Research Article

Evaluation of the dispensing of prescribed anticancer drugs in an oncology-pulmonology unit in a hospital in Dakar, Senegal

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Abstract

Introduction: The objective of our study was to evaluate the dispensing of prescribed anticancer drugs in an onco-pulmonology unit in a hospital in Dakar, Senegal. **Methodology:** This was a prospective and descriptive study that took place between January 2021 and December 2021, for a period of 12 months. Our work focused on all prescriptions containing at least one anticancer drug and originating from the onco-pneumology unit and dispensed at the hospital pharmacy. **Results:** We collected 413 prescriptions from the oncology-pulmonology unit. The results showed a strong male predominance. The over-60 age group was the most represented. Of the 73 prescribed treatment protocols, the combinations of cisplatin and vinorelbine, and carboplatin and paclitaxel, were the most frequently prescribed. Platinum derivatives were the most commonly used, with cisplatin and carboplatin accounting for 42 and 18 uses, respectively. **Conclusion**: Platinum derivatives are essential in the management of patients within the onco-pulmonology unit. Our results also highlight the importance of rigorous monitoring of dispensing to ensure therapeutic efficacy.

***Keywords*:** Anticancer, dispensing, onco-pulmonology, cisplatin, carboplatin

Introduction

Cancer is a global public health issue. It affects all segments of society (Maamri, 2015). In 2022, an estimated 20 million new cases of cancer will be diagnosed and 9.7 million people will die from the disease. The estimated number of people alive five years after a cancer diagnosis was 53.5 million. In Africa, more than 900,000 new cases of cancer and more than 580,000 cancer deaths were recorded (WHO, 2024). In Senegal, cancer incidence and mortality are on the rise, making cancer a real public health issue (DMLT, 2025). According to IARC estimates for 2022, 11,841 new cases of cancer are expected each year, with an estimated mortality rate of around 70% (DML, 2025 ; WHO 2022). Lung cancer is the most common cancer worldwide, with 2.5 million new cases, or 12.4% of all new cases. Breast cancer in women ranks second (2.3 million cases, 11.6%), followed by colorectal cancer (1.9 million cases, 9.6%), prostate cancer (1.5 million cases, 7.3%) and stomach cancer (970,000 cases, 4.9%)(WHO, 2024). Several factors, particularly those related to lifestyle, may be responsible for cancer. These include smoking, diet, alcohol, a sedentary lifestyle, etc. (Duclos *et al*, 2021 ; Castronovo, 2003 ; Barataud, 2016).

Furthermore, chemotherapy is one of the main methods of cancer treatment and is based on the use of several molecules classified according to their mode of action and chemical structure (Leichtnam-dugarin *et al*, 2008). In Senegal, cancer care is becoming increasingly structured thanks to the establishment of specialized services and the growing availability of anticancer drugs in hospitals (DLMT, 2025). However, dispensing these drugs requires specific pharmaceutical expertise to ensure patient safety, compliance with treatment protocols, optimal stock management, and the prevention of medication errors. It is in this context that we set ourselves the objective of analyzing the prescription of anticancer drugs in an oncology-pulmonology unit in Dakar, Senegal.

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Methodology

Study setting

Our study took place in the hospital pharmacy and in the onco-pulmonology chemotherapy unit of the CHNU of FANN.

Type and period of study

This was a prospective and descriptive study which took place between January 2021 and December 2021, for a period of 12 months.

Study population

The study population consisted of all prescriptions containing at least one anticancer drug, prescribed at the oncology and pulmonology unit and dispensed at the hospital pharmacy of the Fann University Hospital Center (CHNU). The anticancer drugs were dispensed according to two methods: free of charge for Senegalese citizens and at a cost for foreign nationals.

Inclusion criteria

Any prescription containing at least one anticancer drug from the onco-pulmonology department, received in the hospital pharmacy of the CHNU of FANN and dispensed during the period from January 2021 to December 2021.

Exclusion criteria

Prescriptions from other facilities, Any prescription not validated by the hospital pharmacy

Data Collection and Variables Studied

Data were collected using a questionnaire specifically designed for this study. The variables studied included sociodemographic characteristics (age, sex), pharmacotherapy characteristics such as the number of cycles, the number and type of chemotherapy protocol prescribed, the International Nonproprietary Name (INN) of cytotoxic molecules, and the pharmacological family or class of anticancer drugs. Data were entered into Excel 2010 and analyzed using SPSS version 23.0. The results were presented in tables and figures. Results were expressed as percentages and figures.

