

Educational action for hospital safety: cleaning and disinfection of the environment in the immediate vicinity of the patient

Ação educativa direcionada à segurança hospitalar: limpeza e desinfecção do ambiente próximo ao paciente

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ABSTRACT

Introduction: Health Care-Related Infections are adverse events that pose risks to patient safety. The environment contributes to the infection transmission chain, therefore, cleaning and disinfection of contaminated surfaces can prevent the spread of microorganisms. **Objective:** To describe the experience of the “Campaign for Cleaning and Disinfection of the Areas in the immediate vicinity of the Patient” carried out between 2016 and 2017 by the Porto Alegre Sanitary Surveillance and the Municipal Infection Control Commission. **Method:** Experience report on educational action promoted by the Sanitary Surveillance of Porto Alegre directed to 27 hospitals in the municipality. Target population were nursing professionals. The PDCA (plan-do-check-act) Cycle management tool was used to carry out the action. **Results:** Elaborated educational materials as instruments of support. The implementation of the campaign with educational actions occurred in June 2017 with the participation of 20 hospitals. It was a collective strategy that improved and enhanced learning in the daily work of health through different didactic approaches. **Conclusions:** Most of the hospitals in the municipality participated in the actions promoted by the hospital safety campaign, through diversified educational actions, aimed at adhering to the measures to prevent injuries. The initiative promoted the integration of Sanitary Surveillance with services and contributed to the strengthening of quality safety of patients and professionals.

KEYWORDS: Hospital Infection; Disinfection; Health Services; Continuing Education; Patient Safety

RESUMO

Introdução: Infecções Relacionadas à Assistência à Saúde são eventos adversos que constituem riscos à segurança do paciente. O ambiente contribui na cadeia de transmissão de infecção, portanto, limpeza e desinfecção de superfícies contaminadas podem evitar a disseminação de microrganismos. **Objetivo:** Descrever a experiência da “Campanha de Limpeza e Desinfecção das Áreas Próximas ao Paciente” realizada entre os anos 2016-2017 pela Vigilância Sanitária de Porto Alegre e pela Comissão Municipal de Controle de Infecção. **Método:** Relato de experiência sobre ação educativa promovida pela Vigilância Sanitária de Porto Alegre direcionada a 27 hospitais do município. População alvo foi composta por profissionais de enfermagem. Utilizou-se a ferramenta de gestão Ciclo PDCA para conduzir a ação. **Resultados:** Elaborados materiais educativos como instrumentos de apoio. A implementação da campanha com ações educativas ocorreu em junho de 2017 e contou com a adesão de 20 hospitais. Constituiu-se em estratégia coletiva que aprimorou e potencializou o aprendizado no cotidiano do trabalho em saúde através de diferentes abordagens didáticas. **Conclusões:** A maioria dos hospitais do município participou das ações promovidas pela campanha direcionada à segurança hospitalar por meio de ações educativas diversificadas, voltadas à adesão às medidas de prevenção de agravos. A iniciativa promoveu integração da Vigilância Sanitária com os serviços e contribuiu para o fortalecimento da qualidade e segurança do paciente e profissionais.

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Received: Dec 18, 2017
Approved: Jun 16, 2018

PALAVRAS-CHAVE: Infecção Hospitalar; Desinfecção; Serviços de Saúde; Educação Continuada; Segurança do Paciente



INTRODUCTION

Healthcare associated infections (HAI) are frequent adverse events in health service facilities and pose great risks to patient safety¹. These infections increase hospitalization time, morbidity, mortality, microbial resistance and the costs related to the assistance of the patient, family, and health system².

The environment contributes to the infection transmission chain according to characteristics of the infectious agents, like the ability to survive on environmental surfaces for a long time, or to colonize patients asymptotically or to contaminate the hands of health professionals transiently³.

In recent decades, an increasing amount of scientific evidence has shown that cleaning and disinfecting contaminated surfaces prevent the transmission of pathogens and reduce HAI⁴.

