

# A Study on Prescribing Trends of Supportive Care Drugs Used in Cancer Chemotherapy in a Tertiary Care Teaching Hospital

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## ABSTRACT

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The encumbrance of cancer is rising worldwide. It is a disease that requires long term therapy and monitoring. Cancer therapy has threat within it that go beyond cure. The biggest impediments for cancer patients to face are the toxicities associated with chemotherapy. With this background the study was carried out to describe the prescribing pattern of supportive care drugs prescribed along with cancer chemotherapy. This prospective descriptive study was carried out for a period of two months. All histologically or cytologically confirmed cancer patients of age between 18-65 years on chemotherapy were included in the study. The data on age, sex, demographic information, primary tumour location, lab investigations, chemotherapy, premedication and supportive care medications were recorded in specially designed data collection form. The study population comprised of 50 patients with the mean age of 54.02 ± 13.85 years. Majority of them were females, of these, 32% of them were diagnosed with breast cancer followed by ovarian cancer in 10% of these patients. Majority of the study population were in third cycle of chemotherapy, predominantly with the combination of paclitaxel and cisplatin in 14% of patients. To avert hypersensitivity reactions and Chemotherapy Induced Nausea and vomiting all patients were pre medicated usually before chemotherapy. The frequently observed supportive care drugs were gastrointestinal drugs (100%), corticosteroids (100%), anti allergics (100%) and analgesics (80%). Other drugs include antibiotics (36%), Nutrition supplements, iron supplements and vitamins. Our study findings convey that all patients during the study period received the best supportive care to improve patients comfort and quality of life.

**Keywords:** Cancer, Chemotherapy, Premedication, Supportive care

## INTRODUCTION

The leading cause of death and a growing concern worldwide, accounting for 7.6 million deaths (around 13% of all deaths) in 2008, is a dreadful disease cancer. Deaths from cancer is projected to rise, with an estimated 13.1 million deaths in 2030.<sup>1</sup> Its incidence in India is estimated to increase to 1.22 million by 2016 as a result of change in size and composition of population<sup>2</sup> and greater than 70% of the cases are reported in the advanced stages of the disease, which resulted in poor survival and high mortality rate.<sup>3</sup>

The commonly observed side effects with chemotherapy includes : decreased red blood cell count, decreased white blood cell count, decreased platelet count, Nausea & vomiting, alopecia, Fatigue, Diarrhoea, Mouth sores, Skin reactions, Muscle/bone effect, Constipation, increased Risk of bleeding, renal damage, parasthesia, reduced cardiac function, sterility, loss of libido, pulmonary complications.

The side effects associated with chemotherapy may be temporary and uncomfortable or life threatening leading to dose reduction and treatment delays with even switching to other therapy.

Cancer supportive care is the treatment of signs and symptoms of cancer, or the management of side effects associated with chemotherapy. Supportive care may also improve survival through stress reduction and influences the immune system. Supportive care is regarded as a care that would help to get the maximum benefit for the patient and their caretakers to cope up with the treatment. These are all focused on quality of life which includes good symptom control.

Pharmacist has a definite role to play in providing pharmaceutical care in the field of Oncology. As Pharmacists are experts in pharmacotherapy; they should offer a unique perspective in improving patient care. The responsibility of ensuring that the medications are optimally used to manage cancer patients relies on the pharmacist. The professional satisfaction can be gained by the pharmacist, by participating in the supportive care of cancer patients. The pharmacist in oncology can actively be involved in the preparation of

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supportive care guidelines, provide current medication information and may also participate in research.

With this background this study was aimed to describe the prescribing pattern of supportive care drugs along with cancer chemotherapy and to evaluate the main therapeutic trend is, on the ground about supportive care management for chemotherapy induced side effects.

**MATERIALS AND METHOD**

This prospective cross sectional study was conducted in the Department of medical oncology of Sri Ramachandra Hospital which is 1750 bedded multi specialty tertiary care teaching hospital, with prior approval from Research and Ethics Committee, Faculty of Pharmacy, Sri Ramachandra University. This cross sectional study was carried out in 50 patients over a period of two months. All histologically or cytologically confirmed cancer patients on chemotherapy in the age group of 18-65yrs were included in the study. The patients who were pregnant or lactating, HIV positive patients, patients with psychiatric illness were excluded from the study. In a specially designed data collection form, the patient's data was collected from the case sheets. The data included age, sex and other demographic information, primary tumor location, lab investigations. Data on chemotherapy cycle, drugs, frequency of administration, and route of administration were recorded from the chemotherapy drug chart. Data on premedication and supportive care medications which includes the name of the drug, dose, route of administration (ROA), frequency of administration (FOA) and duration of treatment were also noted. All the data were compiled, tabulated and expressed as percentages.

