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## ORIGINAL ARTICLE

### CATHETER FULLY IMPLANTED AND AWARENESS OF THE ONCOLOGIC NURSING TEAM

#### CATETER TOTALMENTE IMPLANTADO E O CONHECIMENTO DA EQUIPE DE ENFERMAGEM ONCOLÓGICA

#### CATÉTER TOTALMENTE IMPLANTADO Y EL CONOCIMIENTO DEL EQUIPO DE ENFERMERÍA ONCOLÓGICA

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#### ABSTRACT

**Objective:** identifying the knowledge of a nursing staff of the chemotherapy sector about the totally implanted catheter. **Method:** a convergent care study developed in a chemotherapy unit of a teaching hospital, July and August 2012, with nine nurses working in the unit. The project was approved by the Research Ethics Committee, Protocol n° 75/12. **Results:** the participants demonstrate general knowledge about the catheter, but some mistook the concept with the function. Regarding the management there were described some controversy in very specific points: the use of sterile gloves or not, heparin concentration administered to maintenance, the period between heparin taking and management of the obstruction. **Conclusion:** the study made possible to the professionals being aware about the way that care was being provided, mainly in relation to the detected changes. **Descriptors:** Enduring Catheters; Ambulatory Care; Continuing Education.

#### RESUMO

**Objetivo:** identificar o conhecimento de uma equipe de enfermagem do setor de quimioterapia sobre o cateter totalmente implantado. **Método:** estudo convergente assistencial desenvolvido em uma unidade de quimioterapia de um hospital escola, de julho e agosto do 2012, com nove profissionais de enfermagem atuantes na unidade. O projeto foi aprovado pelo Comitê de Ética em Pesquisa, protocolo de n° 75/12. **Resultados:** os participantes demonstram conhecimento geral sobre o cateter, porém alguns confundiram o conceito com a função. Quanto ao manejo foram descritas algumas controvérsias em pontos bem específicos: uso de luvas estéreis ou não, concentração de heparina administrada para manutenção, período entre uma heparinização e outra e conduta frente à obstrução. **Conclusão:** o estudo possibilitou aos profissionais a tomada de consciência acerca da forma que o cuidado estava sendo prestado, principalmente em relação às divergências detectadas. **Descritores:** Cateteres de Demora; Assistência Ambulatorial; Educação Continuada.

#### RESUMEN

**Objetivo:** identificar los conocimientos de un equipo de enfermería del sector de la quimioterapia acerca del catéter totalmente implantado. **Método:** un estudio convergente asistencial llevado a cabo en la unidad de quimioterapia de un hospital de enseñanza, de julio y agosto de 2012, con nueve profesionales de enfermería que trabajan en la unidad. El proyecto fue aprobado por el Comité de Ética de la Investigación, el Protocolo n° 75/12. **Resultados:** los participantes demuestran el conocimiento general del catéter, pero algunos confundieron el concepto con la función. En cuanto a la gestión se ha descrito cierta controversia en puntos muy específicos: el uso de guantes estériles o no, la concentración de heparina administrada, el período entre una heparina y otra y el manejo frente a la obstrucción. **Conclusión:** el estudio permitió a los profesionales la tomada de conciencia acerca de la forma en que se estaba prestando la atención, en particular en relación con las diferencias detectadas. **Descriptores:** Catéteres Permanentes; Atención Ambulatoria; Educación Continua.

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INTRODUCTION

In Brazil, cancer is among the diseases that most kill, excluding the ill-defined causes. Cancer is the third leading cause, behind only of the cardiovascular system diseases and external causes.<sup>1</sup> Despite advances in oncology, the treatment of cancer is basically guided by surgery, radiation and chemotherapy.<sup>2</sup>

Intravenous chemotherapy, since it is the most common treatment, requires to be obtained a reliable venous access and able to give the medications infusions of frequent annoying character.<sup>3</sup>

Venous system of cancer patients is constantly used either for application of chemotherapy itself, saline infusion, antibiotic, blood/derivatives or collection intended for laboratory tests. Because vascular fragility that develops, is due to routine procedures or by prolonged treatment with these patients is shown the insertion of a totally implanted catheter (CTI). The CTI consists of a central venous access, which has a subcutaneous reservoir made of silicone or titanium typically deployed in the intraclavicular area.<sup>4</sup>

