

# Evaluation of Nursing Records on Clinical Manifestations of Cardiotoxicity

## *Avaliação dos Registros de Enfermagem Acerca das Manifestações Clínicas de Cardiotoxicidade*

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### ABSTRACT

This research aimed to evaluate the nursing records that work in the chemotherapy outpatient clinic about the clinical manifestations of cardiotoxicity and to present a proposal of information route directed to the records of care in this clientele. It is a documentary research, retrospective by analysis of the medical record and quantitative evaluation. The data were collected in a form containing 4 variables directed to the characteristics of the population and 15 variables related to the possible clinical manifestations of cardiotoxicity, obeying ethical norms and analyzed through descriptive statistics. The proposal of an information roadmap was described from a table containing sociodemographic variables and specific elements of the treatment, elaborated from the literature review of this research. Despite the potential toxicity of the chemotherapy treatment, there was no record of the drug used in 12 (50%) medical records and no nursing record was found on possible signs of cardiotoxicity. It is concluded that chemotherapy can develop toxic reactions, such as cardiotoxicity. Knowledge about the possible signs and symptoms of cardiac toxicity, as well as the risk factors and adequate recording of this information by nursing, become important for the reach of clinical documentation with quality.

**Keywords:** Cardiotoxicity; Chemotherapeutics; Nursing record.

### RESUMO

Esta pesquisa objetivou avaliar os registros de enfermagem em um ambulatório de quimioterapia, acerca das manifestações clínicas de cardiotoxicidade e apresentar uma proposta de roteiro de informações direcionada aos registros dos cuidados nessa clientela. Trata-se de uma pesquisa documental, retrospectiva por análise do prontuário e avaliação quantitativa. Os dados foram coletados em formulário próprio contendo 4 variáveis direcionadas às características da população e 15 variáveis relacionadas às possíveis manifestações clínicas de cardiotoxicidade, obedecendo as normas éticas e analisados por meio da estatística descritiva. A proposta de um roteiro de informações foi descrita a partir de um quadro contendo variáveis sociodemográficas e de elementos específicos do tratamento, elaboradas a partir da revisão de literatura desta pesquisa. Apesar da potencial toxicidade do tratamento quimioterápico, não houve registro do medicamento quimioterápico utilizado em 12 (50%) prontuários avaliados e não foi encontrado nenhum registro de enfermagem sobre possíveis sinais de cardiotoxicidade. Conclui-se que a quimioterapia pode desenvolver reações tóxicas, como por exemplo, a cardiotoxicidade. O conhecimento sobre os possíveis sinais e sintomas de toxicidade cardíaca, bem como dos fatores de risco e adequado registro dessas informações pela enfermagem, tornam-se importantes para o alcance de uma documentação clínica com qualidade.

**Palavras-chaves:** Cardiotoxicidade; Quimioterápicos; Registro de enfermagem.

### NOTA

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## INTRODUCTION

Diseases and noncommunicable diseases are the leading causes of illness and deaths in the world population. It is estimated that in 2008, there were 36 million deaths resulting from these diseases, with emphasis on cardiovascular diseases and cancer, and having a greater impact in less developed countries. The demographic and epidemiological transition of the last decades, point the cancer with greater load in the next decades (<sup>1</sup>).

The estimate for Brazil in the biennium 2018-2019 indicates the occurrence of 600 thousand new cases of cancer. With the exception of non-melanoma skin cancer, predicted for 170,000 new cases, the other types of cancer will be about 420,000, the most incident being prostate tumors (68,000), female breast (60,000), colon and rectum (35 thousand), lung (30 thousand), stomach (21 thousand) and cervix (16 thousand) (<sup>1</sup>).

One of the most important and promising treatments against the oncological disease is the treatment with antineoplastic chemotherapy, which is based on the use of chemical agents, either alone or in combination. It is a systemic treatment modality, different from surgery and radiotherapy, which are older and localized. Its systemic ability enabled the cure of leukemias and lymphomas, as well as allowing the treatment of metastases (defined as progression of the disease in another organ through the migration of lymphatic or non-detectable blood cells).

