste presented here is only for the contextualization of losses during the analysis of processes, to support the identification of activities that add value to those that do not add value. It is important to highlight that the literature on Lean waste is vast. Some authors list only seven. Others, as is the case with Liker[17] and even Graban,[18] in his book "Hospitals Lean", a work that we recommend to deepen the subject, already work with the eighth waste: talent.

With the elimination of waste, the process starts to run without barriers, stops or unnecessary interruptions, which makes the flow continuous. From the greater precision of the flow of value, with the maintenance of the steps that really add value, the flow of the product or service starts to be continuous and pulled by the customer. Thus, there is a process of reducing effort, time, space, cost and errors, becoming closer to the ideal.

Then, the search for perfection arises, generated by the virtuous cycle of Lean Thinking, through positive changes carried out continuously with the elimination of barriers, generating fluidity and heavy flow. An environment of constant analysis is born, debates between the team to identify new possibilities for improvement, conducted by the process collaborators themselves, becoming the path that leads to perfection.

Communicating Lean to care teams

Anyone who has had the opportunity to work with Lean in the health area knows that, normally, one of the first lines of the assistance teams is that patients are not cars and the hospital is not an industry. It is understood that this is the initial reply, when, for most professionals, it is something unknown. They support their questions based on the historical context of philosophy: how can something applied in industries be used with patients? In fact, it is possible that, initially, there is a certain amount of aversion to the topic. However, from the moment they come to know the purpose of Lean, resistance ends or decreases considerably for most employees.

[17] Liker (2015).

[18] Graban (2013).

There is something that can help with clarification and adherence, considered as a crucial point in the communication for the preparation of the teams. It is essential that people are informed of the subject, receive explanations, even if basic, at the beginning, and, as work progresses, they are integrated into the process.

With the wide and massive communication of the institution's professionals, it is possible to explain that Lean is not intended to interfere in clinical conduct. The focus is on processes that can be improved by eliminating waste, for greater value delivery to patients.

It is known that patients may need different care, even when dealing with the same disease, which is called natural variability. The focus is on standardizing what is possible, through protocols to reduce artificial variability, caused by healthcare professionals due to their personal preferences in providing care, and not due to the patient's illness or need. Thus, the standardization of protocols, the checklist, the definition of lean flows and processes, contribute significantly to the elimination of waste, as well as to greater security in the provision of care, by evaluating and considering everything that is necessary for the proper execution of care.

The preparation of teams is essential for Lean to achieve its purpose of eliminating barriers and favoring care professionals to concentrate on the execution of care, enabling, in the long run, a strengthening and growth of the business itself, by reducing of costs and risks.[19]

The role of leadership in Lean transformation

It is necessary for leaders to stop operating as firefighters to put out fires (momentary solution) and go on to a detailed analysis of everything that involves the causes and what must be changed so that the problem no longer occurs (root cause analysis).[20] It is expected to change behaviors and use appropriate tools for analysis, such as, for example, the Ishikawa diagram (fishbone), or the 5 questions technique.

On the path to the development of culture based on the essence of eliminating waste in a continuous and systematic way, focused on the definitive resolution of problems, with the participation of all those involved in the process, leaders must promote inclusive discussions, in which employees are heard to make decisions, aiming at group consensus, before any type of implementation or change. Institutional leaders, like supervisors and coordinators, have the role of preparing professionals to be able to work efficiently in organized groups, collect and analyze data, document and improve processes and solve daily problems, in a sense of self-management within the team[21] in a practical and objective way.

In many hospitals, we still perceive that leaders insist on placing professionals in places, such as traditional classrooms, to be trained, sometimes in an unstructured way, in which they expect

[19] Graban (2013).

[20] KOENIGSAECKER, G. **Leading Lean transformation in companies.** Porto Alegre: Bookman, 2011.

[21] Liker (2015).

retention and replication in practice. This may even work for some themes, or when it comes to an initial seminar for the dissemination of Lean philosophy, but it does not serve for people to appropriate the Lean way of doing it.

It is understood that the best way to generate learning retention for the development of Lean Thinking occurs through training in practice, in the work process itself, or through realistic simulations, scenarios created for this purpose, so that professionals can learn about Lean, "doing it".

Active learning will bring greater results for rapid understanding and demystification of Lean philosophy. The fact that they practice from the beginning will even allow for the formation of internal multipliers, and also contribute to arouse (in many) the desire to expand knowledge.

With the development of Lean Thinking, people begin to realize that it is possible to do more with less: human effort, equipment, less time and space, while getting closer and closer to what customers want, assigning value to deliveries. It also provides those involved with a way to make work more satisfying.[22]

As the Lean philosophy focuses efforts on eliminating everything that does not add value, people will be able to spend more time doing what, in fact, creates value for the patient. In the case of hospitals and health entities, it means, for example, that it will provide healthcare professionals with a longer time in the effective provision of care to patients.

Developing Lean Thinking means that leaders should stimulate critical thinking in the analysis of daily work, so that employees start to worry about problems, and not to live with or deviate from them. Leaders should be able to invoke analytical thinking in people, so that professionals start to eliminate everything that interrupts their work, encouraging them to look for ways to solve problems and suggest solutions. Institutional leaders have the main role of developing, in all employees of the institution, the mentality that problems need to be resolved immediately, so that they do not occur again and will result in a waste of time.

Through Lean, it is possible to promote team learning so that they can separate activities into categories: the things they do that are valuable (help the patient); and the things they do that have no value (do not help the patient). At this point, it is necessary to add the perspective of the business: maintaining the activities that are necessary in the company's view, in order to comply with laws and regulations, such as, for example, performing the initial registration of the patient in a single medical record. This process of categorizing activities is a critical step in the Lean journey.

Culture change

The decision to start Lean at the hospital must be made by senior management and be aligned with the organizational strategy, as we consider that the success of Lean philosophy is directly linked to the management model. Change management must be considered, as there will be many internal

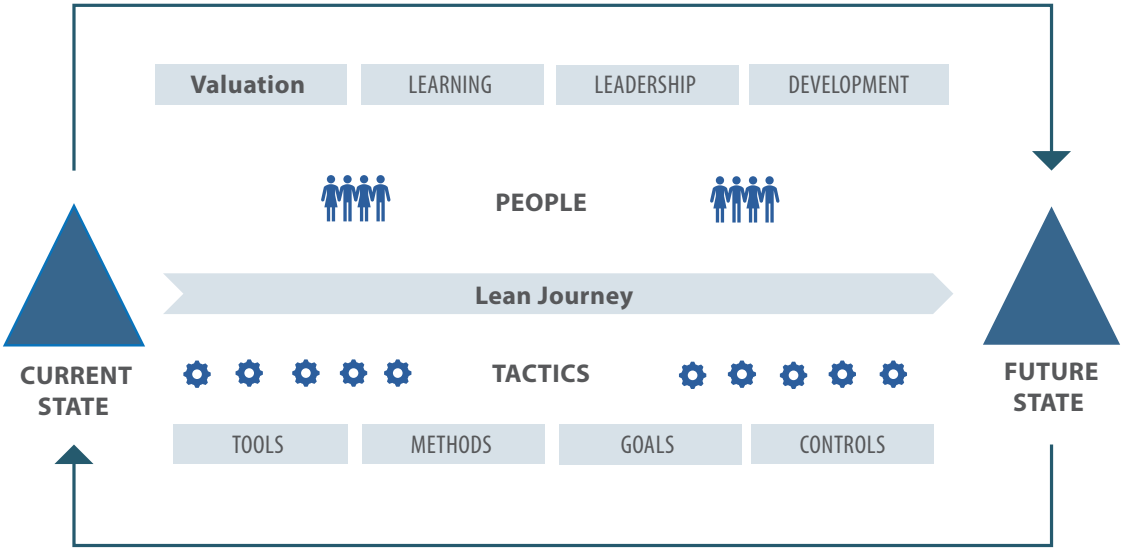
[22] Womack e Jones (2004).

paradigms to be overcome. It is crucial to make it clear that Lean, if implemented in fact to promote substantial and lasting improvements, will change the way things are done in the organization.

Implementing the culture of Lean Thinking is necessary for the results achieved to be sustainable. Improvements in institutional performance are unlikely to be lasting if there is no change in organizational culture.[23] It is necessary to develop a look for the pursuit of perfection, which means that there will always be something to be treated and there will be space for improvement.[24] It is necessary to demystify the idea that a single Lean project is capable of making the entire hospital "Lean", and that the problems treated and eliminated will no longer arise, and therefore nothing else needs to be done.

The Lean culture will start to be created when the people of the organization are trained, developed, valued and prepared to identify waste in the execution of their daily work, in an environment of constant learning, becoming a continuous cycle of improvement, as shown in following figure:

Figure 1 - Development of Lean culture



Source: Prepared by the author of the chapter.

The Lean culture, as shown in the figure, will be obtained in a combination of factors, caused by the tools of continuous improvement of the processes, starting from the current state to the future state, through the valorization of people, constant learning and development, the strong leadership's work to engage the entire professional body, providing routine improvement cycles. The environment will become conducive to learning, generating a permanent growth journey.

[23] CAMERON, K. S; QUINN, R. E. **Diagnosing and changing organizational culture**: based on the competing values framework. San Francisco: John Wiley & Sons, 2006.

[24] Graban (2013).

How to start Lean in hospitals

Here we list the main factors that we consider decisive for obtaining better results for the Lean implementation in hospitals, which can serve as a guide for those who decide to join this journey, which aims to achieve a complete transformation, with Lean Thinking rooted in the mentality of people, giving shape to the way of performing the daily work of everyone in the hospital:

1. Decide strategically:

The goal of becoming a Lean hospital must come from top management, which must declare and supply everything necessary for the development of Lean Thinking, making it part of its strategy. It is crucial to declare widely to all people in the organization that this is a strategic organizational positioning, and that it must have the support of everyone.

As a strategic objective, it needs to be deployed in a capillarized manner, covering all the hierarchical layers of the hospital, so that employees understand the path to be followed and what their contribution to the achievement of results is.

2. Choose Lean leadership:

It is essential that Lean transformation is driven by experts in the field. They can be called instructors, coaches, the name doesn't matter. It is essential to allocate qualified people to conduct the process with the endorsement and unrestricted support from senior management. They can be people or groups responsible for spreading the philosophy, training people and driving change. Some institutions initially choose to hire consulting firms to train their internal leaders. They understand that their leaders already have the current culture of the company and know the difficulties and facilities they will have during the journey. Other companies choose to seek market experts and let them lead the process, even if they are not experts in the health field.

We do not intend to give preference for choosing Lean leadership. What, in fact, we intend to emphasize is the need for the hospital to start its Lean journey with trained people, with deep knowledge of Lean Thinking, with technical and behavioral properties to conduct the application of the tools and work in partnership with senior management while creating the Lean culture.

Without specific and deep knowledge about the Lean system, hardly any professional, or a group of them, will be able to change anything. Top management must understand that it will need committed people, with knowledge and time and sufficient efforts for the expected change, knowing that this person, due to many other duties in the daily management of hospital units, will not be able to allocate enough time to meet the demands for Lean change.

Much of the responsibility ends up with the professional chosen for this function or the formed team. Another important point to highlight is that this or these professionals, when they come from internal leaders, are exempt from the accumulation of functions, that is, they do not act as an "internal Lean specialist" and continue with their previous responsibilities.

The Lean leader should mainly: organize programs, conduct value flow mapping, propagate and teach Lean philosophy and tools to employees, train leaders, develop the implementation methodology to be used internally (standardization of procedures, creation of indicators, policy improvement, ways of monitoring etc.), promoting Lean transformation internally, learning outside the hospital and offering new ideas.[25]

In addition to the in-depth knowledge of Lean philosophy, it is expected that the Lean leader will be: proactive, capable of self-development, focused on results, disciplined, able to learn and teach, have excellent verbal and written communication, conciliator, excellent listener. The leader needs to have a high capacity for critical analysis, systemic vision and excellent interpersonal relationships.

3. Assign autonomy:

It is extremely important that the professional or the Lean reference team enjoy internal autonomy. As it is a strategic role, it is suggested that they are at a hierarchical level directly linked to senior management.[26] The objective is to minimize interference in the traffic of data, information and approaches, for example. Also, the decisions to be made by the management tend to be faster, a fact made possible by the direct relationship of the Lean leader with the management.

4. Start small:

Another fundamental issue is the understanding that it is necessary to start small. Choose a few processes and prioritize those that will bring bigger and faster results. It can be a big mistake to start with the Lean implantation vertically in the hospital. The great risk in this choice is that a specific problem in a specific project will tend to be generalized, which can compromise the execution of other works developed simultaneously. Starting with a project allows time for learning, maturation, adaptation, and the necessary corrections for further extensions in other areas.

5. Set priorities:

It is common for strategic leaders to be asked about the pioneer process, where to start Lean work. They are asked about the "pain felt" so that they can expose the main problems and, therefore, the priorities, so that the first work is carried out in an area or process considered critical by the hospital, as there is a greater potential for rapid response and leadership adherence, providing the opportunity to create a model so that everyone can see how it was done and realize the rapid gain of results, promoting institutional credibility to Lean.[27] The prioritization of projects can be done by drawing up a list of the main "pains" or "annoyances" felt in the organization, contemplating the perception of senior management and, also, the needs reported by the other hospital managers.

[25] LIKER, J. K .; MEIER, D. **The Toyota Model - Application Manual: a practical guide for the implementation of Toyota's 4 Ps**. Porto Alegre: Bookman, 2007.

[26] Ibidem.

[27] Ibidem.

6. Train massively:

For the beginning of the Lean journey, it is necessary to train people, train them to understand the context, the meaning, and the proposed objective. It can take place through a seminar, a workshop for the dissemination of the strategy and first training, covering the largest number of hospital employees. This moment should be used with the best perspective possible, massively communicating the basis of Lean, in order to minimize possible initial insecurities, such as layoffs, loss of area autonomy, among others. The training must be continuous, according to the perceived needs and the evolution of the stages.

7. Communicate and share the results:

Training and engaging employees in the areas worked on is essential, before and during the project, so that everyone feels responsible for the improvements. Once again, the need for transparent and massive communication. With the evolution of the actions, the results obtained should be widely disseminated to the team involved, valuing joint work, celebrating each victory and also repositioning actions, when necessary. This process is focused on developing the feeling of belonging of each employee and acting as Lean multipliers. It is also important to disclose the progress of the project to other hospital professionals, so that they feel motivated and are interested in knowing more about the subject, facilitating the work when it starts in the processes to which they belong.

