

## Planning and administration of environmental security and care in health services

Planejamento e administração da segurança ambiental e do cuidado nos serviços de saúde

Planificación y administración de la seguridad ambiental y del cuidado en los servicios de salud

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### ABSTRACT

**Objective:** To identify if managers' information of work space could support the management actions for the safety of both patient and employee. **Method:** Descriptive study for the application of administrative tool 6W3H in a radiology department of a university hospital. Was applied a questionnaire directed at to heads of this sector. **Result:** The answers obtained in the questionnaires allow to infer that there are implications of the manager's knowledge on intervention in the production processes in health services, reflecting the safety of both patient and employee. **Conclusion:** The analysis work process was not fully identified. There are gaps in knowledge to support management actions related to the safety of both patient and employee. In this context, we suggest an applied integration methods concerning the scientific committees on tool health services, it will be a collaborative element to improve the promotion of safety of both patient and employee.

**Descriptors:** Diagnostic Imaging, Patient Safety, Occupational Health.

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## RESUMO

**Objetivo:** Identificar se as informações que os gerentes detêm sobre seu espaço de trabalho podem subsidiar as ações gerenciais relacionadas à segurança do paciente e do trabalhador. **Método:** Estudo descritivo baseada na aplicação da ferramenta administrativa 6W3H em um setor de radiodiagnóstico de um hospital universitário. Aplicou-se um questionário dirigido aos chefes desse setor. **Resultado:** As respostas encontradas nos permitiram inferir que há implicações no modo da implementação do conhecimento do gerente sobre o uso desta intervenção nos processos produtivos em serviços de saúde repercutindo na segurança do paciente e do trabalhador. **Conclusão:** O processo de trabalho descrito não foi identificado integralmente. Existem lacunas de conhecimento para subsidiar ações gerenciais relacionadas à segurança do paciente e do trabalhador. Sugerimos a integração aplicada de métodos das comissões científicas em serviços de saúde a ferramenta, pois será um elemento colaborador ao aprimoramento da promoção da segurança do paciente e do trabalhador.

**Descritores:** Diagnóstico por Imagem, Segurança do Paciente, Saúde do Trabalhador.

## RESUMEN

**Objetivo:** Identificar si las informaciones que los gerentes poseen sobre su espacio de trabajo pueden subsidiar las acciones gerenciales relacionadas a la seguridad del paciente y del trabajador. **Método:** Estudio descriptivo basado en la aplicación de la herramienta administrativa 6W3H en un sector de radiodiagnóstico de un hospital universitario. Se aplicó un cuestionario dirigido a los jefes de ese sector. **Resultado:** Las respuestas encontradas nos permitieron inferir que hay implicaciones en el modo de la implementación del conocimiento del gerente sobre el uso de esta intervención en los procesos productivos en servicios de salud repercutiendo en la seguridad del paciente y del trabajador. **Conclusión:** El proceso de trabajo descrito no se ha identificado integralmente. Existen lagunas de conocimiento para subsidiar acciones gerenciales relacionadas a la seguridad del paciente y del trabajador. Se sugiere la integración aplicada de métodos de las comisiones científicas en servicios de salud a la herramienta, pues será un elemento colaborador al perfeccionamiento de la promoción de la seguridad del paciente y del trabajador.

**Descriptor:** Diagnóstico por Imagen, Seguridad del Paciente, Salud del Trabajador.

## INTRODUCTION

The flow of calls and the dynamics established within the image services prioritize a chain of events that need to be evaluated in a managerial way. The environment can directly or indirectly influence the risks to the health and safety of the worker and the patient. These risks can be modified by interfering with appropriate administrative and managerial actions.

The factors inherent to the work permeate the direct and indirect costs in the functionality and in the elements of conformity and nonconformity of the service. In 2013, the Unified Health System (SUS) spent R \$ 1,806,372,411.90 (one billion, eight hundred six million, three hundred seventy-seven thousand, four hundred and eleven reais and ninety cents) with imaging tests.<sup>1</sup>

In the following year, this expense increased by 8.2%, amounting to R \$ 1,952,992,170.42 (one billion, nine hundred and fifty-two million, nine hundred and ninety-two thousand, one hundred and seventy reais and forty-two cents), which corresponds to approximately 33.6% of the total spent on Group 2 procedures (diagnostic procedures) of the SUS table, whose expenditure in 2014 was R\$ 5,813,134,400.23 (five billion, eight hundred and ninety Thirteen million, one hundred and thirty-four thousand, four hundred reais and twenty-three cents).<sup>1</sup>

The values demonstrate a high expenditure by SUS due to diagnostic procedures. It is essential to reduce the costs of these services and, consequently, the SUS without depriving customers of quality care. In improving the quality of care and service provided, nursing management and other professions involved in imaging services should promote all necessary and adequate support and material for better patient safety, but also for the worker.

