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NOTIFICATION OF EXTRAVASATION OF CHEMOTHERAPEUTIC AGENTS IN A UNIVERSITY HOSPITAL

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ABSTRACT

This study has for objective to identify the occurrence of extravasation of chemotherapeutic agents reported in a university hospital in the countryside of the State of São Paulo. A cross-sectional, retrospective study (2013 to 2015) of a quantitative approach. Data collection occurred through the analysis of notifications in the electronic system generated by three hospital sectors that administer chemotherapy. There were included notifications of patients under chemotherapy aged above 18, in the period from January 1st, 2013 to December 31st, 2015. We identified 33 notifications of extravasation by chemotherapeutic agents. The drugs extraverted more occurrences were the Fluouroracil (33.3%) and Paclitaxel (18.2%) and the reactions more presented were edema (48.5%), pain (12.1%), and hypersensitivity (9.1%). The first handling was the immediate interruption of infusion (81.8%), followed by the aspiration of residual medication and use of cold compress (54.5%). Only 21.2% of the patients received follow-up. It was observed that the notifications submitted incomplete data, in addition to possible underreporting, making evident the importance of training of nursing professionals to improve the quality of being.

Keywords: Chemotherapy; Extravasation of therapeutic materials and diagnostic; Oncologic nursing.

INTRODUCTION

The antineoplastic chemotherapy became one of the main therapeutic modalities used in the oncologic treatment and its use is related to different adverse events. One of these events is the extravasation of chemotherapeutic agents, this being classified as local dermatological toxicity and defined as the spread of drugs present in blood vessel to the circumjacent tissues[1]. Due to the functional and quality of life impairment arising from possible tissue damage and injuries, the notification of these occurrences is evident as fundamental in the care of the team, especially the nursing team, because it is an important strategy to improve the recognition of failures, facilitate monitoring and implement measures to prevent new cases[2].

However, the absence or the poor quality of the notifications of these events is still a reality in the professional practice of nursing and contributes to low levels of extravasation in reports of health institutions. It should be emphasized that nurses, through Resolution by the Federal Nursing Council (COFEN) Nº 210/1998, are responsible for the administration of chemotherapeutic agents. There are complexity in the administration of some drugs and the need for in-depth knowledge about the specific care related to each drug, indications and adverse events of treatment, as well as its notification[3].

In this sense, it is necessary that nurses understand the extravasation as a problem resulting from multiple factors, being the notification a management tool of health care that can contribute to a better care to the individual with oncological disease[4,5].

In this perspective, it should be noted that healthcare institutions are increasingly worried in adopting policies that promote the management of risks related to health care and patient safety. Therefore, the notification and reporting of notifiable diseases become fundamental to the knowledge of the cause, once that only from this knowledge is possible the development of interventions[6].

Seeking to improve the management of risk related to health, in 2013, through the Decree Nº 1,660 of 22nd July 2009, Decree N 529 of 1st April 2013, from the Ministry of Health and the Resolution of Board (DRC) N 36 of 25th July 2013, of the National Sanitary Surveillance Agency (ANVISA), there was created the National System of Notifications to the Sanitary

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Surveillance - NOTIVISA. This computerized system, employed throughout the national territory, is used for the record of problems related to the use of technologies and care processes, by means of monitoring the occurrence of technical complaints of medicines, health products, incidents and adverse events[7].

The NOTIVISA is an example of a tool that allows the management of risks is part of the routine work of the health team. In addition, generates the managers, more reliable data that will help in the development of methods of more qualified care, which will provide a safer health care, with a focus on prevention of adverse events such as the chemotherapy extravasation[2,8]. It emphasizes the relevance of the notification of adverse events as a means of communication between members of staff and the unexpected occurrences, but that can be prevented, enabling, in this way, the recognition of failures in healthcare and filling gaps in knowledge of the team, and promote changes in the development of care[2].

Studies on the notifications of extravasation of chemotherapeutic agents are of great relevance to serve conducts of the health team. Risk management can bring great benefits to the individual who suffers with the emotional and physical burden of chemotherapy treatment, and for the health institution that avoids the need for prolonged hospitalizations due complications associated with the adverse event[9].

In this sense, it is expected that this study contribute to the understanding of the importance of notifying adverse events, in particular the extravasation of chemotherapeutic agents, and to assist in the promotion of strategies of awareness and adherence to the notifications in health institutions.