8. Create and systematize your way of doing:

The choice of how Lean will be implanted in the hospital must be conscious, well planned and reasoned. It is important that all transversal strategic areas are involved and consulted, and the plan is shared. Lean can be chosen to support the entire process of continuous improvement used internally, for example, in accreditation programs. As it is a way of "doing", supported by tools, methods and techniques, it can and must be aggregated and adapted to institutional needs. It does not mean that everything that has been developed and used so far should be discarded. It is necessary to understand how "your" hospital will better absorb and adapt to the proposal with Lean.

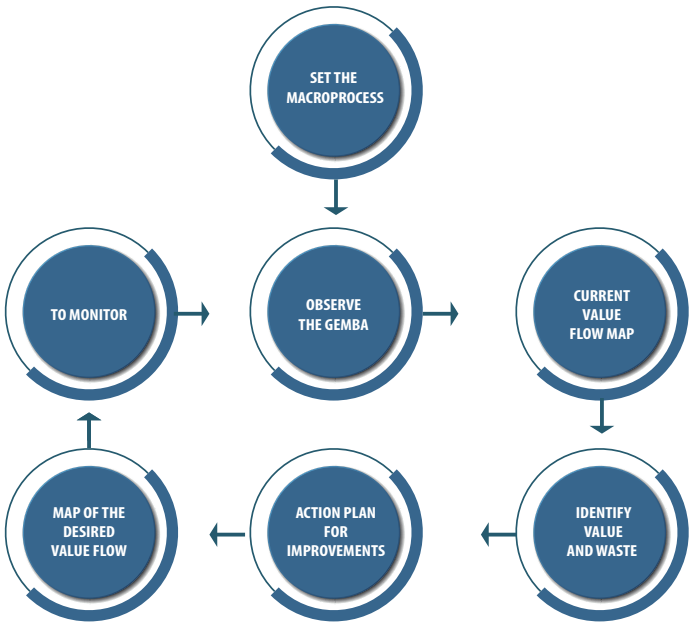
9. Focus on processes:

This can be the main point of all listed. The great insecurity of people when starting to implement a new method of continuous improvement, normally unknown to most, is that the season of "witch hunt" is opened. And we cannot deny that, unfortunately, some managers tend to behave this way, while they show the problems during the execution of the projects. However, what is sought is the development of a new dealing with "problems" process. It must be understood that problems can occur due to several factors, mainly due to organizational failures. Therefore, the focus must be on continuous improvement in processes, through the elimination of waste, supported by redesign of flows, standardization, implementation of protocols, and, lastly, only when and, "if necessary", start work focused on the analysis of the reflexes caused by people's behavior.

Starting the first Lean project

What is expected is to change the split (departmentalized) way of looking at work, to see it in a chain of processes. The following is an outline that can be used to recognize the necessary steps:

Figure 2 - Roadmap for creating the desired value flow map



Source: Prepared by the author of the chapter.

1. Define the macroprocess/area/ service:

It is important that it is chosen in conjunction with senior management and that a list of priorities is drawn up with what is considered critical and strategic for the institution. For this step, a prioritization matrix can be used, for example: Matrix GUT (gravity-urgency-trend), Matrix Urgency x Importance, Matrix Effort x Impact. Another way is to use Pareto to create the initial list and, at the top of the list, the process/service that most generates problems. The Pareto principle holds that 80% of the effects are derived from 20% of the causes. Bringing it to Lean reality, it would mean that 80% of the problems come from 20% of the processes/areas, and that they should compose the initial list for the implementation of Lean. It is interesting that each institution can use the way of prioritizing according to greater aptitude and prior knowledge.

2. Observe in the gemba:

In addition to the reports and information provided by the team working in the project area, it is necessary that the service be followed up at the place where it occurs, at the gemba.[28] For

[28] Koenigsaecker (2011).

example: if you have chosen the medication kit assembly process for patients, you should go to the pharmacy, where the drugs are separated, checked and organized to be delivered to the assistance areas. It is essential that there is observation (without interference), at different times and shifts (if possible), so that the current reality is known. At this time, all notes of how the process occurs should be made, based on the observation of flows, human activities, the use or not of technology and equipment, whether there are repeated activities or unnecessary displacements. In this phase, the times of the activities/steps must be measured, in order to generate initial data to be compared after the implementation of the changes, essential for monitoring and evidence of future improvements.

3. Current value stream map:

Visually represents the value stream map as it is being executed. The participation of the people in the operation, process leaders, as well as someone with autonomy to respond immediately to the proposals for implementing changes, with decision-making power over the macro process, is essential. Driving should be done by those who have a deep knowledge of the Lean Thinking and the tool, to maintain the focus of the work, since it is common, in these initial conversations, to distort the purpose. Macroprocess activities must be ordered according to the way they are currently performed. A practical and playful way is to use a large panel (which can be assembled with A4 paper, brown paper, cardboards etc.) using colored sticky papers for the sequential representation of how activities are performed in daily reality. Self-adhesive papers allow repositioning if any inconsistency is noticed during the work.

4. Identify value and waste:

With the sequential organization of activities, it is possible to analyze all existing losses, such as, for example: redundant tasks, places where there are bottlenecks, excessive use of material or professionals, unnecessary records, tasks that people are unable to explain why are they performing it, among other factors that will be perceived by the components of the analysis group. The most important thing is to make it clear to the group what really adds value to patients and that they cannot fail to perform. An important point to consider is that there are activities that do not add value from the perspective of the patient, but are necessary for the business, such as, for example, activities carried out to comply with specific laws. The analysis can be performed based on the panel assembled in the previous step, making the constructive debate possible, so that ideas can emerge aiming at reducing and improving the studied process.

5. Action plan for improvements:

Based on the current flow map and with the identification of all the steps that exist and that are unnecessary, a plan must be drawn up on how the changes will be made, what is the deadline and who will be responsible. This step is essential so that the work done so far is not lost, as the formalization of actions makes everything clear and avoids misunderstandings of verbal communication. Based on the sequential representation, it is suggested to use another color of self-adhesive paper, so that, at each stage of the process, or in each activity, as the possibilities for

improvement are being identified, they are included at that exact point in the process, and after completion of that moment, be transcribed to a specific standard action plan document. Once again, the prioritization matrix must be used to direct the order in which the actions must be implemented.

6. Map of the desired flow value:

This is the goal to be achieved. As everyone perceives and understands, the value flow must be to generate greater delivery to patients, with better time and less cost, without interruptions. This is what we intend to achieve after the implementation of all the improvement actions identified and listed in the action plan. From the first drawing, from the current flow value map, considering all the actions to be implemented, it can be represented, also in the form of a poster, how will the future flow value map be, using the same technique. It is very important to maintain the first construction and then compare it to what is desired, analyzing the action plan, so that, once again, the process and possible additional needs are rationalized.

7. Monitoring:

It is an important part of all improvement processes. It is advisable to carry it out also during the implementation of the plan's actions, and not just at the end of the term. This is to create greater commitment and conditions that the project can be repositioned, if necessary. The tendency of people to return to the execution of their daily activities is to forget what was proposed, because they are used to the way the process occurs, and deviate from the purpose of implementing improvements. Therefore, monitoring is essential. It is suggested to establish periodic meetings with all those responsible for the actions and the leaders, to share the status of each stage. It is important to determine specific dates for the delivery of the implementation of the improvements, which usually generates greater commitment and control. The discipline of everyone involved is essential to obtain results in Lean projects. Numerical metrics controlled from indicators are essential for the process to be monitored and the evolution of the data to be evidenced.

We also present some tools that can be used or adapted according to the reality of each context. However, there are many others that each hospital can choose to use, or even use specific projects and moments:

Chart 1 - Support tools

What?	When to use it?
Prioritization matrix	To assign order and choose areas/processes for the Lean application in the hospital; determine the sequence of implementation of the actions after the establishment of an action plan, which must be executed first.
Value stream mapping	From Value Stream Mapping (VSM), it is used to improve the current state of a process, portraying visually the steps sequentially, from the beginning to the end, according to the flow of activities, information and materials to reach the future state, also called the desired state. Through it, it is possible to identify what adds value and the waste to be eliminated.

Continues

Continuation

What?	When to use it?
Spaghetti diagram	It serves to map the displacements of people or materials from the current layout, in order to eliminate waste. The flow is represented by lines that visually help to identify where there are significant losses.
Root cause analysis	It is used to get to where the problem was, in fact, originated, that is, the root of the question, for, from then on, determine the way of working for the resolution. The goal is to address the root of the problem, not its effects, so that it doesn't happen again. Provides expanded learning that can be reported on other needs. Examples of tools: Ishikawa diagram (also called fishbone), the 5 questions phase.
5S	Practice through your senses to modify behaviors, namely: utilization (seiri), ordering (seiton), cleanliness (seiso), health (seiketsu) and self-discipline (shitsuke).It is much more than cleanliness and apparent organization, but maintaining an environment that provides better visual management, optimization and positive conditions in the work environment.
Standardization	To document the sequence of activities, time takt (measure of the average rate of customer demand, expressed in time per unit);[29] when applicable, establish standard measures of materials and stocks necessary for the process.It is the formal documentation of "the best current way to safely complete an activity with the appropriate result and the highest quality, using as few resources as possible".[30] The objective is that all professionals, when performing in certain process, do it in the same way
Visual management	It serves as a communication tool to inform about a certain procedure, project status, action plan, indicators, signaling of processes, equipment, etc. Important information for people who circulate in the environment. It must be simple, clear and objective, taking care not to generate visual pollution.
Poka Yoque	Error-proof system. Creating barriers to avoid failures to happen. It can be through a checklist, visual and audible alerts, among others. Great importance for the expansion of patient safety.

Continues

[29] LIKER, J. K.; FRANZ, J. K.The **Toyota model of continuous improvement**: strategy + operational experience = superior performance. Porto Alegre: Bookman, 2013.

[30] Graban (2013, p. 80).

Continuation

What?	When to use it?
Action plan	It is the systematic organization of the actions that need to be taken to guarantee the implementation of improvements. There must be at least a clear and objective description of what needs to be done, who will be responsible for ensuring the execution and the deadline for completion. The 5W2H model can be used, or adapted to the hospital's needs.
Indicators	To continuously evaluate the results and analyze the improvements in the processes, check if the goals set are being reached, if there are deviations, what is the trend, among other situations for the monitoring of projects and decision making. Without the creation, feeding, analysis and monitoring of indicators, it is not possible to know whether the actions implemented are generating improvements in results.
Heijunka	It aims to generate a balance of activities through analysis, and distribute them in a continuous flow, generating productive stability. It seeks to avoid fluctuation in volume. Example: balance the distribution of outpatient medical consultations equally on all days of the week, at all hours of the day's agenda.
Daily meetings for routine management	There are several names used, such as round, huddle meeting, daily huddle, which are short moments performed daily, in the workplace, conducted by the leader, for the alignment of information, report to the teams information about the results, in which it is possible to discuss daily goals, needs and other matters of guidance, feedback, keeping people focused, etc.

Source: Elaborated by the author of the chapter.

Conclusion

If there is a message that we intend to leave to readers of this chapter is that the hospital will succeed in developing the culture of Lean Thinking if it manages to change the mindset[31] of the people of the organization, mainly of the leaders. It is necessary that they conceive that the operations can be executed in different ways from those carried out until the moment, taking a critical look at the entire macro-process.

According to SBCoaching (2019), mindset is the type of view that each person has about life, the way they organize their thoughts and decide to face everyday situations.

Everyone in the institution must understand that Lean seeks perfection, which denotes the possibility of continuous improvement. Thus, even that process that had been measuring good results, it can be improved and must be critically analyzed.

The understanding that needs to prevail is that Lean tools offer the desired improvements, when applied in an integrated manner, converging to the formation of a system, based on wide and continuous use over the years, helping to promote a new organizational culture. However, much more than making use of the tools that bring rapid improvements, it is necessary to focus on the sustainability of results, which involves the continuous development of people, specific training, integration and promotion of the engagement of hospital staff in an expanded way. Only in this way will it be possible to practice true Lean, in a multidisciplinary way, in which the employees themselves will become the multipliers of Lean Thinking.

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CH. 8

TRANSITION OF CARE TO THE EXTRA-ENVIRONMENT HOSPITAL

Luiza Watanabe Dal Ben

Goal

- Present the concept of care transition and its importance in managing chronicles conditions;
- Expose the modalities of transition of care to the extra-hospital environment;
- Propose reflections on management in the transition of care innovations.

History and concept: care transition

The care transition constitutes a set of actions that aim at coordination and continuity of care, such as transferring between different locations or between different levels of assistance, which involves the patient, family members, caregivers and health professionals. It is synonymous with longitudinality and integrality, which are the principles incorporated and practiced in assistance models of the Unified Health System (SUS) and Supplementary Health. Usually, it is directed at populations at high risk in chronic conditions, with high demand associated with relevant health needs and eligible for long-term care.

The care transition strategies, identified in integrative review studies in Latin American countries, point out its components as: discharge planning, early care planning, patient education and promotion of self-management, safety in the use of medications, complete communication of information and follow-up of the patient. These strategies are carried out by members of multidisciplinary teams, and nurses have the main role in promoting safe care transitions. The activities must be initiated from admission until discharge, as recommended by international care transition programs.[1, 2]

The path recommended, similar to the experience in the United States, is to prioritize target groups to integrate care, with chronic conditions such as chronic obstructive pulmonary disease and congestive heart failure to gradually expand, for example by a geographic methodology, for the assistance of other diseases and complexity of assistance. Braet et al.[3] found that the projected interventions, initiated during hospitalization and continued after discharge, to improve the transition from hospital to home care, are effective in reducing hospital readmission.

A key factor in decreasing hospital readmissions is the promotion of patient empowerment, which occurs by training for their self-care and training of their caregivers. This requires financial systems that support and facilitate collaboration between hospitals and home care.[4]

[1] LIMA, M. A. D. S. et al. Care transition strategies in Latin American countries: an integrative review. ***Revista Gaúcha Enfermagem***, v. 39, p. 1-12, 2018. Available at: https://www.scielo.br/pdf/rgenf/v39/pt_1983-1447-rgenf-39-04-e20180119.pdf. Access in: May 15th 2020.

[2] OLIVEIRA, L. R. **Description of the de-hospitalization service of a private hospital in the city of São Paulo**. 2018. Dissertation (Master's) - Federal University of São Paulo, São Paulo, 2018.

[3] BRAET, A. et al. Effectiveness of discharge interventions from hospital to home on hospital readmissions: a systematic review. **JBI Database of Systematic Reviews and Implementation Reports,** v. 14, n. 2, p. 106-173, 2016. Available at: https://pubmed.ncbi.nlm.nih.gov/27536797/. Access in: June 20th. 2020.

[4] Ibidem.

