

Prescribing in care homes: the role of the geriatrician

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Ther Adv Chronic Dis

(2011) 2(6) 353–358

DOI: 10.1177/

2040622311421438

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Abstract: Large numbers of frail elderly people spend some time of their lives in care homes. Increasing age is associated with altered physiology, multiple diagnoses and complex comorbidity, and polypharmacy. Those living in care homes often take larger numbers of medications than those who live in the community and the risk of morbidity as a direct or indirect result of medications is high. Many methods have been suggested to revise the number and type of medications prescribed for individuals at risk of adverse drug reactions (ADRs), both in the community and in hospital with variable success and implementation. Assessment of prescribed and nonprescribed medications by pharmacists, nurses and general practitioners all have a role in optimizing therapeutics with evidence that improved prescribing can reduce the risk of ADRs. In conjunction with these professionals, community geriatricians undertaking a comprehensive geriatric assessment can reduce the number of medications prescribed or optimize therapy where there may be underprescribing (e.g. in depression), thereby reducing the overall risk of hospital admission ADRs.

Keywords: aged, drug toxicity, geriatric assessment, nursing homes, physician prescribing patterns, polypharmacy

Introduction

One of the successes of improvements in health and social care in the developed world is the increase in survival of people into old age. However, increased longevity is associated with an increased burden of disease and therefore an associated increase in years of life with disability and illness for some people. As such, many of the frailest in society will spend some of the final months or years of life in a care home.

In England between 300,000 and 400,000 people over 65 years of age live in care homes with or without nursing in England [NHS Information Centre, 2010; Comas-Herrera *et al.* 2001]. The average length of time spent in a care home is 26.8 months for residential homes or 11.6 months for nursing care homes [Bebbington *et al.* 2001]. Thus, the focus of care for many residents is often very different compared with that for fit and active older people living independently in the community.

Care-home residents on average take more medications than their younger counterparts and more than older people with similar complexities

of illness who are living in the community [Walley *et al.* 1995], and there is clear evidence for a relationship between polypharmacy and the risk of adverse drug reaction (ADR), drug interaction and compliance [Johnell *et al.* 2009; Williams *et al.* 2008; Nguyen *et al.* 2006; Veehof *et al.* 1999]. There is also a clear link between polypharmacy and drug-related hospital admissions with 6.5% of all acute admissions in the UK being drug related [Passalacqua, 2010; Pirmohamed *et al.* 2004; Howard *et al.* 2003]. This rate varies between 2% and 20% depending on the definition of ‘adverse drug event’ and according to age range [Franceschi *et al.* 2008; Alexopoulou *et al.* 2008; van der Hooft *et al.* 2006; Passarelli *et al.* 2005]. In addition, evidence suggests that the rate of ADRs necessitating admission into hospital is increasing [Wu *et al.* 2010; Patel *et al.* 2007].

Older people have reduced ability to clear drugs from the body because of reductions in hepatic and renal clearance [Delafuente, 2008; McLean and Le Couteur, 2004; Muhlberg and Platt, 1999; Le Couteur and McClean, 1998]. Changes in drug distribution as a result of

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alterations in body composition with age also predispose to altered pharmacokinetics [Corsonello *et al.* 2010; Hilmer *et al.* 2005; Crooks *et al.* 1976], which can create a risk of accumulation of a drug. Older people are also often more sensitive to the pharmacological effects of drugs so that type A ADRs are more common in this age group [Routledge *et al.* 2004]. Type B (unpredictable) reactions are also more common [Ventura *et al.* 2010]. Thus, older people have been shown to have both pharmacokinetic and pharmacodynamic changes, as well as heterogeneous patterns of impaired physiological homeostatic mechanisms, all of which predisposes them to unwanted effects of medication [Hilmer *et al.* 2007].