Due to the high cost involved and the risk factors to which the worker and the patient are exposed, management and administrative actions are a preponderant factor for resizing the service provided. Thus, the objective of this study was to identify if the information that the managers hold about their work space can subsidize the managerial actions related to patient and worker safety based on the application of the 6W3H tool in an imaging / radiodiagnosis service.

Administrative management that articulates with the practice and attention to workers and clients can present proposals to improve the efficiency of the service, allowing greater worker safety<sup>2</sup> and patient provided in the National Policy on Occupational Health and Safety (PNSST/2011)<sup>2</sup> and the National Patient Safety Policy (PNSP/2013)<sup>3</sup>. The use of a management tool allows the structuring of actions more appropriate to responsible management. The application of tested and validated tools provides an evidence-based health practice based on patient and worker health and safety.

The 6W3H management tool was one of the means to make a strategic planning that has the purpose of guiding the institutional management in institutions administered by the company. Its application may help to establish more appropriate strategies to recognize the company, identify its purpose and apply its resources obtaining better results.<sup>4</sup>

The company, in this case, the hospital sector should know its strengths and weaknesses, know and strengthen these external opportunities, recognize and recognize mistakes, barriers and limitations, recognize and eliminate external threats, security strategies and have effective ways and effective in the work plan from the perspective of autonomy of care and administrative homeostasis in health services.<sup>4</sup>

The fulfillment of the determinations of the National Health Surveillance Agency that clarifies the need for safety and quality in the services of radiodiagnostic services that

are offered to the population is an obligation that aims to ensure, among other procedures and services, the application of the requirements of promotion, Prevention and radiation protection for patients, professionals, the general public and the environment.<sup>5</sup>

This study is a clipping of a project entitled Nursing in Imaginology: health and safety factors of the worker and the patient whose general objective is to identify a point of intersection between patient and worker safety policies applied to radiodiagnosis / imaging. Administrative interventions are representative in effect on productive processes in health. They provide decision making that will develop systemic actions of interrelationship between quality, safety and protection in the organization of work processes in health.

These considerations require a broader understanding of the contemporary hospital, which goes beyond the reduced formatting of service management and on-call supervision. These elements require the fulfillment of pre existing standards and adaptations and the expansion of the network of professionals in the technical areas of management of health and safety management for health care establishments in Brazil.

We live with elements of the classic health administration in concomitance with issues that did not obtain the resolutions demanded by this, we go through the scenario of health managements with advances and identification of problems, enter into the contemporary model of quality of services and do not anticipate and order support Of management and health security, which for the presented research implies mentioning the need of the radiological protection team with supervision in radiology in health services.

## METHODS

This is an exploratory descriptive study aimed at a managerial diagnosis directed at the interface between the safety of patients and workers of an imaging / radiodiagnosis sector of a university hospital that develops diversified procedures in interventional and non-interventional imaging.

In order to identify the information that the managers have about their workspace making them able to diagnose questions related to the safety of patients and workers in a service of imaging of a university hospital located in the city of Rio de Janeiro, the administrative tool was applied 6W3H Based on responses to a questionnaire addressed to the heads of the professional categories of nursing, medicine and radiology technicians.

The tool is composed of 9 questions originating from English words with the initials W and H used to organize the results obtained in an action plan. These letters correspond to: What, Who, Whom, Whom, Where, Why, How many, How much How much.

We interviewed 5 heads of the services of the medical, nursing and radiology technician categories that attend

to patients submitted to radiodiagnostic procedures, at outpatient level. A five-part questionnaire was used to collect data. The first one consisted of questions related to the recognition of the services offered by the sector; The second was focused on the degree of risk in the sector.

The third, fourth and fifth part were focused on the characterization of the sector, the number of professionals and the quantity of resources available, respectively. The instrument was structured with a total of 37 closed questions and 7 open questions. The issues addressed topics such as the work environment including the risks, the professional and the service offered, which integrate the risk factors present in the imaging sector, which interfere and generate vulnerabilities for patient safety and worker health.

