

Description of the Workflow and Dispensation Profile of Oral Antineoplastics at the Outpatient Pharmacy of a Large Hospital in Rio de Janeiro

<https://doi.org/10.32635/2176-9745.RBC.2025v71n2.4890EN>

Descrição do Fluxo e do Perfil de Dispensação de Antineoplásicos Orais na Farmácia Ambulatorial de um Hospital de Grande Porte do Rio de Janeiro

Descripción del Flujo y Perfil de Dispensación de Antineoplásicos Orales en la Farmacia Ambulatoria de un Gran Hospital de Río de Janeiro

Camila de Andrade Tintel¹; Thais Ribeiro Pinto Bravo²; Cíntia Rosa dos Reis Nogueira³; Thaís Amorim Nogueira⁴

ABSTRACT

Introduction: In the last decades, development and availability of oral antineoplastic have increased. The pharmacist plays an important role in oral antineoplastic therapy, contributing to better adherence to treatment and as part of the multidisciplinary team caring for cancer patients. **Objective:** To carry out a diagnosis of the service and the dispensing profile of oral antineoplastics in the outpatient pharmacy of a large hospital. **Method:** Retrospective and descriptive study carried out from January to June 2022. The evaluation of the medication dispensed was extracted from the E-SUS, the neoplasms treated with oral antineoplastic, age profile and sex was obtained from medical charts. The LucidChart tool was utilized to investigate the flow of dispensation of oral antineoplastics and, eventually, the analysis of possibilities of improvement was carried out. **Results:** 452 patients were women, the most prevalent diagnoses were malignant breast neoplasm (62.3%), malignant prostate neoplasm (21.5%) and malignant colon neoplasm (5.7%). The most dispensed medications during the period were anastrozole (35.6%), tamoxifen (18.9%), capecitabine (12.6%) and abiraterone (11.7%). The main opportunities for improvement were: standardization of prescriptions, organization of waiting lists, including description of patients with previous use of oral antineoplastics, team training to use computer system, organization of the oral chemotherapy storage with identification and presence of an assigned pharmacist to dispense medications. **Conclusion:** Understand the profile of the use of oral antineoplastics in patients treated at a large hospital is important for planning and developing targeted full care. **Key words:** Administration, Oral; Antineoplastic; Neoplasms/epidemiology; Health Quality Management.

RESUMO

Introdução: Nas últimas décadas, observa-se um aumento no desenvolvimento e na disponibilidade de antineoplásicos orais. O farmacêutico possui importante papel na terapia antineoplásica oral, contribuindo para melhor adesão ao tratamento e compondo a equipe multiprofissional no cuidado ao paciente oncológico. **Objetivo:** Realizar diagnóstico do serviço e do perfil de dispensação de antineoplásicos orais na farmácia ambulatorial de um hospital de grande porte. **Método:** Estudo retrospectivo e descritivo realizado entre janeiro e junho de 2022. A avaliação dos medicamentos dispensados foi extraída do sistema E-SUS; o levantamento das neoplasias tratadas com antineoplásicos orais, perfil etário e sexo foi obtido do prontuário eletrônico; a ferramenta LucidChart foi utilizada para investigar o fluxo de dispensação de antineoplásicos orais, e, por fim, fez-se uma análise de oportunidade de melhoria. **Resultados:** Observou-se que 452 pacientes eram do sexo feminino e os diagnósticos mais prevalentes foram: neoplasia maligna de mama (62,3%), de próstata (21,5%) e de cólon (5,7%). Os medicamentos mais dispensados foram: anastrozol (35,6%), tamoxifeno (18,9%), capecitabina (12,6%) e abiraterona (11,7%). As principais oportunidades de melhoria foram: padronização das prescrições; organização das listas de espera adicionando diferenciação dos pacientes que fazem uso prévio do antineoplásico oral; treinamento da equipe para utilização do sistema informatizado; organização do armazenamento de quimioterápicos de uso oral com identificação e presença de farmacêutico exclusivo na dispensação de medicamentos. **Conclusão:** Conhecer o perfil do uso de antineoplásicos orais dos pacientes assistidos em um hospital de grande porte é importante para o planejamento e o desenvolvimento de ações de assistência integral direcionada. **Palavras-chave:** Administração Oral; Antineoplásicos; Neoplasias/epidemiologia; Gestão da Qualidade em Saúde.

