

PROPOSTA DE PROTOCOLO PARA DESCONTAMINAÇÃO DE EQUIPAMENTOS EM UNIDADE DE TERAPIA INTENSIVA

PROTOCOL PROPOSAL FOR DECONTAMINATION OF EQUIPMENT IN INTENSIVE THERAPY UNIT

PROPUESTA DE PROTOCOLO PARA DESCONTAMINACIÓN DE EQUIPOS EN UNIDAD DE TERAPIA INTENSIVA

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RESUMO

Objetivo: Analisar a contaminação de equipamentos em uma unidade de terapia intensiva antes e após a limpeza e desinfecção e propor um protocolo para descontaminação. **Métodos:** Foram utilizados 14 swabs estéreis, umedecidos com soro fisiológico 0,9%, rolados em seu próprio eixo, antes e imediatamente depois da limpeza e desinfecção com álcool 70%, sobre superfícies de equipamentos de manipulação coletiva, em uma unidade de terapia intensiva, para realização de cultura laboratorial. **Resultados:** Na pré-desinfecção, apresentaram crescimento de *staphylococcus coagulase* negativo, a mesa de cabeceira, o teclado de computador e o telefone. O telefone continuou contaminado após a limpeza e desinfecção. A bancada de preparo de medicamento, o glicosímetro, a escala de enfermagem e o monitor não apresentaram contaminação antes nem após a limpeza / desinfecção. **Conclusão:** A contaminação de equipamentos na unidade de terapia intensiva e a desinfecção com álcool 70% foi comprovada; porém, é necessário observar, em cada unidade, a técnica de limpeza utilizada, principalmente nestes mesmos instrumentos que, frequentemente, são tocados pela equipe de saúde, propondo um protocolo para sua respectiva descontaminação.

Descritores: Unidades de terapia intensiva; Desinfecção; Infecção hospitalar; Segurança do paciente.

ABSTRACT

Objective: To analyze the equipment contamination in an intensive care unit before and after cleaning and disinfection and to propose a protocol for decontamination. **Methods:** We used 14 sterile swabs moistened with 0.9% saline, rolled on their own axis, before and immediately after cleaning and disinfection with 70% alcohol, on surfaces of collective manipulation equipment in an intensive care unit, to perform laboratory culture. **Results:** In the pre-disinfection, they presented growth of negative *coagulase staphylococcus*, the bedside table, the computer keyboard and the telephone. The phone remained contaminated after cleaning and disinfection. The drug preparation stand, the glucose meter, the nursing scale and the monitor did not present contamination before either after cleaning / disinfection. **Conclusion:** The study proved the equipment contamination in the intensive care unit and disinfection with 70% alcohol; however, it is necessary to observe in each unit, the cleaning technique used, mainly in the equipment in which they are frequently touched by the health team proposing a protocol for decontamination of equipment.

Descriptors: Intensive care units; Disinfection; Cross infection; Patient safety.

RESUMEN

Objetivo: Analizar la contaminación de equipos en una unidad de terapia intensiva antes y después de la limpieza y desinfección y proponer un protocolo para descontaminación. **Métodos:** Se utilizaron 14 swabs estériles humedecidos con suero fisiológico 0,9%, rodados en su propio eje, antes e inmediatamente después de la limpieza y desinfección con alcohol 70%, sobre superficies de equipos de manipulación colectiva en una unidad de terapia intensiva, para la realización de cultivo de laboratorio. **Resultados:** En la pre-desinfección presentaron crecimiento de *staphylococcus coagulase* negativo, la mesa de cabecera, el teclado de computadora y el teléfono. El teléfono continuó contaminado después de la limpieza y desinfección. La bancada de preparación de medicamento, el glucómetro, la escala de enfermería y el monitor no presentaron contaminación antes ni después de la limpieza / desinfección. **Conclusión:** La contaminación de equipos en la unidad de terapia intensiva y la desinfección con alcohol 70% fue comprobada; todavía es necesario observar, en cada unidad, la técnica de limpieza utilizada principalmente en los mismos equipos en los que, a menudo, son tocados por el equipo de salud, proponiendo un protocolo para su correspondiente descontaminación.

Descriptorios: Unidades de cuidados intensivos; Desinfección; Infección hospitalaria; Seguridad del paciente.

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INTRODUCTION

Environmental contamination by microorganisms in the intensive care unit increases the risk of patients developing health care-related infection (HCRI), especially if the micro-organism is multidrug-resistant. HCRI is transmitted mainly through the hands of health professionals, through contact with surfaces near the patient's bed and through the use of contaminated medical equipment, considerably increasing health care expenditures⁽¹⁻²⁾.