After the data collection, the questions proposed by the 6W3H tool obtained answers that were read, inserted and grouped in a descriptive analysis map. Thus, the analysis was performed considering the presence and absence of responses, treating what was found in light of the available literature on health and safety of workers and patients in the scope of radiodiagnostic services.

This study is in accordance with the resolution of the National Health Council (CNS) 466/2012<sup>6</sup>, which involves research conducted directly or indirectly with human beings and was submitted to an ethics committee in research through the Brazil Platform obtaining the opinion of number 1.119.463.

## RESULTS AND DISCUSSION

The administrative structure of the service is organized from the characteristics of certain test groups. In this way there are two sectors (hemodynamics and radiology) around which the managerial positions are divided. Currently, there are 5 chiefs, two of whom are focused on radiology technicians, two from the medical team and one from the nursing team. In relation to the heads of medicine there is one responsible for the hemodynamic service and another for the other services. The same subdivision is repeated in relation to radiology technicians. The head of nursing is responsible for responding to all sectors.

### What

The imaging / radiodiagnosis service performs radiography, computed tomography (CT), magnetic resonance imaging (MRI), ultrasonography, angiography, interventional procedures, mammography, fluoroscopy, diagnostic and therapeutic neuroradiology. This service is related to several clinical and surgical specialties, according to the services provided by the institution.

### Why

The reason for the care given to the interviewees is to assist the patient in an integrated way from the beginning of the search for the service until its clinical improvement.

The demand for imaging / radiodiagnosis is due to clinical specialties.

This complementary diagnosis helps to elucidate the clinical condition of the patient. This elucidation allows to include the therapeutics integrated to the symptomatology, previous history of surgeries, treatments, allergies to a particular drug and contrast and associated to possible therapeutic interventions like the treatment and prophylaxis.

## Whom

The clientele is characterized by outpatients being patients from the outpatient clinics of the university hospital, patients coming from the vacancy regulation system (SISREG) and the polyclinic associated with the university hospital, in addition to inpatients.

Among the most frequently performed tests are: chest x-ray, computed tomography (CT), and coronary angiography including cardiac catheterization and peripheral arteriography. The demand for these tests is related to outpatient demand. Its accomplishment is conducted by professionals who must have scientific technical knowledge to use correct technique and to avoid damages to the patient.

## Who

This service is performed by a multiprofessional team consisting of doctors, nurses, nursing technicians and radiology technicians. The team varies according to the specificity of each area of imaging / radiodiagnostic service.

From the application of the instrument, the bosses reported the existence of a quantity of workers distributed in a number range, but the precise number of employees was not obtained. Among the available information, the composition of the teams with respect to gender is highlighted, being evident that except in the radiology technicians, the work force of this sector is composed predominantly by women.

## When

The operation of the service takes place in the morning and afternoon shifts for all exams. However, some procedures may occur at night, such as hemodynamics and radiography, in emergency cases, for hospitalized patients.

## Where

The flow of outpatient care in the imaging / radiodiagnosis sector takes place in a building adjacent to the central building whose location is easily accessible, but with some structural problems because it is an old building. The construction has a signaling indicating the sector of x-rays, however it is difficult to visualize and does not have ramp of access of smooth form for people with locomotive deficiencies.

## How

The instrument used did not give an account to describe the entire work process, being possible to identify some

related to the initial customer service, with emphasis on hemodynamics.

For the vast majority of procedures, upon entering the industry, the patient should go to the front desk to submit the application for examination. This document will be taken to the place where the technicians stay while the patients are waiting in front of the door. For the other services, it happens in a similar way, but the wait of the USG occurs in the reception room of the service.

At hemodynamics, the patient submits the request to the registry and awaits scheduling for the examination, and an escort is required on the day of the appointment. Patients who will do this type of examination in the sector will undergo a nursing consultation, regardless of their origin (SISREG) or internal flow. The consultation will guide the examination with the pre and post procedure guidelines, including the complications that the examination may cause. If any documentation is missing, including some examination, it should be remarked.

## How many

The average monthly care is 800 radiographs, with a minimum daily care of 40 patients. The services of computed tomography, ultrasonography make of 31 to 40 examinations per day.

In turn, the MRI service has a daily routine of visits of 1 to 10 exams and hemodynamics a daily attendance of 11 to 20 patients per day.

## How much

Among all the heads of imaging/radiodiagnostic, it was verified that only 3 affirm to know the value of the procedures performed there, corresponding to the total of 60% of the heads. Two heads exemplified the values of specific exams of their area, comparing the price of the SUS table and of private institutions.

