Clinical Interventions in Aging

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ORIGINAL RESEARCH

Geriatrician interventions on medication prescribing for frail older people in residential aged care facilities

This article was published in the following Dove Press journal:
Clinical Interventions in Aging
25 June 2015
Number of times this article has been viewed

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Objective: In Australian residential aged care facilities (RACFs), the use of certain classes of high-risk medication such as antipsychotics, potent analgesics, and sedatives is high. Here, we examined the prescribed medications and subsequent changes recommended by geriatricians during comprehensive geriatric consultations provided to residents of RACFs via videoconference.

Design: This is a prospective observational study.

Setting: Four RACFs in Queensland, Australia, are included.

Participants: A total of 153 residents referred by general practitioners for comprehensive assessment by geriatricians delivered by video-consultation.

Results: Residents' mean (standard deviation, SD) age was 83.0 (8.1) years and 64.1% were female. They had multiple comorbidities (mean 6), high levels of dependency, and were prescribed a mean (SD) of 9.6 (4.2) regular medications. Ninety-one percent of patients were taking five or more medications daily. Of total medications prescribed (n=1,469), geriatricians recommended withdrawal of 9.8% (n=145) and dose alteration of 3.5% (n=51). New medications were initiated in 47.7% (n=73) patients. Of the 10.3% (n=151) medications considered as high risk, 17.2% were stopped and dose altered in 2.6%.

Conclusion: There was a moderate prevalence of potentially inappropriate high-risk medications. However, geriatricians made relatively few changes, suggesting either that, on balance, prescription of these medications was appropriate or, because of other factors, there was a reluctance to adjust medications. A structured medication review using an algorithm for withdrawing medications of high disutility might help optimize medications in frail patients. Further research, including a broader survey, is required to understand these dynamics.

Keywords: frail older, geriatrician intervention, high-risk medications, residential aged care facilities

Introduction

Many frail older people spend their final years of life in aged care facilities. In Australia, the proportion of older people living in care accommodation increases with age from 2% of people aged 65–74 years to 6% of people aged 75–84 years and 26% of people aged 85 years and over.[1] Those living in care homes often take more medications than noninstitutionalized elderly, and the risk of morbidity as a result of medication is high.[2] Also, the incidence of adverse drug events increases with the number of medications prescribed.[3] Residential aged care facilities (RACFs) in Australia are institutions in which prescribing of high-risk medication such as antipsychotics, potent analgesics, and sedatives is high, with between 25% and 30% of patients receiving such medication.[4–6] Ensuring high-quality care and appropriate medication use for

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these residents is challenging given their frailty, complex disabilities, and multiple chronic conditions.[7]

Despite the growing body of literature indicating that medication errors and potentially inappropriate medications are important causes of morbidity and mortality, evidence for effective interventions and strategies to improve the pharmacological management of patients is still limited.[8] Well-organized approaches are needed to provide specialist advice in nursing homes to ensure quality medical care. Practice models that include a pharmacist as part of the multidisciplinary team represent best practice in inpatient, ambulatory, and community settings, and in care transitions between settings.[9] Geriatrician-led case conference reviews and comprehensive geriatric assessments (CGAs) have been shown to be effective in reducing potentially inappropriate medications use and improved suboptimal prescribing.[7,10] Although access to geriatric services in Australian RACFs is limited, expert advice is increasingly provided by video-conferencing (VC).

In the model offered in relation to this study, a specialist geriatrician provides a comprehensive assessment of the patient and input into care plans via VC. Geriatricians make recommendation about patients' medications, perhaps advising that some medications are stopped or others commenced. We designed this study to examine whether VC-mediated geriatric assessment resulted in changes to medications prescribed, and reduced the prevalence of potentially inappropriate medication use.

Methods

Study population and setting

We conducted a prospective observational cohort study of four RACFs in Queensland, Australia, that currently have regular access to geriatric consultations via VC. The participating facilities were the first four to be supported by the geriatrician service operating out of the Centre for Research in Geriatric Medicine. We were able to record the information for 153 patients assessed by four geriatricians over the research timeframe.