Considering the above, the objective of this study was to identify the occurrence of extravasation of chemotherapeutic agents reported in a university hospital in the countryside of the State of São Paulo.

METHODOLOGY

It is a descriptive, retrospective study of a quantitative approach. Data were collected by means of the computerized system of risk management in a university hospital in the countryside of the State of São Paulo.

The data from this system refer to the notifications of reactions resulting from the administration of chemotherapeutic agents. Notifications are generated by three sectors of the hospital institution that perform the infusion of these. These are services that meet patients in outpatient and inpatient care, and to maintain the confidentiality of data, this study will be identified as A, B and C.

For the identification of the notifications there was requested a relation, in the sector of medical data, of all notifications related to the extravasation of chemotherapeutic agents that have occurred in the period studied. We identified 58 notifications in the electronic system that contained the word "extravasation". These were assessed according to the criteria of inclusion: notifications of patients in chemotherapy treatment with age above 18 years; and exclusion criteria: notifications of adverse events related to drugs that are not classified as chemotherapeutic agents.

Three notifications were excluded for having occurred in individuals younger than 18, six notifications of phlebitis, five notifications of seroma, a notification of adverse event due application of contrast and 18 notifications related to defects in hospital supplies, such as equipment, syringes and devices for sealing closed system.

In addition to the notifications in the computerized system, eight others were obtained by consulting the physical files that were not entered in the system. Thus, the final sample was composed of 33 notifications (Figure 1).

Data were collected during the months of April and May 2016, through the analysis of notifications that have occurred in the period from 1st January 2013 to 31st December 2015 generated by three places in the study.

The variables analyzed were age, gender, race, type of tumor, number of cycles of chemotherapy performed, the puncture site, site of the occurrence of the notification, type of chemotherapeutic agents used, type of reaction presented, management of extravasation and patient follow-up.

This study was approved by the Nursing Division of the institution and after, by the Committee for Ethics in Research (Protocol CAAE: 53734616.1.0000.5393), according to the guidelines and regulatory standards for research involving human beings, contained in CNS Resolution 466/2012.

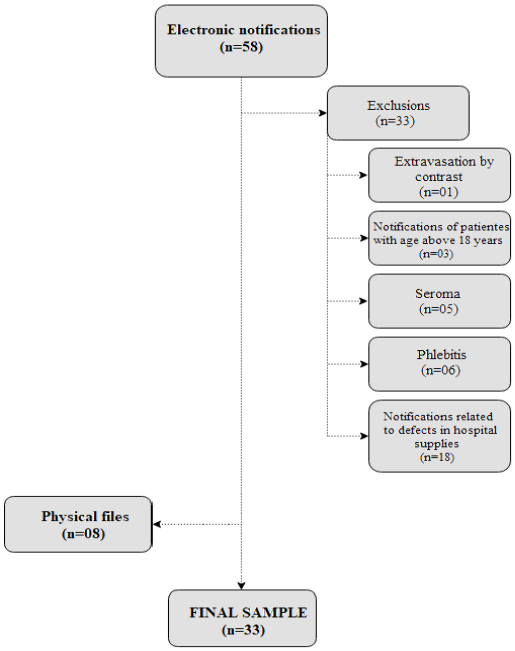

Figure 1 – Sample selection flowchart. 2016.

RESULTS

In the period studied there were identified and analyzed 33 notifications of extravasation by chemotherapeutic agents. The patients presented ages between 24 and 78 years, the average age was 58.5 years old, the majority of the notifications referred to male individuals (60.6%) and Caucasians (63.6%).

In 97% of the notifications was not cited the number of cycles of chemotherapy, the patient had already been submitted. As to the type of tumor, in 31 of notifications (93.9%) there was no mention of the locality.

It was observed that the extravasation occurred in venous punctures performed in the right upper limb (39.4%) and in the upper left limb (39.4%) in a similar manner; in 30.3% of the notifications, the peripheral venous access was on the forearm. It has been observed that 10 chemotherapy drugs were mentioned in episodes of extravasation, and Fluorouracil (33.3%) and Paclitaxel (18.2%) the main (Table 1).

Table 1. Distribution of notifications by chemotherapeutic extravasation in respect to the affected limb, place of performance of venipuncture and extravized drugs. 2016.

