Austin Journal of Pharmacology and Therapeutics

Austin Publishing Group

Open Access Full Text Article

Review Article

A Community Audit of Prescribing for the Frail Elderly with Reference to the STOPP Criteria

Roger Clarnette[1,2]*, Emma Johnston[2], Jillian Ryan[2], Jacqueline O'Toole[2] and Andre Sheil[2]

[1]School of Medicine and Pharmacology, University of Western Australia, Australia

[2]Department of Community and Geriatric Medicine, Fremantle Hospital and Health Services, Australia

***Corresponding author:** Roger Clarnette, School of Medicine and Pharmacology, University of Western Australia, Australia

Received: February 05, 2014; **Accepted**: June 21, 2014; **Published**: June 26, 2014

Abstract

Background: The aims of this prospective audit were to 1. Identify the medications taken by a cohort of patients assessed at home 2. Determine concordance with the provided list and 3. Determine if the medications could potentially lead to adverse events. The Screening Tool of Older Persons Prescriptions (STOPP) was used.

Methods: 192 consecutive patients were assessed during 2012 by ACAT assessors. Medications were recorded by examination of blister packs and medication containers in the home. Concordance with the list contained in the referral letter was recorded and STOPP criteria were identified.

Results: Of 192 patients, 128 were referrals generated from outside the department and these cases were analysed. Of these 92/128 included a medication list on the referral. Of 99 referrals from GPs, 10 did not contain a list of medications. Of the 92 lists, only 34 (37%) were accurate (27% of 128 referrals examined). Compliance was difficult to assess but the majority were not taking all their medications according to standard prescribing.

Using the STOPP criteria, 116 instances of inappropriate prescribing were identified in 37.5% of the group. The five commonest criteria were long acting benzodiazepines, use of vasodilators in the presence of postural hypotension, duplicate drug from a single class, long term use of opioid analgesia and long term use of anti-psychotics in the absence of psychosis.

Conclusions: Frail elderly patients do not present with accurate medication lists. The majority of patients take potentially harmful medications. These findings have implications for prescribing, monitoring communication between components of the health care system.

Introduction

Inappropriate pharmaceutical use in the elderly population is acknowledged as an important health issue with respect to adverse drug events (ADE), preventable hospital admissions, mortality and cost [1,2]. Frail elderly patients are more likely to be on multiple pharmaceuticals and this creates a challenge for clinicians in terms of preventing poor outcomes [3].

In broad terms, inappropriate prescribing has been categorised into i) mis-prescribing e.g. use of a drug that increases the risk of an ADE ii) over prescribing i.e. use of a drug that is not indicated and iii) under prescribing, i.e. failure to use a drug that is indicated [4]. Inappropriate prescribing has also been described as misuse of medicines, prescription of drugs with significant drug–drug or drug–disease interactions, and the omission of beneficial medications [5].

The risk of adverse drug events is higher in elderly patients because of age related changes in pharmacokinetics and pharmacodynamics. Many of these adverse events are preventable. In an American study, this included 27% of ADEs in primary care and 42% in residential care [6,7].

Another issue is that compliance with drug regimens amongst the elderly is less likely than in younger patients because of cognitive dysfunction, social isolation and physical impairments. In addition, poor outcomes occur if beneficial drugs are not prescribed when indicated [8] and inappropriate prescribing is more likely for older patients [9].

Gallagher et al reviewed criteria for identifying inappropriate prescribing and found flaws in methods previously published [10]. In particular, the review commented that the widely used Beers criteria comprised medications that were not used outside of North America [11]. This gave impetus to the development of the screening tool for older person's prescriptions and the screening tool to alert doctors to right treatment; the STOPP/START criteria. These criteria provide the clinician with a physiologically based tool to identify inappropriate and appropriate indications for drug use. The STOPP criteria consist of 65 inappropriate uses of drugs based on drug class. The START criteria consist of 22 examples of inappropriate under prescribing.