RESUMEN

Introducción: En las últimas décadas, se observa un aumento en el desarrollo y en la disponibilidad de antineoplásicos orales. El farmacéutico juega un papel importante en la terapia antineoplásica oral, contribuyendo a una mejor adherencia al tratamiento y formando parte del equipo multidisciplinario en la atención del paciente oncológico. El sector farmacia es uno de los principales generadores de costos en los hospitales, por lo que es fundamental asegurar su funcionamiento y control, estableciendo la calidad de los procedimientos asistenciales. **Objetivo:** Realizar un diagnóstico del servicio y perfil de dispensación de antineoplásicos orales en farmacia ambulatoria de un gran hospital. **Método:** Estudio retrospectivo y descriptivo realizado entre enero y junio de 2022. La evaluación de los medicamentos dispensados se extrajo del sistema E-SUS; la recopilación de las neoplasias tratadas con antineoplásicos orales, perfil etario y sexo se realizó usando la historia clínica electrónica; para el flujo de dispensación de antineoplásicos orales se usó la herramienta LucidChart y, finalmente, se hizo un análisis de oportunidad de mejoría. **Resultados:** 452 de los pacientes estudiados fueron de sexo femenino, la mediana de edad fue 65,4 años. Los diagnósticos más prevalentes fueron neoplasia maligna de mama (62,3%), neoplasia maligna de próstata (21,5%) y neoplasia maligna de colon (5,7%). Los medicamentos más dispensados durante el período estudiado fueron anastrozol (35,6%), tamoxifeno (18,9%), capecitabina (12,6%) y abiraterona (11,7%). Las principales oportunidades de mejora encontradas fueron: estandarización de prescripciones, organización de listas de espera agregando la diferenciación de los pacientes que hacen uso previo del antineoplásico oral, entrenamiento de los equipos en el uso del sistema informatizado, organización del botiquín de quimioterapia oral con identificación y presencia de un farmacéutico exclusivo en la dispensación de medicamentos. **Conclusión:** Este trabajo permitió comprender el perfil del uso de antineoplásicos orales en pacientes atendidos en farmacia ambulatoria de un gran hospital, siendo importante para la planificación y desarrollo de acciones para una atención integral más focalizada. **Palabras clave:** Administración Oral; Antineoplásicos; Neoplasias/epidemiología; Gestión de Calidad en Salud.

^{1,2,4}Universidade Federal Fluminense (UFF). Niterói (RJ), Brasil. E-mails: camilatintel@id.uff.br; thais_bravo@id.uff.br; thaissaamorim@id.uff.br. Orcid iD: <https://orcid.org/0000-0003-0434-6861>; Orcid iD: <https://orcid.org/0000-0003-1123-7727>; Orcid iD: <https://orcid.org/0000-0003-0527-4417>

³Hospital Federal Cardoso Fontes. Rio de Janeiro (RJ), Brasil. E-mail: rr.nogueira.cintia@gmail.com. Orcid iD: <https://orcid.org/0009-0003-7051-3653>

Corresponding author: Thaís Amorim Nogueira. Rua Doutor Mario Viana, 523 – Santa Rosa. Niterói (RJ), Brasil. CEP 24241-000. E-mail: thaissaamorim@id.uff.br



INTRODUCTION

Cancer is a public health issue and one of the greatest causes of morbidity and mortality worldwide, in addition to being a severe clinical condition¹. It is characterized by the uncontrolled growth of transformed cells capable of disseminating between tissues and organs near the affected structure, in which the passage to this abnormal growth is called neoplasm^{2,3}.

In Brazil, for each year of the 2023-2025 triennium, the National Cancer Institute (INCA)⁴ estimates there will be 704 thousand new cancer cases. The most incident cancer types are non-melanoma skin cancer, followed by breast, prostate, colon and rectum, lung, and stomach cancer.

There are different treatment modalities for neoplasms that depend on the patient's characteristics, tumor type, and stage, including surgery, radiotherapy, chemotherapy, immunotherapy, hormone therapy, and target therapy, to promote local or systemic control and increase the survival of patients⁵. Antineoplastic drugs can be administered by intramuscular, subcutaneous, intra-arterial, intrapleural, intravesicular, intraperitoneal, intracavitary, and topical routes, and by the most common routes, intravenous and oral.⁶

The last decades saw an increase in the development and availability of oral antineoplastics, representing about one-third of all antineoplastic agents^{7,8}.

The main advantages of oral antineoplastics include the active participation of patients in their treatment, increasing their autonomy; sparing the need for venous access, minimizing discomforts and decreasing the risk of complications associated with long-term intravenous devices; easy administration; fewer hospitalizations and associated costs; in addition to providing a better quality of life since the patient doesn't need to displace for infusion services and waste time in administering injectable drugs^{6,8,9}.

However, the bioavailability of oral drugs may be low and unpredictable. Any alteration in absorption and metabolism may trigger changes in the plasmatic levels, leading to toxicity, underdosing, or resistance¹⁰. This is the main disadvantage compared to intravenous chemotherapy, in which bioavailability is complete¹¹.

Other disadvantages of oral antineoplastic drugs include the need for more detailed instructions to patients, since the administration is their responsibility, increasing the risk of accidents with super-dosage and adverse reactions^{7,8}. Moreover, it can directly affect treatment adherence due to decreased supervision or contact with the multiprofessional team, weakening pharmaceutical guidance¹⁰.

Pharmaceutical assistance is essential to health services and programs, representing a dynamic process and including medication provision in all its constitutive steps, in the clinical and management fields¹².

The pharmacist has a key role in oral antineoplastic therapy, contributing to better treatment adherence and integrating the oncological patient's multiprofessional team⁸, helping standardize medication and therapeutic plans, and providing instructions and guidance on chemotherapy for patients and caregivers¹³.

Hospital institutions need constant management as they are built on complex processes, needing daily control checks to ensure quality and prevent flaws in the organization's processes. Moreover, the process standardization task must be part of the routine, with every activity being recorded, documented, and repeated for continuous improvement in service¹⁴.

The pharmacy ward is one of the main cost generators in hospitals; thus, ensuring its operationalization, control, and setting the quality of care procedures is essential¹⁵. Pharmacists have a key role in hospital institutions and services in strengthening the quality and safety of care and promoting rational and safe use of medications¹⁶.

Process management is a tool that consists of a series of methodologies and techniques focused on controlling organizational processes, empowering the organization's performance, and creating competitive advantages for it¹⁷.