As already discussed, most drug reactions in the elderly are predictable and therefore potentially avoidable. Given this information, one might expect that prescribing for a patient group with multiple chronic conditions and barriers to compliance that include mental and physical health problems, might result in greater levels of consideration as to the true benefits and risk of prescribing, and to the monitoring of effect. However, evidence seems to indicate the contrary [Gurwitz *et al.* 2007; Crotty *et al.* 2004b; Spore *et al.* 1997]. Similarly, it seems intuitive that a detailed medication review considering all indication, interaction, evidence for use and risk/benefit would be advantageous to the individual concerned. As such, there are many recommendations regarding the methodology and frequency with which medication reviews should be carried out for older people. In the UK, the recommendation of the *National Service Framework for Older People* [Department of Health, 2001] is that anyone taking four or more medications should have a medication review every 6 months, although the nature of the review (e.g. whether or not the patient has to be seen by the healthcare practitioner performing the review) is not laid down.

There are several studies investigating and identifying particular drug classes that are frequently associated with unwanted effects in frail older people, for instance, long-acting benzodiazepines and tricyclic antidepressants [Nishtala *et al.* 2009]. Estimates of the frequency with which potentially inappropriate drugs such as these are prescribed for older care-home residents are between 17.5% and 25% [Zhan *et al.* 2001; Spore *et al.* 1997]. However, all drug classes are

responsible for contributing to data for ADRs. This includes antibiotics, antihypertensives, non-steroidal anti-inflammatory drugs, antiplatelet drugs and anticoagulants, and antineoplastic agents, this collection of drugs is responsible for up to 60% of ADRs [Wu *et al.* 2010; Patel *et al.* 2007; Wiffen *et al.* 2002].

With respect to psychoactive medications in particular, which are amongst the most commonly prescribed medications in care homes, there is an association with increased falls and fracture risk, and increased functional decline in patients using these drugs [McShane *et al.* 1997; Lauritzen *et al.* 1993; Granek *et al.* 1987], as well as constipation, urinary incontinence and agitation. Although mental illness may be part of the disease burden, there is a body of evidence that suggests this group of medications are overprescribed and much work has been done into rationalization of this group of drugs [French *et al.* 2007; Gill *et al.* 2007; Alexopoulos *et al.* 2004; Holmquist *et al.* 2003; Mort and Aparasu, 2000].

Attempts have been made to identify drugs that ought not to be prescribed for older people, either under any circumstances, or rarely. However, these criteria ('Beers criteria'), which have been updated [Fick *et al.* 2003; Beers *et al.* 1991], are not necessarily agreed upon and often there are different opinions as to their applicability in different countries [Zhan *et al.* 2001; McLeod *et al.* 1997]. Other studies have attempted to produce agreement on drugs that should not be prescribed for older people and those that should be prescribed when certain disease conditions are identified [O'Mahony and Gallagher, 2008]. Importantly, several studies using various criteria have all concluded that nursing-home residents in particular are at increased risk of being prescribed inappropriate medications [Gray *et al.* 2006; Lau *et al.* 2005; Spore *et al.* 1997; Williams and Betley, 1995; Beers *et al.* 1991; Gosney and Tallis, 1984].

Most studies of the possible benefits of medication review discussed thus far have started from an assumption that a reduction in the number of drugs prescribed for an individual is universally desirable [Kaur *et al.* 2009; Garcia, 2006; Schmader *et al.* 2004; Furniss, 2002]. Others have pointed out that a review may also benefit a patient if it identifies drugs with potential therapeutic effect that are not prescribed [Parikh *et al.* 2009; Wright, 2007; Quilliam and

Lapane, 2001]. Examples are osteoporosis treatments in patients at risk of fracture, or patients in atrial fibrillation who are not prescribed warfarin or aspirin. Nevertheless, an enthusiasm for treatment needs to be counter-balanced against an awareness that the evidence for the benefit of drug treatments has been gathered in a very different population from those who live in care homes. Similarly relevant is that the life expectancy of residents is limited; thus, preventative drugs that may require months or years of treatment before benefit accrues may not be indicated. The potential risks of polypharmacy have already been described: thus, the decision whether or not to prescribe additional medication for a care-home resident must always be a 'patient-centred' and individualized decision. Special circumstances may factor into this decision-making such as residents with swallowing problems or dementia who may have difficulty in physically taking medication, and those who are fed via nasogastric or percutaneous enterostomy tubes who may have limitations regarding the preparations they can tolerate.