This study was designed after the experiences of over a year of assistance to patients undergoing chemotherapy in which we observed some differences on the part of nursing professionals in handling the CTI. Associated with lived experience and personal consultation in databases LILACS and PUBMED using the implantable catheter totally descriptors, nurse and knowledge, were found a few articles related to the topic, evidencing the gap in this area. The articles focused mainly on the complications generated after device implantation or the importance of nursing in preventing these complications. Only one study, the Lime and Martins, published in 1998, aimed to identify the knowledge of nursing assistants on the management of Broviac and Hickmann catheter.<sup>5</sup>

For a long time cancer was seen as an incurable disease, linked to suffering and death; however, with the advance of biotechnology and genetic study of the changes that the cells, said malignant suffer, it is currently possible to see quality of life for those with cancer and in some cases have a complete remission.<sup>2</sup>

The antineoplastic chemotherapy was considered one of the most promising ways of treating cancer. It consists of a systemic treatment with the drug acts on the patient

cells, whether normal or cancerous, generating often unpleasant side effects. Antineoplastic drugs are preferably administered intravenously (IV), but some drugs may be infused by the subcutaneous, intramuscular and topical. Intravenous, being the most commonly used care, requests the choice of the veins to be used. Thus, sclerotic or fragile veins, or members that are circulatory and lymphatic difficulty must be avoided.<sup>6</sup> In cases where patients are subjected to intravenous therapy with high doses, infusion of large volumes for a prolonged time, blood replacement, or parenteral nutrition central venous access is recommended.<sup>7</sup>

Technological advances in the medical area and in particular in via intravenous therapy provided the use of materials like totally implanted catheter. This required from nursing professionals the specific knowledge of appropriation for its use. The concept of technology in nursing goes beyond the use of materials and equipment, as it involves diverse knowledge leading to the purpose planned by the productive professional nursing process that is comprehensive care.<sup>8</sup>

Among the duties of nursing professionals, drug administration is one of the most responsible activities, which requires professional knowledge and skill. In this sense, nursing actions should be based on competence, in an attempt to eliminate failure during the administration of chemotherapy, thus requiring highly skilled professionals for this type of assistance. Nursing professionals have the responsibility to keep up to date the expansion of their technical, scientific and cultural skills, for the benefit of customers, community and the profession development.<sup>9-10</sup>

This study is of supreme importance, since the nurse is responsible for the use and maintenance of catheter permeability. Thus, to identify the knowledge of the nursing staff in relation to the CTI, it provides opportunities that the nursing care being effective and of quality, avoiding accidents and adverse effects when administering the drugs.

OBJECTIVE

- Identifying the knowledge of a nursing staff of the chemotherapy sector about the totally implanted catheter.

METHOD

This is a convergent care study, which is characterized by the articulation with care.

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The research development place was the chemotherapy unit of a teaching hospital located in the southern of the State of Rio Grande do Sul, during the months from July to August 2012. The study subjects were the components of the nursing staff working in this unit, eight technicians and two nurses. From these, nine participated in the study, as one professional was on sick leave. The entire study was based on ethical principles advocated in research involving human beings.<sup>11</sup>

The study was approved by the Research Ethics Committee of FAMED/UFPel under the Protocol 75/12. After the invitations and accepted the subjects, the first step to be performed was the observation. The observation period was of three weeks, the subjects observed were those who manipulated this period the CTI's. The subject observed as soon as possible was conducted an interview with semi-structured questions and ordered that the respondent made a reminder of the steps taken in the management of CTI. Case, it was observed more than once, the interview and the recall were made only at a single time. The data generated in these observations were used as additional subsidies in the quality control of the information obtained in the interviews. The interviews were conducted individually in private location, using recorder, they generated approximately 120 minutes of recording.

The subjects were identified by the acronym E (interviewed) for the lines recorded in interviews, followed by the number (1-9) corresponding to the same orders. Observations were identified by the acronym NO (observation note).

At the end of this stage the data were compiled and analyzed, and there were used the four generic steps of qualitative research, consisting of apprehension, synthesis, theorization and recontextualization, which occur more or less sequentially.<sup>12</sup>

RESULTS AND DISCUSSION

Nine professionals were interviewed, divided into two teams, two had the upper level graduate and seven a technical level, and there was a predominance of females. Following transcription and analysis it was found that the mean service time of the participants was of 18 years in nursing, and the average of action in the oncology department were seven years. Data were extracted from semi-structured interviews, analyzed and organized into two categories: general knowledge of totally implanted

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catheter and management technique of totally implanted catheter.