Process mapping includes designing performed activities upon analysis and mapping macro-processes within the organization¹⁷. When process mapping is well performed, it facilitates the team's learning about the process, provides visibility on what is happening, demonstrates the roles and relationships among the people involved in the process, identifies gaps, disconnections, and necessary steps, enables measuring how long each activity takes, identifies the project's quick wins, among others¹⁸.

Quick wins can be classified as low-effort and high-impact actions, considered safer since they need fewer resources and work as a pilot for adherence to what is proposed to be changed, in addition to being easy to apply and yielding quick results¹⁹.

This work aims to describe the work process and profile of oral antineoplastic drug dispensation in an outpatient pharmacy service of a large public hospital in Rio de Janeiro, highlighting the importance of the pharmacist's role in this assistance stage.

METHOD

Retrospective and descriptive study conducted from January to June 2022 in an outpatient dispensation service of a large federal hospital pharmacy in Rio de Janeiro.

The outpatient pharmacy staff has two supply assistants, one supply manager, one pharmacist, and one resident pharmacist responsible for dispensing and storing medication.

To outline the profile of the oral antineoplastic drugs dispensation, the target population was composed of patients diagnosed with cancer who used antineoplastic oral drugs provided by the pharmacy from January to June 2022 and were assisted by the clinical oncology or oncological hematology wards, except patients with genitourinary tract neoplasm who were assisted by the urology ward.

Thus, inclusion criteria were patients over 18 years old, assisted by the oncology, hematology, and urology services, who received oral antineoplastic drugs (chemotherapeutic, hormone therapeutic, and target medication specific for cancer treatment) dispensed by the outpatient pharmacy from January to June 2022.

Patients assisted by other specialties or with incomplete dispensation data were excluded from the study.

Other data was assessed, such as number of oncological oral medication units dispensed, extracted from the unit's inventory management and control computerized system (e-SUS), where dispensations are recorded per patient under "Number of units dispensed"; neoplasm treated with oral antineoplastic drug; patient's age and sex profile, obtained from the electronic medical record available at the e-SUS platform.

The flowchart was designed by the author who observed the dispensation process during the three months she remained in the pharmacy. The design was done in LucidChart, an easy-viewing online software used for creating flowcharts. An observational analysis sought fragile aspects, disconnections, and other opportunities for improvement.

A descriptive statistical analysis of collected data using absolute and relative values was conducted. The median was determined in some data because it is more advantageous when there are extreme values and was calculated by ordering the data sequentially, obtaining its central value; the cumulative frequency was highlighted to identify the trend and patterns of the data by adding the frequency of a value to the cumulative frequency of the previous value.

The project was previously submitted to evaluation by the Research Ethics Committee of the *Universidade Federal Fluminense* Medicine Faculty and the *Hospital Federal Cardoso Fontes*, approved under opinion number 5.998.654 (CAAE (submission for ethical review): 66534122.0.0000.5243) and 6.042.050 (CAAE: 66534122.0.3001.8066), in compliance with Resolution 466/12²⁰ of the National Health Council.

There was no need to adopt an Informed Consent Form since the research used secondary data available on electronic information systems, with the confidentiality of the information being fully assured and the use of the results being guaranteed for exclusively scientific purposes.

RESULTS

Use profile of oral antineoplastic drugs

The study involved 634 patients aged 26 to 98 years old, with a median of 65.4 years, and the predominant age group was above 60 years old (70%). Regarding sex, 71.3% of patients declared being female (n=452). Among the patients using oral antineoplastic drugs, the most prevalent cancer types were malignant breast neoplasm, with 62.3% (n=395), followed by prostate 21.5% (n=136), colon 5.7% (n=36), and chronic myeloid leukemia 2.4 %. The most dispensed drugs in the studied period were anastrozole (35.6%), tamoxifen (18.9%), capecitabine (12.6%), abiraterone (11.7%), bicalutamide (8.2%), exemestane (5.0%) and imatinib (3.8%). This data is found on Table 1.

In the graphic representation that quantifies the dispensation of oral antineoplastic drugs (Graph 1), there was a drop in the dispensation of abiraterone in February 2022, associated with a shortage of this medication in that period.

Table 2 relates the age and sex median of the dispensed oral antineoplastic drug. All patients using anastrozole and exemestane were female with a median age of 66.7 years and 69.5 years, respectively. Regarding tamoxifen, 99.2% of patients were women and the age median was 58.2 years. As to the users of capecitabine, 67.5% were women with a median age of 65.7 years. All patients using abiraterone and bicalutamide were male with a median age of 72 and 76.2 years, respectively.

The findings that relate to the distribution of oral antineoplastic drugs with primary tumors are presented in Table 3, highlighting the use of abiraterone exclusively for prostate cancer and anastrozole for breast cancer.

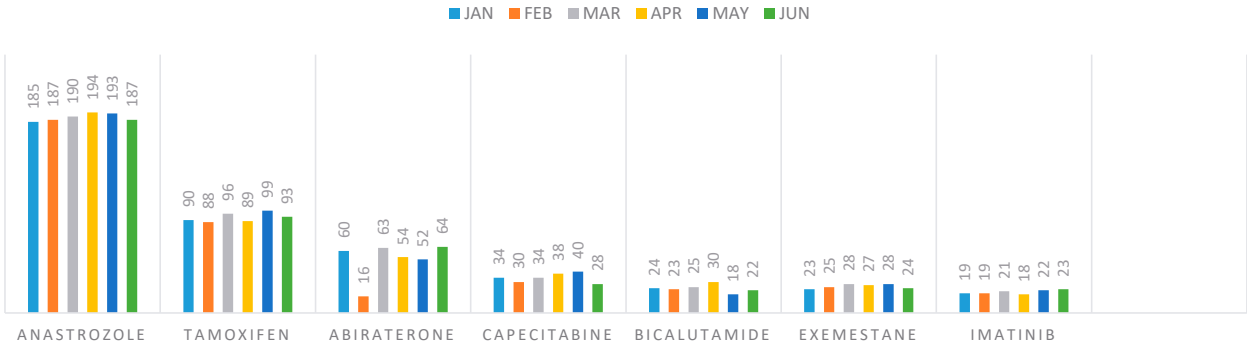
Workflow for dispensing oral antineoplastics in the outpatient pharmacy