Chemotherapy can be used for curative purposes, when systemic treatment is the definitive one, as for example for lymphomas and leukemias; may be an adjuvant therapy, when the treatment aims to increase the chance of cure after certain surgical procedures, such as treatment of breast and lung cancer; can act as a neoadjuvant, when it is used before the curative treatment, aiming at less radicality in the surgical procedure or reducing the risk of metastases and, palliative, when the objective is the palliation of the disease (<sup>2-3</sup>).

Therapy of oncologic disease with chemotherapy can be performed in specialized hospitals, outpatient units and oncological clinics (<sup>3-4</sup>).

In the last decades the antineoplastic treatments have evolved drastically and substantially improved the prognosis of cancer patients. However, the continuous use of chemotherapeutic agents in clinical practice may generate controversy due to its potential adverse effects at the cardiovascular level in treated patients who survive cancer oncology (<sup>4</sup>).

The main complications resulting from the antineoplastic treatment are hematological toxicity, gastrointestinal toxicity, cardiotoxicity, hepatotoxicity, pulmonary toxicity, neurotoxicity, reproductive dysfunction, bladder and renal toxicity, metabolic alterations, dermatological toxicity, allergic reactions and anaphylaxis and fatigue (<sup>3</sup>).

In this sense, cardiovascular diseases in cancer patients are increasingly frequent events. In recent years, advances in cancer treatment have also led to a greater exposure of patients to cardiovascular risk factors, and many chemotherapeutic agents have cardiotoxic capacity (<sup>5</sup>).

The cardiotoxic effects of chemotherapy are related to exposure time and the plasma drug concentration. In addition to risk factors such as age extremes, previous ventricular dysfunction, arterial hypertension, diabetes, use of associated chemotherapeutic agents, mediastinal radiation therapy and genetic susceptibility, contribute to the development of cardiotoxicity (<sup>5-6</sup>).

The definition of cardiotoxicity is based on measurements of the left ventricular ejection fraction (LVEF), which in normal individuals, these measures are between 55% or more. Cardiotoxicity is classified as: a) grade I, when asymptomatic LVEF reduction occurs between 10% and 20%; b) grade II when there is a reduction of the LVEF below 20% e; c) grade III when there is symptomatic heart failure (dyspnea, fatigue, edema) (<sup>6-7</sup>).

The clinical presentation of cardiotoxicity may be acute or subacute when it develops at the onset or within 14 days of termination of treatment and is chronic, which is subdivided into two subtypes: a) when clinical symptoms appear within one year after and (b) when the clinical manifestations appear after one year after the end of the chemotherapy treatment (<sup>7</sup>).

Thus, treatment with chemotherapy requires the health team to interpret its immediate benefit and also to identify risk factors such as radiotherapy of the mediastinum, previous cardiopathy, previous oncological treatment, as well as early identification and control of signs of toxicity.

And these actions need to be registered by the health team in order to monitor and evaluate the care provided, as well as to continue the care process.

In Brazil, every nursing professional has been required since 2002 to document all stages of the care process in which nursing care takes place. Today, after fifteen years, some Brazilian hospitals are still struggling to implement this regulation (<sup>8</sup>).

Good clinical documentation permeates patient safety and is the second goal of the National Patient Safety Program, established by the Administrative Rule 529 of April 1, 2013, which aims at effective communication among health professionals (<sup>9</sup>). It allows the recording of care, offering data for nursing diagnoses, which guide the goals to be reached and the interventions that need to be traced, allowing evaluation and continuity of care (<sup>10-11</sup>).

Nursing records consist of a form of written communication that contains pertinent information about the

patient and the care provided by the nursing team. They are essential elements in the care documentation, considering that, when drafted properly, they enable effective communication between the nursing team and the other professionals involved in care <sup>(11-12)</sup>.