**RESULTS**

The study was carried out in 50 patients, of which 62% (n=31) were females and 38% were males (n=19) with the age between 18-75yrs. Most of the patients undergoing chemotherapy were in the age group of 60-69yrs (30%) which is depicted in Figure-1.

Most of the patients were with the carcinoma of breast (32%) followed by carcinoma of ovary (20%), carcinoma of colon

and rectum (10%), carcinoma of stomach (6%), carcinoma of cervix (6%), hepatobiliary carcinoma (6%), carcinoma of lung (4%), carcinoma of thyroid (2%), carcinoma of prostate (4%) and lymphoma (10%).

About 68% of the patients were in the stage III followed by 22% in stage II and 10% in stage IV (0%) which describes the progression of cancer.

The observed co morbidities among the study population was diabetes in 14% of the patients, diabetes with hypertension in 12%, hypertension in 10%, diabetes with tuberculosis 2%, bronchial asthma with hypertension and diabetes in 4%, tuberculosis 2% and the rest with no co morbidities.

Majority of patients were in III cycle of chemotherapy (24%), followed by 18% of the patients in cycle I, II & VI cycle, 14% of the patients in V cycle, 4% of the patients in IV cycle, and 4% of the patients in VII cycle.

Depending on the type of cancer and its stage different chemotherapeutic regimens were given to the patients. The Commonly prescribed chemotherapy drug combinations were cisplatin with paclitaxel and capecitabine with oxaliplatin in 14% of the patients respectively.

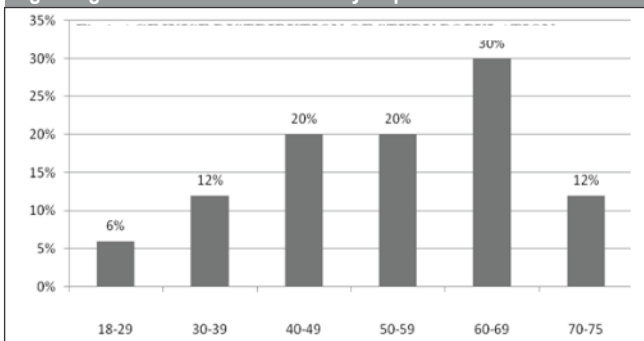
All the patients were premedicated with antiemetics such as Palonosetron, Hydrocortisone, Pantoprazole to prevent chemotherapy induced nausea and vomiting and Pheniramine maleate to avoid any hypersensitivity reactions.

The commonly prescribed antiemetics for supportive care is illustrated in Figure-2 and the gastrointestinal drugs used as supportive care, is depicted in the Table-1.

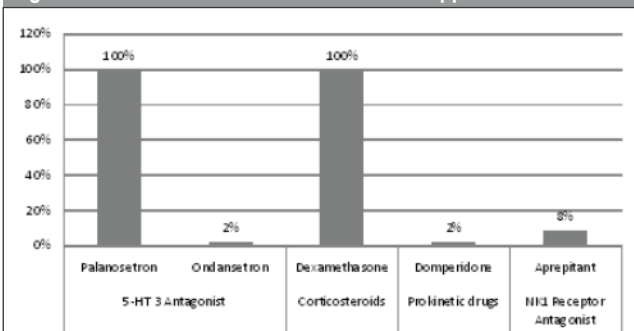
The other prescribed drugs for supportive care were analgesics, antihistamines and antibiotics.

The highly prescribed analgesics were acetaminophen in 62% of the patients followed by aspirin in 20% of the patients, Paracetamol+ Ibuprofen in 10% of the patients, morphine sulphate in 8% of the patients. All the patients were given Pheniramine maleate and 1 patient was given fexofenadine. Five patients were prescribed with zoledronic acid to treat

**Fig. 1: Age Wise Distribution of Study Population**



**Fig. 2: Distribution of Antiemetics used for Supportive Care**



**Table 1: Distribution of Gastro Intestinal Drugs used as Supportive Care**

S. No	Category	Drug	Frequency (n=50)
1	Proton pump inhibitors	Pantaprazole	50
2	H2 Antagonist	Ranitidine	3
3	Ulcer protective	Sucralfate	50
4	Antacids	Combination of metal hydroxides	2
5	laxatives	Bisacodyl	1
		Lactulose	15

osteoporosis and bone complications of cancer. Among 50 patients, 18 were prescribed with Antibiotics for the treatment of infections. The distribution of which is tabulated in the table 2.

