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Research paper

Medication discrepancies in older patients admitted to non-geriatric wards: An exploratory study



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ABSTRACT

Background: Discrepancies between actual home medication and those recorded at admission are a recognised safety concern for older inpatients. Few studies have investigated discrepancies on non-geriatric wards where pharmaceutical care may be less tailored to the needs of older patients.

Purpose: To assess home medication discrepancies categorised by type and clinical impact and, to explore the relationship with patients' clinical profiles.

Materials & methods: This was an observational study in non-geriatric wards in a single hospital without electronic communication with community pharmacies. Subjects were inpatients ≥ 70 years. Home medication assessment occurred through standard care (physician/nurse) and structured medication reconciliation (hospital pharmacist). Discrepancies, defined as any difference in the medications lists resulting from the two methods, their relationship with patient profiles and their potential clinical impact were assessed.

Results: Patients' ($n = 78$) mean age was 79 years and 63% were females; 60% of patients ($n = 47$) were affected by 92 discrepancies, mean 1.96/affected patient (range 1–6). Predominant discrepancies were doses or medications (errors of omission or commission). Discrepancies of moderate clinical impact (31% of affected patients) concerned the majority of respiratory and cardiovascular drugs. The proportion of discrepancies was higher in patients with polypharmacy ($P = 0.001$) and with an indication of lower functional status ($P = 0.032$).

Discussion & conclusion: Medication discrepancies occurring at admission to non-geriatric wards are common in older inpatients and their potentially moderate clinical impact reinforces their importance to patient safety.

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1. Introduction

A complete and accurate medications history is an essential part of seamless care transition between the community and the hospital. Discrepancies between actual pre-admission medications and those recorded at admission as home medications are a recognised safety concern among older inpatients [1]. Uncorrected discrepancies may continue throughout hospitalisation and after discharge, impeding appropriate pharmacotherapy [1,2]. Recent studies show that 40–92% of older patients admitted to geriatric

wards have discrepancies in their home medication lists [1–3]. Medicines reconciliation can reduce discrepancies and is defined as “the process of identifying the most accurate list of a patient’s current medicines – including the name, dosage, frequency and route – and comparing them to the current list in use, recognizing discrepancies, and documenting any changes, thus resulting in a complete list of medications, accurately communicated” [4]. Review by a hospital pharmacist is acknowledged as the highest standard tool to triangulate data collection from the patient and/or carer and community healthcare providers [5]. Medication reconciliation by a pharmacist at admission can potentially improve the accuracy of (home) medications lists and reduce the number of related potential adverse drug reactions [2,6]. Although many studies have used medication reconciliation as an intervention [1,2,6–10], several aspects remain unexplored in older inpatients. Few studies have investigated discrepancies

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occurring in non-geriatric settings where care may be subject to more time constraints and less tailored to the pharmacotherapeutic needs of older patients. It is not fully understood how functional status may be related to having a home medications discrepancy. Moreover, many studies have reported the point prevalence of discrepancies, frequent types and pharmacological classes concerned. However, previous research has not explored the potential clinical impact of discrepancies by pharmacological (sub-)class in order to understand where greatest attention should be paid in clinical practice [1–3,6–11]. Therefore, this study aims to assess home medication discrepancies categorised by type and by pharmacological (sub-)class, to determine the relationship between discrepancies and patients' clinical profile, and to investigate the possible clinical impact of discrepancies occurring in a non-geriatric setting.

2. Materials & methods

We conducted an observational, single-centre study at the Ghent University Hospital in Belgium. We included patients who were at least 70 years old, admitted to one of nine non-geriatric internal medicine or surgery wards, and for whom a consultation with the Geriatric Liaison Team was requested, determined by either scoring two or more on the modified Triage Risk Screening Tool (TRST) (see criteria below) or on request of the attending medical team. Patients were recruited between March–May 2011 in a hospital with no electronic communication with community pharmacies. This study received approval from the Ghent University Hospital Ethical Committee on 6 April 2011 and was performed at the same institution (Approval Number 2011/157). Only eligible patients who provided written informed consent to participate in the study were included.

