Biosafety and humanization conducts applied to accessories supporting conventional radiology examinations

https://doi.org/10.56238/homeIIsevenhealth-119

Bianca Senário Felix
Rafael Raulino dos Santos
Roberta Carvalho Ribeiro Quirino
Adilson Rodrigues de Souza Filho
Crissia Carem Paiva Fontainha

1 INTRODUCTION

Today, biosecurity is a necessary and fundamental requirement for healthcare institutions. Around 1863 the concept of biosafety was already applied. Florence Nightingale, known as a pioneer of modern nursing, highlighted the importance of applying cleaning and disinfection measures, preserving the environment and the proper use of materials and equipment in public health work (RIBEIRO et al., 2023). In Brazil, in 1995, biosafety legislation was created, in force with Law 8,974 of January 5, 1995, which established biosafety standards to regulate the manipulation and use of genetically modified organisms (GMOs) in the country (BRASIL, 1995). Currently, Law 11.105 of March 24, 2005, which provides for the creation of the National Biosafety Council (CNBS) and the National Biosafety Policy (PNB) (BRASIL, 2005).

Recently, the SARS-CoV-2 virus, which causes Covid-19, has triggered a worldwide alert on biosafety issues due to its high potential for transmissibility. The transmission of the coronavirus happens between humans, and can occur from person to person, being transmitted through the air, through coughing or sneezing, through touch or handshake or through contact with contaminated objects or surfaces, followed by contact with the mouth, nose or eyes (PIMENTEL et al., 2020). Given the high power of dissemination of the new coronavirus, the World Health Organization (WHO) has released several guidelines as an attempt to stop the spread of the new virus, such as social distancing, the use of masks and correct and frequent hand hygiene.

Conventional radiology is essential for the diagnosis and monitoring of various pathologies, contributing to saving lives and/or increasing the life expectancy of the population. From the observation of the practice and the advent of the COVID-19 pandemic, the urgency of adopting more rigorous biosafety measures, essential in hospital protocols, was identified, as well as a need to decontaminate the supports and supports used in imaging exams more easily and efficiently between patient care.

In the Diagnostic Imaging Unit (UDI) of the Hospital das Clínicas (HC) of UFMG/EBSERH there are hygiene protocols after the exams, however, these are hampered due to the material in which the supports used are manufactured, such as wood and foams. The replacement of these hospital accessories becomes difficult, as they are expensive and public hospitals need to prioritize demands.

From extension actions linked to the research project that longitudinally follows the radiology scenario at HC-UFMG/EBSERH, it was proposed to coat the supports and supports used by patients, within a financial feasibility, using materials that facilitate effective hygiene.

Among the purposes of the National Policy for Humanization of Care and Management (PNH) of the SUS is to inspire workers, managers and users of the SUS with the principles and guidelines of humanization and to strengthen existing humanization initiatives. In the actions carried out in the UDI, we also sought to expand the humanization processes during radiological examinations.

2 OBJECTIVE

To present the case study of the extension actions carried out in order to improve biosafety and humanization in the conventional radiology service of a university hospital in the city of Belo Horizonte.

3 METHODOLOGY

This is an action developed in the project "Scenario of Radiology at the University Hospital Assisting SUS", CAAE 71737417.9.0000.5149, approved by COEP-UFMG on 08/30/2017, opinion no. 2.248.253, which corresponds to an action research linked to the extension project "Assistance in radiology: bringing together the experiences of the university, the public hospital and the community" (SIEX-UFMG 402801), which aims to promote listening to the community and UDI professionals at HC-UFMG/EBSERH through a longitudinal follow-up that has been taking place since 2017 of the practices performed in radiology.

Initially, a survey of the accessories needed in some imaging exams and their respective manufacturing materials was carried out (Table 1). During this listing, it was observed that the sector did not have pillows, which could be used to provide greater humanization and comfort to the patient. It was also identified that the supports and supports are in good condition (Figure 1), requiring only coating for more effective hygiene.

Table 1 - Description of the Supports and Supports of the UDI HC-UFMG/EBSERH

Descrição dos Suportes e Apoios da Unidade de Diagnostico Por Imagem do HC-UFMG/EBSERH		
Descrição	Material	Quantidade
Suporte para incidência joelho com carga	Madeira	2
Suporte para chassis (perfil com carga)	Madeira	2
Bloco de espumas de apoio	Espuma de Poliuretano Expandido	1
Travesseiros hospitalares	-	-

Source: Prepared by the authors

Therefore, there was a partnership between the project and the Hospitality Unit of HC-UFMG/EBSERH. The latter provided some of the materials needed to carry out the research, such as Napa, commonly used in coatings due to its waterproof and easy-to-sanitize property, in addition to being ready to manufacture hospital pillows and cover the foam block, using the remaining fabric.