The effectiveness of integrated and coordinated care networks for the elderly population argues that programs with the integration of primary care, day care hospital services, social services, and case management with a care plan, are the key elements for the continuity of care.[5]

One of the factors that contributes to safe patient care is the continuity with the integration of processes, information, personalization, meeting the needs and values of patients, inserted in appropriate environments, such as hospital, long-term care unit, outpatient, hospital-day, home care, among others. The study presented by the Yearbook of Hospital Assistance Safety in Brazil indicates that 30% of patients admitted to hospitals could be treated in another service profile, and the costs of unnecessary hospitalizations are around R$ 10 billion per year, which reinforces the importance of monitoring patients in their health condition course aiming at safe and quality assistance.[6]

The profile of the older population and patients in chronic conditions with comorbidities induces the necessary and growing integration between health service providers, central actors of the health system and those responsible for most of the value delivered to patients, resulting in a positive sum competition based on results.[7]

In Brazil, despite the growing increase in health costs, there has been no evidence of an improvement in the quality of care considering the restriction of access, the volume of adverse events and patient satisfaction rates, which corroborates the redirection of health strategies. actions and services to deliver health value, defined as the relationship between the results that matter to patients, which are the clinical outcomes and the cost to achieve these results.[8]

We present some information about the changes in the patterns of death, morbidity and disabilities that surround health conditions in Brazil:

- It is an epidemiological transition that leads to a triple burden of diseases, with the manifestations of long-term infections such as HIV/AIDS, leprosy, certain viral hepatitis; malnutrition and reproductive health problems; external causes and chronic diseases, such as long-term mental disorders;[9,10]
- The Disability Adjusted Life Years (Daly), which represents years of life lost due to disability, was estimated for Brazil in 2008. Its calculation is the sum of two components: that of mortality, represented by the years of life lost due to premature death (years of life lost - YLL), and that of morbidity, characterized by the years of healthy life lost due to disability (years

[5] VERAS, R. P. et al. Integration and continuity of care in health care network models for frail elderly people. **Public Health Journal**, v. 48, n. 2, p. 357-365, 2014. Available at: https://www.scielo.br/scielo.php?pid=S0034-89102014000200357&script=sci_abstract&tlng=pt. Access in: May 15th 2020.

[6] *IESS* – SUPPLEMENTARY HEALTH STUDIES INSTITUTE. **Hospital Assistance Safety Yearbook in Brazil**.Belo Horizonte: *IESS*, 2017. Available at: https://www.iess.org.br/cms/rep/anuario_atualizado_0612.pdf. Access in: June 15th. 2020.

[7] PORTER, M. E.; TEISBERG, E. O. **Rethinking health**: strategies to improve quality and reduce costs. Translation by Cristina Bazan. Porto Alegre: Bookman, 2007. p.139-200.

[8] SILVA, G. E. S.; MALIK, A. M. Health value. ***GV Executivo,*** v. 18, p. 13-15, 2019. Available at: https://pesquisa-eaesp.fgv.br/sites/gvpesquisa.fgv.br/files/arquivos/valor_em_saude.pdf. Access in: May 10th. 2020.

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lost due to disability - YLD). Daly = YLL + YLD. In 2008, in Daly, chronic noncommunicable diseases (CNCDs) predominated in all regions of the country, in particular cardiovascular diseases, mental disorders, diabetes and chronic obstructive pulmonary disease, with a high burden of external causes, especially that of homicides and traffic accidents;[11]

» A demographic transition that leads to a rapidly aging population: people over 60 consume six times more hospital admissions than adults in their 40s.[12] A nutritional transition in which 55.7% of the population is overweight, prevalent in the age group of 18 to 24 years, due to the consumption of ultra-processed foods, with high content of fat and sugar, and the current lifestyle in the country.[13]

These are the challenges that managers face in their daily lives when developing their strategies because all the items mentioned interfere with the increase in chronic health conditions.

Another variable present that impacts the increase in health costs is the technological transition, with high production knowledge and advances in health science and the consequent demand for incorporation into services, even with the implementation of regulations by National Commission for the Incorporation of Health Technologies of the Ministry of Health (MS), integration of new drugs, techniques and equipment that, due to their high volume, surpass the capacity of health systems to apply them rationally,[14] as well as the coexistence of technological advances in health, allowing their use in extra-hospital environments with total security. Therefore, reformulating and innovating health administration practices becomes vital, especially for managing the transition in levels of care intensity. In view of the growing number of elderly people and in chronic conditions, the question is: what are the paths that managers should take to contribute with a better perception and role for users' health self-care?

The delivery of value to patients can be carried out through transitional care modalities, as these contribute to the user enjoying a better quality of life, which is positive for the sustainability of the business and the health ecosystem.

Therefore, the reformulation and innovation of hospital discharge management aiming at continuity are essential, including the practice of transitional care as an option, mainly to patients in chronic conditions.

[11] LEITE, I. C. et al. Disease burden in Brazil. **Public Health Notebook** , Rio de Janeiro, v. 31, n. 7, p. 1551-1564, jul. 2015. Available at: https://www.scielo.br/pdf/csp/v31n7/0102-311X-csp-31-7-1551.pdf. Access in: May 10th. 2020.

[12] VECINA NETO, G.; MALIK, A. M.Trends in health management. ***GV Executivo***, v. 16, n. 4, p. 13-16, 2017. Available at: https://rae.fgv.br/gv-executivo/vol16-num4-2017/tendencias-na-gestao-saude. Access in: May 7th 2020.

[13] BRAZIL. Department of Health Analysis and Surveillance of Noncommunicable Diseases. **Vigitel Brasil 2018:** surveillance of risk and protective factors for chronic diseases by telephone survey - estimates of the frequency and sociodemographic distribution of risk and protective factors for chronic diseases in the capitals of the 26 Brazilian states and the Federal District in 2018. Brasília: MS, 2019b. Available at: https://portalarquivos2.saude.gov.br/images/pdf/2019/julho/25/vigitel-brasil-2018.pdf. Access in: May 11th 2020.

[14] LIMA, S. G. G.; BRITO, C.; ANDRADE, C. J. C. The process of incorporating health technologies in Brazil from an international perspective. ***Ciência e Saúde Coletiva***, v. 24, n. 5, p. 1709-1722, May 2019. Available at: https://www.scielo.br/scielo.php?pid=S1413-81232019000501709&script=sci_abstract&tlng=pt. Access in: May 7th. 2020.

Transitional care modalities

The continuity of care in the Health Care Network of SUS provides an adequate process of the need for the transition of care levels. The private sector adopts some types of transitional care in order to reduce the fragmentation of the care provided and to increase the perception of care by the patients seen in its network. The modalities will be presented below.

Transitional hospitals (long-term care)

Promote specialized interdisciplinary care; intensify care in a coordinated manner, according to the needs of each patient and their family members, adjust the work of an interdisciplinary team, as long as necessary; they share all decisions with users and family members aiming at rehabilitation, stabilization or palliative care. They are clinically stable, who still need medication, materials, equipment, resources for maintaining health and preparing the family; the complexity is high, they are not able to be transferred from the hospital directly to their homes. In the health production chain, transition hospitals also serve patients who are in home care and who need medical care 24 hours a day, as well as nursing, interdisciplinary team and diagnostic tests aimed at clinical stability (worsening of a chronic condition).

The physical space is built under the rules of the Collegiate Board Resolution (RDC) No. 50 of the National Health Surveillance Agency (Anvisa).[15] The processes are established in the standards of national and international security. Care is centered on the user and their family members, its structure is adapted, becoming different from the traditional hospital. It has a specialized team and specific structures, which aim to recover the clients' functionalities, always with support and with the inclusion of family members in the therapeutic plan process. For example: post-surgical orthopedic patients; sequelae of stroke; dependent on devices, such as tracheostomy, gastrostomy, central venous catheter; dependent on mechanical ventilation or respiratory support who are totally dependent on self-care.

In the transition hospital, the interdisciplinary team constantly evaluates and re-evaluates, according to the patient's evolution, the established therapeutic plan, according to the metrics to be achieved. The intensification of coordinated care includes the evaluation of exercises, which aim to maximize the rehabilitation of functionalities, involving the team (doctors, nurses, physiotherapists, speech therapists, nutritionists and nursing technicians) to avoid risks of malnutrition, prevent skin injuries and complications inherent to the devices. The patient is seated for as long as possible, including in the care plan, in addition to reconciling drug therapy, visual, auditory, sensitive and cognitive stimulation, with support from audiovisual resources (videos, photographs with the active participation of family members). It is common that, in 90 days, the patient is discharged, with the support of a family caregiver, eating orally and with greater autonomy. The family monitors all technical procedures, including staying in the external area (garden), allowing the patient's wishes to be fulfilled, such as receiving a pet visit (after permission from the Infection Commission).

[15] BRAZIL. Ministry of Health. National Health Surveillance Agency. ***RDC Anvisa* No. 50, of February 21st 2002**. Provides for the technical regulation for planning, programming, elaboration and evaluation of physical projects of health care establishments. Brasília: Anvisa, 2002.

The interdisciplinary team is composed of doctors, nurses, nursing technicians, pharmacists, nutritionists, physiotherapists, speech therapists, occupational therapists, psychologists and social workers, who work together in the fulfillment, evaluation and reassessment of the therapeutic plan. The private sector offers services to patients and families, with coordination between hospitals, health operators and service providers, educational work with families, patients and physicians on the logic of an articulated network, referenced and integrated in health care.

In recent years, there has been a growth in transitional hospitals in the states of Paraná, Rio Grande do Sul, Minas Gerais, São Paulo, Rio de Janeiro, Bahia and Espírito Santo to meet growing market demand. In 2020, the Brazilian Association of Hospitals and Transition Clinics (ABRAHCT) was created, based in São Paulo, an initiative that demonstrates the need for this modality in the national market, aiming at safe transitional care. All offer rehabilitation and palliative care services, including family members in the decisions sharing, which empowers them for self-care.

Extended Care Units (ECUs)

They are organized in inpatient units, as a service within a general hospital or specialized, and in a Hospital Specialized in Extended Care (HSEC). In the Health Care Networks, the ECUs (15 to 25 beds) and HSEC (minimum of 40 beds) constitute an intermediate care strategy between hospital care of acute and chronic character reappeared and primary care, including home care, prior to the user's return to home. The objectives of the ECUs are: individualized and humanized provision of assistance to hospitalized users who require intensive, semi-intensive or non-intensive rehabilitation care to restore functions and activities and recovery from sequelae; the articulation between the multidisciplinary teams of the ECUs with the primary care teams, including home care, reference centers in rehabilitation and with other teams working in other points of attention in the territory, allowing the effectiveness of comprehensive and continuity care; and the guarantee of responsible hospital discharge.[16]

The implantation of long-stay beds at the *Hospital das Clínicas* of Ribeirão Preto- SP had a positive impact in the increase of 607 new vacancies offered by the tertiary level, considering the average hospitalization of seven days. The hospital increased vacancies for areas of system strangulation, such as Neurology, by 66%, and Intensive Care Unit (ICU), by 50%; total vacancies: 9.3%.[17]

The implementation of ECUs at the *Hospital da Irmandade das Santas Casas de Misericórdia* in Ipuã-SP and Pedregulho-SP, since 2013, has shown positive results, with improved patient functionality.

The two ECUs were evaluated using internationally validated instruments, applied by the interdisciplinary team, on admission and discharge. These metrics of the ECUs[18] will be presented below.

[16] BRASIL. Ministry of Health. GM Ordinance No. 2.809, of December 7th 2012. Establishes the organization of long-term care to support the Emergency Care Network and Emergencies (*RUE)* and other Health Care Thematic Networks within the scope of the Unified Health System (*SUS*). ***Diário Oficial da União***, Brasília, 2012b.

[17] PAZIN-FILHO, A. et al. Impact of long-stay beds on the performance of a tertiary hospital in emergencies. **Public Health Journal**, v. 49, p. 83, 2015. Available at: https://www.scielo.br/pdf/rsp/v49/pt_0034-8910-rsp-S0034-89102015049006078.pdf. Access in: May 10th 2020.

[18] ANDRADE, M. M. T**he work process in long-term care units in the state of São Paulo**. 2017. Dissertation (Master's) – Faculty of Medicine of Ribeirão Preto, *Universidade de São Paulo*, São Paulo, 2017.

» **ECU metrics:**

› Barthel Index: evaluates functional independence and mobility, being applied physiotherapist and occupational therapist. The result is obtained according to the score. Total dependency is considered from 0 to 15 points; from 20 to 35 points severe addiction; 40 to 55 points moderate dependency; 60 to 95 points mild dependence; and 100 points is considered independent;

› Braden scale: aims to assess the risk of developing skin lesions by pressure. It is applied by the nurse. This scale analyzes six factors in the patient, such as: sensory perception; moisture; activity; mobility; nutrition; and friction and shear. These factors are weighted from 1 to 4 points, except the last one, which is 1 to 3 points. It is considered high risk when a score of 16 points or less is obtained;

› Nutritional mini-assessment (MNA®): it is a control and evaluation tool developed by the industry in partnership with a team of geriatricians to identify elderly malnourished patients and those at risk of malnutrition, being applied by the nutritionist;

› Pfeffer scale: questionnaire for cognitive screening, consisting of ten items related to cognitive skills. It is usually applied by the psychologist. Three to seven errors are considered mild/moderate deterioration, and eight to ten errors are considered severe mental deterioration. For people with low education, one more mistake is allowed; and for those in higher studies, one less error is counted;

› Gijon scale: used to measure social risk, applied by the social worker and subdivided into five items: family situation; economic; housing; social relationships; and social network support. Each item scores from 0 to 5 points, which results in ranking in one of the following categories: normal or low social risk; intermediate social risk; and high social risk.

› Geriatric depression scale (EDG-15): used to assess sensitivity to depressive symptoms in the elderly, composed of 15 items, with a weighting of 1 point for each item, with a yes/no answer. Can be self-applied or done by a trained interviewer. The average response time is 10 minutes. The cut score is higher or equal to 5 to determine the presence of depressive symptoms in the elderly.

The assessment instruments presented are protocols used in practice in Spain by the case manager nurses, also known as continuity of care nurses or hospital liaison nurses, who perform coordination with health professionals and, together with the user and the family, establish the most appropriate care plan for each patient after hospital discharge. The activities performed by hospital nurses from links related to continuity of care for Primary Health Care (PHC) encompass the specificity of the work process, the availability of resources, skills and individual competencies to exercise the function of liaison between the assistance levels.[19]

[19] COSTA, M. F. B. N. A. et al. The continuity of hospital nursing care for Primary Health Care in Spain. ***USP* School of Nursing Magazine**, São Paulo, v. 53, p. 1-8, 2019. Available at: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342019000100441&lng=pt&nrm=iso. Access in: June 18th. 2020.