The department of community and geriatric medicine (DCGM) at Fremantle Hospital (FH) provides a comprehensive tertiary assessment and management service for elderly patients in the south regions of greater metropolitan Perth. Fremantle Hospital is a teaching hospital of the University of Western Australia. DCGM is resourced with consultant physicians trained in geriatric medicine, advanced trainees in geriatric medicine, hospital registrars, clinical nurse consultants and a full complement of allied health staff. Patients

Clarnette et al. © All rights are reserved

Citation: Clarnette R, Johnston E, Ryan J, O'Toole J and Sheil A. A Community Audit of Prescribing for the Frail Elderly with Reference to the STOPP Criteria. Austin J Pharmacol Ther. 2014; 2 (4).4

are managed and assessed on in-patient wards, in a day therapy unit and in the community. The Fremantle aged care assessment team (ACAT) is incorporated within DCGM and most visits to patients in their homes are conducted by ACAT assessors. A geriatrician often accompanies the assessor to these visits if the referrer has specifically requested medical advice.

The rationale for this audit was to use the STOPP criteria to document the extent of poor compliance and inappropriate prescribing previously noted during day to day work with elderly patients. In addition, we wanted to determine how accurately doctors recorded their patients' medications, given that the medication lists provided with referrals do not always accurately reflect what the patient is taking. The scope of the audit did not include identification of ADEs.

Methodology

A prospective audit was conducted on referred patients living in their homes in the community during the calendar year of 2012 and registered with the Fremantle Hospital and Health Service Clinical Audit and Quality Improvement Office.

Aims:

1. To identify drugs in the home and determine dispensing method
2. To identify which drugs are being taken.
3. To identify the indications for each drug and record those with no indications.
4. To determine if the indication was still extant.
5. To determine if the patient knows why drugs are being taken.
6. To determine if any drugs are contraindicated as a result of the assessment.
7. To determine if a caregiver has a role in ensuring compliance with the drug regimen.
8. To determine if review of medications is required by a pharmacist.
9. To determine immediate recommendations to the GP regarding drugs.

In accordance with ACAT guidelines, consent for comprehensive geriatric assessment was obtained from all patients. They were asked to show us all medications from all potential locations in the home.

Table 1: Medication list it was found to be inaccurate in 58 of 92 cases (63%).

No inaccuracies	N
1	19
2	14
3	12
4	5
5	2
6	5
7	1

Table 2: Using the STOPP criteria, 126 instances of potentially inappropriate prescribing (PIP) were identified.

STOPP category	N
Cardiovascular	14
CNS	36
Gastrointestinal	12
Musculoskeletal	9
Urogenital	8
Endocrine	1
Fallers	28
Analgesia	10
Duplicate Rx	8

If necessary, and with consent, kitchens, bathrooms, and bedrooms were searched for medications. The patient was asked if they knew why they were taking each drug. All cases were discussed at a weekly team meeting. Discrepancies in the list of medications between the referral letter and the home assessment were noted. Hospital records were scrutinised to determine indications for drugs if these were not apparent from the referral letter or from the home assessment. A written assessment for each patient was prepared and sent to the patients' primary doctor even if he/she was not the source of referral. Recommendations about changes to medication regimens from use of the STOPP criteria were communicated to the primary doctor.

Results

192 consecutive patients were assessed. Of 192 patients, 128 were external referrals and these were the cases analysed (64 cases were internally generated referrals on patients we had previously assessed).

Among 79 females the mean age was 83.90 years (SD 6.99, age range 64-100). Among 49 males the mean age was 82.98 years (SD 8.26, age range 59-102).

Of 128 patients, 99 were referred by their general practitioner (GP). Eleven were referred by a family member and seven by a social worker. The other patients were referred from a variety of sources including aged care facilities, regional assessment services, the old age psychiatry unit and HACC service providers.

No medication list was present on 36 of 128 referrals and of the 99 referrals from GPs, ten did not list medications. Of those referrals that did include a medication list it was found to be inaccurate in 58 of 92 cases (63%) (Table 1). Of all 128 referrals, there were 34 accurate medication lists (27%). Compliance was difficult to assess but the majority were not taking all their medications according to standard prescribing. We determined that 107 of 128 patients needed a medication aid. Only 55 of 128 were using a medication aid at the time of assessment.