Intensive care units are classified as critical areas, intended for severe patients, who require continuous monitoring and 24-hour follow-up of the health team. Equipment and surfaces may become microorganism reservoirs if the cleaning and disinfection process is not performed in a standardized and efficient manner^(1,3-4).

Several studies indicate the presence of microorganisms in materials of daily use by the health team, such as: telephones, benches for drug preparation, electrocardiogram, glycosimeters, stethoscope, computer keyboard, telephone set, nursing professionals' uniform, , mattresses; and point out that the process of cleaning and disinfection has been ineffective and that, in addition to the strong recommendation of hand hygiene for HCRI prevention, environmental control becomes essential, since it becomes a source of cross-transmission of microorganisms when contaminated⁽¹⁻⁷⁾.

In this way, the environmental control process for decontamination of equipment should be better evaluated by the health services, contributing to a safe and undamaged assistance. The objective of this study is to analyze the equipment studied by Cordeiro et al.⁽¹⁾ and propose a protocol for decontamination of the equipment.

METHODS

The study was performed in an Intensive Care Unit of a medium-sized hospital, located in the interior of Minas Gerais. They were included in the research as surfaces of 8 collective equipment of frequent manipulation by the health team of the service. Fourteen swabs were

used, divided into the following: a bedside table (2 swabs), a computer keyboard (2 swabs), a telephone (2 cotton swabs), a medicine preparation stand (2 swabs), a glycosimeter 2 smears), a nursing scale (2 smears) and a monitor (2 smears).

A data collection was done by a researcher in a single moment, being collected 2 swabs of each equipment, being used a cleaning of the other one and after a cleaning of this one, waiting only a drying of the product without definite time. The swabs were identified as before and after cleaning and the equipment was identified with its name; there was no collection of repeated equipment.

Sterile swabs were used and moistened with saline solution 0.9%, before being collected, were rolled on their own axis on surfaces analyzed before and after cleaning / disinfection.

A cleaning / disinfection application was carried out with a disposable cloth, specifically for cleaning / disinfection of surfaces, soaked in 70% alcohol, without cleaning with soap and water, and rubbed in several ways, until the dirt is cleaned. An average of 3 consecutive frictions were observed without drying the equipment.

The equipment analyzed had not been previously cleaned on the day of collection. A cleaning of the equipment analyzed after the swab was collected was carried out with a treatment glove and standard disposable cloth, for use in cleaning surfaces, which was soaked in 70% alcohol. The same was used for all equipment analyzed.

After collection, the swabs were sent to the outsourced laboratory for automated culture.

The development of this study met the national and international norms of research in research, not involving human beings.

RESULTS AND DISCUSSION

The microorganisms found in this study, before and after the cleaning / disinfection of the equipment, were described in Table 1 with identification of the place and of the professionals who manipulated them.

Table 1. Microorganisms present in the equipment handled by the multiprofessional team of the intensive care unit, before and after cleaning / disinfection with alcohol 70%.

Equipments	Bacteria found before cleaning / disinfection	Bacteria found after cleaning / disinfection
Bedside table	<i>Sthafylococcus coagulase</i> negative	There was no growth
Keyboard	<i>Sthafylococcus coagulase</i> negative	There was no growth
Telephone	<i>Sthafylococcus coagulase</i> negative	<i>Sthafylococcus coagulase</i> negative
Medication preparation counter	There was no growth	There was no growth
Glycosimeter	There was no growth	There was no growth
Nursing scale	There was no growth	There was no growth
Monitor	There was no growth	There was no growth

Source: Data collected at the Intensive Care Unit of a medium-sized hospital, located in the interior of Minas Gerais, between May and August 2017.

Of the 7 analyzed surfaces, 4 did not present bacteria, 3 presented bacterial growth of *Sthafylococcus coagulase* negative just prior to cleaning / disinfection; there was no growth after the procedure. And one of the surfaces showed bacterial growth of *Sthafylococcus coagulase* negative before and after the cleaning / disinfection procedure⁽⁷⁻¹⁰⁾.

Sthafylococcus coagulase negative is present in the skin and mucous membranes of the human being, it is considered a pathogen potentially causing infection related to health care, being commonly associated with bloodstream infections, surgical site infection, bacteremia, among others. This pathogen has been increasing its resistance to antimicrobials, and is related to the formation of biofilms⁽¹⁰⁻¹⁵⁾.