Variables	n	%
Limb		
Right upper limb	13	39.4
Left upper limb	13	39.4
There is no report	7	21.2
Punctured location		
Forearm	10	30.3
Back of the hand	6	18.2
Antecubital Fossa	3	9.1
Fist	1	3
Fully implanted catheter	1	3
Shoulder	1	3
There is no report	11	33.3
Chemotherapeutic agents		
Fluouracil	11	33.3
Paclitaxel	6	18.2
Cisplatin	3	9.1
Doxorubicin	2	6.1
Irinotecan	2	6.1
Other drugs*	5	15
There is no report	4	12.1

* Oxaliplatin-1 notification (3%); Etoposide-1 notification (3%); Carboplatin-1 notification (3%); Epirrubicina-1 notification (3%); Dacarbazine-1 notification (3%).
Source: Research data, 2016.

Table 2 shows that the most frequent reactions associated with extravasation by chemotherapeutic agents were edema (48.5%), pain (12.1%), and hypersensitivity (9.1%).

Table 2. Distribution of notifications related to extravasation of chemotherapy drugs according to type of reactions presented. 2016.

Variables	n	%
Edema	16	48.5
Pain	4	12.1
Hypersensitivity	3	9.1
Erythema	2	6.1
Necrosis	1	3
Path venous hyperemia	1	3
Bulging vein path	1	3

Source: Research data, 2016.

Regarding the management adopted by nursing professionals before the occurrence of the chemotherapy extravasation, it has been found that in 81.8% of cases the first forest was the immediate interruption of the infusion of medicine, and in 54.5% held the aspiration of residual medication and the use of cold compress on the affected site (Table 3).

Table 3. Distribution of management adopted by nursing professionals according to the occurrence of chemotherapy extravasation. 2016.

Management	n	%
Stopping the medication immediately	27	81.8
Aspiration of residual medication	18	54.5
Cold compress	18	54.5
Keeping the needle in the puncture site	16	48.5
Withdrawal of the peripheral access	12	36.4
Held new peripheral puncture	11	33.3
Local bandage	5	15.2
Hot compress	1	3
Administration of saline solution 0.9%	1	3
Photographed location of extravasation	1	3
Statement the medical team	1	3
Application of antidote	1	3

Source: Research data, 2016.

Only 21.2% of the patients received some type of follow-up by health professionals by means of telephone contact or scheduling of return.

DISCUSSION

The present study pointed to data relating to the characteristics of the notifications of chemotherapy extravasation in a university hospital. It was observed that the professionals describe important characteristics of the occurrence, such as the age of the individual in treatment, the affected limb, and puncture site, type of chemotherapeutic agent extravasation, local reactions, and management. However, it is perceived that notifications are superficial and/or incomplete, as for example, the absence of an indication of the number of cycles of chemotherapy already made and the type of tumor the patient.

One can also observe that notifications are disabled on the description of local reaction that characterizes the overflow. Another lack of information in the notifications was regarding the monitoring of the patient's health care professional after your return home.

Such data cause discomfort and concern, since it is not possible to know, with clarity, the severity of occurrences of leakage and the adequate monitoring of adverse events, in addition to convey the idea of the absence of care provided. The quality of nursing notes is a point that causes anxiety for many years, as demonstrated in a previous study performed in an outpatient chemotherapy unit of a university hospital in the city of São Paulo, which sought to identify the incidence of extravasation by chemotherapeutic agents and found no record of 15.9% in the care of the connectors of the notification(10). Although the study point to relatively old data, realizes that there is

still a need to improve the quality of annotations on nursing care.

In this sense, the COFEN, by means of Resolution 429/2012, features on the record of professional actions in the patient's medical records, and asserts as being the responsibility and duty of nursing professionals register, on the chalkboard and in other area's own documents, information relevant to the process of caring for and managing work processes necessary to ensure the continuity and quality of care[11].

To analyze the management of extravasation, it was observed that in 18.2% of cases was not performed the immediate interruption of the infusion of the drug, being indicated the suspension of infusion in all cases of suspected, until the due observation[12]. In this sense, a study conducted at a university hospital in the city of Recife, Pernambuco, with nurses working in oncology units found that 76.2% of professionals did not know what the order of recommended management before a carryover[13], showing a lack of care that should be released before the adverse event and reinforcing that premise that the absence of information on notifications is a result of lack of knowledge.