The greatest dimension of the problems is located in the financial resource and, sequentially, material and human resources. The managers, when answering the questionnaire, stated that the highest cost for the sector's operation is related to equipment and stents specific to hemodynamics. It contrasts with this information the low investment of the sector in the continued education, unanimous affirmative of the heads of the service.

The sector receives support from funding agencies in research lines such as pulmonary volume, pharmacological stents; Fractional reserve flow; Angioplasty in the elderly; Pharmacology in angioplasties; Syndrome x; Image and optimization of angioplasty; Renal denervation.

There are differences in length of service between managers. Two managers have more than 24 years ahead of service. Another is between 19 and 21 years old. The head of nursing has between 1 and 4 years in the position. Most of the bosses have a working day at another institution.

Among the 5 heads who answered the questionnaire only one was away from work in the last two years due to illness, not clearly related to work.

The variability of existing activities impacts directly or indirectly on the work process of the multiprofessional team and reflects on management, professional training, adherence to the use of equipment, mechanisms and the recognition of specific protection strategies for the professional and the Patients.

This diversity implies the oscillation in the input and output of resources and their configuration, the activities and capacity of the resources at each point of the process and the versatility of the activities within the process.<sup>7</sup>

The impact interferes in costs whether in the personnel, administrative or materials, affecting the imaging/radiodiagnosis service, altering the efficiency ratio of the work process and can cause work accidents and damages to the population served.

Considering the nursing actions in this context, it is worth noting the market trends in favor of cost reduction and productivity increase that reaches the global level and requires professionals involved in the provision of health services, the use of cost analysis measures appropriate to the current situation.<sup>8</sup>

In Brazil, the use of ionizing radiations and radioactive and nuclear materials is regulated by the National Commission of Nuclear Energy (CNEN). Thus, working in the work environment with ionizing radiations and radioactive materials requires knowledge and responsibility.<sup>9</sup>

The main radiological protections are the plumbiferous accessories and the dosimeter which, depending on the type of examination, should be used by the patient and the professional. This entails a guarantee for patient and worker safety.<sup>5</sup>

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The exposure to ionizing radiation should be the object of attention throughout the multiprofessional team. The professional should be able to identify the risk factors for their development, recognize the problems, program relevant interventions, effective and prevent and minimize complications.<sup>9</sup>

Thus, the recognition given about quality in the imaging/radiodiagnosis service is fundamental for a managerial action adequate to the safety of workers and patients in an imaging service.

Managers who recognize what to do are better able to conduct managerial processes, as they have mastery, knowledge and technical competence in the specific area. This is demonstrated by clinical skills and equipment, materials, and resources that support critical reasoning for comprehensive quality patient care.<sup>10</sup>

There are standards of staffing for these spaces whose variables involve the determination of the number and composition of the team, which occurs, among other criteria, by the type and complexity of the service provided. To do so, an analysis of the work organization should consider the different processes and institutional differences as the adopted model adapted to the needs of health care.<sup>11</sup>

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The proper design of nursing professionals is closely related to patient and worker safety. Because it is an indispensable category in the sense of continuous supervision of work processes that guarantee patient safety.<sup>8</sup>

In the absence of the necessary quantitative and qualitative nursing to provide the safety to the patient, there is a greater vulnerability and the occurrence of adverse effects in the accomplishment of the examination, being necessary the resizing of personnel to flow the attendance and the promotion of patient safety and of the professional.<sup>8</sup>

The strength to handle patients and equipment demands great physical strength during some procedures, as in the movement and removal of patients, actions, mainly related to nursing. Such an effort can lead to lower workloads, which interferes with the efficiency of the strength and capacity of nursing work and should be considered in the management of this service.<sup>13</sup>

The gender issue is prevalent in the sector because of the high predominance of women in the composition of the workforce. Risks related to radioactivity are related to the occupational risk factors that may occur to them. These risks may have implications for the health of the worker, since the radiation can cause deterministic and stochastic effects. These relate to the proportional damage of the dose received and can take forty years to occur some harm. The deterministic, the consequences of the absorbed dose of the radiation and are produced in high doses.<sup>14</sup>

In this way, the manager who knows the composition of the entire team and the characteristics of each employee of his/her responsibility can create a work plan based on the identified characteristics, which may favor a fluidity in the imaging / radiodiagnosis service.