**Table 2: Distribution of Antibiotics used in Study Population**

S. No	Antibiotic	Number of prescription (N=18)	Percentage (%)
1	Clindamycin	4	22.2%
2	Amikacin	4	22.2%
3	Ciprofloxacin	2	11.1%
4	Ofloxacin	3	16.6%
5	Azithromycin	5	27.7%

All patients were provided with supplements in the form of nutrition supplements, vitamins and iron preparation. The prescribed nutrition supplements were Fresubin hepa oral in all 50 patients and Kabiven Peri IV in 3 patients along with multivitamins. The predominantly prescribed iron supplements were ferrous sulphate in 66% of the patients and combination of ferrous fumarate, folic acid and zinc in 34% of the patients.

**DISCUSSION**

Cancer stumbles both physically and psychologically to the patients and their caregivers. Fifty patients were enrolled in our study during the study period of two months. According to the study done by Tanuja Rastogi et al<sup>4</sup>, from a data derived between 1993-1997 among nine regional population based registries, the major type of cancer among female was Cervix uteri followed by breast cancer. Our study shows that the majority of female population were with Breast cancer (32%) followed by Ovarian cancer (18%) indicating a rise of breast cancer among female population.

About 14% of the patients had diabetes and 12% of the patients had diabetes with hypertension and one patient was epileptic. According to Extermann<sup>5</sup> in older patients, the risk and behavior of cancer can be strongly affected by

comorbidities and their related treatment. The patients with these underlying diseases are predisposed to ADRs during chemotherapy. Our study population did not show any ADRs and the patients were found to be taking one or more of pre-defined medication for the treatment of long term comorbidities.

The most commonly prescribed chemotherapy drug combination was Inj.Paclitaxel + Inj.Cisplatin 7(14%) in ovarian cancer patient which was similar to the study done by Sandercock et al<sup>6</sup> which provides a clear evidence that Cisplatin combined with Paclitaxel is the most effective regimen against ovarian cancer. Our study also shows that the combination of Capecitabine with oxaliplatin 7(14%) was commonly used for the colon rectal cancer which is similar to a study done by Michel J Overman et al<sup>7</sup> which reported that Capecitabine in combination with Oxaliplatin produces a superior response rate and longer overall survival for small bowel carcinoma.

The pre medication usually consists of two or more drugs given to a patient before the chemotherapy to avert hypersensitivity reactions and nausea vomiting. Our study shows that almost all the patients were receiving antiemetic as Palanosetron and hydrocortisone which is in concordant to the study done by Sakata Y et al<sup>8</sup>, which states hydrocortisone as an effective antiemetic in patients on chemotherapy.

A Meta analysis by John P A et al<sup>10</sup> suggests, Dexamethasone as an effective therapy in protecting emesis both in acute and delayed phases. Henceforth all the patients of our study population were on dexamethasone along with chemotherapy. This was also supported by a study done by Julio Hajdenberg et al<sup>11</sup> which reported that the combination of Palanosetron and Dexamethasone infused as premedication in patients receiving emetogenic chemotherapy was effective and safe in preventing acute and delayed chemotherapy induced nausea and vomiting. According to a study by Warr DG et al<sup>12</sup>, Aprepitant (15%) was the most prescribed antiemetic drug used against cyclophosphamide and anthracyclines. Our study also shows a similar pattern of treatment for the patients who were on cyclophosphamide.

Pain, the most frequent subjective symptom in cancer patient, which can and must be treated. A three step analgesic ladder indicating the sequential use of the drugs was proposed by W H O in 1986. Our study result shows Acetaminophen in 62% of the patients, Paracetamol with Ibuprofen in 10% of the patients and Aspirin in 20% of the patient, as analgesics for mild pain and 8% of the patients were on Morphine sulphate for severe pain.

Supportive care drugs are used to treat side effects caused by chemotherapy. This study shows that antiemetics,

gastrointestinal drugs antibiotics, antiallergic, and nutrition supplements followed by analgesics, iron supplements, vitamins were the commonest prescribed supportive care drugs, which is similar to a study done by M Di Maio et al<sup>9</sup> where in gastrointestinal drugs (45.7%), corticosteroids (33.4%) and analgesics (23.8%) were the most frequently observed categories.