Figure 1 - Brackets

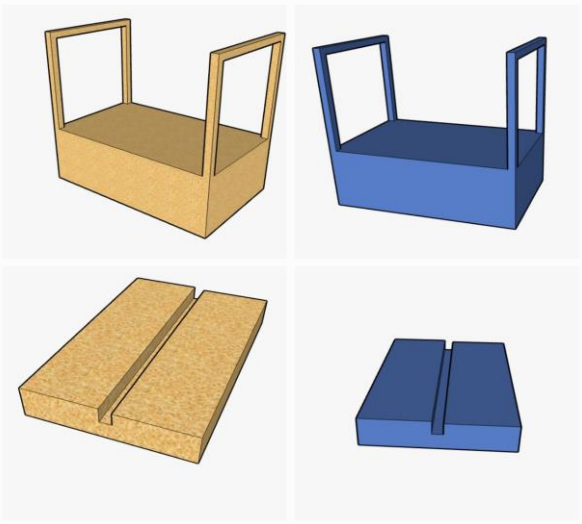
Source: Authors' personal archive

4 RESULTS AND DISCUSSIONS

DRAFT

For better visualization, a three-dimensional model (Figure 2) was prepared and presented to the project coordination, using the free online version of Sketchup software, for planning appreciation. The Hospitality Unit provided for use the Napa fabric, used in hospital facilities because it is waterproof and allows efficient and quick cleaning, using contact glue and instant adhesive of the TekBond brand to fix it to the supports and supports. After analysis, it was suggested by the coordination only the coating of the areas where the patient has contact, being the base and the support rods.

Figure 2 - Three-dimensional model of the project



Source: Prepared by the authors

COATING OF SUPPORTS

Once the project was approved by the coordination, it was verified with the radiological technicians, working in the X-ray sector, a time when the flow of patients would be lower, allowing the intervention in the supports. After defining the schedule, we started marking the places where the cuts would be made on the fabric to later coat the supports.

For gluing, a thin layer of contact glue was initially used on the wood and the fabric was fixed soon after. For greater adherence to the wood, procedural gloves were tied and left on for two hours (Figure 3). At the ninety-degree intersections, diagonal cuts were made in the fabric, so that it followed the junction of the rods, and instant glue was applied, and contact glue was used in the base coating, using the technique of applying glue to the fabric and wood for better fixation (Figure 4).

Figure 3 - Fixation with procedure gloves

Figure 4 -Finalization of columns and base

Source: Authors' personal archive

CHASSIS BRACKET COVER

For the coating of the chassis supports, a time when the flow of patients was lower was also verified. Initially, the 0.15 mm transparent PVC plastic was fixed with Kisafix contact glue, according to the manufacturer's instructions (Figure 5), as a way to improve resistance and, consequently, increase durability. Then, the glue was applied for the final coating, using the Napa fabric (Figure 6).

Figure 5 - Plastic coating

Figure 6 - Final coating

Source: Authors' personal archive

NEW ACQUISITIONS

In order to meet the PNH specifications in the HC-UFMG/EBSERH UDI, a budget was made for the prices of hospital pillows, through an online search in specialized stores in the hospital sector (Table 2). However, through the partnership with the Hospitality Unit, a suitable pillow measuring 50 cm X 70 cm (Figure 7) was purchased for each of the three X-ray rooms of the hospital, plus an additional one for eventual needs. When compared to market values, the manufacture of the pillows by the hospital itself, allowed patients to enjoy greater comfort when performing their examination, without an exacerbated expense.