The operation of the imaging/radiodiagnosis service has positive aspects regarding the shift schedule. This positive aspect allows a large number of users to enjoy this service and the accomplishment of the required examination because it is predominantly up to date.

However, it is necessary to emphasize the need for managerial attention to night work, due to the challenging elements such as sleep and fatigue. These two elements

interfere in the professional practice, as it impacts on the necessary attention the execution of its activity, even in professionals qualified in safe practices for a decision making based on the experience and the scientific technical knowledge with focus in the work.<sup>15</sup>

The vulnerability of professionals and patients to errors in night work exists because of sleep and fatigue. By recognizing this condition, the peculiarities of the sector and the need for support of logistical support and services, as well as the possible relocation of personnel from other sectors should be considered.<sup>15</sup>

The architectural design and the sectorization recommend setting goals and evaluation criteria, conducting market analyzes and feasibility studies, evaluating site locations, developing a work budget, functional programs and spaces.<sup>16</sup>

The steps concerning the sectorization involve steps such as reception and registration, waiting, examination, checking the quality of the image obtained and releasing the patient. The results can be delivered soon after the examination, at a later date or sent directly to the requesting physician according to determinations of the previously established spaces.<sup>16</sup>

The work processes have a direct implication with what happens and determine the level of worker and patient safety. Because the environment, the flow of care, the resources of the sector, professionals and patients characterize as an integrating element and can become vulnerable potential of this process.

There are isolated studies on part of the work process aimed at patient safety or worker safety as MacDonald *et al.* (2013)<sup>17</sup> who manages the radiologist's workload; Yu; Kansagra; Mongan (2014)<sup>18</sup> who articulates the workflow and assesses the potential implications for the environment and Kidwai; Abujudeh (2015)<sup>19</sup> who studies the environment and its conditions for workers.

The identification of spaces in the service, the volume of people in circulation and the risk associated with this volume of care favors the risk factors that may be: human, related to the professional; Systemic, related to the work environment; Related to factors outside the manager's governability and related to the patient.<sup>20</sup>

According to Administrative Rule No. 529 of April 1, 2013, establishing the National Patient Safety Program (PNSP), six goals were established for this safety. These goals guide specific areas, highlighting goals 1 and 2, which refer to identifying patients and improving communication among health professionals, respectively.<sup>20</sup>

Goals 1 and 2 advocate avoiding mistakes such as individual, procedural, and personal failures. These goals provide security for patients and professionals because of assertiveness and mechanisms that benefit workers and patients involved in professional and client care.<sup>20</sup>

Attendance volume can lead to security breaches. These errors are based on patient identification and

communication between professionals. This reflects and impacts on the elaboration of new strategies of articulation of the multiprofessional team to avoid these failures.

The dynamics of configuration of the service and the need to adapt it to the volume of the service characterize interference directly or indirectly in this work environment and in the interprofessional relations of attendance of the service.

The management of knowledge coupled with the time of experience in management can explain the knowledge of the costs due to the management consists of an organization, in this case, the imaging/radiodiagnosis sector, as a tool used with efficiency in the work process.<sup>21</sup>

This knowledge management allows participative and collaborative leadership where everyone is part of the work process. As a result, the service flows with greater efficiency, speed and quality. And as a consequence brings benefits to the industry as a process of more efficient decision making, cost reduction, production time, development of new resources, team motivation and industry productivity.<sup>21</sup>

The importance of cost management in the management of services and the composition of costs are related to the provision of resources of the sector. This results in the direct and indirect costs and in the whole work process which causes interference in the dynamics of the sector's activities and generate vulnerabilities for the worker and the patient.<sup>7</sup>

The 6W3H tool applied to the radiodiagnostic service allowed us the experience of knowing its applicability in front of the elements execution of levels of management, execution of work processes in real time and reality of work organization. These components of the structure of the service studied allow us to reflect and dialogue about the prior importance of the execution of pre-established elements regarding health and safety in health services.

The 6W3H tool has a simplified and effective primordial for its applicability in health services that allows us to produce technical reports of the conditions of functionality and level of problems with a descriptive character that resembles the protection memorials that are fundamental for the execution of Projects and planning in safety and quality in health services. This is a positive element of the tool because it allows the situational diagnosis of first observation of the levels of protection of work processes and the generalization of safety procedures.