Strategies for cleaning and disinfecting surfaces in health care environments must consider the degree and frequency of professional hand on contact, the potential for direct contact with the patient and for contamination of the surface with organic matter or other environmental sources of microorganisms⁵.

Surfaces frequently touched by hands, like those close to the patient, present a higher frequency of contamination and pose a higher risk for transmission of microorganisms⁶. A study performed in Cleveland, United States, found that daily disinfection of these areas was associated with a 39% reduction in the frequency of acquisition of pathogens in the hands of health care professionals after contact with the surfaces. Furthermore, the average number of colony forming units also decreased⁷. Examples of surfaces and equipment frequently touched are: bed rails, bedside table, patient armchair, infusion pumps and parametric monitor⁸.

In hospitals, the nursing team is responsible for cleaning and disinfecting the patient's bed while it is occupied and the surfaces and health equipment close to him/her, including parametric monitors, ventilators, infusion pumps, among others. This is justified by the fact that improper handling of the bed poses risks and may harm the patient, like in case of accidental displacement of drains and catheters⁹.

Microorganisms *Clostridium difficile*, methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* (VRE), norovirus and multidrug-resistant gram-negative bacilli, including *Acinetobacter baumannii*, can spread from infected patients or colonize and survive on dry surfaces for long periods of time⁶. An inherent condition of all cleaning and disinfection strategies is the reduction of the most resistant microbial load⁸.

In order to avoid the persistence of pathogenic microorganisms in hospital equipment and surfaces and to promote a safe environment, training the professionals involved is fundamental to improve the processes¹⁰. The scenario of the hospital plays a role as an environment of care and education, in which the discussion about risk mitigation and quality of care is

essential for managers and health professionals. In all health actions there is an intrinsic educational process resulting from the exchange of knowledge, in which a health care professional learns by teaching, and the other colleague teaches by learning. In this context, the education of health care professionals is an important strategy for us to think about the day-to-day work processes aiming at transformations of health care practices¹¹.

The Municipal Coordination of Hospital Infection Control (CMCIH) of the Health Surveillance body of the city of Porto Alegre, state of Rio Grande do Sul (RS), Brazil, in line with the Municipal Commission of Infection Control (CMCI), composed of representative members of the Hospital Infection Control Services (SCIH), perform some activities to prevent adverse events, among which are the HAI. The members meet periodically and develop actions to improve work processes and risk mitigation in hospitals. In the face of the difficulties reported by hospitals to work with cleaning and disinfecting surfaces by the nursing team and considering the importance to encourage these practices in health services, the health surveillance body developed together with the CMCI an educational program for nursing teams called "Campaign of Cleaning and Disinfecting the Areas Close to the Patient". This paper describes this educational activity, performed between 2016 and 2017 by the health surveillance body of Porto Alegre and the CMCI.

METHODS

This is a report of a municipal educational campaign about cleaning and disinfecting the areas close to the patient for hospital nursing teams of the 27 hospitals of Porto Alegre, which are regulated by the municipal health surveillance body.

The planning process occurred between August and December 2016 and was attended by members of the CMCI and CMCIH professionals of the health surveillance body. Educational material to be used as tools to support local activities was created.

In order to plan and implement the actions of the educational campaign, the health surveillance professionals used an administrative management tool called the PDCA Cycle, composed of four steps: plan, do, check, act¹², whose purpose is to assist the organization, coordinate efforts and guide the actions.

The implementation of the educational activities in hospitals began in June 2017, the month the campaign was launched, and occurred until December 2017. SCIH professionals of 20 city hospitals participated as educators and promoters of the local activities. Health surveillance professionals worked as supporters and collaborators. The hospitals involved represented 74% of the hospital beds of Porto Alegre.

To encourage the engagement of the hospitals in the municipal campaign, some meetings were held by the CMCI.



The educational activities occurred in the assistance units, areas of great circulation, common areas and lounges of the hospitals. Nurses and nursing technicians willingly participated. All shifts were covered. The concepts of cleaning, disinfection, risk mitigation, infection prevention, professional competence and the use of the correct technique were addressed.