In addition, they serve as a basis for the elaboration of the patient care plan, provide subsidies for the evaluation of care provided, are part of the evolution of the patient favoring and collaborating with the nursing audit, teaching and nursing research <sup>(12)</sup>.

The absence of records may imply in the duplication of procedures performed, difficulty in monitoring the care provided, and even in the non-execution of a certain activity, which may jeopardize the patient's own recovery <sup>(7-10-11-13)</sup>.

Thus, in order to promote the continuity of nursing care planning in its different phases, the registration must consist of printed forms duly identified with the patient's data, be clear and objective, with the author's identification, made legibly, without erasure, be part of the medical record and favor administrative and clinical elements for the nursing audit <sup>(14)</sup>.

Thus, the nursing record is a primordial aspect of nursing practice, which needs to be constantly evolving in order to improve its structure and quality, and should focus on the favorable impact of patient care and safety <sup>(11-14)</sup>.

Complete nursing records delimit the care actions developed within a work process and indicate how nurses and their teams provide, represent and signify nursing care that contains revealing evidence of the history and professional culture <sup>(8)</sup>.

In this sense, this research had as the study's problem: How are the nursing records in the chemotherapy outpatient clinic of a University hospital in the state of Rio de Janeiro?

It is assumed that the nursing team that works in the chemotherapy outpatient clinic of the scenario in question does not adequately carry out the records in the medical records about the clinical manifestations of cardiotoxicity, among other possible alterations that the patient is subject, considering that it does not have an information roadmap for your records.

In order to respond to the research problem, this study aimed to evaluate the nursing records in a chemotherapy outpatient clinic about the clinical manifestations of cardiotoxicity and present a proposal of information route directed to the records of care in this clientele.

## METHOD

It is a documentary, retrospective research that used the technique of data collection by analyzing the patient's chart and quantitative evaluation of the same.

The field of research was the chemotherapy outpatient clinic of a University Hospital, located in the city of Rio de Janeiro, which operates on weekdays in the morning and afternoon. The outpatient nursing team is composed of three technicians and four nurses. An average of fifty patients are treated daily. The sector has a pharmacy that only works in the morning preparing the medications according to the prescription of each patient. Data collection occurred from October to November 2015.

A total of 381 medical records were reviewed and 24 medical records were selected, which obeyed the following inclusion criteria: patients' charts submitted to chemotherapy from January 2014 to September 2015; age greater than eighteen years and the records containing the institution's standard evolution sheet. The medical records of patients with coronary artery disease, atrial fibrillation, ventricular arrhythmia and thromboembolism prior to treatment, incomplete records and unavailable data were excluded from the data collection period.

To collect the data in the medical records, a specific form was used, containing the four variables directed to the characteristics of the population: age, sex, diagnosis, chemotherapy used in oncological treatment and treatment time, and 15 variables related to the possible clinical manifestations of cardiotoxicity: cardiac failure, systemic arterial hypertension, pericardial disease, ventricular and supraventricular arrhythmias, acute myocardial ischemia with or without ST segment suppression, asymptomatic left ventricular dysfunction, thromboembolic events, nonproductive cough, dyspnoea and / or pulmonary rales, edema of extremities, cyanosis, decreased peripheral pulse amplitude, tachycardia, confusion, agitation, and torpor.

In order to present the proposal of a script of information directed to the nursing records to the patients under chemotherapy treatment, we selected variables related to the information related to the sociodemographic characteristics, as well as specific elements of the treatment, such as chemotherapy in use, dose of the medication, concomitant medications, possible clinical reactions of the patient related to the chemotherapy treatment, previous complementary examinations, in order to provide better facility for the registration of care provided in this clientele.

The research complied with the ethical criteria of resolution 466/2012 <sup>(15)</sup> of the National Health Council that aims to ensure the rights and duties that concern the research participants, the scientific community and the State. This study is approved by the Ethics and Research Committee CEP / HUPE, opinion no. 1,310,830.

The research data were tabulated and analyzed using descriptive statistics.