The hospital's outpatient pharmacy service has a team of pharmacists, supply managers and supply assistants responsible for dispensing and storing medication. It assists patients from the outpatient clinic, and its primary service is to dispense oral antineoplastic drugs.



Table 1. Profile of patients using oral antineoplastic drugs from January to June 2022 in a Rio de Janeiro federal hospital, 2024

Sex	n	%	
Female	452	71.3	
Male	182	28.7	
Age	n	%	
26 to 39 years-old	10	1.6	
40 to 49 years-old	57	9	
50 to 59 years-old	123	19.4	
≥ 60 years old	444	70	
Diagnosis	n	%	
Malignant breast neoplasm	395	62.3	
Malignant prostate neoplasm	136	21.5	
Malignant colon neoplasm	36	5.7	
Chronic myeloid leukemia	15	2.4	
Malignant rectum neoplasm	14	2.2	
Malignant neoplasm of other digestive organs and of ill-defined locations in the digestive system	10	1.6	
Malignant stomach neoplasm	7	1.1	
Malignant kidney neoplasm, except renal pelvis	6	0.9	
Malignant neoplasm of the rectosigmoid junction	3	0.5	
Malignant pancreas neoplasm	2	0.3	
Malignant thyroid neoplasm	2	0.3	
Malignant esophagus neoplasm	1	0.2	
Malignant neoplasm of the liver and intrahepatic biliary channels	1	0.2	
Malignant neoplasm of the immune system	1	0.2	
Malignant neoplasm of the neuroendocrine system	1	0.2	
Malignant peritoneum neoplasm	1	0.2	
Malignant neoplasm of the bronchi and lungs	1	0.2	
Malignant neoplasm of the cervix	1	0.2	
Malignant neoplasm of the gallbladder	1	0.2	
Oral antineoplastic drug	n	% Relative	% Accumulated
Anastrozole	226	35.6	35.6
Tamoxifen	120	18.9	54.5
Capecitabine	80	12.6	67.1
Abiraterone	74	11.7	78.8
Bicalutamide	52	8.2	87.0
Exemestane	32	5	92.0
Imatinib	24	3.8	95.8
Enzalutamide	6	0.9	96.7
Sunitinib	6	0.9	97.6
Cyclophosphamide	5	0.8	98.4
Lapatinib	3	0.5	98.9
Cyproterone	2	0.3	99.2
Dasatinib	2	0.3	99.5
Everolimus	1	0.2	99.7
Gefitinib	1	0.2	100



Graph 1. Number of oral antineoplastic drugs dispensed per patient from January to June 2022 in a Rio de Janeiro federal hospital, 2024

Table 2. Age and sex mean of the oral antineoplastic drug dispensed from January to June 2022 in a Rio de Janeiro federal hospital, 2024

Oral antineoplastic drug	Age median	Female	%	Male	%
Anastrozole	66.7	226	100.0	0	0.0
Tamoxifen	58.2	119	99.2	1	0.8
Capecitabine	65.7	54	67.5	26	32.5
Abiraterone	72.0	0	0.0	74	100.0
Bicalutamide	76.2	0	0.0	52	100.0
Exemestane	60.1	32	100.0	0	0.0
Imatinib	60.7	11	45.8	13	54.2
Enzalutamide	69.5	0	0.0	6	100.0
Sunitinib	62.8	1	16.7	5	83.3
Cyclophosphamide	67.4	3	60.0	2	40.0
Lapatinib	52.3	3	100.0	0	0.0
Cyproterone	81.5	0	0.0	2	100.0
Dasatinib	62.5	2	100.0	0	0.0
Everolimus	60.0	0	0.0	1	100.0
Gefitinib	66.0	1	100.0	0	0.0
Total	65.4	452	52.6	182	47.4

A computerized system controls and registers the dispensation of oral antineoplastic drugs, and physical records monitor patients who seek medication. However, there are no well-established routines for executing the activities, treatment protocols, and control, and there is a lack of standardization in the prescriptions by the medical specialties who prescribe antineoplastic drugs (oncology, urology, and hematology).

The oral antineoplastic drug dispensation process

The following activities were described by the author upon observing the dispensation process during the three months she remained in the service studied.

The patient comes to the pharmacy with a prescription for oral antineoplastic drugs acquired at the hospital's oncology, hematology, and urology wards.

The staff checks the prescription's conformity regarding the following information: medical stamp, name, dosage, and instructions for the oral antineoplastic drug and proceeds to verify its availability in storage to provide the medication. If the medication is in store and the staff verifies the patient has already been using it, they ask for the patients' original identification document (ID) and collect personal information, such as name, personal identification number, and phone number. If the patient cannot come in person, the staff asks for their representative's ID, collecting the same information.