RESULTS

Development of the Educational Activity: PDCA Cycle steps

First step - Planning

The planning step consists of identifying the problem, setting the objectives, and establishing the goals¹². In an ordinary meeting of the CMCI, the participating members addressed the problem identified by SCIH about the low adherence to cleaning and disinfecting the environment close to the patient by the nursing team and the difficulties faced during the approach to this work process improvement.

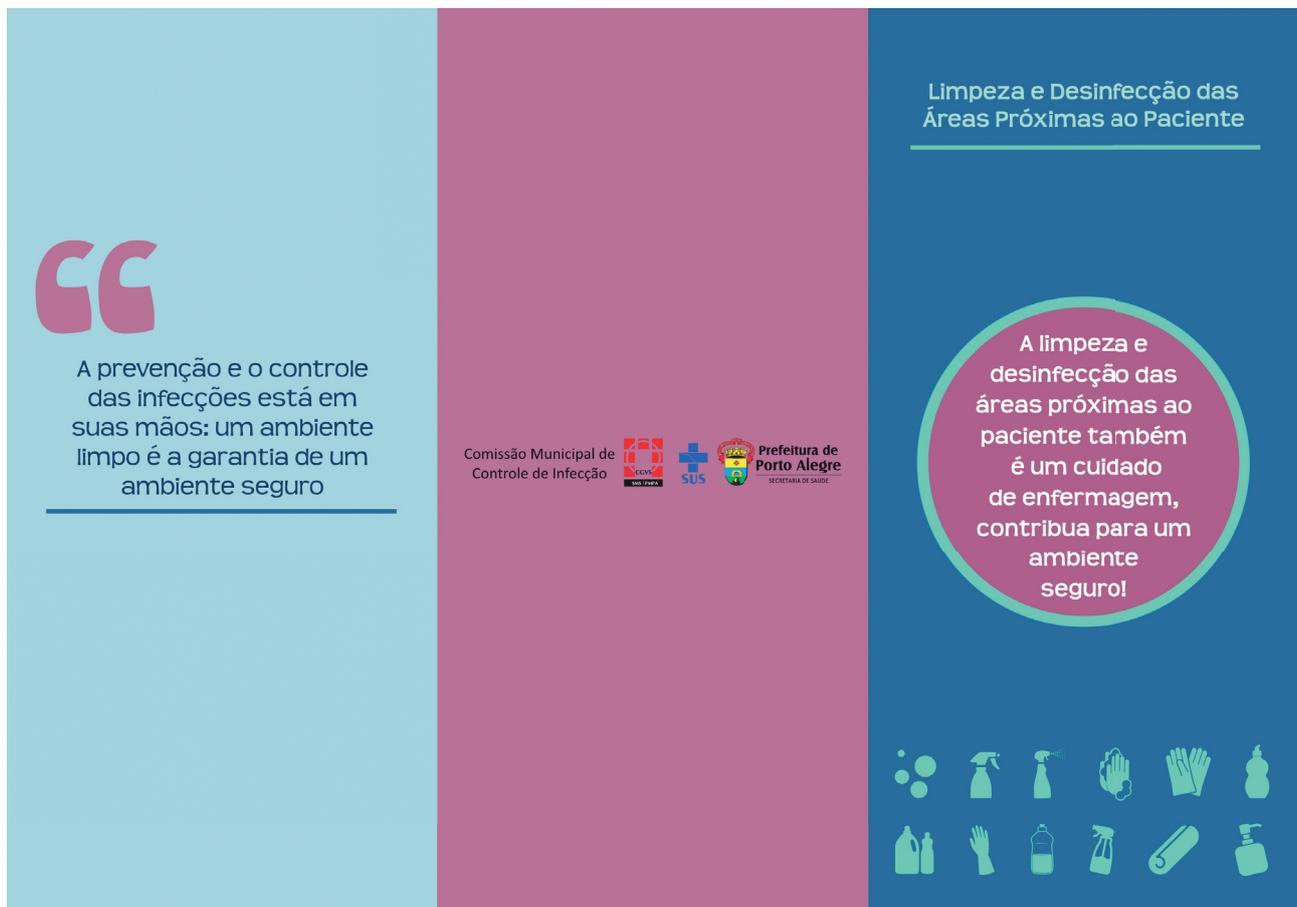
Considering the prominent role of the contaminated surfaces in the transmission chain of microorganisms of epidemiological relevance in health care, the group chose to work with this major