## RESULTS

381 patient charts were analyzed of the chemotherapy outpatient clinic of a University Hospital of Rio de Janeiro. Of these, only 24 medical records met the inclusion criteria. The remaining 357 medical records were excluded due to the following conditions: medical records without chemotherapy evolution sheet (137), medical records without the standard evolution sheet (53), chronic diseases before the start of chemotherapy treatment (134), and medical records prior to chemotherapy 2014 (33).

Of the 24 selected records, 12 (50%) females and 12 (50%) males were identified, and 92% (22) of the patients were between 41 and 80 years old. In this research a low percentage (4% - 1) was identified for the age group between 21 and 30 years old and no percentage for the age group between 31 and 40 years.

In this study, it was possible to observe that the highest percentage of patients who undergo chemotherapy in the outpatient setting was between 40 and 80 years of age, evidencing the relationship between the increase in the life expectancy of the population and the chronic-degenerative diseases, corroborating previous information.

These findings point to the fact that the global industrialization process has led to the redefinition of living standards with standardization of working conditions, nutrition and consumption. At the same time, there has been a significant change in the world's demography, due to the reduction in mortality and birth rates and, consequently, an increase in life expectancy and population aging<sup>(16)</sup>.

This process of demographic change, known as population aging, associated with the transformations in the relationships between people and their environment, has brought about an important change in the morbidity and mortality profile, placing chronic-degenerative diseases, such as cancer oncology, as a new health problems of the Brazilian population, to the detriment of the reduction of the occurrence of infectious-contagious diseases<sup>(16)</sup>.

Another relevant data to be considered about the charts analyzed was the high rate of systemic arterial hypertension (SAH), found in 100% of the charts selected in this study. SAH has a high prevalence and low control rates, being considered one of the main modifiable risk factors and one of the most important public health problems. Mortality due to cardiovascular disease progressively increases with the elevation of blood pressure from 115/75 mmHg in a linear, continuous and independent manner<sup>(17)</sup>.

It is understood that, when patients undergo chemotherapy with potential cardiotoxic risk, they are more likely to develop cardiotoxicity or to present clinical manifestations of it<sup>(4-6)</sup>.

The following table sets forth the cancer diagnoses of the charts selected by gender.

These findings corroborate the incidence of cancers in Brazil. According to data from the National Cancer Institute (INCA), excluding non-melanoma skin tumors, prostate cancer is the most incident among men in all regions of the country, with 91.24 / 100 thousand in the South, 88.06 / 100 thousand in the Southeast, 62.55 / 100 thousand in the Midwest, 47.46 / 100 thousand in the Northeast and 30.16 / 100 thousand in the North. In women, breast cancer is the most frequent in the Southeast (71.18 / 100 thousand), South (70.98 / 100 thousand), Midwest (51.30 / 100 thousand) and Northeast (36, 74/100 thousand). In the North region, it is the second most incident tumor (21,29 / 100 thousand)<sup>17</sup> (1).

In addition, lung cancer in men is the second most frequent in the South (33.62 / 100 thousand) and Midwest (14.03 / 100 thousand). In the Southeast (18.51 / 100 thousand), Northeast (9.01 / 100 thousand) and North (7.69 / 100 thousand), the third<sup>(1-17)</sup>.

Thus, by analyzing the selected charts, breast and prostate cancer are the most commonly found in women and men.

Graph I deals with the chemotherapy used for the treatment of cancer in the scenario studied:

It was observed that anthracycline (doxorubicin) and paclitaxel, in concomitant use with carboplatin, were found in three records for antineoplastic treatments. On the other hand, docetaxel, in concomitant use with pamidronate, has been found for treatment in only one medical record, as well as paclitaxel in single use.

The most commonly used chemotherapy drugs in the treatment of cancer and which have a considerable percentage of cardiotoxicity are the anthracyclines (doxorubicin, epirubicin, idarubicin) 5% to 35% of cases, alkylating agents, (cyclophosphamide, ifosfamide) 5% to 25% of the cases and antimicrobial agent (docetaxel, paclitaxel) 2% to 10% of cases<sup>(7)</sup>. In addition, antineoplastic drugs such as anthracyclines may predominantly cause irreversible damage to the myocardium<sup>(4-6)</sup>.