Table 3. Distribution of primary tumor related to oral antineoplastic drug prescribed from January to June 2022 in a Rio de Janeiro federal hospital, 2024

Medication	Primary tumor	n	%
Abiraterone	Prostate	74	100
Anastrozole	Breast	224	100
Bicalutamide	Prostate	52	100
Capecitabine	Breast	14	17.5
	Stomach	7	8.8
	Esophagus	1	1.3
	Liver	1	1.3
	Pancreas	2	2.5
	Peritoneum	1	1.3
	Gallbladder	1	1.3
	Colon	36	45
	Rectum	14	17.5
	Sigmoid	3	3.8
Cyclophosphamide	Breast	2	40
	Uterus	1	20
	Prostate	1	20
	Myeloma	1	20
Cyproterone	Prostate	2	100
Dasatinib	Leukemia	2	100
Everolimus	Neuroendocrine	1	100
Exemestane	Breast	32	100
Enzalutamide	Prostate	6	100
Gefitinib	Lung	1	100
Imatinib	Leukemia	13	56.5
	Gastrointestinal	10	43.5
Lapatinib	Breast	3	100
Sunitinib	Kidney	6	100
Tamoxifen	Breast	119	99.2
	Prostate	1	0.8

Before handing over the medication, the staff checks its name, dosage, and expiry date. Then, they ask the patient or their representative to sign the Dispensation Control Record and, by scanning the bar code, check the medication out of the E-SUS system. Finally, the oral antineoplastic drug is given to the patient or their representative.

When there is a shortage of the medication or it's just unavailable for starting treatment, the patient's data (medication name, patient name, medical record, and phone numbers) are entered in a waiting list so, when the medication is back in stock, the pharmacist

can contact them. Medication availability follows the waiting list's order and prioritizes patients who already use the medication. The process mapping was graphically represented in a flowchart (Figure 1).

DISCUSSION

According to the present study, it is possible to observe and describe the profile of patients assisted with oral antineoplastic drugs in a large hospital in Rio de Janeiro, as well as its dispensation workflow at the outpatient level. This data is essential to improve access to therapies and correct evident flaws in the dispensation process, avoiding mistakes that can hinder treatment and the clinical outcome of patients.

Regarding the studied characteristics, similar results were found in studies of patients using oral antineoplastic drugs at an oncology center in Ceará²¹ and at the oncological treatment center of the State of Rio Grande do Sul²².

Brasileiro and Carvalho confirmed the predominance of female patients in oral antineoplastic therapy²³. Regarding the age of patients, Mesquita, Arruda, and Macedo²¹ assessed the frequency of oral antineoplastic drug use in patients over 60 years; the studied group's mean age was 60.04 years.

According to INCA, excluding non-melanoma skin tumors, female breast cancer is the most frequent cancer type in the country, followed by prostate cancer, and colon and rectum cancer. Those numbers confirm the results from the present study⁴. Although it is not among the top diagnoses, chronic myeloid leukemia was the third most frequent diagnosis at an oncological general center in Rio Grande do Norte²².

At INCA's *Hospital do Câncer II*, most patients assisted at the outpatient pharmacy use anastrozole and tamoxifen²⁴.

As seen in the present study, malign breast neoplasm is the most frequent diagnosis. Hormone therapy is indicated for treating tumors that are sensitive to estrogen and progesterone. This treatment is recommended for 75%-80% of breast cancer cases²⁵. This explains why the hormone therapy drugs anastrozole, tamoxifen, and exemestane are the most commonly used antineoplastic drugs.

Capecitabine, the third most frequent oral antineoplastic drug found in this study, is used to treat breast, colon, and rectum cancers. It's a tumor-activated fluoropyrimidine developed as a 5-fluorouracil prodrug^{26,27}.

Hormone therapy or inhibition of androgen receptors are widely used options for treating prostate cancer²⁸.



