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# DRESSING OF CENTRAL VENOUS CATHETER OF SHORT PERMANENCE: NURSING CARE

## CURATIVO DO CATETER VENOSO CENTRAL DE CURTA PERMANÊNCIA: CUIDADO DE ENFERMAGEM

## CURATIVO DEL CATÉTER VENOSO CENTRAL DE CORTA PERMANENCIA: CUIDADOS DE ENFERMERÍA

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**ABSTRACT**

***Objective:*** to standardize the technique of dressing central venous catheter of short permanence. ***Method:*** documental research in technical standardization adopted by Brazilian institutions in the realization of hematopoietic stem-cells transplantation that included the routine adopted by the study setting. Data collected were regarding to the technical steps that define the dressing of catheter of short permanence for oncological institution of Santa Catarina/SC and comparatively analyzed. The diverging technical steps in the investigated documents were submitted to the technical analysis. Eight publications in the field of oncology, onco-hematology, technical and legal standards sustained the analysis. ***Results:*** elaboration of the procedure titled: Dressing of central venous access of short permanence. ***Conclusion:*** the objective reach, qualified the performed nursing care, contributed to the continuing education and met the need evidenced by nurses. ***Descriptors:*** Nursing; Transplantation of Hematopoietic Stem-Cells; Catheter; Technology; Oncology.

**RESUMO**

***Objetivo:*** padronizar a técnica do curativo de cateter venoso central de curta permanência. ***Método:*** pesquisa documental realizada nas padronizações técnicas adotadas por instituições brasileiras na realização de transplante de células-tronco hematopoiéticas que incluiu a rotina adotada pelo cenário do estudo. Os dados coletados foram referentes às etapas técnicas que definem o curativo do cateter de curta permanência para instituição oncológica de Santa Catarina/SC e analisados comparativamente. As etapas técnicas divergentes nos documentos investigados foram submetidas à análise técnica. Oito publicações da área da oncologia, onco-hematologia, normas técnicas e legais sustentaram a análise. ***Resultados:*** elaboração do procedimento intitulado: curativo do acesso venoso central de curta permanência. ***Conclusão:*** o alcance do objetivo qualificou o cuidado de enfermagem executado, contribuiu para a educação permanente e atendeu a necessidade evidenciada pelos enfermeiros. ***Descritores:*** Enfermagem; Transplante de Células-Tronco Hematopoiéticas; Cateter; Tecnologia; Oncologia.

**RESUMEN**

***Objetivo:*** estandarizar la técnica del curativo del catéter venoso central de corta permanencia. ***Método:*** investigación documental realizada en las normalizaciones técnicas adoptadas por las instituciones brasileñas en la realización de transplante de células-madre hematopoyéticas, que incluyó la rutina adoptada por el ámbito del estudio. Los datos recolectados fueron referentes a las etapas técnicas que definen el curativo del catéter de corta permanencia para la institución oncológica de Santa Catarina/SC y comparativamente analizadas. Las etapas técnicas divergentes en los documentos investigados, fueron sometidos al análisis técnico. Ocho publicaciones del área de la oncología, onco-hematología, normas técnicas y legales, sustentaron el análisis. ***Resultados:*** la elaboración del procedimiento titulado: curativo de acceso venoso central de corta permanencia. ***Conclusión:*** el alcance del objetivo cualificó el cuidado de enfermería ejecutado, contribuyó para la educación permanente y atendió la necesidad evidenciada por los enfermeros. ***Descriptores:*** Enfermería; Trasplante de Células-Madre Hematopoyéticas; Catéter; Tecnología; Oncología.

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## INTRODUCTION

The transplantation of hematopoietic stem-cell (THSC) is a procedure that involves the destruction of the hematopoietic and immune system by chemotherapy and/or irradiation, and the substitution for stem-cells by a previously collected portion of hematopoietic stem-cells of other individual or own patient.[1] In Brazil, for over 30 years, the THSC is a therapy used for the treatment of hematologic, oncologic, immunologic, and hereditary diseases, aiming to restore the medullary function.[2,3]

The transplantation can be autogenous, allogeneic and syngeneic. The autogenous THSC occurs when the hematopoietic stem-cell (HSC) come from bone marrow or peripheral blood from the patient to be transplanted. In this therapy, two steps occur in the transplantation, the mobilization and conditioning regimes. In these two different stages, central venous catheter is used (CVC) semi-implantable triple lumen (thin or caliber) short permanence for venous access.[3,4]

In THSC, the use of central venous catheter is of fundamental importance to carrying out the procedures and treatment success, because the protocols involve vesicant chemotherapy in high doses, which leads the person to go through a period of hematological immunosuppression, requiring a high complexity assistance. Associated with this, capillary fragility, malnutrition and venous sclerosis resulting from the disease or the treatment, also aggravate the vascular problem.[1,5,6]

The THSC unit of an institution specialized in oncological care of Santa Catarina is the only health unit registered in the state, for performing autogenous THSC, that performs HSC transplantation. The nursing staff of this Unit was trained with specific training in THSC references institutions in Brazil. However, so far, the Nursing Service not formalized the standardization of nursing care in handling the CVC, through the development of Standard Operating Procedure (SOP). This practice has caused different procedures among different professionals.