Results

General characteristics of the population

Table I : Characteristics of the population

Parameters	Modalities	Number (Frequency) N (%)
Inclusion	N = 55	
Median age	60 years (Max : 76 Min : 17)	
Number of prescriptions	413	
Sex	Male	49 (87,27)
	Female	12,73(6)
	Sex-ratio	8,17
Age groups	< 45	7 (12,73)
	[45 - 60[	17 (30,91)
	≥ 60	31 (56,36)

Table 2: Distribution of patients according to the number of prescriptions

Number of prescriptions	Frequency	%
[2 - 4]	16	29,09
[5 - 8]	**21**	**38,18**
> 8	18	32,72
TOTAL	55	100,00

Number of prescriptions

The majority of our patients, 38.18%, had between 5 and 8 prescriptions during their treatment.

Protocol types

The protocol with Cisplatin/Vinorelbine was the most commonly used, accounting for 26.03% of cases.

Cytotoxic molecules

Cisplatin and Vinorelbine were the most commonly used molecules in treatment protocols, accounting for 26.25% and 19.375% of cases, respectively.

Number of treatments

In our cohort, the majority of patients (64.86%) received between 2 and 5 courses of treatment, and 12.16% of patients received 5 or more treatments.

Discussion

Our study includes 468 prescriptions belonging to 55 patients over the period from January 2021 to December 2021. It aimed to examine the dispensing of anticancer drugs at the hospital pharmacy of the CHNU de FANN.

Table 3: Distribution of patients according to the number of protocols

Protocols	Number (N)	Frequency (%)
Patients with one protocol	**41**	**74,55**
Patients with two protocols	11	20,00
Patients with three protocols	3	5,45
TOTAL	55	100

Table 4: Distribution according to the type of protocol prescribed

Protocols types	Number (N)	Frequency (%)
Carboplatin	1	1,37
Carboplatin/Etoposide	3	4,11
Carboplatin/Taxol, Vinorelbine/Bevacizumab	1	1,37
Carboplatin/Gemcitabine	4	5,48
Carboplatin/Gemcitabine/Bevacizumab	2	2,74
Carboplatin/Paclitaxel	7	9,59
Cisplatin/ Gemcitabine	9	12,33
Cisplatin/ Etoposide	5	6,85
Cisplatin/ Vinorelbine/Bevacizumab	7	9,59
Cisplatin/Pemetrexed	1	1,37
Cisplatin/Taxol	1	1,37
Cisplatin/Vinorelbine	**19**	**26,03**
Docetaxel	6	8,22
Docetaxel/Bevacizumab	2	2,74
Gemcitabine, Docetaxel	2	2,74
Vinorelbine	1	1,37
Vinorelbine/Bevacizumab	1	1,37
Vinorelbine/Gemcitabine	1	1,37
Total	73	100,00

Table 5: Distribution according to the number of molecules dispensed

Cytotoxic Molecules	Number (N)	Frequency (%)
Bevacizumab	13	8,125
Carboplatin	18	11,25
Cisplatine	**42**	**26,25**
Docetaxel	17	10,625
Etoposide	8	5
Gefitinib	2	1,25
Gemcitabine	17	10,625
Mixol	1	0,625
Pemetrexed	1	0,625
Taxol	10	6,25
Vinorelbine	**31**	**19,375**
Total	160	100