Table 2 - Hospital pillow budgets 50 cm x 70 cm

ORÇAMENTO - TRAVESSEIROS HOSPITALARES 50 cm X 70 cm	
Empresa	**Preço (Unidade)**
Magazine Médica	*R$ 126,92*
Medclean Produtos Hospitalares	*R$ 72,54*
Cirurgica Amorim	*R$ 92,64*
Shopping Prohospital	*R$ 84,17*
Média de preços	*R$ 94,07*
Obs.: Pesquisa realizada na data de 9/11/2022	

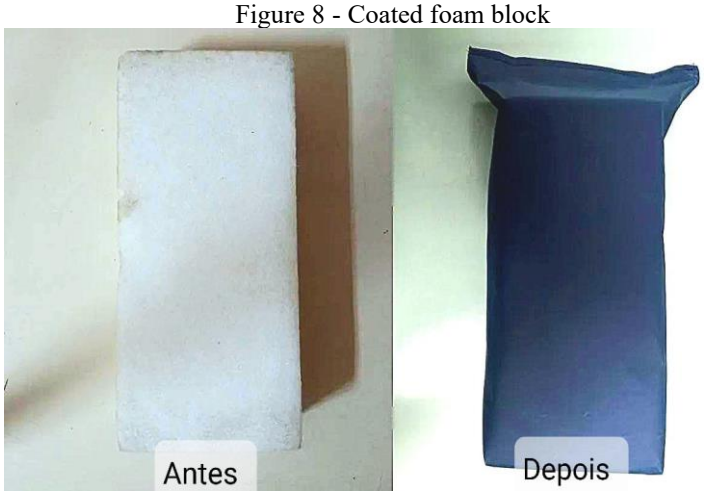
Source: Prepared by the authors

Figure 7 - Pillows purchased

Source: Authors' personal archive

For the manufacturing, the unit used surplus fabric and foam from previous projects, and there were no additional costs. In addition to the pillows, the sector also offered to cover the foam block (Figure 8).

Figure 8 - Coated foam block



Source: Authors' personal archive

PROJECT MONITORING

After three months, a new visit was carried out to monitor the durability of the coatings on the supports and struts. It was noticed that some parts were worn out more easily (Figure 9). In view of this, repairs were made in the necessary places and new suggestions were proposed to increase longevity, such as the use of a new material to reinforce the work done previously. Thus, a 0.15 mm transparent PVC plastic was used in the areas of greatest contact (Figure 10) and a Kisafix brand contact adhesive. The application technique occurred according to the instructions provided on the glue packaging.

Figure 9 - Wear found on the supports

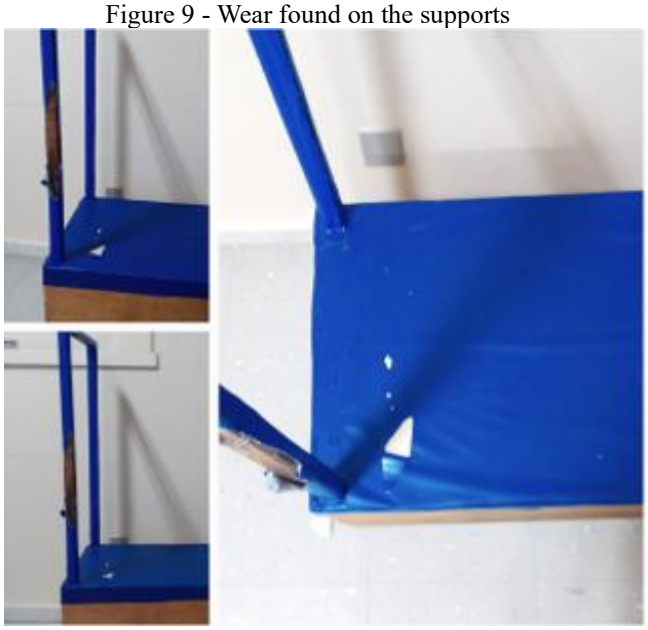


Figure 10 - Final repair of the supports

Source: Authors' personal archive

Throughout the project, there were expenses with contact glue and 0.15mm PVC plastic, totaling approximately R$240.00 all costs. These expenses, in relation to the average values of hospital pillows researched in this article, correspond to a saving of 36% of the amount necessary to purchase the four pillows (R$376.28).

As a form of evaluation, the professional of radiological techniques, working in the X-ray sector of the UDI, Alexandre Dias da Silva, was asked to report on the impacts of the project in the sector. According to him, "The project is very valid, in terms of biosafety, because the porosity of the wood makes it difficult to sanitize. We ask patients to be barefoot, to hold the support, it is important that there is a way to clean quickly and efficiently. Congratulations to all for the initiative and the work". Taking into account the feedback after the action, it is possible to observe that there was a positive impact of the project in the UDI of HC-UFMG/EBSERH, increasing the level of biosafety and comfort of patients in the sector.