This fact is alarming, because the mishandling of the CVC can be decisive factor for possible complications during and after transplantation, thus, the lack of standardization becomes a determinant factor to the risk of technical errors and divergences among professionals.

The standardization of the technique is essential for the success of this intervention, in order to ensure the quality of care to patients submitted to hematopoietic stem-cell transplantation and to reduce the possibility of catheter-related infections.

Taking into consideration the need of permanent education in health services for the success and safety of THSC and the lack of established routine for SOP in THSC unit of the cited institution, this study aims to standardize the technique of dressing central venous catheter of short permanence.

## METHOD

Documental research performed to meet the needs of the Nursing Service of a THSC Unit of institution specialized in oncological care of Santa Catarina/Brazil. In October 1999, this Unit was inaugurated and performed the first autogenous transplant in 2000 and, until October 2011, performed 430 transplants.

For the realization of documentary research, initially was made the request to four Coordination of Nursing of oncological institutions of national reference for the development of THSC to send the standard operating procedure relative to the CVC dressings, used in their service routines. The request was honored through telephone contact and letter forwarding. As ethical care, institutions were asked to send the written authorization, providing the procedures as a data source for this study. Two oncological institutions, one from São Paulo and one from Rio de Janeiro published its SOPs and sent the authorization for use of the documents in this study.

Three documents were included in this study: SOP of the institution of São Paulo, SOP of the institution of Rio de Janeiro and technical routine of the setting of the study.

The data collected from the investigated documents were regarding to the technical steps that define the care with the handling of short permanence catheter, and were recorded in a specific file for this purpose. The study was conducted between September 2011 and April 2012.

The results of data collection were presented to the nursing staff for discussion, theorizing and analysis. Eight publications sustained theoretically the analysis.[1-3,5-9] The choice of these publications occurred by the scientific and technical quality and for being reference in the field of onco-hematology, technical and legal reference for the investigated procedure. After this step, the

standard operating procedure to be followed by the setting where this study began, the procedure has been validated was prepared, to be followed by the setting where this study began, being validated the procedure, in a meeting with team members. Professional training was also conducted for the execution of the new nursing technique.

To facilitate the learning procedure, an imaging session was performed, describing the dressing technique of CVC of short permanence, and that is part of the produced SOP. This SOP follows the model used by the study setting, containing: title, date of issue and revision, objective, performer, sector, used material, figures, description of the procedure, observations, control of record and name of the responsible for the preparation, review and approval. In this study is presented, the procedure title, objective, needed materials, description of the procedure and observations.

## RESULTS

The data collection showed that the routine established by the institution of São Paulo and the institution of Rio de Janeiro, when compared with the scenario of the study, had several phases of the process performed equally. However, some different points have been identified. The steps found that differed were: the interval at dressing change with gauze and tape, the responsibility for the execution of the procedure, fixation of dressings and disinfection and protection of closed ducts of the central venous catheter.

The SOP of the institution of São Paulo recommends dressing change with gauze and tape every 24 hours, subject to the integrity of the skin, and can be changed on alternate days when exists tissues commitment and there is no change in the insertion site. The SOP established by the institution of Rio de Janeiro indicates the interval in the dressing change every 24 hours and when necessary. In the study setting, dressing change is performed every 48 hours and according to nurses evaluation.

The SOP of the institution of São Paulo describes as executor of the procedure, the nurse technician, the nurse is responsible for the curative indication. The SOP established by the institution of Rio de Janeiro and the routine of the study scenario, indicate the nurse as executioner responsible.

The institution of São Paulo and Rio de Janeiro, describe the hypoallergenic tape as an option for fixing the dressing held with sterile gauze, however, the SOP of the institution of Rio de Janeiro associates dermal protector over the insertion site. In the study setting, the fixing of the dressing with gauze is also performed with porous hypoallergenic tape and as the institution of Rio de Janeiro uses dermal protector over the insertion site.

The SOPs of the institution of São Paulo and Rio de Janeiro have as standardization the disinfection of closed ducts of the catheter through the use of alcohol 70%.