Home care

Home care services (HCS) follow *RDC* No. 11 of *Anvisa*,[20] which defines the technical functioning of home care organizations in relation to the structure, processes and the results, considering the responsibility of institutions, both public and private, from admission to discharge or death of the patient. There is a need for a call center that opens 24 hours a day, every day of the week, capable of resolvability.

Home care is considered the extension of hospital treatment, emergency care and outpatient care to the patients' homes. The conformation of the home care makes it possible to guarantee continuity of care and comprehensiveness, substituting and complementing the existing health care modalities. The cost reduction is present in the prevention of preventable hospitalizations, less exposure to the risk of infection related to health care, and support for the choices of patients and family members to be assisted at home. In *SUS*, home care has been regulated since 2002.

In the private sector, home care has been practiced since the early 1990s, being considered an extra-contractual benefit. It is not included in the roll of procedures by the National Health Agency (*ANS*). The practice denotes that health plan operators consider it a good management tool, since for more than two decades it has been practiced by self-management, medical cooperatives, vertical operators and health insurance.

An instrument is used to classify patients for home care, the Evaluation Table for Home Care Planning,[21] which includes: eligibility criteria; home care planning (HCP) from 12 to 24 hours of continuous nursing care, according to the clinical complexity of the patient; support criteria for the indication of HCP, related to the degree of dependence, the risk for complications, morbidity; and technical procedures. For pediatric patients, the Katz scale score is 2 points. The sum of the scores directs the patient's classification in home care modalities: health condition monitoring program (continuity of treatment); assistance or home care (procedures, drug therapy, physiotherapy sessions, psychology, speech therapy, assessment and monitoring by a nutritionist and nurse); and 12 and 24 hour home care. Up to 5 points are considered as one-off procedures (dressings, parenteral medications) or other programs; from 6 to 11 points, multiprofessional service - procedures are included as long as they are not exclusive; from 12 to 17 points, is considered home hospitalization 12 hours; and 18 or more points, 24-hour home care is considered.[22]

The eligibility assessment of patients includes administrative and psychosocial criteria.[23] Coverage by health plans has been expanded to rehabilitation, post-acute care (orthopedic surgery,

[20] BRAZIL. Ministry of Health. National Health Surveillance Agency. ***RDC* Anvisa No. 11, of January 26th, 2006.** Provides for the technical regulation of the operation of services that provide home care. Brasília: Anvisa, 2006.

[21] *NEAD* – NATIONAL CORE OF HOME CARE SERVICES COMPANIES. E**valuation Table for Home Care Planning.** São Paulo: Nead, [s.d.]. Available at: https://www.neadsaude.org.br/pdfs/5-FINAL-SITE.pdf. Access in: May 20th 2020.

[22] *NEAD* – NATIONAL CORE OF HOME CARE SERVICES COMPANIES. **Good Practices Manual**. Care practices: advances in home care. Fascículo VI. São Paulo: Nead, 2019. p. 20-27. Available at: https://www.neadsaude.org.br/wp-content/themes/nead/nead-digital/boaspraticas06/#p=20. Access in: May 20th 2020.

[23] BRAZIL. Ministry of Health. Health Care Secretariat. Hospital and Emergency Care Department. **Patient safety at home.** Brasília: MS, 2016b.

post-stroke), antibiotic therapy (antimicrobial parenteral outpatient therapy - Opat),[24,25] palliative care, and even after a medical consultation or emergency room. The skill of the home care nurse in patient education is as important as the skill and competence in performing infusion therapy procedures, as this contributes to favorable results related to safety and adherence to the infusion administration of patients/family members/caregivers. Learning is assessed by return statements for psychomotor skills. Strategies such as teach-back are appropriate for assessing the cognitive knowledge, such as naming the signs/symptoms to promptly inform the nurse about home or pharmacy care.[26] With the advancement of technology, the realization of laboratory tests, electrocardiogram, ultrasound, X-ray, have been performed at home.

In the public sector, the guidelines are clear, determined and disseminated by the Ministry of Health, in order to expand primary care by strengthening the Family Health Strategy Program (HSP), and the Best at Home Program, one of its axes is to provide speed to the hospital discharge process with continued care at home. Home care is indicated for people with clinical stability who need health care in a situation of restriction to bed, home, temporarily or permanently or in a degree of vulnerability, in which home care is considered the most opportune offer for treatment, palliation, rehabilitation and prevention of injuries, with a view to expanding the autonomy of the user/patient/family/caregiver. The objectives of the Home Care Service (HCS) are: to reduce the demand for hospital care; reducing the length of stay of hospitalized users; humanization of healthcare, with expansion of users' autonomy; care transition (deinstitutionalization); and optimization of Health Care Networks' financial and structural resources.[27]

Home care in SUS is organized into three modalities - AD1, AD2 and AD3 -, that differ according to the care needs demanded by each patient/family, clinical complexity, type of care, frequency in relation to the visits/evaluations, the intensity of multiprofessional care and the need for health equipment resources.[28] The home environment provides the patient with care based on humanization, close to the family routine, avoiding unnecessary hospitalizations, reducing the risk of infections,[29] as well as promoting the autonomy of patients and family members through training, enabling users to finish the treatment proposed in their homes, as they have already overcome the acute phase of the pathology. The economic and care viability is significant: the average HCS patient/day cost is 1.041% lower than that of hospitalization.[30]

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[24] OLIVEIRA, P. R. et al. Outpatient parenteral antimicrobial therapy for orthopedic infections: a successful public health experience in Brazil. **The Brazilian Journal of Infectious Diseases**, v. 20, n. 3, p. 272-275, 2016. Available at: https://www.scielo.br/scielo.php?script=sci_abstract&pid=S1413-86702016000300009&lng=pt&nrm=iso. Access in: May 15th2020.

[25] *BI* – BRAZILIAN SOCIETY OF INFECTOLOGY. New guidelines are launched by *SBI*. ***SBI* Bulletin**, *SBI* on the agenda, p. 3, mar. 2017. Available at: https://www.infectologia.org.br/admin/zcloud/120/2017/03/Boletim_Marco_2017.pdf. Access in: May 15th 2020.

[26] GORSKI, L. A. The 2016 infusion therapy standards of practice. **Home Healthcare Now,** v. 35, n. 1, p. 10-18, 2017. Available at: https://www.ncbi.nlm.nih.gov/pubmed/27922994. Access in: May 10th 2020.

[27] BRAZIL. Ministry of Health. Department of Health Care. Department of Primary Care. **Home care notebook**. Brasília: MS, 2012a.

[28] BRAZIL. Ministry of Health. Ordinance No. 825, of April 25th, 2016. Redefines home care within the scope of the Unified Health System (SUS) and updates qualified teams. ***Diário Oficial da União***, Brasília, Seção 1, p. 33, 2016a.

[29] PADOVEZE, M. C.; FIGUEIREDO, R. M. (Coords.). **Prevention and control of infections associated with out-of-hospital care: primary care, outpatient care, diagnostic services, home care, long-term care services**. 2nd. ed. ampl. e rev. São Paulo: APECIH, 2019. p. 361-436.

[30] REIS, G. F. M. **Home care:** analysis of the profile of patients in the use of resources and costs in a city in southeastern Brazil. 2018. Dissertation (Master in Nursing) - São José do Rio Preto Medical School, São José do Rio Preto, 2018.

Stud[31] revealed that pediatric hospital patients had 6.04 times more infections and underwent 6.43 times more procedures when compared to the home group, in which lower rates of readmissions were found, with 41.66% of the children studied never being readmitted and 76.19% of those who needed to be readmitted after more 30 days since the hospital discharge. Another benefit was the availability, on average, of 101.80 pediatric hospital beds in five years,[32] which demonstrates how effective *SADs* are in reducing the number of procedures, infections and, consequently, public spending on health.

Home care is complex and heterogeneous, characteristics that require the team assistance alignment with their clinical expertise, emotional maturity and sensitivity of professionals to face the challenges in the search of meeting the expectations of the clients and collaborators, with patient safety as a guideline, as care is performed in the patient/family/caregiver's own environment. The home environment is the space to provide health, which requires service providers to have a vision of the health ecosystem and the development of their socio-relational skills. The use of telemedicine, telehealth, e-health and telehomecare makes it possible to have a panorama of the clinical status of the patient at a distance in real time, monitoring and intervening in the treatment in a preventive, efficient and effective way, shortening distances quickly in interventions, which also provides cost reduction and user and employee satisfaction.

Home care services linked to teaching hospitals promote advances in home care due to the role of the professionals and teachers involved, who articulate with local sectors in search of resolution and fulfillment of their teaching and research mission. The *Hospital de Clínicas de Uberaba* started assisting patients dependent on mechanical ventilation, and contributed with considerations on the expected benefit in terms of risks, discomfort or additional costs to the patient[33] and with discussion about advance directives of will.[34] The Center for Interdisciplinary Home Care (Nadi), of the Central Institute of the *Hospital das Clínicas* of the Medical School of USP (FMUSP), created since 1996, an example of innovation, serves interdisciplinary teams, composed of doctors, nurses, social workers, psychologists, nutritionists, physiotherapists, speech therapists, dentists and pharmacists, who perform, perform, in average, six daily visits to ensure quality of life for patients. It constitutes an excellent teaching, research and training space for multiprofessional residency and improvement,[35] and, annually, holds the Interdisciplinary Home Assistance Congress (Ciad), a national reference.[36] The home care sector is advancing, with companies that have recognized quality accreditation seals, such as those of the Joint Commission International (JCI), the National Accreditation Organization (*ONA*), Accreditation Canada International (ACI), among others.

Permanent education is vital for the alignment of internal processes, security assistance, the promotion of the professionals' own health to care for others, the exercise of empathy and compassion, teamwork and entrepreneurship, seeking to understand the expectations of patients/clients and employees, so that they deliver the service, with added value for the patient and his family.

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[31] CARVALHO, A. J. L. **Analysis of the effectiveness of a Brazilian pediatric home care service.** 2019. Dissertation (Master in Health Sciences) – FFederal University of Uberlândia Medical School, Uberlândia, 2019.

[32] Ibidem.

[33] BRAZIL. Ministry of Health. **Recommendations for home mechanical ventilation**. Brasília: MS, 2018.

[34] DADALTO, L. et al. Anticipated directives of will: a Brazilian model. **Bioethics Journal,** v. 21, n. 3, p. 463-476, 2013. Available at: https://www.scielo.br/pdf/bioet/v21n3/a11v21n3.pdf. Access in: May 15th 2020.

[35] YAMAGUCHI, A. M. et al. (Eds.). **Home care**: an interdisciplinary proposal. São Paulo: Manole, 2010.

[36] See more at: www.ciad.com.br. Access in: August 7th. 2020.

As each home represents a virtual hospital, support to streamline processes, with safety and quality, it is vital, as well as communication and logistics, enabling safe transportation of inputs, control and storage on site for the success of all involved. The record in the patient's medical record is of the utmost importance, with the express authorization of the patient and his responsible family members, describing who can have access to the document, as it remains in the home where the care is provided, under the responsibility of the Home Care Service.

In the management of home care, the correct dimensioning of personnel, in quantitative and qualitative terms, is extremely important for the provision of home care for quality, as it directly interferes with the effectiveness and cost of health care. In nursing, this process includes the following steps: identification of the average daily workload in the home care; determining the proportion of the professional category of nursing; working hours of the nursing team and technical safety index, for the clinical complexity classification of patients, equivalent in hours of nursing care,[37] and, for the multiprofessional team, the use of a scale adapted from the Nursing Activities Score (NAS), mainly for AD2 and AD3 patients.[38]

- **Metrics in home care:**
  - Monitoring, quality assessment and patient safety in home care, in different modalities, are performed by the indicators of structure, process and results.
  - There are five indicators recommended in the Annex of RDC No. 11 of Anvisa,[39] which, mandatorily, must be carried out and sent, monthly or semi-annually, by the Home Care Services, described according to the modalities of home care, such as: mortality rate for home care; hospitalization rate after home care; infection rate for home care; high rate of home care; and high rate of home hospitalization. Regulation requests filling in according to the number of patients who received home care in the month, considering the number of patients on the 15th of each month.
  - For the Best at Home Program (SUS), the indicators adopted are: the average overall stay and average stay; the percentage of users classified by home care modalities as AD1, AD2 and AD3 upon admission; the percentage of users per originating service (origin); the percentage of users by conduct/reason for leaving (outcome); the percentage of home care users due to health/condition assessed; and the service capacity of the Home Care Service.
  - In the private sector, data is collected daily, analyzed and discussed by the Infection Control Commission, the Customer Service Management Commission and the paying source (health plans), to later be transformed into graphics for better understanding and communication according to the protocols of each institution. In all households there is an efficient corporate communication device (smartphone), to facilitate everyone's communication (family, patient, employees and suppliers in the patients' homes); it also works to connect data on the presence of employees, changes in the physical record

[37] DAL BEN, L. W.; GAIDZINSKI, R. R. Proposed model for dimensioning nursing staff in home care. ***Revista de Escola de Enfermagem da USP***, São Paulo, v. 41, n. 1, p. 97-103, mar. 2007. Available at: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342007000100013. Access in: May 15th 2020.

[38] BÔAS, M. L. C. V.; SHIMIZU, H. E.; SANCHEZ, M. N. EElaboration of an instrument for the classification of complexity care of patients in home care. ***Revista da Escola de Enfermagem da USP,*** São Paulo, v. 50, n. 3, p. 434-441, maio/jun. 2016. Available at: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342016000300434&lng=en&nrm=iso&tlng=pt. Access in: May 20th 2020.

[39] Ibidem.

and communication with the interdisciplinary team. For the homes of patients being monitored, communication is carried out by the support center 24 hours, seven days a week, with a resolute direction of the situation.

The continuous monitoring of indicators in home care that favor the understanding of patient satisfaction, cost-benefit and cost-effectiveness analysis of therapy, and the clinical outcome of the health condition encompass care, people management and continuity of care.

Below, we present the indicators considered in the practice of home care:

Chart 1- Indicators for home care management

Indicator	Calculation formula
Incidence of unplanned exit of an oro/nasogastroenteral tube for nutritional support.[40] General incidence of gastric extubation	(No. of unplanned gastric extubation of an oro/nasogastric tube / In total patients with gastric intubation) x 100
Incidence of planned gastric extubation	(No. of planned gastric extubation in the period / Total number of patients with gastric intubation in the period) x 100
Incidence of patient falls under home care system	(No. of falls in the period / In the total of patients treated at home care in period) x 1000
Incidence of skin injury from pressure.[41]	(No. of new pressure skin lesion in patients in the modality of home care in the period / Total number of patients at risk for skin lesions in the modality of home care in the period) x 100
Infection rate per device	(Total number of device infections / Total number of patients / day with the device) x 1000
Rate of clinical complications	(Total number of clinical complications / Total number of patients / day) x 100

Source: Elaboration of the author of the chapter based on the literature on the theme and indicators usually applied.