In this study, the lack of precise information on notifications found in computerized system indicates a deficit of knowledge about the said adverse event. A previous study carried out in the hospital institution of this research, pointed out that 75% of professionals involved in the administration of chemotherapeutic agents reported having knowledge about the extravasation. However, to classify it as to time, 7.1% of the erroneously classified in the immediate period and 3.6% in the late group, as well as 67.8% not citing any management adopted before the occurrence[14].

In addition, the study[14] mentioned still pointed out that 53.6% of the participants claimed to make the record of adverse events only in the patient's medical records, not accessing the computerized system of notifications, and 7.4% reported that is not held the record of adverse events in any document or system. The study also concluded that the record of cases of leakage is not carried out systematically, as well as there is a lack of standardization in the information recorded.

The data presented in the spur to reflection on the consequences of the lack of information on notifications of leakage by chemotherapeutic agents. It is known that the adverse events are injuries or damage caused to involuntary way which may result in an inability or dysfunction of the members, may be temporary or permanent, since they depend on various factors that determine its severity and are the result of the care provided by health care professionals[15].

By his character incapacitating, the extravasation is considered an oncologic emergencies, because it requires rapid interventions to avoid the risk of permanent injury, making it imperative to your knowledge, as well as the immediate interventions and extra-hospital management[16].

In this sense, the notification of these events shows itself as a management tool in health, since it allows, by means of its description, the identification of factors that must be addressed in order to improve the quality of care. The information contained in the notification feature grants for analysis and implementation of strategies to professionals involved in the care provided, aiming at the reduction of cases of extravasation and the improvement of monitoring. It adds that the notification of the extravasation should be a tool for continuous monitoring of performance for assessment of the quality of care provided to cancer patients[17].

In addition, the systems for notification of adverse events can help the development and directing specific training of professionals who work in oncology units. It should be pointed out that training and continuous education of professionals is one of the main factors for secure administration of chemotherapy drugs. The education of the multiprofessional team regarding the prevention and management of extravasation includes ensuring the knowledge of risk factors, identify the signs and symptoms, start the ducts of treatment and the extra-hospital care, in addition to keeping the notification systems always updated[18,19].

This concern has been reported in a previous study with the nursing team professionals of a university hospital, which noted the need for structuring a program of continuing education to meet the educational needs of health staff due to the lack of knowledge about the prevention, identification, and management of extravasation[20].

Before the examination of the notifications found in computerized system, it is understood that there is a gap in knowledge related to the theoretical-practical issues, relating to the extravasation of chemotherapeutic agents. Given that demonstrates the necessity of permanent education effective as

strategic plan to improve and maintain the security of the administration of these drugs.

CONCLUSION

The study pointed out issues of concern related to the extravasation of chemotherapeutic agents as the possible lack of knowledge of the team involved in the administration of drugs and the poor quality of nursing notes, as well as the underreporting of adverse event.

Despite the limited sample number of notifications, it was possible to identify the need for restructuring strategies for continuous education of professionals involved in the administration of chemotherapeutic agents with the goal of improving care to cancer patients and avoid injuries resulting from therapy.

In addition, it is essential to the achievement of further research on the incidence of chemotherapy extravasation, actions of prevention, management and quality of notifications, as well as development of strategies that minimize the underreporting, seeking the quality of care.

NOTIFICAÇÃO DE EXTRAVASAMENTO DE AGENTES QUIMIOTERÁPICOS EM UM HOSPITAL UNIVERSITÁRIO

RESUMO

Este estudo teve o objetivo de identificar a ocorrência de extravasamento de agentes quimioterápicos notificados em um hospital universitário no interior do Estado de São Paulo. Estudo transversal, retrospectivo (2013 a 2015) e de abordagem quantitativa. A coleta de dados ocorreu por meio da análise de notificações no sistema eletrônico geradas por três setores hospitalares que administram quimioterápicos. Foram incluídas notificações de pacientes em quimioterapia com idade acima de 18 anos, no período de 1º de janeiro de 2013 a 31 de dezembro de 2015. Identificou-se 33 notificações de extravasamento por quimioterápicos. As drogas extravasadas mais incidentes foram o Fluouroracil (33,3%) e Paclitaxel (18,2%) e as reações mais apresentadas foram: edema (48,5%), dor (12,1%) e hipersensibilidade (9,1%). O primeiro manejo foi a interrupção imediata da infusão (81,8%), seguida da aspiração da medicação residual e utilização de compressa fria (54,5%). Apenas 21,2% dos pacientes receberam seguimento. Observou-se que as notificações apresentaram dados incompletos, além de possíveis subnotificações, evidenciando a importância da capacitação dos profissionais de enfermagem para melhorar a qualidade do ser.