5 FINAL CONSIDERATIONS

In this article, solutions to improve biosafety and patient humanization implemented in the Diagnostic Imaging Unit of the Hospital das Clínicas da UFMG/EBSERH were listed, within a financial feasibility.

In the pandemic context, experienced from 2020 onwards, imaging was one of the main propaedeutics used for the diagnosis of patients at Hospital das Clínicas in Belo Horizonte, with 33,358 X-ray exams being performed during this period (HC-UFMG/EBSERH, 2021). The high hospital flow caused the need to intensify biosafety measures.

According to the National Health Surveillance Agency (Anvisa), biosafety is the safety condition achieved by a set of actions aimed at preventing, controlling, reducing or eliminating risks inherent in activities that may compromise human and animal health and the environment.

In view of this, there was a mobilization so that the UDI of HC-UFMG/EBSERH, focusing on the supports and accessories used to assist some radiographic incidences, was in accordance with the safety parameters established by the surveillance agencies.

The Ministry of Health, through the National Humanization Policy (PNH), characterizes humanization as the appreciation of the different subjects involved in the health production process: users, workers and managers; fostering the autonomy and protagonism of these subjects; increasing the degree of co-responsibility in the production of health and subjects; establishing solidarity bonds and collective participation in the management process; identifying health needs; changing the models of care and management of work processes focusing on the needs of citizens and the production of health; commitment to ambience, improvement of working conditions and care.

The joint work between the Hospitality Unit and the UDI, through the development of low-cost pillows, integrated, interdisciplinarily, the sectors in favor of humanization in the Diagnostic Imaging Unit of the hospital.

ACKNOWLEDGMENTS

To the coordination of the Diagnostic Imaging Unit of the Hospital das Clínicas of UFMG / EBSERH; to all who approved the project at HC-UFMG / EBSERH; to the Hospitality Unit, Graycielle Silva; to the seamstress of the Hospital Hospitality sector, Rosalita; to Professor Dr. Crissia Fontainha for the financial incentive. Crissia Fontainha for the guidance and coordination of the project "Scenario of Radiology in the University Hospital of SUS"; to the professionals of the UDI for the feedbacks; to PRPq / UFMG for the financial incentive to the scholarship holders; and finally, to the UFMG Radiology Technology course (IMA / FM / UFMG).

REFERENCES

PIMENTEL, Renata Macedo Martins et al. The spread of covid-19: an expectant and preventive role in global health. J. Hum. Growth Dev., São Paulo, v. 30, n. 1, p. 135-140, Apr. 2020. Accessed on: Apr. 14, 2023. http://dx.doi.org/10.7322/jhgd.v30.9976.

BRAZIL. Law No. 11.105, of March 24, 2005. Provides for the creation of the National Biosafety Council (CNBS) and the National Biosafety Policy (PNB). Brasília, DF: Official Gazette of the Union, 2005.

BRAZIL. Law No. 11.105, of March 24, 2005. Provides for the creation of the National Biosafety Council (CNBS) and the National Biosafety Policy (PNB). Brasília, DF: Official Gazette of the Union, 2005.

BRAZIL. Law No. 8974, of January 5, 1995. Provides for standards for the use of genetic engineering techniques and release into the environment of genetically modified organisms. Brasília, DF: Official Gazette of the Union, 1995.

Ribeiro, G., Pires, D. E. P. de., Martins, M. M., Vargas, M. A. de O., Melo, J. A. C. de., Misiak, M. (2023). Biosafety and patient safety: vision of nursing teachers and students. Acta Paulista De Enfermagem, 36, eAPE02921. https://doi.org/10.37689/acta-ape/2023AO02921

ANVISA. RDC No. 512, of May 27, 2021. Provides for good practices for quality control laboratories. Disponível em <http://antigo.anvisa.gov.br/documents/10181/6278771/RDC_512_2021_.pdf/5650229b-218e-467a-83dd-e292581c20fe>. Accessed on: April 14, 2023.

BRAZIL. Ministry of Health. 2004. National Humanization Policy. Available at: http://portal.saude.gov.br/saude/area.cfm?id_area=390. Accessed on: Apr. 14, 2023.

PAHO. Fact sheet on covid-19. Available at: https://www.paho.org/pt/covid19. Accessed on: April 16, 2023.

EBSERH. GOV, 2023. Statistical report. Available at: https://www.gov.br/ebserh/pt-br/hospitais-universitarios/regiao-sudeste/hc-ufmg/acesso-a-informacao/relatorio-e statistico. Accessed on: Apr. 14, 2023.