In addition, duration of administration may also cause relative risk for developing cardiotoxicity during or after cancer therapy<sup>(4-18)</sup>.

Thus, the need for cardiologic follow-up of patients who are using anthracycline (doxorubicin), docetaxel and paclitaxel in order to identify any type of cardiologic alteration that could compromise the patient's life<sup>(3-6-19)</sup>.

However, even when there was a correlation between the use of chemotherapeutics and potential cardiotoxic risk, no record was found on the name of the drug or protocol used in 12 medical records. No record was also found on possible clinical manifestations of cardiotoxicity, as well as signs and symptoms of other toxicities.

**TABLE 1 – Cancer diagnoses found in selected charts of patients undergoing chemotherapy treatment at a University Hospital, Rio de Janeiro, Brazil, 2015**

<b>Doenças crônicas</b>	<b>Feminino</b>	<b>Masculino</b>	<b>Total</b>
<b>Câncer de ovário</b>	2	-	2
<b>Câncer de pâncreas</b>	2	0	2
<b>Câncer de colón</b>	1	1	2
<b>Câncer de pulmão</b>	1	2	3
<b>Sarcoma de Kaposi</b>	0	1	1
<b>Câncer de mama</b>	3	0	3
<b>Câncer de estômago</b>	1	0	1
<b>Adenocarcinoma de endométrio</b>	1	-	1
<b>Câncer de timo</b>	0	1	1
<b>Câncer de próstata</b>	-	2	2
<b>Seminoma clássico</b>	-	1	1
<b>Tumor de testículo</b>	-	1	1
<b>Câncer de canal anal</b>	1	0	1
<b>Lipossarcoma mixóide</b>	0	1	1
<b>Câncer de bexiga</b>	0	1	1
<b>Carcinoma escamo-colunar de laringe</b>	0	1	1
<b>Total</b>	12	12	24

Source: survey data.

Since chemotherapy administration is directly related to the potential cardiotoxic risk, it is of the utmost importance that nursing care assess the patient before, during and after administration of these drugs, in order to evaluate any type of clinical change indicative of cardiotoxicity, or even their preclinical symptoms<sup>(3-4-6-19)</sup>.

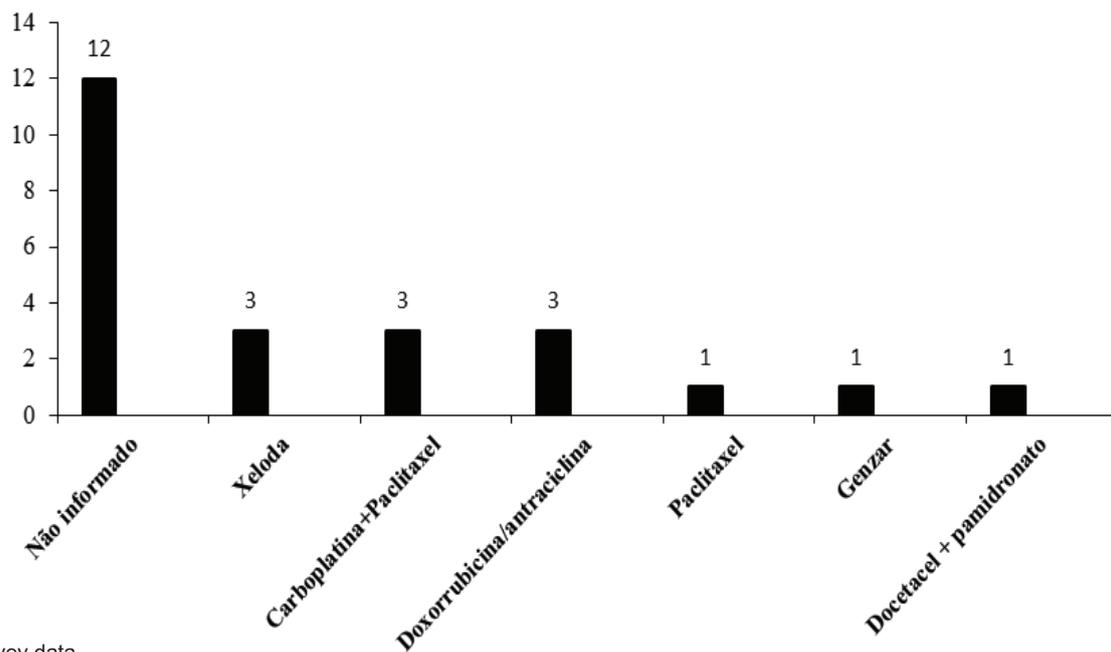
The essential nursing care for evaluation of the cancer patient, focusing on the identification of possible clinical alterations, including cardiotoxicity, verification of vital signs, weight and height; evaluation of test results; notification of intercurrents to the physician; immediate intervention in the occurrence of side effects that may arise during drug administration; and perform the