Data collection

At participating facilities, geriatrician-supported CGA is encouraged within 4–12 weeks of admission. All residents are offered CGA at entry into the participating RACF. However, uptake is determined by referral from the treating general practitioners. The CGA is conducted using a structured protocol based on the interRAI (Resident Assessment Instrument) Long-Term Facility assessment system, administered by a senior registered nurse. The assessment includes a comprehensive diagnosis list, justification of all medications documented, functional profile, cognitive assessment confirming the presence or absence of cognitive and mood disorders, recommendations for prevention and management, and advanced care planning. Observations made by the nurse are entered into a clinical decision support system, which generates a draft resident health care profile and care plan. The clinical decision support system is mounted on a web-based platform to permit review and comment by a specialist geriatrician. interRAI is a not-for-profit research consortium with international collaboration from more than 30 countries that aims to improve the quality of life of vulnerable persons through a unified comprehensive assessment system.

Ideally, 1–4 weeks following admission to the facility, residents who have been referred to a geriatrician by the GP are assessed via video-consultation by the specialist. The geriatrician is able to speak with the resident as well as attending RACF staff and resident's family members if present. Recommendations to the GP and RACF are made, as necessary, regarding the resident's care plan following the consultation. CGA is also offered to existing residents on an "as needs" basis. A formal functional profile is prepared, and a report is generated recording the recommendations made by the geriatrician. Data for this study were retrieved from these sources over an 18-month period from January 2013 to August 2014. Ethics approval was obtained from the University of Queensland Medical Research Ethics Committee. All patients or their substitute decision-maker gave informed consent for participation.

Key measures

The primary outcome measure was the appropriateness of prescribing. A high-risk medications list was created based on those recognized by the American Geriatric Society 2012 Beers Criteria,[11] the McLeod criteria,[12] the Laroche criteria,[13] the PRISCUS criteria,[14] and the Norwegian General Practice criteria[15] (Table 1). These criteria consider a medication as high risk when it has a tendency to cause adverse drug events and drug toxicity in older adults due to its pharmacological properties and the physiologic changes of aging. For our study, we defined high-risk medications as those that are listed on any one of these criteria. We excluded medications not available in Australia. Polypharmacy status was categorized into three groups based on the number of medications prescribed: non-polypharmacy (0–4 medications), polypharmacy (5–9 medications), and hyper-polypharmacy (≥10 medications).[16] Complementary and as-required medications were excluded. Three levels of change on current

Table 1 High-risk medications list

Medication	ATC codes	Main concerns	References
Analgesics, anti-inflammatory			
NSAID			
Aspirin >325 mg/day	N02BA01	– Very high risk of gastrointestinal hemorrhage, ulceration, or perforation, which may be fatal	11
Diclofenac	M01AB05	– Risk of renal toxicity especially in patients with preexisting chronic kidney disease	11
Ketoprofen	M01AE03		11,14
Ketorolac	M01AB15		11,12
Mefenamic acid	M01AG01	– Risk of fluid retention and fluid overload leading to decompensated heart failure in patients with underlying cardiac dysfunction	11,12
Meloxicam	M01AC06		11,14
Naproxen	M01AE02		11
Piroxicam	M01AC01	– Indomethacin may also have CNS side effects	11,12,14
Indomethacin	M01AB01		11–14
Etoricoxib	M01AH05		14
Ibuprofen	M01AE01		11
Opioid analgesics			
Pethidine	N02AB02	– Elevated risk of delirium and falls – Risk of neurotoxicity	11,12,14
Antiarrhythmic			
Amiodarone	C01BD01	– Predisposition to bradycardia and heart block	11
Flecainide	C01BC04	– Pro-arrhythmic effects	11,14
Sotalol	C07AA07	– Pro-arrhythmic effects	11,14,15
Disopyramide	C01BA03	– Potent negative inotropic effects predisposing to heart failure – Anticholinergic activity	11–13
Digoxin >0.125 mg/day	C01AA05	– Risk of toxicity especially in presence of renal insufficiency	11,13,14
Nifedipine	C08CA05	– Potential for postural hypotension – Short-acting formulations associated with increased mortality in elderly patients	11,13,14
Spironolactone >25 mg/day	C03DA01	– Risk of hyperkalemia	11
Diltiazem	C08DB01	– Potential to promote fluid retention and exacerbate heart failure	11
Verapamil	C08DA01		11
Antibiotics			
Nitrofurantoin	J01XE01	– Long-term use associated with pulmonary side effects, renal impairment, liver damage	11,13,14
Anticholinergics			
Antihistamines			
Chlorpheniramine	R06AB02	– Risk of anticholinergic effect: constipation, dry mouth, visual disturbance, bladder dysfunction – Clearance reduced with advanced age – Increased risk of confusion and sedation, impaired cognitive performance	11,14
Cyproheptadine	R06AX02		11,13
Dexchlorpheniramine	R06AB02		11,13,15
Diphenhydramine	R06AA02		11,13,14
Doxylamine	R06AA09		11,13,14
Promethazine	R06AD02		11,13,15
Antiparkinson agents			
Benztropine	N04AC01	– Risk of anticholinergic side effects – Not recommended for prevention of extrapyramidal symptoms due to antipsychotics	11
Antispasmodics			
Propantheline	A03AB05	– Highly anticholinergic, uncertain effectiveness	11
Oxybutynin	G04BD04	– Anticholinergic side effects	11,13,14
Solifenacin	G04BD08	– ECG changes (prolonged QT)	11,13,14
Tolterodine (non-sustained release)	G04BD07		11,13,14
Antithrombotics			
Dipyridamole (short-acting)	B01AC07	– Risk of orthostatic hypotension	11–13
Warfarin	B01AA03	– Increased risk of bleeding	11,14
Prasugrel	B01AC22		11,14
Ticlopidine	B01AC05		11,14