issue in order to prevent and control HAI in the city hospitals. The aim was to educate the workers and to promote a safe environment in the hospitals of Porto Alegre.

Accordingly, the health surveillance body proposed an educational municipal campaign in all the hospitals as a strategy to strengthen this subject in the institutions and improve this practice. The following goals were established: to develop educational material and implement educational activities in the hospitals.

As an instrument of pedagogical support to develop educational activities, the members of the CMCI produced a leaflet with technical content on the subject, according to Figures 1 and 2. The material focused mainly on the definition of environmental cleaning and disinfection, the various pieces of equipment and materials whose surfaces can be contaminated, the competence of the activity by the nursing team, the importance of standardizing the procedure and the correct cleaning and disinfecting technique to be used. After the technical production of the educational product, the artwork was made by the Communication Team of the Municipal Health Department.

In order to optimize financial resources and considering the importance of an educational material to the campaign visual



Source: Municipal Commission of Infection Control - Health Department of Porto Alegre (RS), 2016.

Figure 1. Educational leaflet - front.



Limpeza e Desinfecção das Áreas Próximas ao Paciente

A limpeza e a desinfecção de superfícies proporcionam bem-estar, conforto e segurança aos pacientes, visitantes e profissionais de saúde, como também exercem papel fundamental na prevenção e controle das infecções relacionadas à assistência à saúde (IRAS), pois atuam diretamente na redução dos microrganismos presentes nos ambientes de assistência, principalmente naqueles que ficam próximos ao paciente. Desta forma, é imprescindível a aplicação de técnicas adequadas para a garantia de um ambiente seguro.

Limpeza

é a remoção da sujeira de uma superfície utilizando meios mecânicos, fricção e meios químicos, detergentes. A limpeza é fundamental no controle das infecções, pois remove a matéria orgânica que abriga a carga microbiana.

Desinfecção

é um processo físico ou químico que inativa microrganismos, exceto esporos bacterianos. Em superfícies são usados desinfetantes químicos. A superfície deve ser previamente limpa ou estar sem sujidade visível. Atualmente encontramos saneantes que realizam a limpeza e desinfecção em uma única ação.

▶ Compete à equipe de enfermagem a limpeza e desinfecção de superfícies e equipamentos (bombas de infusão, monitores multiparâmetros, ventiladores mecânicos, grades da cama, mesa ou bancada auxiliar) que estão relacionados à assistência ao paciente, com vistas a garantir a segurança dos processos.



▶ É fundamental que seja estabelecido protocolo institucional para padronização das ações de limpeza e desinfecção do ambiente de assistência pela equipe de enfermagem, validado pelo SCIH.



Técnica correta

- 1 Borrifar o detergente desinfetante sobre o pano multiuso que será utilizado para a limpeza
- 2 Limpar as superfícies desejadas em sentido único alternando a superfície do pano
- 3 Deixar secar. Não enxaguar.
- 4 Desprezar o pano multiuso no descarte de resíduo infectante ou se for reutilizável encaminhar para a lavanderia

Frequência
A cada 06 horas.
Em situações de surto a frequência deve ser aumentada para 2x/turno

Obs.:
Não borrifar o desinfetante diretamente nas superfícies dos equipamentos, pode danificar os mesmos.

Source: Municipal Commission of Infection Control - Health Department of Porto Alegre (RS), 2016.