integral nursing record of the care process, as well as the intercurrents, making this part of the patient's chart<sup>(3-6-9-19-20)</sup>.

It is understood that the records are essential components in the care process since, when documented with quality, they portray the reality in which the care was offered. Thus, they enable effective communication between the health team, as well as favor research, audits, legal processes and planning<sup>(20)</sup>.

In addition, half of the information related to patient care is provided by the nursing team and the need for adequate and frequent records on the patient's chart is undisputed<sup>(08-11-13-14)</sup>.

**GRAPH 1 – Chemotherapeutics registered in the medical records of patients undergoing outpatient treatment in a University Hospital, RJ, Brazil, 2015**



Source: survey data.

Nursing records, when scarce and inadequate, compromise the care provided to the patient, as well as to the institution and the nursing team. And it also compromises the patient's safety, impacting on the measurement of nursing care survivor results <sup>(11-13-20)</sup>.

A study with chart analysis showed that during data collection and analysis, it was possible to observe that the records of the health team are flawed <sup>(21)</sup>.

Much of the information recorded by nursing is limited to the recording of data presented by the patient, demonstrating the need for the systematization of nursing records, so that it can be performed adequately, providing a more complete care <sup>(8-13-19-20)</sup>.

Just as incomplete medical record records for patient care, for the most part, do not meet the requirements set by health institutions or professional councils. Registered nursing records should be filed in medical records providing user information and professional care <sup>(11-12-22)</sup>.

In this way, the records in the chart represent an indicator of the quality of care provided, as well as being an instrument for ethical and legal support to caregivers, as well as patient safety, avoiding undesirable and avoidable complications <sup>(8-17-19-22)</sup>.

Recognizing the importance of the quality of nursing records on the care provided to patients undergoing chemotherapy, Table I presents a proposal for a roadmap for the necessary information about care provided in this clientele, based on the variables presented and discussed in this article.

## CONCLUSION

Cancer cases in Brazil have increased considerably and due to the various antineoplastic treatments, such as chemotherapy, have increased the survival of patients. However, chemotherapy may develop toxic reactions, such as cardiotoxicity. Thus, knowledge about the possible signs and symptoms of cardiac toxicity, as well as risk factors and adequate recording of this information by nursing, become increasingly necessary.

In addition, it was noted that they are essential for the adequate care of cancer patients on chemotherapy, early identification of cardiovascular risk, correct diagnosis of cardiac alteration, establishment of effective therapy and complete record of care offered to the patient. This set of measures can contribute to early identification of the risk of cardiotoxicity, facilitate the implementation of preventive measures and improve the quality of life of the patient.

Therefore, the quality of nursing records is of great importance in order to establish satisfactory nursing interventions and, proposing a roadmap of information, can contribute to excellent care.