[40] NAVES, L. K.; TRONCHIN, D. M. R.; MELLEIRO, M. M. Incidence of gastric extubation in pediatric and adult groups in a home care program. ***Revista Mineira de Enfermagem,*** v. 18, n. 1, p. 61-67, jan./mar. 2014. Available at: https://cdn.publisher.gn1.link/reme.org.br/pdf/en_v18n1a05.pdf. Access in: May 20th 2020.

[41] MACHADO, D. O. et al. Healing of pressure injuries in patients followed by a home care service. **Nursing Text & Context,** v. 27, n. 2, p. 1-8, 2018. Available at: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072018000200329&lng=pt&tlng=pt. Access in: May 20th 2020.

Is it possible to implement value-based care in the hospital institution?

Measurement is very important for the success of management to obtain improvements in the organization. Transitional care is a way to deliver value to the patient in chronic conditions. The experience of Silva (2018)[42] during the process of implementing value-based care in a university hospital of high complexity reveals that it is a successful model and possible to be implemented. The manager with technical and scientific knowledge has in his favor a previous theoretical knowledge about the stages, which makes him make decisions with more security and agility, overcoming his difficulties before understanding and analyzing the observed facts. Robustly, the researcher demonstrates that value-based care has great mobilizing power, especially in the health area, which, mostly, meets the expected purpose of health professionals, to do the best for people. Throughout the change process, the high leadership needs to be present, like a rudder, directing and redirecting to achieve the purposes of the change process.

Why adopt transitional care?

Chronic conditions tend to increase due to an aging population; people with Chronic Noncommunicable Diseases will use health services more, especially hospitalization.[43]Develop strategies and implement them with the interdisciplinary team, to identify and meet the needs of patients, families and caregivers, that is, a management on the ends, will make a difference, with integrality to obtain good results. The components of the health production chain have specific purposes. Each institution wants the patient's journey to be the best possible. By adding a service that monitors the health condition, it increases the possibilities for the patient to feel valued and perceive the institution's concern for him, resulting in the value of delivering that institution's services.

Clinical and organizational governance are vital to the quality and safety of assisted patients, especially those who are in chronic conditions, in which it is necessary to visualize long-term care. Transitional care provides this possibility, in the most appropriate place, for the right time and with the appropriate resources, which results in positive clinical outcomes of added value for all, including for the sustainability of the health system. Ideally, the public and private sectors join forces for effective communication on the purpose of existing health equipment in the Brazilian health system (basic health units, Family Health Strategy, Better at Home Program, home care, hospitals) and for health education, and that the entry into the health system must be through PHC, with the adoption of healthy habits and lifestyle.

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[42] SILVA, G. E. S. **The search for value-based care in a university hospital.** 2018. Dissertation (Master in Management for Competitiveness) - São Paulo School of Business Administration from Fundação Getúlio Vargas, São Paulo, 2018. Available at: http://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/23984/A%20BUSCA%20PELO%20CUIDADO%20BASEADO%20EM%20VALOR%20EM%20UM%20HOSPITAL%20UNIVERSIT%C3%81RIO.pdf?sequence=7&isAllowed=y. Access in: May 15th 2020.

[43] MALTA, D. C. et al. Chronic non-communicable diseases and the use of health services: analysis of the National Health Survey in Brazil. ***Revista de Saúde Pública,*** v. 51, supl. 1-4, p. 1-10, 2017. Available at: https://www.scielo.br/pdf/rsp/v51s1/pt_0034-8910-rsp-S1518-87872017051000090.pdf. Access in: May 15th 2020.

Hospitals are essential entities in the health production chain. Professionals working in these institutions have a demand for users who seek answers and the integration of care in the stages before hospitalization, called pre-acute; during hospitalization, that are acute care; and after hospital discharge, for those complex patients, in a post-acute situation. Communication is flawed; the important thing is to improve the gaps that exist in *SUS* and in Supplementary Health, which are currently fragmented, and improve the value for the patient, with sharing coordinated information and exchanges between the health system.

Some attitudes that make treatment more effective are:

- Start with the care of certain pathologies experienced that have been successful internationally;
- Guide the user;
- Know the home environment;
- Develop a care plan together with the patient and their caregiver;
- Provide time for the patient to understand how the process will be like and understand the importance of your participation in restoring their health;
- Enable preconditions for the patient to make adaptations in order to facilitate their recovery.

Thus, the professional will see if the proposed treatment is the most appropriate for that patient, given the circumstances of his social network, but will also be able to pay more attention to the rehabilitation monitoring and post-hospitalization, which increases the success rate of a surgery and allows a possible reduction in the hospitalization time.

The hospital must be geared to assist patients in acute situations and worsening of chronic conditions, and be technology and research centers to reduce premature deaths and influence public policies for the good of all.

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CH. 9
COST MANAGEMENT

Marcelo Accetta

Goal

- Present cost management as essential for planning the production chain;
- Provide hospital managers with tools to reflect on costs and their consequences;
- Provide a reflection on the improvement of performance in order to set it as a reference in negotiation, in maximizing results and in supporting the decision-making process of the management.

The importance of thinking about hospital costs

The cost area is increasingly gaining ground in the management of health organizations as this impacts decision-making.

With the use of appropriate techniques and verification, control and prospecting instruments, it is possible to measure greater managerial efficiency, becoming a competitive advantage in the health segment, while strategic actions are inserted in the institutional planning. In the meantime, with globalization and the increasing complexity of health institutions, integrated into the public and private health system, it is necessary to know and monitor health organizations' financial resources, the costs of products and services to determine and evaluate their results and prospecting scenarios, in addition to improving management.

Among some of the possible benefits with an adequate management of these themes, we mention:

- Correct pricing format for hospital services, supported by real and secure data, also improving future negotiations;
- Increased profitability;
- Decrease in waste;
- Competitive advantage;
- Stay in the market.

The hospital manager has a fundamental role in this process, since it is something strategic and that can be a decisive factor for the organization's permanence in the market.

The search for efficiency in the quality of health care

The trend of growth in health spending, associated with the resources to which it is submitted to the health system (public and private services), imposes on its managers, mainly responsibles for running these organizations, the use of existing resources as rationally as possible. Therefore, it is necessary to assess the costs of products and services in order to ascertain and evaluate their respective results, in addition to improving the management itself.

Efficiency, that is, the ability to be productive and achieve the best performance with the minimum of errors, understood as a relationship between inputs consumed in a rational way to perform a given production in a period of time, must be one of the goals of health organizations and its leaders. Having efficiency as an objective means considering issues related to quality, including continuously evaluating the need to provide resources to strengthen this segment. In fact, being efficient in the use of instruments available is certainly a basic condition to justify the need to request more resources if necessary.

Decision-making, monitoring, evaluation and technical support require a set of detailed and systematized information on the proper functioning of the actions, among them the use of financial and budgetary resources, as well as knowledge about hospital costs. Cost management should serve as an effective tool for managing and monitoring of services. The hospital manager will be able to develop a qualified management, based on results information, when considering the need to have a cost structure of the unit's production system. With a reliable calculation system, a complete analysis will be doable, with the possibility of identifying the degree of organizational efficiency.

Cost management as a source of information

Cost management can be considered an administrative control technique, which allows the implementation of corrective and strategic measures towards a better performance, allowing to map all profitability and monitor service results. Since it is also an instrument of financial support, cost management is also a strategic and necessary support to assist in raising the distribution of expenditures, budgetary reserves, sectorized budget, planning and actions.

For the implementation of cost management in hospitals, it is usually necessary to insert a structure with new processes, dynamically built, in order to enable control and assess expenses. It is interesting to highlight that the integration of sectoral information, as well as expanding communication between areas, can be complex at first due to the organizational structure itself, the multiplicity of services and professionals they involve and, simultaneously, an expressive volume of data produced, which needs to be captured and processed. However, with the dissemination of the results to the teams and the presentation of the benefits, the process becomes part of the routine horizontally in the institution.

For a hospital manager, the concept of cost must have a particular meaning, sometimes radically different from that commonly known and present in accounting records. In the economic conception of costs and essential in economic theory, it revolves around the view that there are unlimited needs for limited or scarce resources. In this conception, the entire productive ordering also necessarily becomes a structure of choice, since the resources used in a given production process will not be available to be used in another production alternative.

Therefore, we face some situations called "opportunity cost" or "social cost", which reflect this scarcity of resources. The opportunity cost incorporates the notion that the resources (human, monetary and material) used to save a person's life is no longer available to be used for another (or others). It is not a question of denying the conception, so common among health professionals, that life is priceless, but of recognizing that it has a cost that is also expressed in terms of other people's health.

Note that certain existing inputs in abundance may have an opportunity cost cheaper than its price or monetary cost.[1,2]

In this sense, it is important to contextualize that the hospital manager's decision-making process should include aspects related to the concept of opportunity cost, with the essence of economic evaluation techniques, as in cost-benefit and cost-effectiveness analysis. A grounded decision-making structure of these concepts is essential to avoid waste and misallocation of resources.

With the empowerment of the health manager, there will no longer be room for decision-making based on personal opinions. A successful hospital must have an administrative body that knows costs (the right people in the right places) and that plans, with all this information, capital investments with a good knowledge of the company's situation and that establishes prices and wages based on real costs, providing an accurate calculation of these. The management and the managers need a detailed assessment, with clear, objective and accurate cost information, as they work with a usually small "net profit".

The hospital manager must establish rates and prices based on the reality of the calculated costs. To this end, it is essential that the established verification system appropriately allocates direct and indirect costs to the respective unit or to the patient's service. With reliable calculation, it is possible to elaborate the direct and indirect fixed costs, the direct and indirect unit costs, etc. The staffing in cost centers, either in departments or in some auxiliary service, can only be done by knowing the "real costs", as well as the existing needs. Certainly, the budget, or any other projections of future financial needs, need bases for cost analysis of past performance, such as: the hospital's purchasing department has concerns about cost and inventory controls; the nutrition and dietetics department needs cost control per meal; the laundry and maintenance must consider its costs in comparison to the contracted services - all of these needs require correct data information, which results from the application of accurate verification methods.[3]

Hospital cost management, through its results and indicators, can influence the institution's final billing. We advise the hospital manager, when knowing the costs in an analytical way, to look for

[1] PIOLA, S. F.; VIANNA, S. M. **Health economics:** concepts and contribution to health management. Brasília: Ipea, 1995.

[2] BERMAN, H. J.; WEEKS, L. E. **The Financial Management of Hospitals.** Rio de Janeiro: *Pioneira Editora* Bookstore, 1979.

[3] Idem.

plausible actions for the rationalization of resources and the repositioning of investments, and don't opt for the common "spending cut" because, in addition to possibly not solving budget problems, it may end up generating other failures in the organization, as happens, for example, when the choice involves reducing the staff. From the detailed study of the accounts cleared, other sources of problems can be perceived, such as, for example, in the management of equipment (inefficient use) or in medication management (high value stopped in stock), and also inefficient internal processes.

From another point of view, hospital managers may also believe that the budget is good and that the positive results are a sign that the institution is growing. Delays of 15 or 20 minutes to start a procedure in the operating room may not seem like a long time for professionals or patients. However, in the long run, if the total idle time of the room, equipment and doctors is counted, the perception tends to be quite different.

It is essential that the hospital manager understands that the costs of services are not limited to direct expenses, such as wages, supplies, food, medicines but it also includes overhead items such as maintenance, administration, depreciation, conservation and cleaning, laundry and medical records (general cost centers).

In order for the total costs of operating the hospital to be recovered, by charging for services provided to patients, an exact allocation of all costs must be made, with interdepartmental apportionments, via cost centers providing the services for which patients pay. For that, it is necessary to create a process capable of allocating all hospital operating costs to the respective centers or units that produce the revenue.

Subsidy for decision-making

To be able to offer health, it is necessary to have one. And in this case, we refer to financial health. For the exercise of financial management, by controlling the costs of operations, it is necessary to have managers with a high level of responsibility in addition to specific knowledge on the subject. Many of the costs appropriated by the accounting process are outside the domain or influence of managers of departments or functional units, that is, the cost centers that will have their values added due to the average of other areas. In order to improve the management process, the hospital must direct the control responsibility to the managers who prove to be responsible for the areas that generate the costs, that is, have the possibility of making decisions that may influence values. For example: the value of the bed hygiene process, prorated to the inpatient unit, is the ultimate responsibility of the hotel manager, for having autonomy to intervene directly in the process.

The concept of cost analysis by levels of responsibility, also called accountability, relates costs to the level of responsibility, which provides an agile dynamic in the control process while assigning management to those who have the direct authority to incur the mentioned information.

One of the basic objectives when knowing hospital costs is to offer information that allows managers to improve the functions of planning and controlling operations. The planning process establishes the conditions for a company to reach its maximum potential and the necessary control.

The amount of cost information represents an important input for the projection of future indicators and for the projection of results and operating budgets disseminated throughout the organization. As the cost system is consolidated within the company, a series of parameters is generated as a reference for planning operations and setting standards. Therefore, a dynamic of constant feedback of the planning and control functions is established. In principle, historical cost data becomes vital for the planning exercise, while planning is an unquestionable prerequisite for performance evaluation. If there are no indicators to be used as a reference, the conclusion on the level of efficiency with which resources are used makes it more difficult to make an accurate comparison.[4]

A health institution is frequently in need of investment such as, for example, regarding the renewal of the level of medical technology, information systems and innovations related to the care model. All of these decisions require a high degree of responsibility on the part of managers, in general, involving and/or adding resources. There is no mistake in terms of the timing of the investment and the proper dosage, which will ensure results not only from a financial nature, but also in the quality of services and in the opportunity to face the growth of the sector's competitiveness.[5]

As the behavior of costs and the results of the company's operational activities are completely ignored, the conditions of managers facing the investment decisions become extremely unsafe. In a business context with this degree of complexity in decision making, it is not enough to have adequate information about the cost of current operations; it is also unquestionable the managerial reach of these data and the competence of organizing simulations and different scenarios that guarantee a safe analysis for choosing the best investment option.

We highlight, below, some items that should be used for the formulation of financial planning, which help and allow important decisions to be visualized:

- Goals;
- Budget projections;
- Budget reserve;
- Historic Serie;
- Feasibility analysis;
- Required financial flow;
- Cost evaluation (return) x productivity;
- Minimum amount of activity required.

[4] MATOS, A. J. **Hospital cost management:** techniques, analysis and decision making. São Paulo: Publisher STS, 2002.

[5] Idem.

Cost calculation

In order to offer support to managers about existing cost methodologies, we will briefly contextualize the ones most used by health institutions, showing indicators and information for managing their costs. They are not necessarily exclusive, that is, they can be used mutually, each with its advantages and disadvantages; therefore, the institution must analyze which methodology will be most appropriate to achieve the objectives.