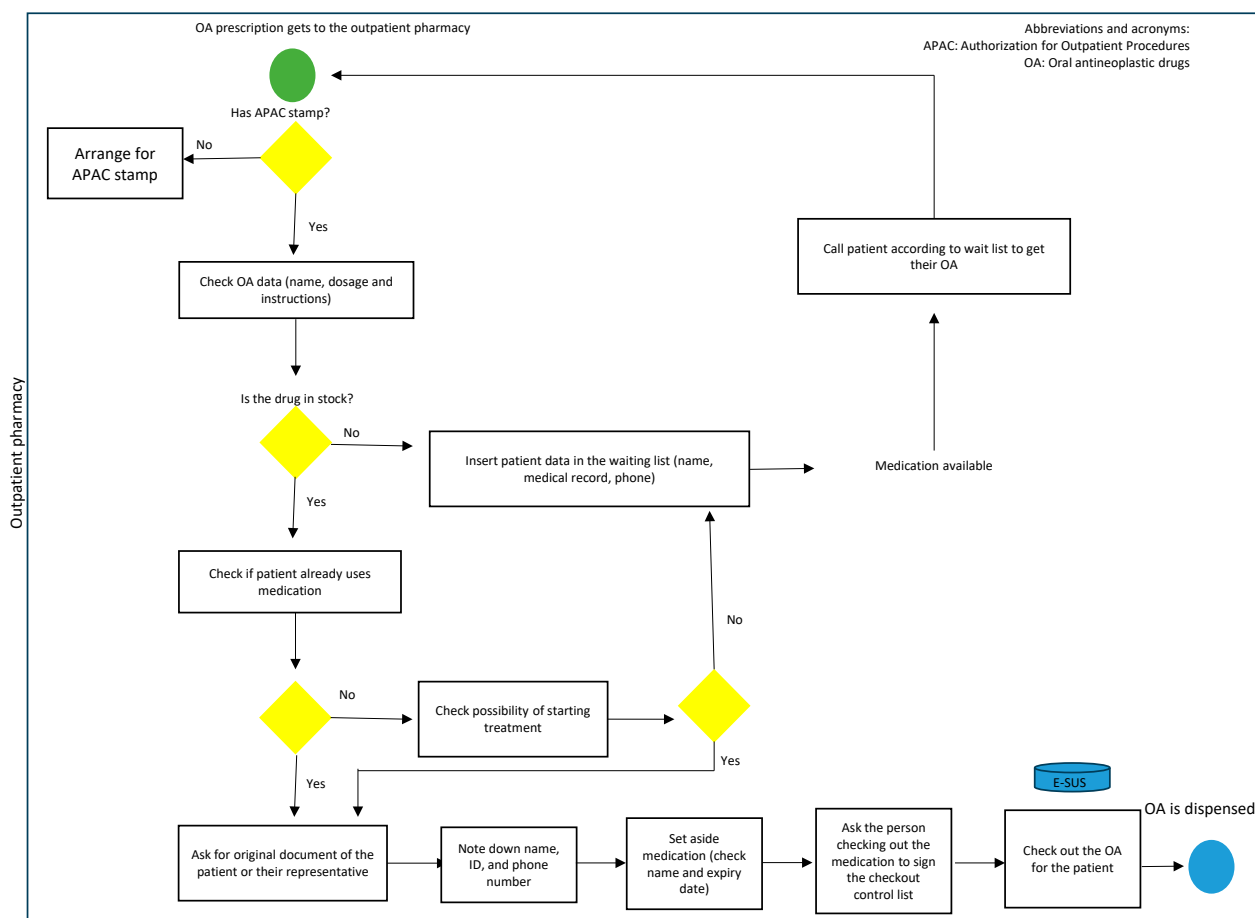


Figure 1. Flowchart of oral antineoplastic drug dispensation process

Abiraterone and bicalutamide were the most frequently dispensed medications for treating this pathology.

Regarding the correlation of oral antineoplastic drugs to primary tumor, most findings are in line with Batista¹¹, Rodrigues et al.²⁹, and Silva et al.³⁰, who describe the therapeutic indication of the studied medication, except for the use of anastrozole in thyroid tumors and tamoxifen for prostate cancer.

Hormone therapy is recommended for tumors that present hormone-dependent growth and dissemination. Tumors that suffer this type of hormonal interference usually lodge on the breast, endometrium, ovaries, and thyroid³¹.

Regarding the patient using tamoxifen for a prostate cancer primary tumor, the information collected in the electronic medical record justifies the recommendation due to mastalgia suffered by the patient. According to Labre et al.³², tamoxifen may be employed at a dosage of 10 mg/day, for three months, in case of intense mastalgia.

Regarding data related to the profiles of patients assisted at outpatient levels, observation and description

are required, as they direct the active pharmacist to follow the tendency of drugs, predict and adjust inventory, and better guide patients regarding the use of medicines for their clinical conditions, ensuring their safety. Thus, the dispensation system must be safe, organized, and effective to reduce errors and reach good results in healthcare services.

According to the present study, there are no well-established routines for executing the activities, treatment protocols, and control, and there is a lack of standardization in the prescriptions by the medical specialties who prescribe antineoplastic drugs (oncology, urology, and hematology) at the concerned hospital.

Regarding the oral antineoplastic drugs dispensation process, the lack of a well-structured operational scheme, process or organization infrastructure generates unstandardized conducts that favor flaws and deviations in the quality of the service provided¹. Organizations with deficient and poorly consistent processes and spaces favor dispensation errors³³.

Most flaws in the dispensation process do not harm patients; however, its overall participation in the total of

medication errors is considerable and allows for a greater risk of adverse events. Medication errors involve annual expenditures estimated at 42 billion dollars and are the main cause of avoidable damage in the healthcare system³⁴. The incidence of medication errors can generate prolonged hospitalizations, the need for additional treatment, an increase in hospitalization costs, pain, suffering, sequelae, and death³⁵.

Paiva¹ observed that flaws in the medication dispensation process promote stress in patients, due to the delay in receiving medication, and in professionals, due to issues related to prescriptions, records, documentation, and high demand.

The analysis of the oral antineoplastic drug dispensation workflow surfaced opportunities for improvement, most with immediate suggestions, that generate high-impact improvements and are easy to apply, called “quick wins”.

The presence of an exclusive pharmacist in the dispensation process ensures effective assistance to patients. Chapter 3 of the pharmacy best practices guide (*Boas Práticas de Farmácia*) states that the pharmacist's presence and action are essential in medication dispensation, and their work cannot be delegated or exercised through mandate or representation³⁶.

Including pharmacists in the dispensation process is beneficial to antineoplastic drug usage since they will advise patients regarding the necessary care, dosage, administration routes, and adverse effects, increasing adherence, contributing to more effective treatments, and preventing complications³⁷.

The pharmacist should be involved in all the steps described to ensure the quality of the service provided. According to Castro and Silva, the hospital pharmacist should implement a management system focused on organization, staff training, and communication with the multiprofessional team to prevent process flaws and offer an effective service and rational medication use to patients³⁸.

Optimal inventory ensures the quality of medications. The shelf organization must allow the identification of name, batch number, and expiry date³⁹. The oral antineoplastic drugs cabinet must be organized so that its location is dynamic, fast, and efficient to reduce errors and ensure quality in dispensation⁴⁰.