Palavras-chave: Quimioterapia. Extravasamento de materiais terapêuticos e diagnósticos. Enfermagem oncológica..

NOTIFICACIÓN DE EXTRAVASAMIENTO DE AGENTES QUIMIOTERAPÉUTICOS EN UN HOSPITAL UNIVERSITARIO

RESUMEN

El objetivo de este estudio fue identificar la incidencia de extravasamiento de agentes quimioterapéuticos notificados en un hospital universitario en el interior del estado de São Paulo/Brasil. Estudio transversal, retrospectivo (2013 a 2015) y de abordaje cuantitativo. La recolección de datos ocurrió por medio del análisis de notificaciones en el sistema electrónico generadas por tres sectores hospitalarios que administran los quimioterapéuticos. Fueron incluidas las notificaciones de pacientes en quimioterapia con edad superior a 18 años, en el período de 01 de enero de 2013 a 31 de diciembre de 2015. Se identificaron 33 notificaciones de extravasamiento de quimioterapéuticos. Las drogas extravasadas más incidentes fueron el Fluouroracilo (33,3%) y Paclitaxel (18,2%) y las reacciones más presentadas fueron: edema (48,5%), dolor (12,1%) e hipersensibilidad (9,1%). El primer paso fue la interrupción inmediata de la infusión (81,8%), seguida de la aspiración de la medicación residual y la utilización de compresa fría (54,5%). Solo 21,2% de los pacientes recibieron seguimiento. Se observó que las notificaciones presentaron datos incompletos, además de posibles subnotificaciones, evidenciando la importancia de la capacitación de los profesionales de enfermería para mejorar la calidad del ser.

Palabras clave: Quimioterapia. Extravasamiento de materiales terapéuticos y diagnósticos. Enfermería oncológica.

REFERENCES

1. Pérez Fidalgo J, Fabregat L, Cervantes A, Margulies A, Vidall C, Roila F. Management of chemotherapy extravasation: ESMO– EONS Clinical Practice Guidelines. Ann surg oncol [online]. 2012 Oct. [citado 2018 mar 28];23(7):167-173. doi: https://doi.org/10.1093/annonc/mds294.

2. Silva LA, Terra FS, Macedo FRM, Santos SVM, Maia LG, Batista MHJ. Notification of adverse events: characterization of events occurred in a hospital institution. Rev enferm UFPE [online]. 2014 Sep. [citado 2016 nov 10];8(9):3015-23. Available in: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/10020.

3. Conselho Federal de Enfermagem (BR), Resolução COFEN nº 210/1998. Dispõe sobre a aprovação das Normas Técnicas de Biossegurança Individual, Coletiva e Ambiental dos procedimentos a serem realizadas pelos profissionais de Enfermagem que trabalham com quimioterapia antineoplásica [online]. Conselho Federal de Enfermagem; 1998 [citado em 2016 nov 10]. Available in: http://www.cofen.gov.br/resoluo-cofen-2101998_4257.html.

4. Vidall C, Roe H, Dougherty L, Harrold K. Dexrazoxane: a management option for anthracycline extravasations. Br j nurs [online]. 2013 Sep. [citado 2018 mar 28];22(17):6-12. doi: https://doi.org/10.12968/bjon.2013.22.Sup17.S6.

5. Rodríguez, JAA. Extravasations, a real problem. Léon: 2014.

6. Corbellini VL, Schilling MCL, Frantz SF, Godinho TG, Urbanetto JS. Medication-related adverse events: percepception of nursing aides. Rev bras enferm [online].2011 Mar/Apr. [citado 2016 dec 10];64(2):241-47. doi: http://dx.doi.org/10.1590/S0034-71672011000200004.

7. Ministério da Saúde (BR). Documento de referência para o Programa Nacional de Segurança do Paciente [online]. Brasília. Ministério da Saúde; 2014 [citado 2018 mar 30]. Available in: http://bvsms.saude.gov.br/bvs/publicacoes/documento_referencia_programa_nacional_seguranca.pdf.

8. Melo CL, Delfim LVV, Dantas RB, Ribeiro RA. Risk and adverse events management in an emergency unit: perception of the nursing team. J Nurs UFPE [online]. 2013 Out. [citado 2018 mar 28];7(10):6146-55. Available in: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/12250.