We mention the following methods for calculating costs:[6]

- Absorption costing;
- Activity-Based Costing (ABC);
- Direct or variable costing.

The absorption costing system fully allocates all costs (direct, indirect, fixed and variable) to the final products/services. According to Martins (2001),[7] "Costing by absorption is the method derived from the application of generally accepted accounting principles, born of the mentioned historical situation, it consists in the appropriation of all the production costs to the elaborated goods", that is, all expenses related to the manufacturing effort are distributed to all products/services.

The ABC (Activity-Based Costing) system allows better visualization of costs by analyzing the activities carried out within the institution and their respective relationships with cost objects. The basic principle of this system is to make as many proportional and non-proportional costs as possible through cost drivers. It is a system of alternative costing that has been tested, mainly in Brazil.

Direct or variable costing, according to Martins (2001),[8] has as its basic foundation the separation of variable costs and fixed costs, being appropriate to products and services those costs that vary with their volume of production, since fixed costs are considered expenses for the period, with their amounts allocated directly to the result. Direct costing is also called variable costing, or even marginal costing (change in the total cost of production due to the variation in one unit of the quantity produced), since the variable costs, for the most part, are direct. Variable costing is generally used for managerial purposes, as a tool to assist management in decision making.

Regardless of the methodology chosen by the institution, there are aspects that need to be considered for proper cost management to be achieved, which includes extensive communication to all internal stakeholders with appropriate disclosure to each audience, aiming at greater adherence to the process, mainly in the collection of data in the areas.

[6] BRAZIL. Ministry of Health. Secretariat of Science, Technology and Strategic Inputs. Department of Health Economics. National Cost Management Program. **Technical cost manual:** concepts and methodology. Brasília: MS, 2006.

[7] MARTINS, E. **Cost accounting**. 8. ed. São Paulo: Atlas, 2001.

[8] Idem.

We list some crucial points:

- Awareness at the strategic level: managers and supervisors;
- » Awareness at the tactical and operational level: importance and awareness of all areas;
- » Institutionalization of the service: definition of the position of the cost department in the organizational structure of the institution and the person responsible for conducting the activities and their duties.

A look at revenue: billing and auditing hospital bills

When talking about the financial health of an organization, in addition to spending planning, it is necessary for the hospital manager to have a close look at the hospital bills, in which the processing of revenues occurs.

Hospital accounts integrate the performance of various services from the arrival of the patient to the hospital. They start to be processed from the reception to the nursing and medical assistance, requiring a fine adjustment in the interaction of the processes to avoid loss of revenue. This alignment is essential to avoid the occurrence of errors such as, for example, mistaken admission of a patient, distortions in the annotation patterns and several other situations that can cause flaws in the final result of the revenue. It is necessary that they are aligned with the contracts and the collection standards, such as type of invoices to be made, own charts, collection agreement with health insurance for, so, to know the difference between the invoiced and the left to invoice and, consequently, the invoiced received. For proper management of this topic, it is necessary to establish goals and indicators - as, for example, percentage of invoiced accounts, controls and disallowance resources, to be carried out by the medical or technical part.

The purpose of referring to the hospital billing process in this chapter is that the cost management work will not be able to guarantee the sustainability of the business, in case the structure for calculating the revenues is not appropriate and adequately controlled. For the results of this process to be measured, an account auditing service can be implemented, with the responsibility of creating internal standards and auditing them later, showing them compliance. Monitoring should be structured based on clear and objective indicators, with measurable goals disclosed and with responsibilities shared between related services.

The economic concept of costs and their contribution to health management

Based on the reflections undertaken in this chapter, we can see that hospitals are large companies due to their total assets and operating expenses. However, the sector's competences in financial management, with some exceptions, have not kept pace with current demand. Hospitals are vital and necessary resources for the community and must be managed for their benefit, aiming to promote health services to an acceptable level of quality and at the lowest possible cost, that is, balance in cost and revenue for the sustainability of the business. For this, management tools and techniques are indispensable to promote help, control and provide quality services at minimal cost, and, in parallel, to make capital investment decisions and control operations of a complex system.

We have seen that the costs of services are sometimes calculated inappropriately, which compromises data analysis and decision making. It is essential that hospital managers take ownership of the microeconomic instruments for calculating costs and analyzing average costs and other indicators relating to microeconomic categories, in addition to using them as input for macroeconomic analysis, that is, to decide on the best way to allocate resources among different possibilities.[9]

The great difference in hospital management goes through a structure of financial, budgetary and cost management, based on techniques capable of responding, within the scope of economic rationality, to questions of an entirely different nature, although all of them are allocative (and therefore distributive). In this sense, there is a need for the hospital manager to develop skills that enable him to adequately manage these undoubtedly challenging issues in the field of health.

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[9] Piola and Vianna (1995).

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CH. 10

Hospitality Management

Ana Cristina Barbosa Pontes,
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Miquéias Alves Santos

Goal

- » Address the main concepts that permeate hospitality management;
- » Demonstrate the importance of leadership in hospitality management to obtain the expected institutional results
- » Present hospitality as a contributory factor to the patient's good experience.

Hospitality management to support the organizational structure

Faced with complex scenarios experienced in health management, getting all services to focus on offering quality care to patients and maintaining the organizational structure in line with the hospital's needs is a major challenge.

In this sense, hospitality management serves as a service centralizer focused on patient care. According to Boeger,[1] hospitality aims to demonstrate to the customer that he is at the center of everything, which is the target of the greatest concern of employees, who are at your side to take care of your physical, psychological and emotional well-being, helping you to go through this period of withdrawal from your routine. Among the services provided by the hotel industry, we cite, for example, laundry, linen, furniture management and corrective maintenance of apartments, highlighting the support for bed management and in-patient care, performed by the hospital concierge. The service performed by this professional has great relevance to management processes and enables patient access to hospital infrastructure.

We highlight the main duties performed by the hospital concierge:

- » Monitor the hospitality services performed in all accommodations after the patient's discharge from hospital;
- » Assess the need for corrective maintenance service for accommodations;
- » Monitor the offer of accommodation in a timely manner and in good condition;
- » Provide customer service: receive requests, complaints, suggestions and compliments;
- » Interact with partner areas to provide patient care with focusing on resolution of occurrences;
- » Perform the evaluation of the patient's experience while in the hospital environment;
- » Promote humanized care.

[1] BOEGER, M. **Hospitality:** management and humanization. 2nd. ed. São Paulo: Publisher Senac, 2012.

The interaction between the different areas of hospitality provides a critical and expanded view from the perspective of the patient and his perception of the care received. To base the conduct of hospitality management on fundamental concepts, those among them that permeate the organizational structure and leadership are fundamental for obtaining good results. Organizations need to continuously invest in the development of people, through education, training and new opportunities for professional growth.[2]

The importance of leadership in hospitality management

The hospital, being a complex organization, is a favorable space for a strong leadership development. The hospitality management of a hospital has, in its daily life, numerous development opportunities and a broad view of the organizational structure, permeates the various dimensions of the organization, in addition to maintaining contact with various internal and external factors such as service providers and suppliers.

The qualification of managers and the look towards the constant search for assertive leadership are fundamental for organizational sustainability. Going beyond its scope and immersing itself in the hospital structure and in the organization's purpose should be the goal of every hospitality manager, supported by continuing education, so that one understands the complexity of the system and can act efficiently and sustainably.[3]

For Prestes et al.,[4] "Many leaders, mainly in smaller or newly created hospitals, need to play both roles: now as a manager, now as a leader". Knowing how to lead is a basic competence in achieving the expected institutional results. Challenging yourself in the quest for continuous improvement, aimed at the operational structure for which it serves, and also engaging the team in this journey is also a fundamental role of the leader.

The hospitality manager must have as main characteristics the strategic look and the leadership ability, so that he is assertive in decision making. To this end, planning actions that lead to the interaction of hospitality services in assistance areas is not a simple role, and will require habits that can create an intercession between skill, knowledge and desire from the manager (figure 1). From obtaining positive results, it is more likely that the team will feel compelled to seek and contribute even more to assistance focused on quality and service directed to the needs of internal and external clients.[5]

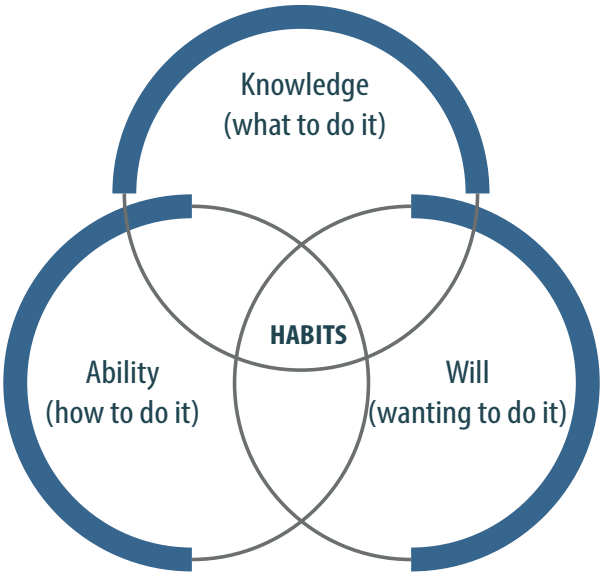
[2] BURMESTER, H. **Hospital Management Manual**. São Paulo: Publisher Senac, 2012.

[3] VECINA NETO, G.; MALIK, A. M. **Health management**. São Paulo: Guanabara Koogan, 2012.

[4] PRESTES, A. et al. (Eds.). **Hospital Manager's Manual**. Brasília: FBH, 2019. p. 49.

[5] FILHO, J. M. et al. **Strategic planning and management in healthcare organizations.** 2nd. ed. Rio de Janeiro: Publisher FGV, 2016.

Figure 1 - Effective habits



Source: Adapted from Covey (2019).[6]

Covey,[7] in his book, addresses that, to be effective, we must not only speak what we think, but be willing to listen to what others think. He reports that a habit is established when there is an effort in three dimensions: what to do, how to do it and if you are willing to do it. That said, it is possible to understand that, in order to obtain the expected results of the hospitality areas, in addition to the technical knowledge needed by the manager, he must have the ability to put into practice what he knows, which is the competence to systematize the actions in the daily practice of the service, and, still, have the aspiration to make it happen, which is associated with the desire to do "what you know that has to be done".

Another important quality of a leader in the hospitality industry is resilience. Acting with tranquility and balance in adverse moments and showing a calm and balanced posture when dealing with the most complicated situations are attitudes that transmit security to the team, favoring the development of a more prepared environment to face adversities. For Prestes et al.,[8] "The leader is differentiated for not victimizing difficulties, as he focuses his actions in the search for problems solutions and encourages people on his team to walk together". It is important that the leader knows how to share knowledge with his followers. Encouraging the creation of an environment for sharing technical, strategic and personal information will strengthen the group, will help in decision making and interaction among peers.

Last but not least, the leader needs to practice feedback on a daily basis. This tool brings an enrichment for self-knowledge and transparency with the team, making it possible for everyone to develop their actions with a clear knowledge of what is necessary to achieve the expected result.

[6] COVEY, S. R. **The 7 habits of highly effective people: powerful lessons for personal transformation**. 76th. ed. Rio de Janeiro: Franklin Covey, 2019.

[7] Ibidem.

[8] Prestes et al. (2019, p. 52).

The entire team needs to be signaled when making mistakes and recognized when they get it right, so that people can develop the ability to create alternatives with their leader, and thus solve the problems. For Burmester,[9] "Maybe one of the most important roles of the leader in the organization is to become responsible for shaping an organizational culture that seeks excellence ".

Following these leadership precepts, the hospitality manager has an essential role in creating an organizational structure capable of supporting the assistance areas, providing excellent care to customers, in addition to ensuring that the hospital stay brings a good experience to the patient.

Performance of the hospitality areas and the impact on patient experience

We have experienced an important cultural change, which provides a more attentive look at the hospitality areas in hospital institutions and contributes to a journey of positive patient experience within a hospital unit.

It is common for the patient's evaluation to be focused on the observation of non-assistance issues. He can see, on the one hand, if the food is delicious, if the environment is clean, if the sheets are adequate and if his demands were met quickly; on the other hand, most of the time, he is not able to understand if the medicine administered is the best one in the laboratory, if the requested exam is the most appropriate for the definition of its treatment - analyzing technical issues requires specialized knowledge. When there is a better interaction between management and hospitality and care areas, it is possible to make the patient's experience more positive, in line with the safety principles required in a hospital institution. We highlight the areas of hygiene and nutrition to describe the performance and the most relevant aspects, which contribute to the inpatient experience, the alignment of these areas with the strategic objectives of a hospital.

Hospital hygiene

The hospital environment is, of course, full of microorganisms and, therefore, offers points of contact and transmission of infections that can be brought to the patient through surfaces, objects and vectors. For Boeger,[10] the goal of cleaning is to remove visible dirt; removing, reducing or destroying pathogenic microorganisms and controlling the spread of biological contamination. In addition to the fundamental role related to infection control, the hygiene of the environments is strongly linked to the patient's experience, since cleaning is an item frequently observed by customers, precisely because of their routine ability to judge, with a glance, if a place is properly cleaned.

[9] Burmester (2012, p. 85).

[10] Boeger (2012).

Hygiene is a sensitive sector, influenced by the personal and technical particularities of employees, that deserve to be observed with a very special look at the area's management, of people and quality, because it is necessary to adapt flows and processes to a language that is easy to understand, so that failures in the execution of tasks are avoided. Using photos and images in the description of the procedures and using practical training make a huge difference for the retention of learning and for the execution of daily work.

It is also essential to understand what generates satisfaction and what motivates the operational team to achieve the established goals. Developing shared goals and creating projects and actions focusing on motivating and engaging people are actions that mean you are using an excellent tool for the management of the area.

When a hospital seeks to implement a culture of continuous improvement of its processes, and, for this, it decides to invest in motivational projects, so that operational teams develop a sense of belonging to the institution's macro objectives, usually, the engagement occurs quickly. A project that is structured and systematized in a clear and objective way is able to value the involvement of employees and enable the assessment and performance of each agent in the team.

The expected result with the application of a project that clarifies the performance of each team member motivates them to obtain individual results so that sectoral and organizational goals are achieved, being able to promote the strengthening of the relationship between members of the team, the leaders and the processes, developing an awareness of the importance of hygiene in the hospital environment, in addition to enabling the technical and behavioral assessment of each employee involved in the project.