Figure 2. Educational leaflet - back.

identity, as part of the strategy of awareness and sensitization, the CMCI sketched a banner. The banner was planned to be made of cleanable material to be used a mobile item in different areas of the hospital, at every educational activity. The sentence chosen for the educational product emphasized the importance of the practice: "Cleaning and disinfecting the areas close to the patient is also nursing care. Contribute to a safe environment".

After manufacturing and printing the educational products, the material was distributed to the participating hospitals for the conduction of the activities. In March 2017, the health surveillance body convened the participating hospitals to delineate the local activities. The commission chose the week of June 19 to 23 of 2017 to launch the campaign. Each hospital SCIH defined their teaching methods and approaches and programmed their educational activities with the nursing teams.

Second step - Doing

The "Do" step consists of performing the tasks exactly as planned in the planning step¹². In this step, several educational activities were performed in the participating hospitals. One of the hospitals emphasized the importance of the practice performing a broad action, developed in a great circulation area of the

institution. The professionals received an invitation to participate in an educational game, called "Interactive Quiz", that was played with a technological device: a tablet. Through the game, the workers tested their knowledge on the subject, received guidelines and shared their learning experiences. As a strategy to promote the local activity, the hospital developed a digital invitation, available in its own computer network. The hospital also created the "D hour", as the moment of the day dedicated exclusively to cleaning and disinfecting the areas close to the patients, once a shift, at predetermined times.

Another hospital promoted the "Coffee Break with the Infection Control", a scientific moment during which the nursing professionals invited were received with coffee and education. The action educated the nursing team about the importance of the practice, the use of the correct technique and the use of the standardized sanitizing product in the institution. It is worth emphasizing that, before acquisition, the sanitizing products for cleaning and disinfecting surfaces in health care services must be ascertained whether they are registered in the Brazilian Health Surveillance Agency and match the specific requirements¹³.

Also, some blitzes were performed in the units of one of the hospitals in order to train the professionals and apply environmental



cleaning validation tests through protein markers and adenosine triphosphate - ATP - bioluminescence method - that detects organic matter on surfaces. The teams performed the method before and after the cleaning and found that the greater the amount of organic matter on the surfaces tested, the greater the relative light units (RLU) shown by the equipment.

Of the 20 participating institutions, 15 chose to promote the training of the nursing team onsite, in their own inpatient units, during the shifts, in order to cover a greater number of participants. Dialogued lectures, debates and delivery of educational material and gifts as rewards for the participation on the activities were used to drive engagement.

The practice was also addressed through round-table discussions with the workers to produce meaning in the construction of knowledge that values the previous knowledge of the apprentice and promotes protagonism, challenging them into thinking critically about the work processes, according to the ideas of Permanent Education in Health.

Third step - Checking

The checking step consists of monitoring each planned activity and comparing the results achieved with the planned goals¹². Health surveillance workers and the Communication Team of the Municipal Department of Health supported and participated in the activities in the health care facilities, according to a weekly schedule. The activities occurred according to the action plan and the goal results were achieved as planned.

In the next cycle of the campaign, we intended to apply monitoring measures, like inspecting the processes to evaluate the practices performed by the nursing team, implementing indicators of adherence to cleaning and disinfecting the areas close to the patient through direct and indirect observation of the activity. In addition, we also intend to check the percentage of professionals participating in the educational activities on the subject in all the hospitals Porto Alegre, periodically.

Fourth Step - Action

The action step consists of acting in the process considering the results achieved¹². The week of activities launched the educational campaign and worked as a collective strategy to improve and enhance learning in the daily work on health care facilities, which are knowledge-producing spaces. Considering the above, the CMCI found the interventions planned to be effective and in order to keep the educational activities happening, plans to perform them periodically so that subject can be updated, enabling the creation of discussion spaces. Moreover, the health surveillance body will invite the non-participating institutions again seeking to engage all the hospitals in Porto Alegre.