Using the STOPP criteria, 126 instances of potentially inappropriate prescribing (PIP) were identified (Table 2). More than one PIP was identified in some patients. Of the 128 patients, 48 had identifiable STOPP criteria (37.5%). The most common inappropriate prescribing drug categories were

1. Use of long acting benzodiazepines
2. Vasodilator use associated with postural hypotension

3. Duplicates of same drug class
4. Long term use of strong opiates
5. Long term anti-psychotic use in the absence of a psychotic illness.

Discussion

This study confirmed that frail elderly patients are often not referred with accurate medication lists and that the majority of patients take potentially harmful medications. It is assumed that this inaccuracy will apply equally when patients present to out and in-patient services and when received in to residential care facilities. Use of the STOPP criteria allowed quantification of the extent of potentially inappropriate prescribing. In our audit 37.5% of patients had a PIP. This compares to a range between 21.4% and 79% in other observational studies using the STOPP criteria [12]. The commonest PIPs using the STOPP criteria are use of proton pump inhibitors for peptic ulcer, long acting benzodiazepine use and use of antipsychotics in the absence of psychosis, as noted in a review by Hill-Taylor et al [12].

There is further evidence that these criteria facilitate identification of inappropriate prescribing. Onatade and colleagues reported on use of the STOPP criteria to identify potentially inappropriate medications (PIMs) in elderly patients on admission and discharge from a teaching hospital using the STOPP criteria [13]. The prevalence of PIMs dropped from 27% on admission to 22.6% on discharge amongst 195 assessed patients.

A study in a chronic care facility in Israel applied the STOPP criteria to 357 patients with a mean age of 82.7 years [14]. This was a frail group of patients with a high incidence of falls and hospital admissions in the 12 months before the study. STOPP criteria identified 67.7% of residents of having potentially inappropriate prescriptions. The most common PIMs were use of proton pump inhibitors (PPI) for peptic ulcers at full therapeutic dose for greater than 8 weeks (n = 64, 17.8 %), duplicate drug class prescriptions (n = 53, 14.7 %) and long-term acting benzodiazepines (n = 48, 13.3 %).

In another report STOPP and Beer's criteria were applied to 715 acute admissions [15]. The purpose was to establish if a causal connection exists between potentially inappropriate prescribing and acute admission presentation. It was found that STOPP criteria identified PIMs that contributed to 11.5% of admissions associated with adverse drug events as opposed to 6% of PIM related admissions identified by the Beers' criteria.

In a subsequent report the STOPP and Beer's criteria were applied to a consecutive series of 600 patients over age 65 years admitted to a teaching hospital [16]. A comparison was made of the proportions of patients with STOPP and Beer's related PIMs with avoidable ADEs that contributed to the admission. Of 219 ADEs, 151 (68.9%) were thought to have contributed to admission were also considered avoidable. The likelihood of a serious avoidable ADE increased significantly when STOPP PIMs were applied (OR, 1.847; 95% CI, 1.506-2.264; P < .001). While the application of Beers criteria PIMs did not significantly increase ADE risk (OR 1.276; 95% CI, 0.945-1.722; P = 0.11). The authors concluded that STOPP criteria PIMs, unlike Beers criteria PIMs, are significantly associated with avoidable ADEs that can contribute to hospital admission. Assessment of inter-rater reliability found good correlation amongst clinicians in six European centres [17].

A strength of our audit is that patient's drug regimens were accurately recorded given that their homes were forensically examined for all pharmaceuticals. Reliance on medical notes to document the drug regimen was not necessary. A deficiency of our audit is that we did not identify START criteria.

Possible causes of the discrepancies between drug lists on referral letters and what is actually taken include poor record keeping, limitations in computerised medication summaries and poor transmission of information from one health setting to another. In addition, many elderly patients simply cannot comply with complex medication regimens. Even if medication aids are put in place this is no guarantee that the patient will be able to use these effectively. In this audit some patients did not have all their medications contained in the blister packs.

These findings have important implications for prescribing, monitoring and communication between components of the health care system. The findings also cast doubt over the accuracy of studies that rely on medical records to record patient medication regimens. Accurate recording of medication use requires inspection of the patient's home. More studies are needed to identify the risk of an ADE from PIP and standardisation of methods to accurately determine exactly what drugs frail elderly patients take is needed.