◆ General knowledge about fully implanted catheter

In this category there were grouped questions about the concept of CTI, advantages and disadvantages of inserting the same and aspects of the needle of Hubber. The following few lines about the questioning, which is a CTI:

*The device that all patients who undergo chemotherapy should use [...] (E 04).*

*[...] catheter implanted subcutaneously in the patient, where they use deeper access, caliber, which gives you more safety to transfuse some medications [...] (E 07).*

The CTI are flexible tubes made of radiopaque silicone, polyurethane or Teflon, have a titanium chamber at one end. The central part of the panel is a silicone membrane called the septum, which are carried out punctures to access the device. They are called fully implanted for not having external portion after their installation.<sup>2</sup>

It became evident after analyzing the data that the participants knew what a catheter is, but sometimes the concept is confused with the role. It is understandable that kind of situation, since all knowledge that the participants had were being stored along the lived experience on a daily basis; because, according to them, previously it had never been approached this issue in a theoretical way with the team. Only two participants had already done a course at another institution about CTI.

Two participants showed uncertainty as to the CTI implantation technique:

*It is a peripheral vein, where one is free to stay using the arms, hands and all [...] (E 09)*

*[...] I did not even know where it is placed; where it was actually installed [...] (E03)*

Such CTI is inserted through aseptic surgical technique; the port is placed through an incision into subcutaneous tissue. Usually it is placed in the forearm or upper chest wall region. After the desired vein is punctured and the catheter can be introduced while ensuring that its tip is positioned in the superior vena cava or right atrium.<sup>13</sup>

Regarding Hubber needle, it is observed that participants were aware of what it was; however, due to the fact not to use the punctures in the sector, some doubts and uncertainties have emerged, such as:

*[...] I don't know. Only then I heard the name, ah I do not know what [...] (E03).*

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*[...] just know that it is more practical, Hubber already is to stay longer [...] (E02)*

The statements are in line with the literature that addresses the Hubber needle, defined as blunt needle, developed especially for puncture of CTI. Generally the needles have a bevel at its tip at the time of cutting the puncture septum port, unlike those of Hubber has a lateral orifice prevents this cutting effect. Some recent studies have shown advantages of using Hubber in relation to standard needles, in situations such medication at reflux septum. However, highlight the need to investigate this type of situation in chemotherapy sectors, as it is globally recommended the use of Hubber needle to chemotherapy.<sup>14</sup>

Another important point noted in the reports is the issue of comfort that the needle provides:

*[...] it is like a scalp, only that it is more appropriate, because it is in a comfortable position for the patient [...] (E05)*

*[...] it is a needle that is used for portocath... it has a better adhesion to the skin and is not this discomfort and the risk of losing such access [...] (E 06)*

The lines of the participants corroborate the findings in the literature, as in cases of chemotherapy infusion over a longer period of time; Hubber needle 90° would be preferable, as it enables better adaptation to the patient's body and using dressings.<sup>14</sup>

The concern made explicit in the statements could be observed during the survey, where participants were always questioning the patient regarding comfort, paying attention to the most suitable position during infusion treatment.

*[...] Concern for patient comfort is something that draws attention, usually after the puncture catheter, the professional questions whether the needle is bothering him or not. It is emphasized the care at the time of fixation. Patients going home infusing chemotherapy concern is even greater [...] (NO)*

Regarding matters, it dealt advantages and disadvantages, participants pointed out the advantage two aspects, safety, both the patient and the professional, and comfort. This could be evidenced in the following statements:

*[...] one of the great advantages (of having a CTI) is not having to go through the discomfort of being bitten so many times to get a peripheral access [...] (E 01)*

*[...] preventing the suffering of the patient [...] (E08)*

*All, I think so for the patient the risks that he stops to run, for a carryover. I think to*

*patient safety and to our as professional. (E04)*

The statements, in addition to citing technicalities regarding the advantages and disadvantages of CTI also induce reflection of other nursing care dimensions in the oncology sector, such as the issue of avoid suffering and discomfort to be punctured repeatedly. This finding corroborates the findings of another study, in which the care in chemotherapy for nursing staff meant giving, care, attention, affection, dialogue and establishment of a connection. Being careful something complex, it must be analyzed from various prisms paying attention to the physical, emotional, social and spiritual bonds involved.<sup>15</sup>