The administrative and management tool meets the general criteria of security compliance by the level of protection attention, however the levels of prevention, diagnosis of risk and vulnerability factors and the level of effective protection on the existence and intensity of exposure factors need The fulfillment of the requirements established by the orders 453/98<sup>5</sup> (ANVISA), compliance with 6.514/1977 on Health Regulatory Norms (RN)<sup>22</sup>, which evokes the

NR-32, NR-5, NR-7, NR-NR-8, NR-9 lengths presented in Ordinance 3.214/1978, which explain the safety relationships for the worker and the Work environment and, therefore, for patients.<sup>23</sup>

The safe environment is for everyone, there will be no safe environment for the patient if the workers also do not have a safe environment and minimum safety conditions to develop productive processes in health. And an imbricated and codependent relationship involves the psychosocial, ergonomic, and socio-moral-affective factors of work relationships.

The patient and the work are found as elements of dependence of the coexistence so that the health work relation develops. One exists for the care of the other and a meeting. They are not beings that do not connect, so the safety of the patient depends mainly on the therapeutic environments established by the Florence Nightingale theory and for the health and safety of the politics and legislations that have not yet been fulfilled.

The recent research on the “profile of health professionals of the nursing team carried out by the interinstitutional national coordination of the Nursing Profile in Brazil” study, consisting of the National School of Public Health of the Oswaldo Cruz Foundation (ENSP/FIOCRUZ), Federal Nursing Council, The Brazilian Nursing Association (ABEN) and the National Federation of Nurses (FNE), organized by the Ensp/Fiocruz Human Resources and Health Research Center (NERHUS) in 2015, Nurses who represent 59.3% of the workforce in the public sector and 31.8% in the private sector and who are exposed to precarious working conditions, violence, vulnerability of the work environment and lack of job security.<sup>24</sup>

However, the research on the profile of nursing in Brazil goes beyond nursing. It presents the tangential result of the working conditions related to the organization of the productive processes in the network of health services in Brazil. This precariousness and non-safety is not exclusive to this professional, given that the work environment involves the other professions in health and the nucleus of healthcare, constituted by the patient, the target of receiving the acts of caring.<sup>25</sup>

The tendency to consider the new policies, resolutions and deliberations as elements of solution are actually an invitation to think about the advances, challenges and scenarios that we have when embracing the new and fulfilling the old. The administrative tools in health contribute to the description of work processes in health and allows us to identify that the human resources in health, the people, are the primordial axis that deserve investments, so the work environment and of the care to the patient must be thought To safely accommodate all people, the dimension of the human being does not allow separation into worker and or patient, but include all who are included in the act of caring.

## FINAL CONSIDERATIONS

Since the purpose of the study was to identify if the information that managers hold about their workspace can subsidize the managerial actions related to patient and worker safety based on the application of the 6W3H tool in an imaging / radiodiagnostic service, Highlighted what has been achieved in this investigation.

The manager of the radiodiagnostic unit should recognize what to do, since the panorama of the activities carried out in the sector and its support network favor making more assertive decisions for the correlations of clinical practice. In the study, the managers were able to clearly explain what the sector is doing.

When this manager understands why to make value the scientific ethical knowledge that allows to put in the place of the other. He can organize the team in order to assist the patient fully in order to minimize the risks arising from ionizing radiation and possible work accidents.

Regarding the “who to do” the manager of the radiodiagnosis unit must understand that the client needs to be in a safe environment and know the profile of these clients This factor allows to think in strategies for each patient and that may have factors in common among them as Pathologies, treatments in order to adopt a therapeutic plan by the multidisciplinary team. Such information was also found in managers’ speech.

The “who does” question brings special relevance to the health of the worker. In this sense, the manager of the radiodiagnostic unit must pay attention to the multiprofessional team in order to be always up to date and with the adequate number of professionals that allows the flow of the service to flow without or with the minimum of possible interurrences in the service. Regarding the quantity of workers, the information obtained was limited, and it is not clear if the managers have a clear dimension of the appropriate personnel to perform the service.

The moment of operation of the service is expressed by the answers to the question “when does” allows the flow of service to contemplate customers to enjoy the service. All the managers answered the question. This favors organizing resources, including emergency care for hemodynamics and radiography for hospitalized patients, which facilitates the process.

Where the action is carried out, it refers to the attendance space. The manager must be aware of the signs marked on the service. For the established dynamics allowed by the structural set and the flow of care prevent the workers and the patient from being exposed to the inherent risks of work. The answers denoted knowledge about space.

Job processes are described in the answers to the “how-to” question. Little information was obtained about the integral work process, knowledge gap to be studied. It can be noticed in the described items that part of the

process presents points of intersection between patient and worker safety policies.