(*Continued*)

Table 1 (*Continued*)

Medication	ATC codes	Main concerns	References
Antidepressants			
TCA			
Amitriptyline	N06AA09	– Peripheral anticholinergic side effects (eg, constipation, dry mouth, orthostatic hypotension, and cardiac arrhythmia)	11–15
Clomipramine	N06AA04		11,13–15
Doxepin (>6 mg)	N06AA12	– Central anticholinergic side effects (drowsiness, inner unrest, confusion, other types of delirium)	11,13–15
Imipramine	N06AA02	– Cognitive impairment	11–14
Nortriptyline	N06AA10	– Increased risk of falls	11
SSRI			
Fluoxetine (daily use)	N06AB03	– CNS side effects (nausea, insomnia, dizziness, confusion) – Hyponatremia	11,14,15
Paroxetine	N06AB05	– Confusion and other types of delirium – Cognitive impairment	11
MAO inhibitors			
Tranylcypromine	N06AF04	– Hypertensive crises – Cerebral hemorrhage – Malignant hyperthermia	11,14
Antiemetic drugs			
Trimethobenzamide	NA	– Can cause extrapyramidal adverse effects	11
Antiepileptic drugs (AEDs)			
Phenobarbitone	N03AA02	– Sedation – Paradoxical excitation – Highly addictive	11,14
Antihypertensive agents			
Clonidine	C02AC01	– Hypotension (orthostatic), bradycardia, syncope	11,13,14
Methyldopa	C01AB01	– CNS side effects: sedation, cognitive impairment	11,13,14
Moxonidine	C02AC05	– Hypotension (orthostatic) – Bradycardia – Sedation	13
Nifedipine	C08CA05	– Short-acting nifedipine associated with increased risk of myocardial infarction, increased mortality in elderly patients	11,13
Prazosin	C02CA01	– Hypotension	11,13,14
Terazosin	G04CA03	– Dry mouth – Urinary incontinence/impaired micturition – Increased risk of cerebrovascular and cardiovascular disease	11,14
Antipsychotics (neuroleptic drugs)			
First-generation (conventional) agents			
Chlorpromazine	N05AA01	– Anticholinergic and extrapyramidal side effects	11–13,15
Fluphenazine	N05AB02	– Parkinsonism	11,13,14
Haloperidol (>2 mg)	N05AD01	– Hypotonia	11,14
Promazine	N05AA03	– Sedation and risk of falls	11,13
Trifluoperazine	N05AB06	– Increased mortality in patients with dementia	11
Prochlorperazine	N05AB04		11,13–15
Second-generation (atypical) agents			
Aripiprazole	N05AX12	– Fewer extrapyramidal side effects	11
Asenapine	N05AH05	– Clozapine: increased risk of agranulocytosis and myocarditis	11
Clozapine	N05AH02		11,13,14
Olanzapine (>10 mg)	N05AH03		11,13–15
Muscle relaxants			
Baclofen	M03BX01	– CNS side effects: amnesia, confusion, falls	13,14
Solifenacin	G04BD08	– Anticholinergic side effects: constipation, dry mouth, CNS side effects	11,13,14
Orphenadrine	N04AB02	– More sedation and anticholinergic side effects than safer alternatives	11

(*Continued*)

Table 1 (*Continued*)