A motivational project must include all employees of the hygiene service. The suggestion is that the leaders of the area themselves play the role of evaluating the requirements, using tools developed for this purpose. Some points are important and can significantly contribute to the achievement of good results, which we suggest to be included in the evaluation metrics as criteria for obtaining an individual concept (grade):

- Performance in activities: the evaluation must be clear and objective (example: square meters or areas cleaned by the professional x quality x time);
- Motivation in the work environment: willingness and acceptance to perform tasks proposed by the leaders without the need to be led by another person;
- Communication with the team (leaders and co-workers): appropriate speeches to the workplace that encourage a favorable team environment;
- Compliance with routines: these need to be easy to understand and widely known by all team members;
- Use of personal protective equipment (PPE): for the safety of all;
- Attendance/punctuality: presence and constancy at work;
- Use of correct techniques: execution of appropriate procedures;
- Sustainability: rational use of available materials, without waste and underutilization;
- Productivity: maintain a standard for delivery of activities during the evaluation period;
- Compliance in the audits of beds or administrative areas: from the insertion of a process for checking deliveries, to confirm the quality of the performed service.

Based on the definition and detailing of the criteria, it is important that a score is established for each topic evaluated, which can be, for example, great, regular or inappropriate, following each classification with scores 1.0, 0.5 or -1.0, respectively. It is suggested that the evaluation be monthly and, in the end, the employee with the best score will be rewarded with any award considered attractive to the group members (a way of recognizing the achieved performance). A day-off in the following month can be a favorable reward for employees.

The intention is that the whole team seeks to fulfill each criteria with even more compromise and engagement, which naturally foments a better mood, promotes a search for knowledge and fosters a more careful compliance with practices.

A motivational project, in addition to having the opportunity to develop leaders who play the role of evaluators, can assist with the goal of building a closer look at all members of the hygiene team, in the way of acting and caring for hospital patients, making them hygiene agents with the purpose of offering excellent service to the institution's customers. This feeling of care can allow the patient to feel more comfortable, welcomed and safe, and thus have a more positive experience during their hospital stay.

The nutrition service as part of hospitality

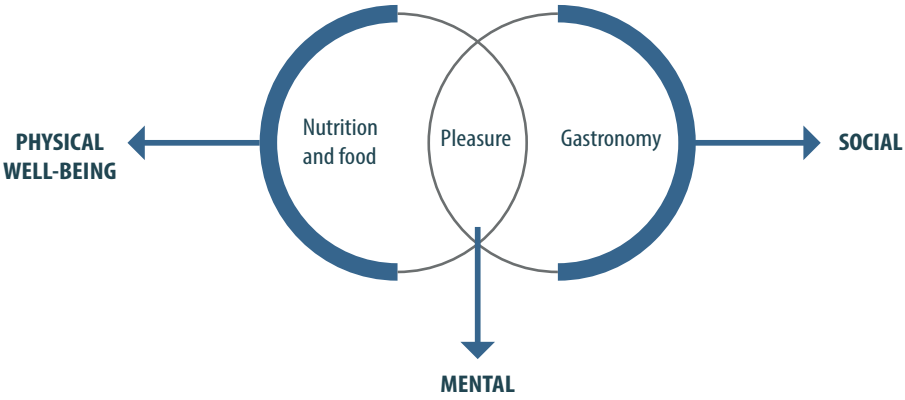
According to Severine,[11] the goal of nutrition service in health institutions goes beyond serving a tasty, balanced and safe meal. It goes beyond the limits of the kitchen, when contemplating the nutritional assistance to patients and collaborators.

Food is directly involved with healing. For Castro and Correa,[12] "these services are of great importance in the way the patient recovers during their treatment and in the concept they create in the minds of those who seek the hospital ". This thought is justified by the capacity for evaluation and the relationship that people have with food, which is also considered a source of pleasure.

[11] SEVERINE, A. N. Food service management.In: MALIK, A. M.; VECINA NETO, G. (Orgs.). **Health Management**. São Paulo: Guanabara Koogan, 2012.

[12] CASTRO, A.; CORREA, M. D. R. G. Gastronomy and nutrition in the hospitality context. In: BOEGER, M.; FARAH, O. G. D.; WAKSMAN, R. D. (Orgs.). **Hospitality.** São Paulo: Manole, 2011. p. 87.

Figure 2 - Integration of gastronomy and nutrition



Source: Adapted from Castro and Correa (2012).

Hospital gastronomy has been improving more and more, contributing significantly to the patient's good experience. According to Castro and Correa,[13] "the purpose of gastronomy is to create dishes and promote pleasure in consumption, through the transformation of food ". In the case of hospitalized patients, outside their environment and routines, a good nutritional experience during hospitalization can be decisive in recovering health and satisfaction with their care in general. The patient needs to be treated individually; his origin, habits, customs and creed must be respected so that his needs are fulfilled, always in conjunction with aspects related to their recovery and healing process, in addition to humanizing care.

The hospital diet must be planned to provide the patient with the necessary nutrients aiming to assist them in their recovery and maintenance of health. It is important that nutritional care is monitored by doctors, nurses and nutritionists, the main agents involved in this process. Multidisciplinary interaction contributes to health promotion and prevention of pathologies related to food, which may arise during hospitalization.

There are many strategies that can help to improve the provision of nutritional assistance in health units. The existence of a manual or electronic panel, for the good monitoring of the therapeutic plan related to the patients' diet, is a practice used by many institutions. This tool provides that the process of release, suspension or modification of the hospital diet is optimized. The method, which used to be carried out manually, started to be automated in some institutions, offering the possibility of eliminating some unwanted practices present in the operation, such as failure to supply the diet, preparation, delivery, and lack of control over fasting time.

The implementation of improvements, such as the electronic panel of diets in nutrition and the definition of the flow of release of dietary prescriptions (doctor x nursing), as well as the training of the multidisciplinary team, enhance the process and expand the engagement of the stakeholders, when sharing the purpose of offering safe care to patients. Several gains can be obtained with the implementation of the proposed actions, such as:

[13] Ibidem, p. 93.

- Accurate and secure information;
- Reduction of delivery time of the diet;
- Control of fasting time;
- Mitigation of flaws in the diet supply process;
- Improvement in patient satisfaction during hospitalization;
- Standardization of the technical service of nutrition.

There are many benefits when working with hospitality services in an integrated manner. When aligning the role of nutrition to this purpose in the quest to provide a good experience to the patient, actions can be created for several important commemorative dates for patients in order to surprise them in a positive way and minimize the impact of hospitalization.

In order to know the particularities of each patient, it is favorable that the health service nutrition is aligned with nursing. In this sense, it is also important that the nutritionist consults the patient about their food preferences to make adjustments to their diet when possible in order to satisfy them. It is also recommended, especially for long-term patients, to adopt a menu that reminds them of their home, providing physical and mental well-being, which can contribute to the restoration of their health.

Innovations for hospitality management

In order to obtain results in hospitality management that promote a better patient experience, the need for a well-designed, implemented and executed process is evident, along with properly trained managers with the ability to assess adherence to the process established to achieve the projected goals.

The implementation of the concierge service brought to light indicators aimed at the opinion of the patient based on their experience, the more effective monitoring of the bed turning process, which provides greater operational gain, as well as in the perception of security that the assistance team starts to have in relation to the hospitality services by knowing the process and the monitoring performed, aimed at meeting patient demands.

The patient tends to identify with hospitality professionals through daily contacts, feeling comfortable by sharing criticisms, needs and suggestions during their hospitalization period, which makes it possible to identify and implement immediate improvement actions, able to have a better perception of quality, safety and patient experience.

The role of leadership is evidenced in the monitoring of processes, in their adjustment, in ability to apply the available tools to obtain better performance of the executor, in each step. According to Burmester,[14] "reaching the highest levels of performance requires methods and processes focused on learning ".

In addition, the involvement of senior management in supporting and preparing for leadership it's fundamental; so you need to be committed to the development of all the people who

work in the hospital, stimulating learning and creativity, getting involved and serving as an example and model to be imitated, reinforcing values and engaging everyone.[14]

We note that hospitality management plays a strategic role, especially regarding the application of the concepts of people and process management, backed by quality tools that involve good practices in certification processes.

The successful implementation of the hospitality management area depends mainly on the adequate choice of professionals who will be in charge of the processes, followed by training of these leaders, so that the concepts of management, leadership and quality can reflect on the institutional results. From there, it is possible that the tactical base will enable the operational base, providing an adequate monitoring of the execution of tasks and making a participatory and effective management model real.

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[14] Burmester (2012, p. 35).

CONSIDERATIONS

Andréa Prestes and J. Antônio Cirino

CONTINUOUS IMPROVEMENT IN HEALTH

It is important to resume that, in the Health Sector, there is no room for stagnation, especially in times of substantial changes on the world stage. Increasingly, the hospital manager is called to work on the topic of change management in a skillful and fast way. Considering what is presented in the chapters of this volume of the Hospital Manager's Manual, we can see that there is always room to promote positive changes and many opportunities to do even better.

The maxim of "continuous improvement", proclaimed by so many authors, stands out in the Health Sector in Juran's trilogy, referring that quality is achieved through planning, control and improvement, with the implementation of positive changes that are, in fact, sustainable.[1]

In this sense, we assembled this new work so that it brought to readers themes that are dear to them in the day-to-day hospital management and, at the same time, subjects that are in vogue on the world stage, as a subsidy to the search for excellence in the management of processes, people and projects of health institutions.

We started with the chapter "Change Management", precisely to present possibilities for reflection while facing inconstancy of their daily lives, contributing to equip hospital managers to handle the changes that occurred on a daily basis, driven by micro or macro events.

Following, the chapter "Strategic Planning" provides us with the base for the proper management of the health unit, in addition to understanding the historical context of the strategy, the structuring of the organizational identity and the way to enhance this instrument for the organization's sustainability.

Furthermore, in order to undertake this management properly, we need to base each action in a compliance policy, a topic addressed in the third chapter, entitled "Health Compliance". In this, we brought legal information for the formalization of an integrity program and how crucial it is to grant this knowledge to health professionals, as well as the legal rules that interpose the theme. And, in a practical way, how to establish this program, which also seeks to guide the internal rules of coexistence between the various people working in the units.

As one of the essential arms of compliance, we talk about "Risk Management" in the fourth chapter, this being an opportunity to improve assistance, administrative and support procedures, by identifying possible failures in the unit and defining control practices that can mitigate these occurrences. As a suggestion for a tool for monitoring the subject, the institution of a periodic risk assessment was presented, which provides opportunities for improvement cycles.

With this in mind, the fifth chapter deals with "Patient Safety", bringing the main concepts of this theme, connecting management by processes, results and risk management itself. With the expertise presented in the text, it is possible to know the strategies to enable the implementation of a Patient Safety Center (PSC), as well as to focus this information as effective sources of improvement on the health organization.

[1] SCOVILLE, R. et al. Sustaining improvement. Cambridge: Institute for Healthcare Improvement, 2016. (IHI White Paper).

In the "Technological Innovation in Health" chapter, the idea was to expose this disruptive scenario for the improvement of processes, knowing the reasons for adopting new procedures, the themes involved and the main innovations that are occurring in the scope of health. In order for this change to be made possible, we present the necessary investments to make innovation a reality in the different profiles of health units.

The seventh chapter, entitled "Lean in Health", connects the discussions aimed at improvement. Through it we know the origin of this philosophy and its application in health, as well as the need for leaders who develop and encourage Lean Thinking. In this context, with the presentation of the most usual tools, it was possible to understand that Lean culture is an essential factor for the sustainability of results.

In the chapter that addresses the "Transition of Care to the Extra-hospital Environment", we were enlightened about the foundation of this concept and its importance in the management of chronic conditions, as well as the modalities inherent to the theme. Reflections that provided the opportunity for thinking to innovate in the management of the care transition were also presented.

In the ninth chapter, "Cost Management", we strengthen this theme as central to health management, considering the frequent need for resources for new investments. Thus, reflections were offered to equip hospital managers in this area, aiming at improving the economic and financial performance of the units in which they operate.

Finally, with the last chapter, "Hospitality Management", we learned how unparalleled leadership is in providing excellent patient care in terms of comfort, hygiene and food, by establishing successful actions that can contribute to the implementation of management that effectively supports care practices, providing the best bed turnover and patient satisfaction.

In view of this, we can affirm that this second volume of the Hospital Manager's Manual fulfills its role, by bringing modern and relevant themes to the hospitals that make up the Brazilian Hospitals Federation - FBH and to the others that perhaps had the opportunity to interact with the work. May continuous improvement be the motto of everyone who works in health management!

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FBH AND THE FEDERATES

FBH

A HISTORY OF FIGHTS FOR IMPROVEMENT IN THE HEALTH SECTOR OF THE COUNTRY

The Brazilian Hospital Federation (FBH) is a non-profit associative entity that has represented the Brazilian hospital sector for over 50 years.

Member of the Health Chamber of the National Agency for Supplementary Health (ANS), with constant presence at the National Health Surveillance Agency (Anvisa) and the Ministry of Health (MS), FBH participates in the main decisions of the sector, fighting for better working conditions for the companies it represents and for the quality of services provided by the private health network.

Currently, one of the main focuses of the Federation is the fight to mitigate the financial crisis that affects a significant portion of private hospitals affiliated to the Unified Health System (SUS), including charities and specialized clinics, such as nephrology.

The SUS procedure table did not have a readjustment between 1994 and 1999, which resulted in a great gap that was never compensated.

The FBH's proposal is to strengthen the institutional position of hospitals regarding the negotiations of the private health network with the government and health plan operators, with the purpose of promoting a recovery plan by updating the amounts paid to the health units covenant to SUS and the supplementary system.

Another major struggle tackled by the Federation is the reduction of the tax burden in the Health Sector, considered one of the highest in the Brazilian economy by tax studies, including double taxation on some taxes.

The tax burden imposed on the sector is the subject of constant debate of the FBH with the public power and the National Congress. The FBH proposes the exemption of some taxes that affect the revenue to reduce the charges, thus improving the negotiation of the adjustment of SUS tables and health plans.

HISTORIC

A trajectory of struggles

FBH, one of the largest representatives of the country's private health network, has helped to write the history of Brazilian public assistance over the past 50 years.

The Federation and its state associations act in defense of clinics, hospitals and outpatient clinics, representing today more than 4.000 units responsible for 62% of SUS care and 100% of the supplementary system, meeting the care needs of the population in locations where there are no public hospitals.

Growth and modernization

In this trajectory, FBH has turned adversities into achievements and nowadays is guided by the permanent goal of qualifying public assistance, always based on ethics, justice and the idea that health is really a right for everyone.

Quality first

The National Accreditation Organization (ONA), established by the FBH's initiative, sponsorship and incentive, is the first national entity to create a quality program, attest credibility and encourage the improvement of institutions that offer health services throughout the country, by accreditation programs, which permanently evaluate the quality of health services in the country. This was another important step in FBH history.

The creation of courses for the qualification of professionals from private institutions, using the structures of its affiliates, is a constant investment of FBH, with the permanent purpose of qualifying the Brazilian hospital sector.