Regarding quantity, the volume of care in the question “quantos” stands out, since the large volume of patients can interfere directly or indirectly in professional practice. This configuration can lead to possible failures, which makes the safety and health of the worker and the patient vulnerable.

Finally, in terms of costs, it became clear that managers recognize their importance, but not all of them have information on what they represent in the industry. The relationship with worker health extends the application of the method to productive processes in health and the organization and process of work in health.

The recognition of the risk factors, time management that is imbricated to the times and movements of the procedures brings out the Taylorist model of work organization. Exposure to risk factors and socio-technical-environmental vulnerabilities are commonly shared by workers and patients; Evidencing the practice of the managerial model in health requires, for example, the monitoring and dosimetry of both and will have repercussions on the health and safety conditions of the work process.

The tool deals fundamentally with the general administrative aspects, but for its improvement in safety it lacks the integrated work plan involving the technical management teams in health services. This is due to the dimensions that permeate risk management, waste, infection control, hospital epidemiology and health and worker safety services in health services, as foreseen in NR-05 and recommended in the safety actions of NR-32 And other norms in sanitary surveillance for health establishments and services.

This line of management also involves health care management committees, which can be exemplified by curative/stomatology committees, hospital surveillance and medical records, pharmacological protection.

This line of management also involves health care management committees, which can be exemplified by curative/stomatology committees, hospital surveillance and medical records, pharmacological protection, risk and safety management committees, accident prevention, occupational accidents and Worker health, fire brigade, management of radioprotection and dosimetry, hospital ergonomics and quality of life at work commission. The relationship between users/patient/client and workers/professionals has in the dimensions of the elements of safety the integrality of care that permeates the human dimensions of work and health.

## REFERENCES

1. BRASIL. Produção Ambulatorial do SUS - Brasil - por local de atendimento. Valor aprovado por Subgrupo proced. e Ano processamento Grupo procedimento: 02 Procedimentos com finalidade diagnóstica, 2013-2013. Disponível em: < http://tabnet.

datusus.gov.br/cgi/tabcgi.exe?sia/cnv/qauf.def>. Acessado em: 30 de março de 2015