Medication	ATC codes	Main concerns	References
Sedative and hypnotics			
Long-acting benzodiazepines			
Clonazepam	N03AE01	In general, all benzodiazepines increase the risk of cognitive impairment, delirium, falls (muscle-relaxing effect, prolonged sedation) with risk of hip fracture, depression, psychiatric reactions (can cause paradoxical reactions, eg, agitation, irritability, hallucinations, and psychosis) and motor vehicle accidents in older adults	11
Diazepam	N05BA01		11–15
Bromazepam	N05BA08		13,14
Clobazam	N05BA09		13
Nitrazepam	N05CD02		13–15
Flunitrazepam	N05CD03		13–15
Short- and intermediate-acting benzodiazepines			
Alprazolam	N05BA12		11,13,14
Lorazepam	N05BA06		11,13,14
Oxazepam	N05BA04		11,13–15
Temazepam	N05CD07		11,13,14
Triazolam	N05CD05		11–14
Non-benzodiazepine hypnotics			11–14
Zolpidem	N05CF02		11,13,14
Zopiclone	N05CF01		13–15
Chloral hydrate	N05CC01		11,14
Others			
Theophylline	R03DA02	– Risk of arrhythmias – No proof of efficacy in COPD	11,15
Glipizide	A10BB07	– Long half-life leading to possible prolonged hypoglycemia	13
Cimetidine	A02BA01	– Confusion – More interactions than other H2 antagonists	11–13
Diphenoxylate	A07DA01	– No proof of efficacy – Blocks the muscarinic receptors	12,13

Abbreviations: ATC, anatomical therapeutic chemical; COPD, chronic obstructive pulmonary disease; CNS, central nervous system; ECG, electrocardiogram; MAO, monoamine oxidase; NSAID, non-steroidal anti-inflammatory drugs; SSRI, selective serotonin reuptake inhibitors; TCA, tricyclic antidepressants.

prescription were defined as drug stopped, dose altered, and new drug started.

Statistical analysis

The Statistical Package for Social Science 21.0 (IBM SPSS Statistics 21. Ink) was used for statistical analysis. Categorical variables were summarized using proportions and continuous variables using mean, standard deviation (SD), and range. In univariate analysis, the differences in the distribution of variables between patients with or without high-risk medications were compared using the chi-squared test for categorical variables, and nonparametric or parametric comparison of means for continuous variables, depending on the distribution of the data. Tests of significance were two-tailed, using a significance level of $P \leq 0.05$.

Results

Over the course of the study, 153 patients were assessed by the four participating geriatricians across four facilities. Demographics and clinical characteristics of the study population are presented in Table 2. The mean (± SD) patient age was 83.0 (±8.1) years and 64.1% were female. The median length of stay in the facility at the time of assessment was 488 days (range 6–3,213 days). Twenty-four percent of patients were assessed within 12 weeks of admission to the facility. Patients had multiple comorbidities (mean 6), including dementia diagnosed in 67.3%, depression in 46.4%, and delirium in 11.7%. Other prevalent comorbidities were hypertension (35.9%), diabetes (20.9%), heart diseases (13.7%), and respiratory diseases (11.1%). Patients were prescribed a mean (± SD) of 9.6 (±4.2) regular medications. Polypharmacy (≥5 medications) was seen in 91% (n=139) residents, half of whom (n=69) were exposed to hyper-polypharmacy (≥10 medications).

Of all medications prescribed (n=1,469), the geriatrician recommended withdrawal of 9.8% (n=145) and dose alteration for 3.5% (n=51) medications. Medications were stopped because of adverse effects (n=66), no clear

Table 2 Demographic and clinical characteristics of study population

Characteristics	Total, N=153
Age, years	
Mean ± SD	83.0±8.1
Median	83
Females, n (%)	98 (64.1)
Length of stay at the time of assessment: median length of stay, days (IQR)	488 (6–3,213)
Marital status (%)	
Married	50 (32.6)
Widowed	73 (47.7)
Separated/divorced	19 (12.4)
Never married	11 (7.1)
Comorbidities (%)	
Dementia	103 (67.3)
Delirium	18 (11.7)
Depression	71 (46.4)
Under nutrition	49 (32.0)
COPD/asthma	17 (11.1)
Hypertension	55 (35.9)
Diabetes	32 (20.9)
Ischemic heart disease	21 (13.7)
Prescription medications	
Total number of prescribed medications	1,469
Mean ± SD	9.6±4.2
Polypharmacy categories (%)	
0–4 medications (non-polypharmacy)	14 (9.2)
5–9 medications (polypharmacy)	70 (45.8)
≥10 medications (hyper-polypharmacy)	69 (45.1)

Abbreviations: COPD, chronic obstructive pulmonary disease; IQR, interquartile range; SD, standard deviation.