In a study conducted about the perception of the ICU patient with, it was observed that the positive effects reported by patients were: greater freedom of movement, less interference to perform activities of daily living, as well as lower dependence on the nursing team when the catheter is in use, reducing anxiety receiving chemotherapy. Perceptions of these participants and the speeches of the respondents of this study are ratified in an American guideline, in which CTI's have shown greater safety and effectiveness in repeated administration of chemotherapy. Furthermore, it provides a more secure venous access, reducing the discomfort and anxiety about repeated punctures and increasing the patient's quality of life.<sup>3, 14</sup>

Participants when asked about the disadvantages, some were very clear when they quoted the infection, rejection, obstruction and displacement as the CTI inserting the changes:

*Of course he has disadvantages: it can be a rejection, may have an infection [...] [...] Obstruction as well. (E07).*

*[...] Already, about infection, I saw in a patient breathe and come pus [...] I saw cases, its also (catheter) has turned [...] (E09).*

Only one guy stated not knowing the complications in the use of CTI

*[...] I don't think there's anything, only has advantages, disadvantages I think has no [...] (E03).*

It is perceived knowledge about the late complications, infection, catheter obstruction, receptacle catheter disconnection, and consequent migration.<sup>16</sup> The statements are in line with scientific findings, since while using CTI may arise complications such as infection, obstruction, infiltration or extravasation, in these situations the nurses are required as the

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knowledge needed for correct handling.<sup>4</sup> Immediate complications were reported, such as bruising, heart rhythm disturbances, venous injury, air embolism, complications from anesthesia, cardiac tamponade and catheter intolerance.

A study conducted between the years 1998/2008 analyzed 4215 catheters as complications, and only 225 showed infection, followed by 89 thrombosis and 75 to obstruction.<sup>17</sup>

These findings are mentioned by E01:

*[...] I think there are few disadvantages unless there's rarely a rejection... Happens more is rare the catheter if turn the opposite [...] (E 01).*

The CTI provides safety and comfort to the patient, but like any invasive procedure can lead to injuries, it is clear that the participants showed notions about these possible complications and even some even reported experiencing some such situations in practice. Although, literature describes low rates of CTI complications, it is for nursing professionals be aware and possess knowledge to identify these complications. And if not for his professional competence determined action, notify the competent professional to make it run as fast as possible.

Management technique of totally implanted catheter

This category addressed questions about the proper steps, aspects related to catheter obstruction and conduct at the end of infusion. Regarding the steps performed, besides the issue held in the interview, we used the observation to complement the data. The data obtained in the interview are clearly stated in the following lines:

*[...] Prepare a tray, put gloves ... I use sterile, one gauze package, alcohol in our case the butterfly, a syringe with water [...] (E02)*

*[...] you have to view, palpate, aseptic, and insertion ... when I learned the puncture we had the custom in the industry use everything sterile, as long it was falling, as the courses that was doing [...] (E04)*

*[...] it makes aseptic with normal cotton punctures and aspires has to feel good background, with firmness that is succeeding punching vacuums up 6 ml of blood I do not wear glove, just do hand hygiene, and fixed it I see how that is flowing the medication [...] (E09)*

It is clearly shown the existence of controversies in the ducts, particularly for the use of sterile gloves or not. The findings are corroborated with the literature that says that there are still many controversies regarding the maintenance of CTI, and that many

current procedures are done based on what the device manufacturer directs, than in randomized trials. Hand washing before and after the completion of the procedure is of fundamental importance to the prevention of infections and the use of sterile gloves or not, has not been well studied, but it is recommended the use of all sterile equipment to access catheter.<sup>8</sup>

One participant cited the technique does not touch as the first choice in its action:

*[...] do a asepsis with alcohol and use that method does not touch, I went there, I will introduce the needle [...] (E 08).*

In a Scottish guideline<sup>13</sup> regarding aseptic technique it has been described that there are many controversies surrounding the handling of catheters, and the evidence found of conflicting nature, the absence of statistically significant data to show that the technique "no touch" is the most appropriate to prevent infections. This technique consists of performing the cleaning of the site to be punctured without the use of sterile gloves, but in no time it is touched by the hands of the individual who is performing the sterilization. Only the sterile material, gauze soaked in alcohol or other antiseptic, will contact the place of punction.<sup>13</sup>

The findings illustrate how the literature currently available on the management of CTI, you put forward the appropriate course of action, because even after the demand for data to be more homogeneous and convergent, it was not possible to establish a single direction.