DISCUSSION

The educational activities developed in the “Campaign of Cleaning and Disinfecting the Areas Close to the Patient” come to

meet a need present in all city hospitals, since contaminated surfaces contribute to the transmission of hospital pathogens. Therefore, improving the cleaning and disinfection practices is necessary². Among the existing strategies, the process improvement interventions based on educational activities for the professionals involved stood out and were effective⁵.

The World Health Organization recognizes the HAI as a serious public health problem and recommends that the authorities, in a national and regional level, develop actions to prevent it¹⁴. Protecting and promoting the health of its citizens, taking care of collective interests, intervening and disciplining private activities, when there is a risk to public health, are some of the main duties of the State. It is inherent in public authorities to act in favor of the collective rights and this intervention occurs through the public administration with regulatory and police powers, like the health surveillance bodies developing actions for the prevention and control of HAI¹⁵. In Brazil, the municipalities and the Federal District are responsible for the management of the Municipal Health Systems and for the development of educational actions to improve the population health and quality of life through health surveillance education¹⁶. Considering its field of action, Porto Alegre’s health surveillance body prioritized its educational attribution viewing it as an important and basic instrument to change the reality.

In this context, the initiatives of the public authorities in the fields of education and communication in health care are highly relevant to face the health problems identified. Health surveillance is not restricted to supervision, control or regulation. It has a broader sense, an important educational role, and its actions include the prevention and mitigation of risks to ensure safe health care to the population. This fact fits with what is found in the literature, which states that education is the most promising tool to promote behavioral changes to prevent and control HAI¹⁷. Therefore, the integration and union of efforts between the health surveillance bodies and the regulated sector and investments in educational processes of the professionals are important strategies to prevent these adverse events and, consequently, to improve the quality and safety of the patients assisted.

Educational health care campaigns are designed to influence a target audience during a given period of time using communication and adopting teaching and informative approaches¹⁶. In addition, the campaigns tend to improve behavior, knowledge, skills and attitudes of the target audience. The actions use several intervention strategies, like mechanisms or tools for change¹⁸. In this perspective, considering completeness and fairness, the use of participatory and dialogical teaching and learning methodologies for professional education on collective and individual health care is fundamental¹⁹. Several educational actions developed during the campaign prioritized the active participation of the nursing team in the process of knowledge construction and promoted them as leading agents of their learning processes, corroborating with the studies performed.



It is important to highlight the high adherence of the hospitals to the municipal campaign and the acceptance of nursing professionals of the educational activities. However, this participation must be strengthened through the support and encouragement of senior management and other managers of the hospitals in order to be broader and involve the entire nursing team. Another important aspect is the need to monitor the actions through process and results indicators in future actions to evaluate the practices.

Considering its cyclical and continuously improving nature, the PDCA is a useful management tool to identify the opportunities to improve the processes¹². Therefore, the continuous evaluation of the educational actions performed to improve the strategies in health care services is relevant.

The actions of the campaign were idealized not only to share information, but to be an educational method to qualify the working processes in hospitals considering the local features and their needs. The purpose is to fill the gaps of knowledge of the professionals and improve the quality of care. This is in line with what is found in the literature, which states that information alone cannot cause change in people's behavior. When emphasizing educational aspects, the communication

addresses the desires, expectations, attitudes and perceptions of the individuals about the subject and enables a new behavior of the people involved¹⁶.

CONCLUSIONS

The actions favored educational aspects with the purpose of driving changes in the behavior of the professionals involved. This campaign proposal helps to understand joint efforts focused on achieving a common goal: health education to overcome the challenge of adherence of professionals to the measures to prevent problems and adverse events related to health care. Since the PDCA Cycle is a method of analysis and change of processes, its application is neither tight nor absolute. Evaluation and continuous control to develop processes and promote the improvement of the educational activities of municipal campaigns through PDCA are always necessary.

This initiative promoted joint actions between the health surveillance body and the health care services and contributed to strengthening the actions that improve quality and patient safety. However, encouraging more public management actions to further integrate the practices and promote patient safety in health care services is still necessary.

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Conflict of Interest

Authors have no potential conflict of interest to declare, related to this study's political or financial peers and institutions.



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