indication/medication burden (n=63), and disease cured (n=16). Similarly, the medication dose was altered because of adverse effects and other factors (n=36), changed to "as required" (n=5), and ineffective dose (n=10). New medications were initiated in 47.7% (n=73) patients (Table 3). High-risk medications prescribed (10.3%; n=151) and intervention by geriatricians are listed by drug classes in Table 4. At least one high-risk medication was prescribed to 58.2% (n=89) patients. The univariate analysis showed that the length of stay was the only variable significantly associated with patients having at least one high-risk medication (Table 5). Of the high-risk medications, the geriatrician ceased 17.2% (n=26) medications and altered the dose in 2.6% (n=4). High-risk medications stopped were analgesics (n=6), antispasmodics (n=5), sedative and hypnotics (n=5), antipsychotics (n=3), antiarrhythmic (n=3), antihypertensive (n=2), gastrointestinal medications (n=1), and antibiotics (n=1). The dose was altered for antiarrhythmic (n=2), antidepressants (n=1), and sedative and hypnotics (n=1).

Discussion

To our knowledge, this is the first study of a geriatrician intervention where the medication advice for residents at long-term residential care facilities was specifically assessed via video-consultation. We found moderate levels of high-risk medications prescribed to residents in RACFs. Geriatricians made relatively few changes. This suggests that either the prescription of these medications was appropriate or other factors influenced the decision not to adjust medications.

The aim of defining high-risk medication use is to focus on a group of medications for which there is common consensus about potential inappropriateness. In principle, the high-risk medications prescribed to RACF residents in our study should not have been started or continued except under certain conditions; for example, amiodarone, a high-risk medication used in older people, is a therapy that may be indicated to treat supraventricular arrhythmias effectively in patients with heart failure;[17] and benzodiazepines, that may increase the risk of mental decline, delirium, falls, and fractures in older adults, may be appropriate for treating seizures, certain sleep disorders, and anxiety disorders.[11] The reluctance on the part of the geriatrician in adjusting/stopping many of these high-risk medications might suggest that prescription of some of these medications was appropriate. It is also possible that patients' (or primary care

Table 3 Outcomes of geriatrician intervention

Interventions	No of medications	Reasons
Drug stopped (145 [9.8%])	66	Adverse effects
	63	No clear indication/medication burden
	16	Disease cured or quiescent
Dose altered (51 [3.5%])	36	Dose reduced (because of adverse effects and other factors)
	10	Dose increased (because of ineffective dose)
	5	Changed to "as required"
New drug started (102 [6.9%])	58	Untreated morbidity
	23	Better alternative to present therapy
	21	Symptom relief

Notes: Total medication prescribed: 1,469; total high-risk medications prescribed: 151 (10.3%).

Table 4 High-risk medication prescribed and geriatrician intervention

System/therapeutic category/medications	High-risk medications prescribed, N (%)	Result of geriatrician intervention
Central nervous system medications	80 (52.9)	
Antidepressants	10 (6.6)	DA – 1
Antipsychotics	21 (13.9)	DS – 3 NDS – 1
Sedative and hypnotics	49 (32.4)	DS – 5 DA – 1 NDS – 2
Cardiovascular system medications	21 (13.9)	
Antiarrhythmic	12 (7.9)	DS – 3 DA – 2 NDS – 1
Antihypertensive	9 (5.9)	DS – 2
Gastrointestinal	6 (3.9)	DS – 1
Antihistamines	5 (3.3)	
Antithrombotic	22 (14.5)	
Antiparkinson agents	1 (0.6)	
Antispasmodics	5 (3.3)	DS – 5
Analgesics	9 (5.9)	DS – 6
Antibiotics	2 (1.3)	DS – 1
Total	151 (100)	DA – 4 DS – 26 NDS – 4

Abbreviations: DA, dose altered; DS, drug stopped; NDS, new drug started.

medical practitioners') strong belief in their medications might impact on an otherwise appropriate reduction in the number of medications taken, but this was not specifically explored in our study. In addition to these patient-related factors, there might be some prescriber-related factors that hinder medication adjustment, such as involvement of several prescribers, the use of preventive medication, and evidence-based medicine guidelines that often induce polypharmacy, uncertainties of precipitating disease relapse or drug withdrawal syndromes, and lack of risk/benefit information for the frail older residents.[18]