2.1. Study design and data collection

The standard admissions procedure was followed by the attending physician or nurse who recorded the patient's home medications in free text, based on an often unstructured patient interview, and demographic data in the electronic patient file. The Geriatric Liaison Team subsequently interviewed patients concerning any geriatric risk factors (see outcome measures below) as part of standard care.

In addition to these standard procedures, a hospital pharmacist interviewed patients and their main carers, as needed, about their pre-admission medications use within 36 hours of admission. Pharmacists used a standard list of questions based on the Best Possible Medication History Interview Guide [12] concerning the patient's medications use (including dose, frequency and route of administration), the use of specific medicinal products which are regularly forgotten by patients (e.g. inhalers, medication for pain or insomnia, salves, vaccines, medications taken once a week or month, etc.), and any allergies or adverse events the patient may have experienced. In case of doubt or if the patient could not be interviewed, the hospital pharmacist consulted a second relevant information source, such as the patient's general practitioner, community pharmacist and/or nursing home staff. The reconciled home medications list was recorded using a structured form in the electronic patient file which was immediately available for the attending physician's consideration.

2.2. Outcome measures

The home medications list compiled by the hospital pharmacist served as a "golden standard" of pre-admission medications use, to

which the list derived through standard care was compared. A discrepancy was defined as any difference between the standard care home medications list and the hospital pharmacist's home medications list. Differences were assumed to be unintentional. Discrepancies were categorised by anatomical therapeutic chemical sub-classification (ATC3) and by type (i.e. an error of omission or commission of a medication, the dose, the frequency, the time of administration, and the route of administration). More than one discrepancy type could be recorded for the same medication. Any discrepancies identified were immediately updated in the patient's electronic file used by the medical team.

The TRST is a six-item validated proxy indicator of functional status, given its relationship with functional impairment on the Activities of Daily Living scale [13]. Based on the interview and judgement of the Geriatric Liaison Team, the modified TRST was scored out of a possible six points: mobility problems (1 point), a previous hospitalisation (1 point), living alone or without support (1 point), polypharmacy (at least five home medications) (1 point), and cognitive impairment (2 points). The sixth item on the TRST, "nurse concern", was not considered in this modified version. In clinical practice, a cut-off score of 2 is used to differentiate between high and low functional status [13], although in this study, several cut-off points were explored.

The validated three-point Cornish scale was used to determine the potential clinical impact, where Class 1 is unlikely to cause, Class 2 has a potential to cause moderate, Class 3 has a potential to cause serious patient discomfort or clinical deterioration [7]. Assessment on the level of discrepancy was executed independently by a geriatrician and a hospital pharmacist who were not involved in the medication reconciliation. The two scores for each discrepancy were compared and, in case of disagreement, the lowest clinical impact score was used in data analysis.

2.3. Statistical analysis

Statistical analyses were performed with Statistical Package for the Social Sciences (SPSS) version 21.0 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics were used to determine baseline characteristics of the population, and the prevalence and the type of discrepancies. Differences between patients affected and unaffected by discrepancies, and a comparison of means were analysed through Pearson Chi-Square and Independent Samples *t* Tests, respectively. Significance was set at $P < 0.05$. The chance adjusted agreement of the potential clinical impact rated by a geriatrician and a pharmacist was calculated using the weighted Kappa statistic.

3. Results

3.1. Description of the study population

Patients ($n = 78$) were using an average of seven home medications (range 0–21, total of 572 medications), calculated after the structured patient interview (Table 1). Cardiovascular (30% of drugs), central nervous system (19% of drugs), and alimentary tract (16% of drugs) medications were the most commonly used pharmacological classes. In 94% of cases, patients were admitted from home, while six percent of patients were admitted from a nursing home or other hospital. Most patients had a planned admission (78%) and were most frequently admitted to the orthopaedics, urology or ophthalmology wards. The most frequent co-morbidities were arterial hypertension and gastrointestinal tract disorders. The median TRST score was 3 (6 point scale), indicating functional impairment. TRST scores were missing

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