Process mapping generates efficiency gains, integration between fields, and clarifies activities. Manuals, routines, and procedures should be available and up to date since, in addition to allowing continuous reflection on new work executions and providing constant quality and improvement, they are reference documents for process operation and learning tools for teams⁴¹.

Organized monitoring of the drug dispensation flow assessment and situational analysis of outpatient pharmacy highlights strategies for minimizing errors and waste, promoting more effective processes, and the sustainability of the Brazilian National Health System⁴⁰.

CONCLUSION

This study allowed the understanding of the use of oral antineoplastic drugs by patients assisted by the pharmacy of a large hospital in Rio de Janeiro, an important perspective for planning and developing actions targeted at more comprehensive assistance.

Hospital institutions are built on complex processes that need constant management. There is an increasing number of oncological patients using oral antineoplastic drugs. Thus, in addition to ensuring the quality of the medication provided, quality dispensation processes should be in place to prevent medication errors, since those directly impact patient safety and can increase hospitalization and health costs.

Thus, the pharmacist's importance in the Pharmaceutical Assistance Cycle is to ensure the quality of this system, especially regarding drug dispensation, helping increase patients' adherence to treatment and preventing complications.

CONTRIBUTIONS

All the authors have substantially contributed to the study design, acquisition, analysis and interpretation of the data, wording, and critical review. They approved the final version for publication.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

FUNDING SOURCES

None.

REFERENCES

1. Paiva KM, Besen E, Moreira E, et al. Incidência de câncer nas regiões brasileiras e suas associações às políticas de saúde. *SaudPesq*. 2021;14(3):533-42.
2. Batista DRR, Mattos M, Silva SF. Convivendo com o câncer: do diagnóstico ao tratamento. *Rev Enferm UFSM*. 2015;5(3):499-510.
3. Amorim AR. *Genética do câncer [monografia]*. Brasília, DF: Centro Universitário de Brasília; 2002.



4. Instituto Nacional de Câncer. Estimativa 2023: incidência de câncer no Brasil. Rio de Janeiro: INCA; 2022 [acesso 2024 dez 12]. Disponível em: <https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document/estimativa-2023.pdf>
5. Silva AG, Azevedo C, Mata LRF, et al. adesão de pacientes ao tratamento com antineoplásicos orais: fatores influentes. *Rev baiana enferm*; 2017;31(1):e16428. doi: <https://www.doi.org/10.18471/rbe.v31i1.16428>
6. Marques PAC. Pacientes com câncer em tratamento ambulatorial em um hospital privado: atitudes frente à terapia com antineoplásicos orais e locus de controle de saúde [dissertação]. São Paulo: USP; 2006.
7. Franco GAS, Silva LF, Seixas FL, et al. Necessidades de aprendizagem de familiares de crianças e adolescentes em tratamento com quimioterápicos antineoplásicos orais. *Esc Anna Nery*. 2022;26:e20210246. doi: <https://doi.org/10.1590/2177-9465-EAN-2021-0246>
8. Vasconcelos G, Caetano T, Oliveira T. A importância do farmacêutico na farmacoterapia antineoplásica oral [monografia]. Itabira: Faculdade UMA; 2022.
9. Souza JLR, Araújo ACS, Nascimento FSL. O papel do farmacêutico na Adesão de pacientes em uso de antineoplásicos orais. *Rev Eletr da Estácio*. 2019;5(2)1-12.
10. Ferreira LPL, Silva JS. Atenção farmacêutica ao paciente oncológico em uso de antineoplásicos orais [monografia]. Recife: Faculdade Pernambucana de Saúde; 2016.
11. Batista EMM. Avaliação da adesão à terapêutica farmacológica com antineoplásicos orais [tese]. Lisboa: Universidade da Beira Interior Portugal; 2012.
12. Oliveira MA, Bermudez JAZ, Osório-de-Castro CGS. Assistência farmacêutica e acesso a medicamentos. Rio de Janeiro: Editora Fiocruz; 2007.
13. Souza M, Santos H, Santos M, et al. Atuação do farmacêutico hospitalar na oncologia. *Bolet Inf Geum*. 2016;7(1):54.
14. Giro L, Sivieri LFP. Análise para melhoria no setor farmacêutico de um hospital: um estudo de caso a partir da utilização da metodologia lean healthcare. *Rev Prod Destac*. 2017;1(1)432-56.
15. Silva LC, Cardoso CAR. A importância da qualidade na farmácia hospitalar e seu papel no processo de acreditação hospitalar. *Rev Cient UMC*. 2016;1(1):1.
16. Santos JR. Caracterização dos serviços do farmacêutico hospitalar: uma revisão integrativa [monografia]. Paripiranga: UniAGES; 2021.
17. Gama JA. Aplicação de um método de gestão por processo em um hospital no Oeste do Paraná [monografia]. Curitiba: Universidade Tecnológica Federal do Paraná; 2017.
18. Apostila gestão de processos. 1. ed. Campinas: FM2S Educação e Consultoria; 2022.
19. Amorim MC. Proposição de melhorias no processo de projeto em empresa de engenharia [monografia]. São Paulo: Poli-usp.; 2016.
20. Conselho Nacional de Saúde (BR). Resolução nº 466, de 12 de dezembro de 2012. Aprova as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. *Diário Oficial da União*, Brasília, DF. 2013 jun 13; Seção I:59.
21. Mesquita JL, Arruda CAM, Macêdo AF. Perfil dos pacientes em terapia antineoplásica oral em um centro oncológico. *Cad ESP*. 2018;12(1):46-56.
22. Medeiros MLS, Lopes COM, Sampaio VA. Perfil de pacientes oncológicos na adesão ao uso de antineoplásicos orais. *Temas em Educ Saúde*. 2023;19:e023005.
23. Brasileiro DKS, Carvalho MEB. Perfil de pacientes em serviço de quimioterapia na cidade do Recife que fazem uso de antineoplásicos por via oral [monografia]. Recife: Faculdade Pernambucana de Saúde; 2019.
24. Veloso RR, Manaças LRA, Soares FC, et al. Análise da adesão à terapia antineoplásica oral de pacientes atendidos na farmácia ambulatorial do Hospital do Câncer II do Instituto Nacional de Câncer José Alencar Gomes da Silva [Internet]. Rio de Janeiro: Instituto Nacional do Câncer; 2011.
25. Paula JCP, Rocha VMP, Bayer VML, et al. Hormonioterapia no tratamento de câncer de mama em pacientes do sexo feminino: uma revisão integrativa. *RSD*. 2021;10(3):e26810313235. doi: <http://dx.doi.org/10.33448/rsd-v10i3.13235>
26. Fernandes CDL, Castro CQ, Ries EF, et al. Perfil dos pacientes em tratamento quimioterápico com capecitabina no hospital universitário de Santa Maria/RS. In: 6 Congresso Internacional em Saúde; 14 a 17 de maio de 2019; Ijuí. Ijuí: UNIJUI; 2019.
27. Olinto GL, Petry RD, Lindenmeyer D, et al. Implantação de serviço de atenção farmacêutica à pacientes oncológicos em uso de capecitabina. *Rev Bras Farm Hosp Serv*. 2013;4(4):46-50.
28. Duizith MVS. Câncer de próstata resistente à castração: revisão da literatura—passado, presente e futuro [monografia]. Rio de Janeiro: Instituto Nacional de Câncer José Alencar Gomes da Silva; 2017.
29. Rodrigues HS, Souza RP, Sousa R. Perfil de interações medicamentosas de Agentes Antineoplásicos Oraís (AAOs) dispensados para pacientes oncológicos. *RSD*. 2020;9(8):e145985369. doi: <https://doi.org/10.33448/rsd-v9i8.5369>
30. Silva DCPR. Proposta para auxílio na estratégia de produção de medicamentos antineoplásicos com risco de desabastecimento no Brasil [tese]. Rio de Janeiro: Fundação Oswaldo Cruz; 2019.



