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Drug-related problems in elderly patients with cancer receiving outpatient chemotherapy



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ABSTRACT

Purpose: This study aimed to identify common drug-related problems(s) (DRP) among elderly patients receiving outpatient chemotherapy, common drugs involved, and common actions taken to resolve key DRP detected.

Methods: A retrospective study was conducted at the National Cancer Centre Singapore (NCCS). Elderly patients (aged ≥ 65) with any cancer type and stage, taking at least 3 chronic medications, and who received medication therapy management (MTM) between January 2011 and December 2012 were included in the study.

Results: Two hundred ninety-four patients were included in the final analysis. The mean age of the patients was 71.8 years. The patients had a median of 3 co-morbid conditions and were taking a median of 6 chronic medications. The common DRP detected were potential drug interactions (DDI) (398 cases, 36.4%), adverse drug events (346 cases, 31.7%), and non-adherence (97 cases, 8.9%). Majority of potential DDI detected involved non-chemotherapeutic agents (369 cases, 92.7%) and monitoring of patient was the most common action taken (316 cases, 79.4%). Adverse drug events detected were mostly associated with chemotherapy (316 cases, 91.3%) and patient education was the most common action taken (236 cases, 68.2%). Non-adherence in patients was commonly resolved by patient education (59 cases, 60.8%). Only 5 or more chronic medications taken were found to be associated with the presence of DRP in multivariate analysis ($p \leq 0.05$).

Conclusion: Greater understanding of DRP will enable early detection and appropriate management of DRP, thereby improving patient care for elderly patients with cancer.

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1. Introduction

Ageing is an important risk factor for cancer.¹ Among all the newly diagnosed cases of cancer in America, 60% occurred in persons aged 65 and above.¹ Similar trends are reflected in Singapore, whereby the highest age-specific incidence rate of cancer between years 2008 and 2012 was observed in the age group of 65 years and above.² Projections by the Population Division of the United Nations estimated that the percentage of

the world's population aged 65 and above will increase from 8% in year 2000 to 19.7% in year 2050.³ In Singapore, the number of residents aged 65 and above is expected to multiply threefold from 300,000 in year 2004, to 900,000 in year 2030.⁴ With an ageing population, we expect to observe a dramatic increase in the number of cancer diagnoses in the coming years.

Ageing is also associated with the development of co-morbid conditions.⁵ The 2010 National Health Survey found that the prevalence of hypertension, diabetes mellitus, and high blood

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cholesterol increases with age.⁶ This translates into higher potential for polypharmacy.^{7,8} A study on drug use in elderly Danish patients found that polypharmacy was more prevalent among older patients with cancer than age-matched controls without cancer.⁹ In Singapore, most patients do not have designated primary care physicians who coordinate their medical care and drugs therapy. Given the toxic nature of chemotherapeutic agents and their narrow therapeutic indices, elderly patients undergoing chemotherapy often require additional supportive medications to treat disease and/or therapy-related symptoms, further increasing the potential for problems associated with polypharmacy.

Drug-related problem(s) (DRP) is defined as an event or circumstance involving medication therapy that actually or potentially interferes with an optimum outcome for a specific patient.¹⁰ DRP is prevalent among elderly patients receiving chemotherapy.^{7,11} A study on elderly patients with cancer in Singapore found a total of 361 DRP in 91.5% of the patients.¹¹ DRP may lead to consequences that are especially debilitating to elderly patients receiving chemotherapy.¹² This could result in a “prescription cascade”, where additional and potentially unnecessary drugs are started to manage an adverse drug event, placing the patient at risk of additional adverse drug events. More importantly, adverse drug events may lead to unnecessary hospitalizations and increased morbidity and mortality. A study conducted by Chan et al. found that 12.4% of the unplanned hospital admissions of patients with cancer were associated with a DRP.¹³ Another study conducted by Nazer et al. on patients with cancer found that 22.9% of the admissions to the intensive care unit were associated with an adverse drug event and 28.1% of the admitted patients died.¹⁴

In an effort to improve patient care and ensure patient safety and compliance, the Medication Therapy Management (MTM)

Service was launched in 2009 at the National Cancer Centre Singapore (NCCS), mainly targeting patients with cancer receiving IV chemotherapy at the Ambulatory Treatment Unit (ATU) in the NCCS. Patients aged 65 years old and above, of any cancer type and stage, and taking at least 3 chronic medications are eligible for the service. Patient consent is sought before the provision of service. The service is provided by a team of MTM pharmacists who consolidate and review patients’ chronic medications, and thereby identify and resolve any potential or actual DRP.

Despite the significance of DRP, published information on DRP in the older population of patients with cancer is scarce. Greater understanding of the characteristics of DRP in elderly patients with cancer will facilitate better management of the problem. In our previous publication, we have examined the impact of the MTM Service over a 10-month period.¹¹ This paper is part of our continuous effort to review the updated data on the common DRP detected by MTM pharmacists in elderly patients receiving outpatient chemotherapy, the common drugs involved, and the common actions taken to resolve the DRP detected.

2. Methods

2.1. Study Design and Patients

This was a retrospective cross-sectional study on patients receiving MTM Service provided at the NCCS. The study was approved by the Central Institutional Review Board (CIRB). Patients aged 65 years old and above with any cancer type and stage, taking at least 3 chronic medications, and received MTM from January 2011 to December 2012 were included in

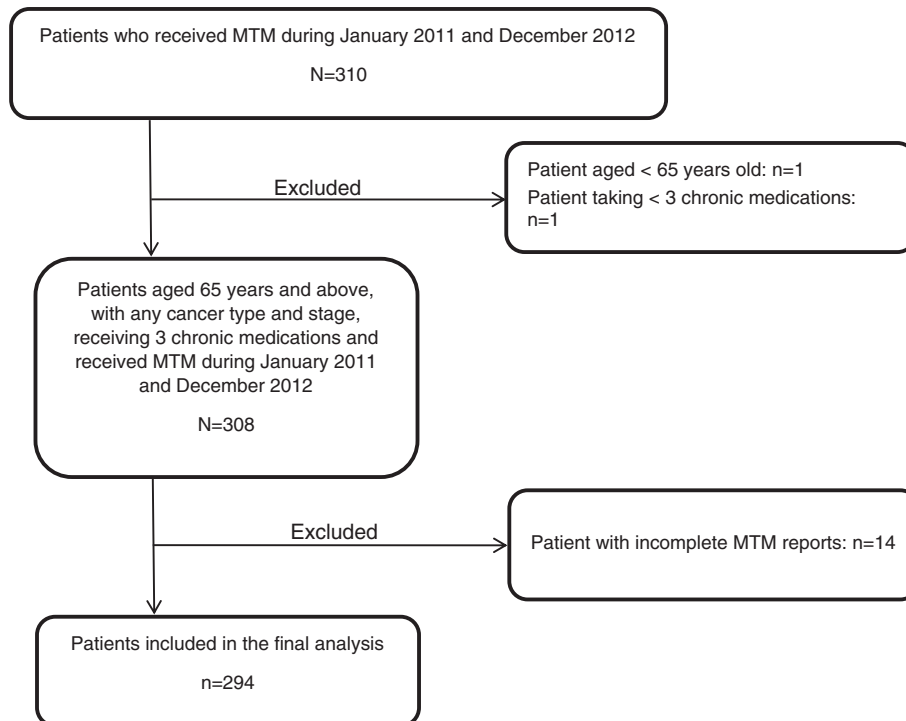


Fig. 1 – Patient selection flowchart.

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