9. Bushatsky M, Almeida RSM, Lima MTC, Barros MBSC, Beltrão Neto JEV, Ramos YTM. Quality of life in women with breast cancer in chemotherapeutic treatment. Cienc. cuid. saúde [online]. 2017 jul/set. [citado 2018 mar 30];16(3):1-7. doi: http://dx.doi.org/10.4025/cienccuidsaude.v16i3.36094.

10. Adami NP, Baptista AR, Fonseca SM, Paiva DRS. Antineoplastic Drugs Extravasation Notification and Delivered Care. Rev bras cancerol [online]. 2001 [citado 2016 nov 10];47(2):143-51. Available in: http://www.inca.gov.br/rbc/n_47/v02/pdf/artigo2.pdf.

11. Conselho Federal de Enfermagem (BR), Resolução COFEN nº 429/2012. Dispõe sobre o registro das ações profissionais no prontuário do paciente, e em outros documentos próprios da enfermagem, independente do meio de suporte - tradicional ou eletrônico [online]. Conselho Federal de Enfermagem; 2012 [citado 2016 nov 10]. Available in: http://www.cofen.gov.br/resoluo-cofen-n-4292012_9263.html.

12. Gonzalez T. Chemotherapy extravasations: prevention, identification, management, and documentation. Clin J Oncol Nurs [online]. 2013 Feb. [citado 2018 mar 28];17(1):61-6.doi: http://dx.doi.org/10.1188/13.CJON.61-66.

13. Souza NR, Bushatsky M, Figueiredo EG, Melo JTS, Freire DA, Santos ICRV. Oncological emergency: the work of nurses in the extravasation of antineoplastic chemotherapeutic drugs. Esc Anna Nery Rev Enferm [online]. 2017 jan. [citado 2018 mar 30];21(1):1-9. doi: http://dx.doi.org/10.5935/1414-8145.20170009.

14. Gozzo TO, Souza SG, Moysés AMB, Carvalho RAO, Ferreira SMA. Knowledge of a nursing team about chemotherapy adverse effects. Cienc. cuid. saúde. [online]. 2015 abr/jun. [citado 2018 mar 30];14(2):1058-66. doi: http://dx.doi.org/10.4025/cienccuidsaude.v14i2.25040.

15. Chiu K, Tindholdt TT, Tonseth KA. Extravasation injuries. Tidsskr nor laegeforen [online]. 2016 Feb. [citado 2018 mar 30];3(136):233-6. Available in: https://www.ncbi.nlm.nih.gov/pubmed/26860383.

16. Kreidieh FY, Moukadem HA, El Saghir NS. Overview, prevention and management of chemotherapy extravasation. World J Clin Oncol [online]. 2016 Feb. [citado 2018 mar 30];7(1):87-97. Available in: https://www.wjgnet.com/2218-4333/full/v7/i1/87.htm.

17. Guimarães RCR, Gonçalves RPF, Lima CA, Torres MR, Silva CSO. Nursing actions facing reactions to chemotherapy in oncological patients. J res fundam care online [online]. 2015 Apr/Jun. [citado 2018 mar 30];7(2):2440-52. doi: http://dx.doi.org/10.9789/2175-5361.2015.v7i2.2440-2552.

18. Coyle CE, Griffie J, Czaplewski LM. Eliminating extravasation events: a multidisciplinary approach. J InfusNurs [online]. 2014 May/Jun. [citado 2016 dec 05]; 37(3):157-164.. Available in: https://insights.ovid.com/crossref?an=00129804-201405000-00003.

19. Reynolds PM, MacLaren R, Mueller SW, Fish DN, Kiser TH. Management of extravasation injuries: a focused evaluation of noncytotoxicmedications. Pharmacotherapy [online]. 2014 Jun. [citado 2016 dec 05];34(6):617–32. Availiable in: https://onlinelibrary.wiley.com/doi/abs/10.1002/phar.1396.

20. Gozzo TO, Santos LAC, Cruz LAP. Knowledge of the nursing team on the prevention and management of extravasation of chemotherapy drugs. Rev enferm UFPE [online]. 2017 dez. [citado 2018 mar 30];11(12):4789-97. doi: https://doi.org/10.5205/1981-8963-v11i12a15191p4789-4797-2017.

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