Interventions for appropriate prescribing in older people such as education, medication reviews, computerized support systems, and interdisciplinary team review have a positive impact on prescribing.[10] Yet, evidence for effective interventions to improve care in residential care settings is limited. A study by Crotty et al suggested that case conferences help an outreach geriatrician team to optimize medication management.[7] They describe the use of multidisciplinary case conference meetings to review medication in RACFs with significant improvement in medication appropriateness in the intervention group. There is conflicting evidence, however, concerning the efficacy of case conference medication reviews. One study using case conferencing to review the prescription and use of medications for community-dwelling older adults was unsuccessful in demonstrating the change in inappropriate use of medications.[19] A similar study in residential care facilities was unsuccessful in establishing changes in the number of medications.[20] Other approaches to optimize prescribing in frail older people might be the integration of a pharmacist in a team to make a collaborative approach on the quality of prescribing. Studies from inpatient settings suggest that the addition of a pharmacist to health care teams could lead to major reductions in morbidity and improved patient outcomes.[21,22] Another study on older patients transferring from hospital to a long-term care facility showed that adding a pharmacist transition coordinator on evidence-based medication management and

Table 5 Univariate analysis of variables influencing the use of high-risk medications

Characteristics	Patients		*P*-value
	Without high-risk medications (n=64)	With at least one high-risk medication (n=89)	
Socio-demographic			
Age	83.55±8.5	82.67±7.8	0.513
Sex (female)	44 (68.8)	54 (60.7)	0.304
Clinical			
Length of stay	303 (70.75–780.50)	630 (100–1,022.50)	0.044
Assessment status (within 12 weeks of admission)	18 (28.1)	19 (21.3)	0.334
Polypharmacy (>4 medications)	57 (89.1)	82 (92.1)	0.516
Comorbid conditions			
Delirium	7 (10.9)	11 (12.4)	0.788
Dementia	44 (68.8)	59 (66.3)	0.749
Depression	27 (42.2)	44 (49.4)	0.375
Under nutrition	24 (37.5)	25 (28.1)	0.218

Note: Values represent frequency (% of n).

health outcomes could improve the aspects of inappropriate use of medications.[23]

Optimizing prescribing requires appropriate ways to taper or withdraw high-risk medications in older adults. Available explicit and implicit criteria for appropriate prescribing encompass medications that have been validated in, and applied to, robust, healthy populations aged 65 and older. Therefore, these approaches may not be applicable to the more frail and multimorbid oldest old who reside in RACFs.[24] Most attention has been paid to the development of guidelines on how to initiate medications, but there are limited studies on the most effective way to cease medications.[25,26] Barriers to cease medications include time constraints on medical practitioners. This had led some to advocate that there should be some systematic approaches to follow in ceasing medications.[27,28] In responding to polypharmacy and minimizing high-risk medications, there appears a need for a practical algorithm that helps clinicians identify and discontinue potentially inappropriate high-risk medications using a systematic approach. This algorithm should signify a range of different clinical scenarios in relation to high-risk medications and offer an evidence-based approach to identify and, if appropriate, discontinue such medications and/or suggesting alternative treatments when required.

Our study has several limitations. Although, combining five different explicit criteria gives us an opportunity to extract a comprehensive list of high-risk medications, this list is not meant to regulate practice in a manner that surpasses the clinical judgment and the assessment of a prescriber. Also, because of our definition of high-risk medications as a list of drugs, the further domains of inappropriate prescribing such as underuse of medications and drug–drug interaction might be missed. Any adverse health events occurring among the residents using high-risk medications were also not investigated in our study. Considering the small sample size of 153 patients, the study results may not be representative of larger sample size in different nursing home settings.

Conclusion

In this study of 153 residents of four RACFs, we found a moderate prevalence of potentially inappropriate high-risk medications. However, geriatricians made relatively few changes, suggesting either that, on balance, prescription of these medications was appropriate or, because of other factors, there was a reluctance to adjust medications. Further research, including a broader survey, is required to understand these dynamics. A structured medication review using an algorithm for withdrawing medications of high disutility might help optimize medication prescribing in frail older people.

Acknowledgments

The authors would like to thank Elena Klestov and Eamonn Eeles, participating geriatricians for their support during the video-consultation; Melinda Martin Khan, research fellow in Centre for Research in Geriatric Medicine, for her help in ethics application; and staffs in Masonic Care Queensland for their assistance in data collection phase of this study. An abstract of preliminary study results on the first 75 patients was accepted as a poster in British Geriatrics Society (BGS) Autumn Meeting 2014, 15–17th October, Brighton, UK.

Disclosure

The authors report no conflicts of interest in this work.

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