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Drugs prescribed for patients hospitalized in a geriatric oncology unit: Potentially inappropriate medications and impact of a clinical pharmacist☆

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ABSTRACT

Objectives: The aim of this study was to assess the prevalence of potentially inappropriate medication (PIM) use upon admission and at discharge in a geriatric oncology unit after involving a clinical pharmacist. Although the few studies conducted in geriatric oncology units used the 2003 Beers criteria, this study used START and STOPP criteria, a more appropriate tool for European formularies.

Materials and methods: Prospective study in older (≥70 years) patients consecutively admitted to a geriatric oncology unit in a cancer center from July 2011 to April 2012. Clinical pharmacist conducted a complete comprehensive medication review including non-prescription and complementary (herbals) medications. This information coupled with the patient's medical history allows identifying PIMs using the STOPP and START criteria. The number of PIMs at admission and at discharge from the hospital was compared after clinical pharmacist intervention.

Results: Ninety-one older cancer patients (mean age ± SD = 79 ± 6 years) were included in the study. START criteria identified 41 PIMs for 31 persons (34%) at admission compared to 7 PIMs for 6 persons (7%) at discharge. STOPP criteria identified 50 PIMs at admission for 29 persons (32%) compared to 16 PIMs at discharge for 14 persons (16%). Results showed significantly lower START scores at discharge than at admission ($p < 0.001$); similarly, STOPP criteria demonstrated fewer PIMs at discharge than at admission ($p < 0.001$).

Conclusion: The use of START and STOPP criteria by a clinical pharmacist allows identifying PIMs and changing prescriptions for older cancer patients in agreement with the oncologist and geriatrician of the team.

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1. Introduction

Older people often experience multiple co-morbidities and are prescribed multiple drugs. This increases the risk of adverse drug events (ADEs) and interactions[1,2]; it also contributes to considerable health care costs.[3–5] This risk is heightened by age-related physiological changes, which influence pharmacokinetics and pharmacodynamics.[6] Because of these changes, some drugs pose special risks to older people, e.g., prolonged sedation and increased risk of falls with long-acting benzodiazepines[7] or increased risk of upper gastrointestinal bleeding with non-steroidal anti-inflammatory drugs.[8] Use of such drugs is therefore potentially inappropriate, especially when safer alternatives exist.

Several methods have been proposed to manage potentially inappropriate medicines (PIMs), such as educational interventions, computerized decision support systems or a geriatric medical service. Importantly, involving a clinical pharmacist in healthcare units has been demonstrated to improve the appropriateness of prescribed drugs.[9] According to the European Society of Clinical Pharmacy, their mission consists of promoting safe and appropriate drug use to optimize patient care. Their efficacy in reducing polypharmacy, drug-related problems and/or PIMs has been confirmed by several studies (for reviews see[10,11]) and has been studied in different settings of care[12] such as nursing home, ambulatory care, and acute care settings. However few published studies[13–15] investigated the impact of interventions by pharmacists in a geriatric oncology unit, although the prevalence of polypharmacy and PIM use in senior adults with cancer was recently shown to reach 84% and 51%, respectively.[15] The efficacy of clinical pharmacists' interventions on reducing inappropriately prescribed drugs may thus be even more marked in this high-risk group.

Various criteria have been proposed to identify PIMs in older people.[16–22] Most studies are based on the 2003 Beers criteria,[19] a consensus criteria for drug use in older adults built on the modified Delphi technique of expert consensus.[13,14] However, 2003 Beers criteria do not have unanimous support in the literature as clinical outcomes have never been validated by experimental studies.[23] Moreover, 2003 Beers criteria do not provide a critical appraisal of the clinical utility and the benefit/risk ratio in all patients.[24–26] Finally, this screening tool created in the United States does not cover some European formularies.[27] To overcome this drawback, another review tool called STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions) was created, and found more sensitive than 2003 Beers criteria in detecting PIM prescription during hospitalization.[28,29] Only one recent retrospective study investigated STOPP criteria in identifying PIM use in an ambulatory geriatric oncologic unit, based on a pharmacist-led comprehensive medication review,[15] though on admission only. The proportion of recommendations made by the clinical pharmacist that were followed by the treating physicians was not mentioned. Consequently, this former study cannot conclude that a pharmacist-led comprehensive medication review enables good characterization of drug interactions, reducing the number of PIMs. Moreover, START (Screening Tool to Alert doctors to Right Treatment) criteria were not used in this study, though STOPP criteria were designed to be used in conjunction with them[30] to provide comprehensive appraisal of older patients' medications, so that prescription errors could be identified at the same time as errors of omission.

The main objective of this study was to assess PIMs upon admission and at discharge in a geriatric oncology unit after involving a clinical pharmacist using the STOPP and START criteria. A secondary aim of the study was to identify and reduce drug–drug interactions.

2. Methods

2.1. The Geriatric Oncology Interdisciplinary Unit

The Institute Jules Bordet is a Belgian tertiary hospital, specialized in cancer treatment for adult patients. A pilot geriatric oncology unit with 6 beds was created on April 1, 2008. Older patients with cancer requiring hospitalization for an acute illness, for chemotherapy administration or any other cause were admitted to this unit. It involves an interdisciplinary team for geriatric oncology patients (geriatrician, nutritionist, neuropsychologist, social worker, occupational therapist, clinical pharmacist, medical oncologists, physiotherapists and nurses). The clinical pharmacist was already a member of the geriatric oncology unit before the beginning of the current study. She possesses a complementary master in clinical pharmacy in addition to her master in hospital pharmacy.

2.2. Patients

Older patients with cancer (≥70 years) admitted consecutively to the Geriatric Oncology Unit at the Jules Bordet Institute, Brussels, Belgium, from July 2011 to April 2012 were enrolled in this study. Patients with hematologic disease were not included since they were managed by a different medical staff.

The ISAR score (Identification of Seniors at Risk[31]) and the G8 score[32] were administered by the head nurse to screen geriatric profile. The ISAR is a self-report screening tool which assesses the 6 month-risk of functional decline, and which consists of 6 close-ended questions easy to answer upon admission; i.e. need for help in daily activities; increase of this need since the current illness; memory problems; significant altered vision; recent hospitalizations in the last 6 months; and daily use of three or more drugs at home. The G8 tool assesses the nutritional status, motor skills, psychological status, number of drugs, self-reported health status and records patient's age. Finally, the Charlson index[33] assesses comorbidity in patients with cancer, and is computed from comorbidities based on the electronic health record. When the ISAR score reached 3 and the G8 score was under 15, a complete comprehensive geriatric assessment is administered to the patient including the Activities of Daily Living,[34] the Instrumental Activities of Daily Living,[35] the Mini Mental Status,[36] the Geriatric Depression Scale,[37] the Hospital Anxiety and Depression Scale,[38] Mini Nutritional Assessment,[39] and visual analogic pain scale.

This study was approved by the Jules Bordet Institute's ethics committee.

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