In CTI obstruction situation controversies persist and more intensely, some have shown a tendency to try to unblock securely actions or using anticoagulants:

*[...] Sometimes you can put a little bit of nothing of heparin, gives a little pull [...] (E01)*

*[...] I'll try a peripheral access, call the nurse. I'd try pushing, would get a saline solution and try to push [...] (E08)*

While others are more careful:

*The conduct is to tell the doctor or oncologist, and try a peripheral access from being discontinued [...] (E 06)*

*[...] I will first call the nurse, who will surely seek medical advice, I try not to use it there (CTI) [...] (E09)*

The unblocking recommended in the literature indicates the use of fi physiologic solution 0,9% associated with the application of gentle movements repeated aspiration times using a 10 ml syringe so that there is no rupture of the catheter. In case of no obstruction, it is recommended the same



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technique, but with the infusion of ascorbic acid. In extreme cases we indicated is requesting medical evaluation for possible use of Streptoquinase solution that should only be administered under the supervision of that professional.<sup>2</sup>

It was evident that the team performed clearing actions as their own understanding, the absence of a standard procedure to endorse in case of complications.

Regarding heparin intake there were no differences in the conduct held:

*[...] heparin dilution is 1 to 9... put cotton with micropore because sometimes can bleed [...]* (E03)

*The conduct is to wash this orifice with a solution of 6 ml heparin [...]* E06

However, regarding the administered concentration it was found that it was three times higher than that reported by other guidelines<sup>13-2</sup>, administered 6 ml, the concentration of 500 units per milliliter heparin.

British guideline recommended that the heparin concentration should be the lowest possible, heparin 10 units diluted in 1 ml of 0,9% saline. And in situations such as administration or infusion of blood and blood product volume 2-3 ml 500 units of heparin per milliliter.<sup>13</sup> In Brazil, the reference guideline guides the aspiration of 1 ml of sodium heparin (25.000 units per milliliter vial), diluted in 10 ml of 0,9% physiologic and administration of 2 ml of the solution of heparin in whole or semi-implanted catheters, infusion totaling 500 heparin.<sup>2</sup> Units operating in one of CTI manufacturers recommended infusion was 500 units of heparin, infused with 5ml of a concentration 100unidades per milliliter.<sup>18</sup>

Another relevant point in this subject was the frequency of heparin recommended to patients, marked the speeches a range of 30 to 60 days:

*Generally this patient is guided about the procedure; the need to wash this catheter each 41 to 41 days is approximately 30 to 40 days [...]* (E06).

*[...] from 30 to 30 days, studies have now demonstrated that a longer period may be from 45 to 60 days [...]* (E04).

The difference of a few days between the guidelines may seem irrelevant, but in this respect nursing occupies a position of extreme importance, since this sector generally, is that it creates and maintains contact with the patient throughout the treatment.

The lack of a standard time for catheter maintenance infusion of return jeopardizes its functionality, and recommending the

maximum period of thirty days between heparin taking,<sup>18</sup> so it is extremely important that the information is homogeneous and based on literature, because then the patient will feel secure and confident about the team.

## CONCLUSION

Survey participants had a relatively long duration of action in practice in the chemotherapy sector, demonstrating skill in nursing care, many were professionals with a more traditional training and shown to be rooted in certain routines. Thus propose changes in behavior requires patience, skill and knowledge about what it is addressing.

The team demonstrated general knowledge of the CTI, but was detected deficits in some very specific points, such as: confuse the concept with the tool, be aware that the Hubber needle is ideal for punching the CTI, however unaware as indeed it acts on the port.

Some differences were identified, such as the use of sterile gloves or not, aseptic, heparin after infusion of drugs, especially in relation to conduct front obstruction. The latter should take care, since depending on the chosen course the consequences generated may cause irreversible damage to the patient.

It is believed that the study met its initial objectives, it was possible to learn what the pros know about some points regarding the CTI. But it is believed that the most important research have been the moments of reflection about the way the nursing care was being provided in the sector. Therefore, more important than just providing care, it is to know what you're doing, how you are doing and why. For only aware and confident of their nursing actions succeeded in comprehensive care and desired quality.