31. Silva TM. Hormonioterapia como alternativa no tratamento do câncer de mama [monografia]. Gama, DF: Centro Universitário do Planalto Central Aparecido dos Santos UNICEPLAC; 2019.
32. Labre SRT, Silva ACN, Júnior MPQ, et al. Mastalgia: revisão de literatura. CREEM - GO, 2021;1(3)45-6. doi: <https://doi.org/10.37951/2675-5009.2021v1i03.44>
33. Lapão LV. Lean na gestão da saúde: uma oportunidade para fomentar a centralidade do doente, o respeito pelos profissionais e a qualidade nos serviços de saúde. Acta Med Port. 2016;29(4):237-9.
34. Nascimento MMG, Rosa MB, Wanderley LA, et al. Perfil de erros de dispensação de acordo com o sistema de dispensação adotado em um hospital público. BJHP; 2019;1(1):40-52.
35. Pichler RF, Garcia LJ, Seitz EM, et al. Erros de medicação: análise ergonômica de utensílios da sala de medicação em ambiente hospitalar. Cad saúde colet. 2014;22(4):365-71. doi: <https://doi.org/10.1590/1414-462X201400040004>
36. Conselho Federal de Farmácia (BR). Resolução nº357, de 20 de abril de 2001. Aprova o regulamento técnico de Boas Práticas de Farmácia. Diário Oficial da União, Brasília. 2001 abr 27; Edição 82; Seção 1:24-30.
37. Souza JLR, Araújo ACS, Nascimento FSL. O papel do farmacêutico na adesão de pacientes em uso de antineoplásicos orais. Rev Eletr Estácio Recife. 2019;5(2):1-12.
38. Castro APM, Silva PF. A importância do profissional farmacêutico na gestão da farmácia hospitalar. Rev Ft. 2022;26(112):1. doi: <https://doi.org/10.5281/zenodo.6632275>
39. Souza DMK, Garbois GD, Guimarães DA, et al. Melhorando a utilização de medicamentos na atenção básica em um município do sudeste brasileiro. Rev Eletr Farmácia. 2008;5(3):54-9. doi: <https://doi.org/10.5216/ref.v5i3.5372>
40. Gleriano JS, Roela SCR, Gasparini LVL, et al. Mapeamento de processos na dispensação de medicamentos: ferramenta para gestão e melhoria da qualidade. Rev Adm Saúde. 2018;18(72):1-16. doi: <http://dx.doi.org/10.23973/ras.72.127>
41. Rodrigues AKS, Júnior LBO, Santos LFP, et al. Diagnóstico situacional de um hospital universitário de Minas Gerais a partir dos resultados do processo de avaliação interna da qualidade. HU Rev. 2022;48:1-11. doi: <https://doi.org/10.34019/1982-8047.2022.v48.34666>

Recebido em 22/8/2024

Aprovado em 6/2/2025