In the study setting, the disinfection of the tips of these ducts are performed with cloroexidine gluconate 0.5% and, in addition to the disinfection process, these are closed with gauze and tape, the latter care is not described in the documents investigated in other institutions.

## DISCUSSION

As for the interval of the dressing of central venous access, on investigated publications, the dressing change within up to 48 hours apart or as needed is recommended, according to the nurse evaluation, who performs the daily dressing change, in the presence of signs of inflammation in the area of catheter insertion.[1,7]

The nursing staff, evaluating this finding, determined that would keep changing the dressing with gauze and tape every 48 hours or as needed. The choice was supported by the recommendations established by the Commission of Infection Control (CIC) that guides the setting of the study and by the performed analysis technique.

Regarding the responsibility for the execution of the procedure, the Resolution RDC No. 45 recommend the nurse as executor of the central access dressing.[8] COFEN determines as competence of the professional nurses, planning and programming actions aimed at reducing risks and strengthening of the results in THSC.[9] This is also reaffirmed by other reputable references in Oncology and Onco-hematology.[1,5,6]

According to the team's decision, after analyze the findings and these added regulations of the relevant parts, it was determined that nurses would continue performing and being responsible for the procedure investigated in the study setting.

As for dressings fixing, it is noteworthy that care with the dressing of CVC is relevant to the control of blood stream infections. The indication of the type of dressing should be the result of the evaluation of the nurse about the conditions of the site of insertion, type of catheter, insertion time, the patient's history of allergies to adhesive and skin conditions.

The use of dermal protector in the catheters fixing have some indications, among them, the need for frequent dressing changes. Skin protection at the site of catheter insertion, with the use of dermal protector, prevents risk of injury continuity in the skin tissue, contributing to the prevention of catheter-related infections.[7, 10] Thus, with this findings, the nursing staff opted to keep the pattern already established in the Unit.

According to disinfection and protection of closed ducts, disinfection of the connections must be performed with 70% alcohol solution by vigorous friction and cloroexidine gluconate 0.5% can be used as a second option. Disinfection is the physical or chemical process that destroys all pathogenic microorganisms from inanimate objects and surfaces, with the exception of spores, being 70% alcohol the most suitable for surfaces, and the catheter ducts considered as surfaces.[3,7]

The recommendation for the prevention of hospital infections describes the protection of catheter ducts with dry gauze as a form of physical barrier of pathogenic microorganisms and highlight the importance of changing this gauze, if it gets wet.[7]

According to the findings and as recommended by the standards described in the surveyed references, the nursing staff decided to adopt the use of 70% alcohol and still maintain protection lumens with dry gauze and tape in the study setting.

Without other divergences among the routine of the study setting, documents and investigated references, followed the completion of the preparation of Standard Operating Procedure, which was titled as: dressing of central venous access of short permanence.

Hereafter, the objective is presented, necessary materials for execution of the procedure, description of procedures and observations.

Objective: to make dressing in central venous catheter in order to maintain permeability and asepsis related to the handling of access to prevent contamination, obstructions and prevent possible infections.

Necessary Materials:

Mayo table

Tray containing:

- Dressing pack; (sterile gauze, kocher forceps, rat tooth and anatomic);
- Package of sterile gauze;
- Bottle of 10 or 30 ml of 0.5% alcoholic cloroexidine of personal use;
- 03 Syringes of 20 ml with 0.9% saline solution;
- Adhesive plaster, porous hypoallergenic adhesive tape and sterile transparent film;
- Plastic bag to despise contaminated material;
- 03 Syringes of 05 ml to aspirate CVC ducts;
- 01 pair of examination gloves;
- 01 pair of sterile gloves;
- Skin protector;
- Sterile caps for CVC
- Hydrocolloid plaque when indicated.

Description of the procedure:

First phase:

- To wash hands;
- To gather the necessary material on the tray;
- To take the material to the patient's room;
- To guide the patient regarding the procedure to be performed;
- To position the patient, exposing only the dressing region, when the location of the CVC is subclavian D/L or jugular D/L, to position the patient's head in the opposite direction to the insertion of the catheter.