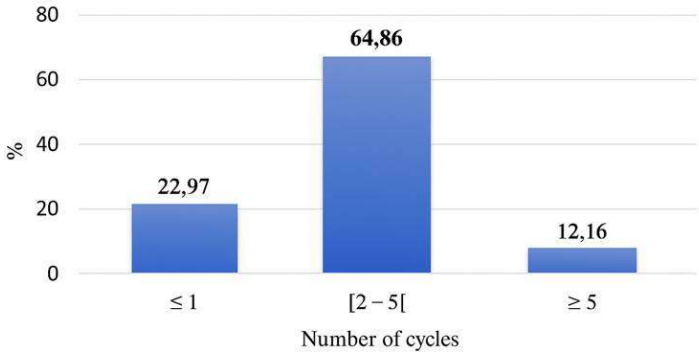

Figure 1 : Distribution of patients by number of treatment

Aspects such as the profile of prescribers were not taken into account, as all prescriptions for cancer patients were prescribed only by doctors from the oncology-pulmonology unit. We recorded a predominance of males (n=49), contrary to several studies in the sub-region that report a predominance of females (Sidibé, 2023 ; Maiga, 2024). All these results could be explained by the influence of certain risk factors, in particular smoking, which remains more prevalent among men (Locatelli-Sanchez M *et al*., 2025 ; Jha P *et al*., 2006). The average age was 59.33 ± 12.05, and the over-60 age group was the most common, accounting for 56.36% of patients, followed by those aged [45–60 years [with 30.91%. Our data were comparable to those of Senghor et al., where patients aged 60 and over were the most represented, accounting for 50% of the total, with an average age of 59.3 ± 11.3 (Senghor *et al*., 2020).

The predominance of this age group in our study could be explained, on the one hand, by the high incidence of bronchopulmonary cancer in this category of the population and, on the other hand, by the delayed impact of the risk factors involved (De Groot *et al*., 2018).

The majority of our patients, 38.18%, had between 5 and 8 prescriptions, and 31.48% of patients had more than 8 prescriptions during their treatment. This high number of prescriptions may generally result from changes in treatment protocols during the course of care. These changes could be caused by supply shortages of certain anticancer drugs. The Cisplatin/Vinorelbine protocol was the most commonly used, accounting for 26.03% of cases, followed by the Cisplatin/Gemcitabine combination (12.33%). These results are consistent with the data in the literature, which highlights the predominant role of platinum salt-based regimens (cisplatin or carboplatin) combined with vinorelbine or gemcitabine in the first-line treatment of bronchopulmonary cancers (Chermiti Ben Abdallah *et al*., 2014). In our cohort, the majority of patients were on a protocol (74.55%). Only 5.45% had undergone three protocols and 20% had undergone two protocols. This reflects good tolerance of the molecules, a favorable clinical response, and no disruption in the supply of the drug within the department. Changes or modifications to chemotherapy protocols mainly occur in cases of toxicity, clinical ineffectiveness, or disruption in the availability of molecules (Gkika *et al*., 2015). Platinum derivatives (cisplatin and carboplatin) were the most commonly prescribed drugs during our study, at 26.25% and 11% respectively. Vinorelbine and gemcitabine were used at rates of 19.37% and 10.62%. Sidibé in Mali, in his study, highlighted Paclitaxel as the most commonly prescribed cytotoxic molecule (Sidibé, 2023). Cisplatin remains the gold standard drug for the treatment of bronchopulmonary cancers. In most studies comparing monotherapy with

platinum-based combination therapy, response rates were higher in the platinum-containing regimen (Quoix *et al.,*2013). Given its contraindications and side effects, cisplatin cannot be used in all patients. It can be replaced by a combination of carboplatin and certain "new drugs," which can achieve very good response rates that are even comparable to cisplatin-based regimens (Oan *et al.*, 2022). However, the equivalence of activity between carboplatin and cisplatin in bronchopulmonary cancer is probably not accurate, as seems to be demonstrated by the study published by Rosell et al., which compared carboplatin-paclitaxel and cisplatin-paclitaxel (Rosell *et al*., 2002).

Conclusion

Cancer presents in diverse forms, thus requiring a specific therapeutic approach for each cancer site and, increasingly, according to the genomic presentation of the tumors. In our study conducted at the hospital pharmacy and the oncology-pulmonology unit, cisplatin was the most frequently prescribed drug (26.25%), followed by vinorelbine (19.37%). Men represented 87.27% of the patients, the majority of whom were over 60 years old. Platinum derivatives are essential in the management of cancer patients within the oncology-pulmonology unit. Our results also highlight the importance of rigorous dispensing monitoring to ensure therapeutic efficacy. It would also be highly beneficial to create a pharmaceutical record for each patient, strengthen the relationship with cancer patients, and train more pharmacists in cancer chemotherapy to improve patient care.

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