According to a study by Laethem Van et al<sup>13</sup> Clindamycin is effective against anaerobes, and reports that 80% of the patients responded to clindamycin well. Our study shows that Clindamycin was used in 22.2% of the patients to treat infections.

Nutrition supplement is essential in cancer patients to arrest malnutrition. Our study shows that all patients were given oral Fresubin hepa, Intravenous Kabiven Peri as supplements. The Patients with hemoglobin value of 7-11gm/dl, were supplemented with iron preparation along with chemotherapy.

### CONCLUSION

Over the past two decades the supportive care for patients receiving antineoplastic agents has dramatically improved. One of the best and important examples in this development is to prevent nausea and vomiting effectively. This was achieved by the use of Dexamethasone for acute and delayed emesis.

Based on the results of this study it can be concluded that in addition to chemotherapeutic drugs all the patients received the best supportive care to improve patients comfort and improve quality of life with cancer.

Since this study was carried out for a period of two months, the effectiveness of these medications couldn't be judged over this period of time. Further studies with follow-ups are required to compare the effectiveness of various supportive care medication used with cancer chemotherapy.

### REFERENCES

1. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008 v1.2: Cancer incidence and mortality worldwide: IARC Cancer Base No. 10. Lyon (France): IARC Press; 2010. Available from: <http://globocan.iarc.fr/>.
2. Murthy NS, Kishore Chaudhry, Rath GK. Burden of Cancer and Projections for 2016, Indian Scenario: Gaps in the Availability of Radiotherapy Treatment Facilities. *Asian Pacific J Cancer Prev*.2008; 9: 671-7.
3. Dinshaw KA, Rao DN, Ganesh B. Tata Memorial Hospital Cancer Registry Annual Report, Mumbai, India: 1999.
4. Tanuja Rastogi, Susan Devesa, Punam Mangtani, Aleyamma Mathew, Nicola Cooper, Roy Kao, Rashmi Sinha. Cancer incidence rates among South Asians in four geographic regions: India, Singapore, UK and US. *Int J Epidemiol*. 2008; 37(1): 147-60.
5. Martine Extermann. Interaction Between Co morbidity and Cancer. *Cancer Control*. January 2007; 14(1):13-22.
6. Sandercock J, Parmar MK, Torri V, Qian W. First-line chemotherapy for advanced ovarian cancer: Paclitaxel, Cisplatin and the evidence. *Br J Cancer*.2002 Oct7; 87(8):815-24.
7. Michael J Overman, Gauri R Varadhachary, Scott Kopetz, Rosni Adinin, Lin E, Jeffrey S. Morris et al. Phase II Study of Capecitabine and Oxaliplatin for Advanced Adenocarcinoma of the Small Bowel and Ampulla of Vater. *J Clin Oncol*. 2009; 27(16): 2598-2603.
8. Sakata Y, Komatsubara S, Watanabe M, Mineyama H, Abe N. Antiemetic efficacy of high dose hydrocortisone in patient receiving cisplatin therapy. *Hinyokika Kyo*. 1986 Dec; 32 (12): 1799-812.
9. M Di Maio, Perrone F, Gallo C, Iaffaioli RV, Manzione L, Piantedosi FV et al. Supportive care in patients with advanced non-small cell lung cancer. *Br J Cancer*. 2003 Sep 15; 89(6):1013-21.
10. John PA Ioannidis, Paul J Hesketh, Joseph Lau. Contribution of Dexamethasone to Control of Chemotherapy-Induced Nausea and Vomiting: A Meta-Analysis of Randomized Evidence. *JCO*. 2000 October 19; 18 (19):3409-3422.
11. Hajdenberg J, Grote T, Yee L, Arevalo-Araujo R, Latimer LA. Infusion of Palonosetron plus Dexamethasone for prevention of chemotherapy induced nausea vomiting. *J Support Oncol*. 2006 Oct; 4(9):467-71.
12. David G Warr, Paul J Hesketh, Richard J Gralla, Hyman B Muss, Jørn Herrstedt, Peter D Eisenberg et al. Efficacy and tolerability of Aprepitant for the prevention of chemotherapy induced nausea and vomiting in patients with breast cancer after moderately emetogenic chemotherapy. *J Clinical Oncology*.2005; 23 (12): 2822-2830.
13. Van Laethem Y, Lagast H, Klastersky J. Anaerobic infections in cancer patients—comparison between therapy oriented strictly against anaerobes or both anaerobes and aerobes. *J Antimicrob Chemother*.1982 Aug; 10 SupplA: 137-44.