Second phase:

- To sanitize hands with alcohol gel at the care point;
- To sort the stuff on the mayo table;
- To open the package of dressing with aseptic technique in sterile field;
- To arrange on the sterile field material to be used, caps, film, syringes;
- To pour the alcohol cloroexidine on gauzes;
- To put on gloves of procedure;
- To remove the dressing with a gloved hand and/or rat tooth forceps, observing the characteristics of the site of CVC insertion and skin;
- To observe the skin, signs of infection, hematoma including fixing of the catheter from the exit hole to the tip, in search of externalization;
- To discard the dressing removed and the procedure gloves in garbage bag;
- Put on sterile gloves;
- To use kocher forceps with gauze soaked in alcohol or saline solution 0.9%, for antisepsis with circular movements starting from the insertion local to 10 cm in diameter;
- To repeat the procedure two or more times with new sterile gauze sheets;

- To remove crusts and devitalized skin tissues to promote better healing, when indicated;
- To cover the insertion with sterile gauze, using anatomical forceps and fixed in place with porous and hypoallergenic tape or sterile transparent film for CVC.

**Third phase:**

- To remove the dry gauze with plastic tape of the closed catheter ducts;
- To perform disinfection of closed catheter ducts through rigorous friction with gauze soaked with alcohol 70% keeping the leaf surface which comes into contact with the tip of the sterile catheter throughout the procedure.
- To remove the cap of each closed duct of the catheter with gauze soaked in alcohol despising them in the trash bag;
- To use syringes to aspire approximately 05 ml of blood from each closed duct of the catheter and then washing the ducts with 20 ml of saline solution 0.9% clamping them with positive pressure;
- To close ducts with sterile cap and protect them with dry gauze and tape;
- To guide the patient as what activities can cause the catheter traction and reporting any change over the same to the nursing staff, including: signs of inflammation, moisture dressing and closed ducts;
- To register date, time and responsible for the curative procedure;
- To save/discard the material used in locations recommended by the unit;
- To wash hands.

**Observations:**

1. The first dressing should be carried out 24 hours after implantation of the CVC;
2. All dressing should be protected during showered and changed whenever it is wet;
3. When carried out with dry gauze and porous hypoallergenic adhesive tape, must be changed up to 48 hours, when conducted with film, up to 07 days. The need to change on this interval will be given by evaluation and statement of the nurse;
4. When the dressing is made with sterile transparent film, gauze should not be used under the cover;
5. When indicated by the nurse, the use of film with gauze in the place of hypoallergenic adhesive tape should be considered as dry dressing observing the change every 48 hours;
6. If the patient has a skin lesion, replacing the alcoholic cloroexidine by 0.9% saline solution;
7. In case of skin deepithelization, cover the wound with hydrocolloid plaque under dry dressing or, in case of skin sensitivity, use “cavilon spray” (liquid skin protector);
8. Avoid the use of film in thrombocytopenic patients, with caliber catheters, with skin lesion and have high possibility of discharge;
9. To annotate features of the site, observing any changes and permeability of ducts in control register of catheter advocated by the unit. When presenting changes in the site, register on printed shift report for a more detailed evaluation of care and report to the doctor;
10. The washing of the ducts will be held during the changing of dressings, when needs to open the same or as directed by the nurse;
11. The gauze, that protects the catheter closed ducts must remain dry and should be replaced if moistened.

The strategy of availability of the produced is constituted as a tool of information and communication technology (ICT) to contribute to the education and training of professional nurses, the study setting or other institutions, or even interested in the theme addressed here, favoring the qualification of nursing care and the exchange of experiences. The dissemination of information gives greater visibility to nursing, integrating different levels of training in a common objective of advancing knowledge, expanding and developing the capacity of scientific production.[10] The scientific dissemination of results helped to increase the production of knowledge in this area of research still to low productivity at the national level.[11-2]

It is worth noting that the proper approach in nursing care, training of professionals, from care protocols, prevents errors and allows the patient safety with central venous catheters.[13-16]

## CONCLUSION

In hematopoietic stem-cell transplant, the nurse's role covers a broad field of activity, being responsible for the planning, execution, coordination, supervision and continuing education for professionals. In this context, it is understood the development of standard operating procedure, developed in this study, as a strategy to contribute to the competent performance of nursing care in the management of central venous catheter of short permanence.

It is noteworthy that, for the development of this study, was associated with the knowledge produced by renowned institutions

nationally in onco-hematology, which guaranteed the quality of produced work. This form of partnership, that promotes the exchange of knowledge, are recommended to other studies.

The disclosure of produced allowed the disclosure of the material produced, thus establishing as an important strategy that can be used for the improvement of nursing professionals, whether the own scenario of the study or to other institutions.

For Nursing, continuing education means a differential for competent assistance, because the competence connect knowledge, skill and attitude. To standardize a technique for nursing and train professionals for its development is to be performing continuing education. The conclusion of this study met the goals initially set and considering that this study started from the questioning of nursing care and the expectations of professionals, by itself the object of the work is an achievement for the nursing staff. Moreover, the performed can ensure standardized technical care, qualified and safe to the patient in onco-hematologic treatment of the study setting.

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