However, due to the lack of nursing documentation in the charts used in this study, no clinical manifestations of cardiotoxicity were found. This fact becomes a limitation of this research, because without registration on patient care, it is doubtful whether this event really happened or whether there was and has not been registered, and new studies are needed to elucidate this gap.

Although the cardiotoxic manifestations were not

**TABLE 1 – Proposal of a script with variables needed to record the information about the care provided to patients submitted to outpatient chemotherapy in a University Hospital, RJ, Brazil, 2015.**

Variables for information about:	Justification
1. Identification of the patient	Errors can occur at the moment of admission of the patient in the care system, through failures in the patient's registry data, which may compromise all security in the care process (20-23). In practice, patient identification is a step in nursing care that does not receive due attention, and may interfere with other stages, essential to guarantee the quality and safety of the service provided (23). These failures can result in poor outcomes for the individual, such as disabilities, unnecessary hospitalizations, expose them to more therapeutic procedures and measures, and even cause death (20-23-24-25).
2. Chemotherapy Protocol / Dosage	Chemotherapeutics act to affect the basic processes of cell division, so many side effects of this drug therapy are directly related to the mechanism of action itself. In this way, knowing the protocol and its dosage, helps the nurse to predict the intensity of gastrointestinal toxic symptoms, as well as the probability of developing cardiotoxicity (3-4-6-18-10).
3. Vital Signs	These are indicators of the body's ability to regulate temperature, oxygenate tissues and maintain blood flow, as well as pain-related discomforts. Verification of vital signs before, during and after chemotherapy is essential for the early identification of sudden changes in the patient's clinical condition (6-7-24).
4. Comorbidities / Risk factors	For the diagnosis of chemotherapy-associated cardiomyopathy, it is important to define the class and chemotherapy used, its cumulative dose, the prior use of other cardiotoxic chemotherapeutics, and the presence of other cardiovascular risk factors (3-7). Risk factors for cardiotoxicity of chemotherapy: hypertension, age greater than 60 years, previous left ventricular dysfunction, previous thoracic irradiation (7).
5. Medications for daily use	Many individuals are submitted to polypharmacy (high number of medications daily), in order to promote better therapeutics (24-25). However, this practice may lead to undesirable drug interactions in patients. Therefore, identifying and recording previous medications may contribute to minimize or avoid these events in patients undergoing chemotherapy (3-6).
6. Type of catheters	Complications such as phlebitis, infiltration / extravasation, obstruction or accidental displacement of the device during chemotherapy treatment may be directly related to the type of catheter in use. Considering that the nursing team is responsible for insertion and maintenance of venous accesses, it is of the utmost importance that the recommended technical care be understood in order to prevent and / or reduce undesirable events related to the installation and maintenance of venous devices (3-10-25).
7. Cardiotoxic manifestations / signs and symptoms	The monitoring of signs and symptoms of heart failure is a fundamental aspect of the management of patients who undergo cardiotoxic oncologic therapy. As toxicity may occur during chemotherapy, and even several years after the end of treatment, continuous monitoring of the clinical manifestations of the syndrome is necessary (4-18).
8. Gastrointestinal manifestations	Gastrointestinal symptoms are the most common side effects of chemotherapy, occurring in about 75% of patients undergoing chemotherapy. In this way, the nurse working in this scenario must be attentive and record it in order to stratify acute, late and anticipatory and institute prescribed drug therapy (3-18-10-26).

Source: survey data.

found in the nursing records, it was possible to evaluate the importance of the registry on the subject and to present a proposal of a script with important information that need to be registered by the nursing, aiming the search for a clinical documentation with quality.

With the purpose of greater exploration of the subject matter, it is necessary to stimulate the development

of new studies with other methodologies, seeking to explore more carefully the comprehension of the complexity of cardiotoxicity and forms of prevention, contributing to the resolution of the gaps left by this research.

We hope that the disclosure of the findings of this study may be useful to highlight the importance of nursing records, aiming at the quality of service provided to cancer patients with potential cardiotoxic risk.

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