References

1. Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. JAMA. 1998; 279: 1200-1205.
2. Lindley CM, Tully MP, Paramsothy V, Tallis RC. Inappropriate medication is a major cause of adverse drug reactions in elderly patients. Age Ageing. 1992; 21: 294-300.
3. Lam MP, Cheung BM. The use of STOPP/START criteria as a screening tool for assessing the appropriateness of medications in the elderly population. Expert review of clinical pharmacology. 2012; 5: 187-197.
4. O'Connor MN, Gallagher P, O'Mahony D. Inappropriate prescribing: criteria, detection and prevention. Drugs Aging. 2012; 29: 437-452.
5. Page RL 2nd, Linnebur SA, Bryant LL, Ruscin JM. Inappropriate prescribing in the hospitalized elderly patient: defining the problem, evaluation tools, and possible solutions. Clinical interventions in aging. 2010; 5: 75-87.
6. Gurwitz JH, Field TS, Harrold LR, Rothschild J, Debellis K, Seger AC, et al. Incidence and preventability of adverse drug events among older persons in the ambulatory setting. JAMA. 2003; 289: 1107-1116.
7. Gurwitz JH, Field TS, Judge J, Rochon P, Harrold LR, Cadoret C, et al. The incidence of adverse drug events in two large academic long-term care facilities. Am J Med. 2005; 118: 251-258.
8. Lipton HL, Bero LA, Bird JA, McPhee SJ. Undermedication among geriatric outpatients: results of a randomzied controlled trial. Annu rev Gerontol Geriatr. 1992; 12: 95-108.
9. Wahab MS, Nyfort-Hansen K, Kowalski SR. Inappropriate prescribing in hospitalised Australian elderly as determined by the STOPP criteria. International journal of clinical pharmacy. 2012; 34: 855-862.
10. Gallagher P, Ryan C, Byrne S, Kennedy J, O'Mahony D. STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment). Consensus validation. International journal of clinical pharmacology and therapeutics. 2008; 46: 72-83.

11. Beers MH, Ouslander JG, Rollingher I, Reuben DB, Brooks J, Beck JC, et al. Explicit criteria for determining inappropriate medication use in nursing home residents. UCLA Division of Geriatric Medicine. Arch Intern Med. 1991; 151: 1825-1832.

12. Hill-Taylor B, Sketris I, Hayden J, Byrne S, O'Sullivan D, Christie R. Application of the STOPP/START criteria: a systematic review of the prevalence of potentially inappropriate prescribing in older adults, and evidence of clinical, humanistic and economic impact. Journal of clinical pharmacy and therapeutics. 2013; 38: 360-372.

13. Onatade R, Auyeung V, Scutt G, Fernando J. Potentially inappropriate prescribing in patients on admission and discharge from an older peoples' unit of an acute UK hospital. Drugs Aging. 2013; 30: 729-737.

14. Frankenthal D, Lerman Y, Kalendaryev E, Lerman Y. Potentially inappropriate prescribing among older residents in a geriatric hospital in Israel. International journal of clinical pharmacy. 2013; 35: 677-682.

15. Gallagher P, O'Mahony D. STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions): application to acutely ill elderly patients and comparison with Beers' criteria. Age Ageing. 2008; 37: 673-679.

16. Hamilton H, Gallagher P, Ryan C, Byrne S, O'Mahony D. Potentially inappropriate medications defined by STOPP criteria and the risk of adverse drug events in older hospitalized patients. Archives of internal medicine. 2011; 171: 1013-1019.

17. Gallagher P, Baeyens JP, Topinkova E, Madlova P, Cherubini A, Gasperini B, et al. Inter-rater reliability of STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment) criteria amongst physicians in six European countries. Age Ageing. 2009; 38: 603-606.

Austin J Pharmacol Ther - Volume 2 Issue 4 - 2014
ISSN: 2373-6208 | www.austinpublishinggroup.com
Clarnette et al. © All rights reserved

Citation: Clarnette R, Johnston E, Ryan J, O'Toole J and Sheil A. A Community Audit of Prescribing for the Frail Elderly with Reference to the STOPP Criteria. Austin J Pharmacol Ther. 2014; 2 (4).4