Studies show that non-hand hygiene may lead to environmental contamination and cross-transmission of microorganisms from one patient to another; therefore, this is an essential procedure in all conduct and protocol to be performed in the safe care of an individual, involving 5 steps intended for care before and after contact with it. It is verified that hand hygiene procedures, before caring for the patient, are the most neglected, and the nursing technician is the category that has the least adhesion to the procedure^(1,8).

In addition to the practice of hand hygiene, another measure of safety for the patient is the decontamination of surfaces, since they come frequently with these same individuals and the professionals involved in the care. Most surfaces are considered non-critical because they only come into contact with the intact skin of the patient; but they can be contaminated by themselves or by the professional and, from this, they become objects of cross-transmission. In

some studies, the low adherence to hand hygiene is observed, we can propose that decontamination of surfaces should become a subject that should also be analyzed as prevention of infection and patient safety.

In this way, the literature shows that disinfection with 70% alcohol occurs by friction of the same for at least 30 seconds. We need to take into account that several surfaces are not smooth and flat, deserving care on all sides to be rubbed, as well as recesses that often can not come into contact with alcohol. We also need to take into account the frequency of disinfection of equipment and establish routines according to their use, ie the most handled must be decontaminated after use or at a higher frequency, and the use of gloves for the contact with them, instituting contact and universal precautions. The telephone set, computer keyboard and drug preparation stand are surfaces, often handled by the care team, so they must be disinfected more frequently and with precision in the technique, besides the correct hand hygiene to reduce environmental contamination^(1,3).

The physical structure of the ICU should also comply with the recommended criteria, such as: the existence of gel-based dispensers or alcohol dispensers near the patient's bed; the minimum distance between the beds; presence of properly identified wastes, in accordance with RDC 50/2002.

The limitations of this study were: the small number of the sample, the restricted period of collection, the low occupancy rate of the sector, being used as criterion, hospitalization not less than 24 hours.

The applicability of this study aimed to propose a protocol for decontamination of equipment of the unit, alerting about the frequent contamination of them when being handled

without hygiene of the hands before and after contact with patients, materials and other contaminated equipment near the patient's bed.

In this way, there is a suggestion of protocol for decontamination of equipment in the intensive care unit:

Proposed protocol for decontamination of equipment in the Intensive Care Unit

The presence of dirt and organic matter on hospital surfaces serves as a means of proliferation of microorganisms in the intensive care unit. Hand hygiene and surface cleaning and disinfection for health-related infection prevention are therefore of paramount importance.

Hospital surfaces should always be clean and dry. The intensive care unit (ICU) is classified as a critical area, considering its potential risk for transmission of infections⁽²⁾.

The physical structure of the ICU must comply with current norms such as: at least 2 meters between beds, with separation between them; between beds and walls, 1 meter; foot of the bed, 1.2 meters; the box must be at least 3 meters wide with 1 meter on each side and another 1 meter for the bed.

There should also be 1 washbasin for every 5 non-insulated beds with faucets or hand-free controls and the provision of necessary handwashing supplies such as water, soap and paper towel. Insulation room with toilet or bathroom, for every 10 beds of ICU, and that must have anteat and washbasins, exclusive for the use of the team, provided with bench and dump. It is also important to reinforce on the materials and equipment that should be individualized for each bed.

Equipment used in the ICU that can not contact 70% alcohol or that are not smooth and flat, making cleaning and disinfection difficult, should be evaluated for the application of a plastic cover that adapts to the equipment so that it is possible to perform the procedure.

The multiprofessional team working in the ICU, such as physicians, nurses, nursing technicians, physiotherapists, etc., should comply with the recommendations provided by the hospital infection control committee regarding the precautions used for patients in isolation.

Professionals working in the ICU should be trained and trained to perform hand hygiene and techniques for cleaning and disinfecting materials and equipment.

The general recommendations for the

professional who will perform the cleaning and disinfection of surfaces are: hand hygiene, removal of adornments, use of personal protective equipment (gloves, masks, aprons, glasses)^(2,16).

Cleaning: it is the removal of dirt through the use of soap and water⁽⁴⁾.

Disinfection: it is a physical and chemical process that eliminates the majority of the pathogenic microorganisms of the surfaces⁽⁴⁾.

Contamination: transitory presence of microorganisms of infectious material on the surface, without tissue invasion or parasitism relation. It can occur in inanimate objects or in hosts, being it can be direct or indirect⁽⁴⁾.

CONCLUSION

The present study shows that microorganisms can survive on inanimate surfaces, and can thus be sources of colonization when handled by health professionals. Measures for environmental decontamination should be adopted by the health care service, obeying the criteria of the protocol indicated for decontamination with alcohol 70%.

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