- BRASIL. Decreto nº 7.602, de 7 de novembro de 2011. Dispõe sobre a Política Nacional de Segurança e Saúde no Trabalho – PNSST. Informativo da Confederação Nacional da Indústria. Publicado no Diário Oficial da União, nº 214, seção 1, 8 nov. 2011 Disponível em:<http://www.ilo.org/wcmsp5/groups/public/---ed\_protect/---protrav/---safework/documents/policy/wcms\_212109.pdf>
- BRASIL. Boletim Informativo Segurança do Paciente e Qualidade em Serviços de Saúde. Brasília: ANVISA, 2011, 1 (1). Disponível em:< http://portal.anvisa.gov.br/wps/wcm/connect/f72c20804863a1d88cc88d2bd5b3ccf0/BOLETIM+I.PDF?MOD=AJPERES>.
- SAPIRO, Arão; CHIAVENATO, Idalberto. Planejamento Estratégico: Fundamentos e aplicações - Da Intenção aos Resultados. Elsevier: Rio de Janeiro, 2015
- BRASIL. Portaria nº453 de 1998. Aprova o Regulamento Técnico que estabelece as diretrizes básicas de proteção radiológica em radiodiagnóstico médico e odontológico, dispõe sobre o uso dos raios-x diagnósticos em todo território nacional e dá outras providências. Publicada no D.O.U. em 02. de jun. 98. Disponível em:<http://www.cro-rj.org.br/radiologia/PF453integra.pdf>
- BRASIL. Ministério da Saúde. Conselho Nacional de Saúde. Resolução CNS 496/12. Publicada no DOU nº 12,13 de jun. 2013, Seção 1, p. 59. Disponível em: <http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf>.
- SLACK, N.; CHAMBERS, S. Gerenciamento de operações e de processos. 2 ed. São Paulo: Bookman, 2013
- CRUZ CWM; GAIDZINSKI RR. Tempo de enfermagem em centro de diagnóstico por imagem: desenvolvimento de instrumento. Acta Paul Enferm. São Paulo, 2013,26(1): 79-85. Disponível em:< http://www.scielo.br/pdf/ape/v26n1/13.pdf
- SALES *et al.*. Atuação de enfermeiros em um Centro de Diagnóstico por Imagem. J Health Sci Inst., 2010, 28(4): 325-8. Disponível em: <http://www.unip.br/comunicacao/publicacoes/ics/edicoes/2010/04\_out-dez/V28\_n4\_2010\_p325-328.pdf>
- MOURA *et al.* Liderança em enfermagem: análise do processo de escolha das chefias. Rev. Latino-Am. Enfermagem Artigo Original, 2010, 18(6).
- ALÁSTICO GP; TOLEDO JC. Acreditação Hospitalar: proposição de roteiro para Implantação. Gest. Prod., São Carlos, 2013, 20(4): 815-31.
- VITURI, D.W. *et al.* Dimensionamento de enfermagem hospitalar: modelo OPAS/OMS. Texto Contexto & Enfermagem. Florianópolis, 2011, 20(3): 347-56.
- PASA, T.S. *et al.* Riscos ergonômicos para trabalhadores de enfermagem ao movimentar e remover pacientes . Rev Enferm UFSM, 2015, 5(1): 92-102.
- BRAND CI; FONTANA RT; SANTOS AV. A saúde do trabalhador em radiologia: algumas considerações.Texto Contexto Enferm, Florianópolis, 2011 Jan-Mar; 20(1): 68-75
- COSTA, D. G.; DALL'AGNOL, C.M. Liderança participativa no processo gerencial do trabalho noturno em enfermagem. Rev. Latino-Am. Enfermagem [online]. São Paulo, 2011,19(6):1306-13.
- BRASIL. Ministério da Saúde. Secretaria-Executiva. Departamento de Economia e Desenvolvimento. Apoio ao diagnóstico e à terapia (imagenologia). Brasília: Ministério da Saúde, 2013.
- KIDWAI, A.S; ABUJUDEH, H.H. Radiologist Productivity Increases With Real-Time Monitoring: The Hawthorne Effect. American College of Radiology, 2015,12(10): 1076-8.
- MACDONALD *et al.* De medição e gerenciamento de carga de trabalho do radiologista: Um método para quantificar as atividades radiologista e calcular os equivalentes em tempo integral necessários para operar um serviço. Journal of Medical Imaging e Radiation Oncology, 2013, 57: 551-7.
- YU JPY; KANSAGRA AP; MONGAN J. The Radiologist's Workflow Environment. Journal of the American College of Radiology, 2014, 11(6).
- BRASIL. Ministério da Saúde. Documento de referência para o Programa Nacional de Segurança do Paciente [recurso eletrônico]. Brasília: Ministério da Saúde, 2014. Disponível em:< http://blog.iagsaude.com.br/wp-content/uploads/2014/06/documento\_referencia\_programa\_nacional\_seguranca.pdf >



21. PEREIRA AG; VERGARA LGL; MERINO EAD; WAGNER A. Soluções no serviço de radiologia no âmbito da gestão: uma revisão da literatura. *Radiol Bras* [online]. 2015, 48(5): 298-304.
22. BRASIL. Portaria nº 3.214, de 08 de junho de 1978. Aprova as Normas Regulamentadoras – NR do capítulo V, Título II, da Consolidação das Leis do Trabalho (CLT), relativas à Segurança e Medicina do Trabalho. DO Suplemento n. 127 de 06 de julho de 1978. Disponível em: < <http://www010.dataprev.gov.br/sislex/paginas/63/mte/1978/3214.htm>>.
23. BRASIL. Portaria nº 6.514 de 22 dezembro de 1977. Altera o Capítulo V do Título II da Consolidação das Leis do Trabalho, relativo a segurança e medicina do trabalho e dá outras providências. Publicada no D.O.U. em 23 de dez.77. Disponível em:< [http://www.planalto.gov.br/ccivil\\_03/leis/l6514.htm](http://www.planalto.gov.br/ccivil_03/leis/l6514.htm)>
24. FIOCRUZ. Pesquisa inédita traça perfil da enfermagem no Brasil. Fiocruz, 2015. Disponível em: < <http://portal.fiocruz.br/pt-br/content/pesquisa-inedita-traca-perfil-da-enfermagem-no-brasil>>
25. MERHY, Emerson Elias. A reestruturação produtiva na saúde, a produção do cuidado e a cartografia do trabalho vivo em ato. São Paulo: HUCITEC, 2002.
26. PORTO, Marcelo Firpo de Souza. Uma ecologia política dos riscos: princípios para integrarmos o local e o global na promoção da saúde e da justiça ambiental. 2 ed. Rio de Janeiro: Editora Fiocruz, 2012.

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