## REFERENCES

1. Instituto Nacional do Câncer. Estimativa 2010: incidência de câncer no Brasil. [Internet]. 2010 [cited 2012 June 20]. Available from: [www.inca.gov.br/estimativa/2010/estimativa20091201.pdf](http://www.inca.gov.br/estimativa/2010/estimativa20091201.pdf)
2. Instituto Nacional de Câncer. Ações de enfermagem para o controle do câncer: uma proposta de integração ensino-serviço. [Internet]. 2008 [cited 2012 Sept 14]. Available from: [http://bvsmis.saude.gov.br/bvs/publicacoes/coes\\_enfermagem\\_controle\\_cancer.pdf](http://bvsmis.saude.gov.br/bvs/publicacoes/coes_enfermagem_controle_cancer.pdf)
3. Moura ACF, Moreira MC. A unidade de quimioterapia na perspectiva dos clientes-

indicativos para a gestão do ambiente na enfermagem oncológica. Esc Anna Nery Rev Enferm. 2005 Dec;9(3):372-80.

4. Martins FMM, Carvalho CC. A percepção do paciente referente a ser portador de uma cateter de longa permanência. Rev Esc Enferm USP. 2008 Sept;42(3):526-31.

5. Martins LMM, Lima AR. Cuidados com o paciente que utiliza o cateter Hickman-Broviac: um estudo de caso. Rev Esc Enferm USP. 1998 Oct;32(3):187-91.

6. Correia J, Albach LSP, Albach CA. Extravasamento de quimioterápicos: conhecimentos da equipe de enfermagem. Ciênc saúde coletiva. 2011 June;4(1):22-31.

7. Miranda RB, Lopes JRA, Cavalcante RN, Kafeijan O. Perviedade e complicações no seguimento de cateteres venosos totalmente implantáveis para quimioterapia. J vasc bras. 2008;7(4):316-20.

8. Stocco JGD, Crozea K, Labronice LM, Maftum MA, Meier MJ. Cateter central de inserção periférica: percepções da equipe de enfermagem. Cogitare enferm. 2011 Mar;16(1):56-62.

9. Lima IS de, Clementino FS, Miranda FA, Sousa CSM, Brandão ICA, Brasil SKD. Equipe de Enfermagem: Conhecimentos acerca do manuseio de drogas antineoplásicas. Rev enferm UERJ. 2010;19:40-5.

10. Brasil. Conselho Federal de Enfermagem. Resolução COFEN 240/ 2000, de 30 de agosto de 2000 . Dispõe sobre a regulamentação do Exercício da Enfermagem. Aprova o Código de Ética dos Profissionais de Enfermagem e dá outras providências. Available from: <http://pnass.datasus.gov.br/documentos/normas/79.pdf>

11. Brasil. Conselho Nacional de saúde. Resolução 196/96, de 10 de outubro de 1996. Dispõe e aprova as diretrizes e normas regulamentadoras de pesquisa envolvendo seres humanos. Available from: [http://www.pucminas.br/documentos/pesquisa\\_cns.pdf](http://www.pucminas.br/documentos/pesquisa_cns.pdf)

12. Paim L, Trentine M. Pesquisa convergente assistencial. 2th ed. Florianópolis: Insular; 2004.

13. Kelly L, Buchan E, Brown A, Criggie L. Care and maintenance of central venous catheter devices. NHS Greater Glasgow and Clyde. Scotland: 2011.

14. Carlo D, Biffi R. Totally implantable venous access devices. Itália: Spring Verlag; 2012.

15. Lima EFA, Coelho SO, Leite FMC, Sousa AI, Primo CC. O cuidar em quimioterapia: a percepção da equipe de enfermagem. Rev pesqui cuid fundam. [Internet] 2014 [cited

2014 Apr 8];6(1):101-8. Available from: [http://www.seer.unirio.br/index.php/cuidadofundamental/article/viewFile/2855/pdf\\_1056](http://www.seer.unirio.br/index.php/cuidadofundamental/article/viewFile/2855/pdf_1056)

16. Honório RPP, Caetano JÁ, Almeida PC de. Validação de procedimentos operacionais padrão no cuidado de enfermagem de pacientes com cateter totalmente implantado. Rev bras enferm. 2011 Sept/Oct;64(5):882-9.

17. Silva FS, Campos RG. Complicações com o uso do cateter totalmente implantável em pacientes oncológicos: revisão integrativa. Cogitare enferm. 2009 Jan/Mar; 14(1):159-64.

18. Gabriella Silveira de Souza de GS, Rocha PRS , dos Reis PED , Vasques CI. Manuseio de cateter venoso central de longa permanência em pacientes portadores de câncer. R enferm cent o min. [Internet]. 2013 Jan/Apr; 3(1):577-86 [cited 2013 June 15]. Available from:

<http://www.seer.ufsj.edu.br/index.php/recom/article/viewFile/340/389>

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