Association of Hospitals of the State of Alagoas

The Association of Hospitals of the State of Alagoas (AHEAL) was founded on May 31st, 1974 in a memorable meeting held at the headquarters of the Society of Medicine of Alagoas in the city of Maceió, capital of the Alagoas state.

The AHEAL was formed with the purpose of bringing together the hospitals of Alagoas state, with a view to promoting and improving the cultural and scientific medicine focusing on the country's development and effective social welfare factor of our community.

It is up to the entity to represent the hospitals associated with the FBH, to support the legitimate interests of its affiliates, as well as to organize congresses, courses, seminars and conferences, effectively providing the continuity of its guiding principles for the full development of hospitals in Alagoas.

Currently, AHEAL consists of 16 associated hospitals, totaling over 1.847 beds.

The Association remains vigilant and attentive to the health policy in the country, in line with the actions promoted by FBH, in order to promote the constant updating of its members, paying attention to the technical-scientific advances in medicine and the quality of health services.

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Association of Hospitals of the State of Alagoas

The Association of Hospitals and Health Services of the State of Bahia (AHSEB) is a non-profit or economic civil association, founded on October 20th, 1965. Today, in the state, there are 635 hospitals and 14.186 beds.

Since its inception almost 50 years ago, AHSEB has been committed to: permanently contributing to the orientation of associates with a view to the quality of the health sector in Bahia state; to appear as a procedural substitute in the defense of the interests of its members in the judicial or administrative sphere; represent associates before authorities, professional associations, public or private institutions and the general public, in defense of their interests, rights and reputation.

The purpose of the Association is to approximate hospitals, clinics and other establishments in the area, stimulating the exchange of information, making AHSEB a reference for the Health Sector, in the search for solving problems involving private health areas in the state. Through partnerships with important and reputable entities - Salvador University (Unifa-cs), Federal University of Bahia (UFBA), Northern University of Paraná (Unopar) and Brazilian Micro and Small Business Support Service (Sebrae) -, AHSEB achieves excellence in continuing education.

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Association of Hospitals of the State of Ceará

Association of Hospitals of the State of Ceará (AHECE) was created in 1967, a non-profit organization that seeks to defend the interests of its members (hospitals and clinics) and also those who provide services to SUS, as well as the supplementary health chain (operators, insurers, cooperatives and self-management tellers).

The Ceará state has 277 hospitals and 8.816 beds. The entity also acts with the Executive, Legislative and Judiciary powers, promoting congresses and courses aiming at the constant improvement of the political-administrative management of its associates.

The Association currently operates in its own headquarters acquired in August 2007, with the Covenant Department covering hospitals and imaging clinics and the Legal Department.

It is worth being associated, because only then the benefits derived from the entity's work in defense of the Health Sector will be achieved.

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Association of Hospitals, Clinics and Health Service Providers of Espírito Santo

The Association of Hospitals, Clinics and Health Service Providers of Espírito Santo (AHCES) together with the Union of Health Services Establishments of the State of Espírito Santo (SINDHES), are the only legal representatives of the economic category in the Espírito Santo area, bringing together over 3.000 companies in the state. The Association is responsible for defending the collective or individual rights and interests of the category, including legal, technical and administrative matters.

The Association history began on December 10th, 1970, in Vitória-ES, with an assembly between representatives of hospitals, clinics, nursing homes and laboratories of the philanthropic and private network installed in the state. At the time, the first board of directors of AHCES was elected, chaired by Dr. Herwan Wanderley.

From the beginning, there was the participation and support of companies from all over the state, which saw in the Association a democratic and important space for negotiations and discussions of the sector. Since then, AHCES's trajectory has been marked by the defense of the collective interests of affiliated health institutions, allied to modernization, resoluteness and quality in the provision of services to the Espírito Santo population.

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Association of Hospitals of the State of Goiás

Associative representation entity, the Association of Hospitals of the State of Goiás (AHEG) was founded on August 6th, 1968, being formed for the purpose of defining and orienting hospital policies and standards of its members, aiming at quality, rationalization, improvement in care and treatment, the establishment of rules for interpersonal and interdepartmental relationships in hospitals, and the maintenance of technical-operational and market research bodies. The Association represents the sector in a state that includes 435 hospitals and 11.394 hospital beds.

AHEG also aims to maintain cultural activities, such as: directed events, study exchange, publications, courses, training and representation of its members before the public authorities, class entities and the general public, always subordinated to their interests, their defense and their rights.

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Association of Hospitals of Minas Gerais

Due to the need for leadership in the medical and hospital area, Association of Hospitals of Minas Gerais (AHMG) was founded on December 9th, 1956.

Due to Belo Horizonte growth and to the increasing arrival of illness from the interior of the state, the supply of hospital beds in the capital no longer supported the demand. These facts, added to the nationalization of care services, motivated the emergence of new hospital organizations. Today the state has 677 hospitals and 32.015 beds.

To represent them there was the Hospitals' Union. However, due to the strictness of the specific legislation, the union could not act with the desired freedom with the Social Security entities. In view of this, it was unanimous to welcome the founding of AHMG.

Structured on the principles of medical ethics, AHMG was a department of the Medical Association of Minas Gerais, but soon became autonomous, given the need for broad autonomy and independence of action.

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Association of Hospitals and Health Houses of the State of Pará

Association of Hospitals and Health Houses of the State of Pará (AHCSEP) was founded on January 27th, 1977 with the aim of doing effective work for the hospital and nursing home class. There are 239 hospitals with 8.443 beds throughout the state.

The first board had Fernando Guimarães as president, Carlos Costa de Oliveira as vice president, Joaquim Alcides Queiroz as 1st secretary, Sérgio Vasconcelos Paiva as 2nd Secretary, Fernando Jordão de Souza as 1st Treasurer and Victor Moutinho da Conceição as 2nd Treasurer. On February 16th, 2001, AHCSEP was merged into the Union of Health Services Establishments of the State of Pará (Sindesspa).

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Paraibana Association of Hospitals

Founded on July 26th, 1968, its vision is to act with excellence in health care, promoting the search for the improvement of services offered by associated institutions with the aim of providing society with access to a quality, humanized and high resolution medicine.

Through the work done by APH, the associates are represented with public agencies and agreements for any and every negotiations of institutional nature. The state has 153 hospitals and 3.143 hospital beds, and the Association is working to continuously strengthen the sector.

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Paraná State Hospitals Association

The Association was born under the necessity of strengthening the political actions and technological updating and knowledge, complementing the attributions of the Union of Hospitals (Sindipar) and, later, of the Federation of Hospitals and Health Services Establishments of the State of Paraná (FEHOSPAR). The state has 502 hospitals and 20.181 beds. The Association also represents the promotion of exchanges between members to share experiences and knowledge, aiming at improving the standard of the service and reducing operating costs.

In 2016, AHOPAR celebrated its 43rd anniversary. The story began to be constructed in March 1973, when 16 representatives of Curitiba's main hospital institutions met in consecutive assemblies to form a non-profit organization that, as a FBH›s arm, could give more political voice in the defense of interests of the private hospital sector, complementing the actions inherent to the union of the category, the Sindipar. AHOPAR's trajectory presents great achievements that deserve to celebrate its leaders and associates.

In the early 1990s, the Association engaged in major national and state movements. It participated in the Parliamentary Health Front creation, the enhancement of public and supplementary health services and the reduction of taxes, including the Municipal Services Tax (ISS) and the URV lawsuit, which represents an important financial recovery to the network affiliated to the SUS. AHOPAR supported the Paranaense Institute of Hospital Accreditation (IPASS) creation and placed great emphasis on knowledge dissemination through courses, congresses and meetings.

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Northeastern Hospitals Association

Northeastern Hospitals Association (ANH) was founded on July 13rd, 1967 and works with associates to defend the interests of the sector, promoting scientific administration through courses, seminars and congresses to develop and improve hospital management. Strives for improvement in the conditions of hospital, medical and outpatient services. The state nowadays has 20.181 hospital beds and 250 hospitals.

It was designed by psychiatrist Luiz Inacio de Andrade Lima and founded in Recife with the partnership of Professor Waldemir Miranda and physicians Avelar de Castro Loureiro, Savio Vieira, João Marques de Sá and Tomé Dias.

The paths taken by the Association have always been of many struggles in defense of hospitals, especially those located in the inner cities that constantly faced the most diverse demands made by the State Health Department and the Municipal Health Secretariats.

Pernambuco state representative, which has one of the largest health centers in the country, ANH has the role of defending the interests of these establishments and strengthening regional leadership. A region that has more than 400 hospitals and 8.000 beds and generates more than 107.000 jobs, Pernambuco is one of the most sought locations for health care, due to technology, adequate infrastructure and advanced health facilities.

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Association of Hospitals of the State of Rio de Janeiro

Rio de Janeiro State Hospitals Association (AHERJ) is a private, non-profit civil society whose purpose is to gather, coordinate and defend the interests and objectives of health care units, whether hospitals, nursing homes, clinics, sanatoriums and other outpatient units, as well as complementary services for diagnostic and treatment, private or public, established in Rio de Janeiro state. The state has 504 hospitals and 21.091 beds.

In 1969, the Duque de Caxias Care Hospital (NADUC) was created, formed by a group of hospitals in that municipality. In 1971 NADUC was transformed into AHERJ. In 1972, November, the definitive Board of Directors formed by the founders of AHERJ was formed. In 1975, with the merger of Rio de Janeiro state with Guanabara state, by FBH's decision, AHERJ was officially recognized as the only representative resulting from the union of the two states.

In 2002, AHERJ, through the Niterói and São Gonçalo Regional, played a key role in rescuing the Niterói and São Gonçalo Hospital, Clinic and Health Care Union, promoting legal, economic, and communication advice. AHERJ reformed its bylaws in 2015 to form a new board of directors, with an executive vice president and the Ophthalmology Department.

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Association of Hospitals of the State of Rio Grande do Norte

The Association of Hospitals of the State of Rio Grande do Norte (AHORN) was founded in 1973 to represent the state hospital sector, which has 2.336 beds and 107 hospitals. The paths taken by the Association in its trajectory of representativeness and struggles in defense of hospitals were marked by struggles and achievements.

Presidents' succession line: Paulo Santiago Henriques Bittencourt was the first AHORN president, re-elected for five consecutive terms, from 1973 to 1983. Founding member, participated in the bylaws drafting committee and had a vote of honour proposed at the General Assembly; Severino Lopes da Silva, AHORN second president reelected for five consecutive terms from 1983 to 1993; Ricardo Bittencourt, AHORN third president, reelected for five consecutive terms from 1993 to 2003; Carlos Alexandre A. Garcia, AHORN fourth president, elected in 2003 and who served until 2005; Elson Sousa Miranda, AHORN fifth president, elected in 2005 and serving in office until 2008. The Association experienced a retirement moment, returning to its activities in 2013, with Élson Sousa Miranda serving as president for 13 years.

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Association of Hospitals and Health Establishments of Rio Grande do Sul

The night of January 23rd, 1969 was a milestone for the health of the state. At a meeting at Hospital Moinhos de Vento, representatives of 14 institutions in Porto Alegre, Canoas, Caxias do Sul and Bento Gonçalves founded two entities that have since been indispensable in defending the interests of the category. The state today has 341 hospitals and 25.001 beds.

In almost five decades there were numerous advances and achievements, achieved with much commitment and unity of the entities of the state.

During the 1970s, the Association emphatically claimed policies favorable to the hospital network with national authorities and leaders, with presidents Geisel, Médici and Figueiredo. In the second run, chaired by Lauro Schuck, the Association moved to a second headquarters, located in a gallery (called Champs Élysees) in the Moinhos de Vento neighborhood.

AHRGS is currently developing a new communications and action plan to strengthen its membership base and offer more services to its maintainers.

Affiliated to the FBH since its foundation, came from AHRGS the former president of the FBH, the physician Angel Antonio Gomez Del Arroyo, and the also physician and former vice president for various managements, Lauro Schuck. AHRGS presidents were the hospital administrator Hélio Henriques (1969-1971), the physician Lauro Schuck (1971-1981), the physician Vicente Passos Maia Filho (1981-1982), the accountant Ilso Menegás (1982-1987, 1995-1998 and 2005-2010), the physician Paulo Schuller Maciel (1987-1989 and 1998-2005) and the physician Claudio Allgayer (1989-1995 and 2010-present).

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Association of Hospitals of the State of Santa Catarina

The Association was founded on August 31st, 1963, with the mission of representing the interests of the Santa Catarina hospital network. The state has 254 hospitals and 11.879 beds.

In January 1975 the headquarters of the entity was acquired, being expanded in 1983, with the acquisition of new adjoining rooms, giving conditions for the accomplishment of its activities. Since 1980, AHESC has decentralized its activities by creating seven regional centers, which were renamed Regional Hospital Administrative Council (CARH), and in 2009, as a result of strategic planning, were renamed AHESC Regional, divided into the following regions: Greater Florianópolis Regional, North and Northeast Regional, South Regional, Mountain Regional, Midwest Regional, Western Regional and Valleys Regional.

The entity's objectives are: to define and guide the hospital policy in the state; promote the development of hospital care; establish operating rules aimed at the integration of medical services; represent associates and defend their interests, rights and reputations; promote the development of scientific administration through courses and seminars in the various areas of interest of the hospital class; disclose and enforce the Code of Ethics of the Hospital Administrator and other professionals associated.

In August 1995, the entity had an important reinforcement in carrying out the activities inherent to health. The Federation of Hospitals and Health Services Establishments of the State of Santa Catarina (FEHOESC) creation only added to AHESC's efforts, consolidating the partnership in May 1996, with the union of the two entities in the same work environment, at the AHESC office.

In 2010, AHESC and FEHOESC joined forces and acquired a new, broader and more adequate headquarters to develop activities and better serve their associates. AHESC currently represents 105 associated hospitals, totaling over 8.365 beds.

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Association of Hospitals of the State of São Paulo

On June 7th, 1965, the Hospitals Association was created to provide services to the Social Security, presided at the time by Livio Amato. Two years after its founding, on August 7th, 1967, the entity was renamed the São Paulo State Hospitals Association and its president was Pierpaolo Gerbini.

The state today has 1.059 hospitals and 66.479 hospital beds. AHESP has the great mission of representing the largest health center in the country and acting to defend the interests of the hospital sector. It works to establish policies in the hospital management area, encouraging the adoption of good practices, aimed at quality care, patient safety and preserving the sustainability of the sector. Facilitates and assists the relationship of hospitals with the market and the regulatory body. Represents its members before public and private institutions. It promotes studies, research and events to improve the technical and administrative staff of members, as well as exchanges between members and institutions in the area of health care. Defends the common legal and economic interests of its members.

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