Who should conduct medication reviews?

Thus, individual clinical judgement remains the mainstay of medication review for care-home residents. The question remains, who should conduct such reviews?

There have been many studies assessing the benefit of medication review by general practitioners (GPs), community and clinical pharmacists, multidisciplinary interventions and geriatrician-led comprehensive assessment that includes a medication review.

Pharmacists

Traditionally, the role of the pharmacist in care-home prescribing has been one of supply and advice regarding storage and documentation. Nevertheless, there is some evidence that medication review by clinical pharmacists significantly reduces the risk of falls [Zermansky *et al.* 2006]. However, it does not appear that a review of medication by pharmacists has any significant impact on overall hospital admission or mortality.

There is evidence of variability in the extent to which GPs follow the suggestions of pharmacists [Zermansky *et al.* 2006; Lapsley, 1988]. The reasons for this are not clear. A study in 1998 demonstrated that in an hour, a pharmacist's review of medicines could improve care in nursing

homes and the advice given by pharmacists was widely accepted by nurses and GPs (78%) [Lapsley, 1988]. However, in the work of Zermansky and colleagues, only 48% of recommendations to GPs were implemented [Zermansky *et al.* 2006].

GPs

Evidence has also been produced examining the role of the GP in medication reviews. The study by Zermansky and colleagues indicated that only 28% of patients received a medication review in a 12-month period [Zermansky *et al.* 2006]. Nonetheless, there are data that suggest a single review of repeat prescription lists by a GP for patients in care homes significantly reduces the number of drugs prescribed, reduces the prescribed dose, or enables a switch to a suitable less expensive alternative [Khunti and Kinsella, 2000]. It is hypothesized that this creates an overall financial benefit, but to date, assessment of the impact that this might have on quality of life, admission to hospital or ADRs has yet to be undertaken.

Multifaceted assessment

Geriatrician-led case conference reviews and evaluation of appropriateness of medications prescribed has been considered by several community and hospital-based teams worldwide. Overall, the evidence suggests that more complex assessment including comprehensive geriatric assessment in care-home prescribing reduces potentially inappropriate medication use and improves suboptimal prescribing [Kaur *et al.* 2009; Garcia, 2006; Schamder *et al.* 2004, Crotty *et al.* 2004a].

Crotty and colleagues demonstrated the complexity of this assessment with specialist outreach services that included a multidisciplinary case conference with a geriatrician, GP, nursing-home staff and a pharmacist. This intervention improved prescribing without significant adverse impact on patient behaviour [Crotty *et al.* 2004a].

There is also evidence that medication review as part of a comprehensive assessment rather than in isolation (e.g. as part of an assessment of a patient at risk of falls) may also be of benefit. Single interventions did not demonstrate any reduction in the risk of falls in this meta-analysis [Oliver *et al.* 2007].

Conclusion

There is compelling evidence to suggest that care-home residents are subject to inappropriate prescribing and persuasive evidence that they are likely to be at increased risk of hospital admission, death and other adverse events as a consequence. The benefit of reduction in adverse outcome as a result of medication review is clear, but the best approach for this is not. Evidence suggests that a prescription review by GPs can reduce the number of medications prescribed but there is a lack of information about the impact of this on hospital admissions or other outcomes. A review of medications by clinical pharmacists can have an impact on outcome due to reduced risk of falls, however, there is contrasting evidence that suggests single interventions, such as medication review alone, have not demonstrated in improvement in outcome. However, a multidisciplinary review and comprehensive geriatric assessment reduces the number of inappropriate medications prescribed and such reviews may reduce the risk of falls, improve sub-optimal prescribing and reduce hospital admissions in frail elderly patients.

In short, the role of the geriatrician in the care home is not to replace the services already provided by the GP or other community-based healthcare professional, but in complementing established services and optimizing prescribing so that the risk of adverse outcome is reduced. In future it may be useful to examine the role of the pharmacist, GP and community geriatrician with other health and social care professionals in a proactive team-based approach to care of care-home patients, especially as their frailty increases. Specific research or summaries of expert opinion on the benefit of preventive treatments (e.g. statins or warfarin) in this group may guide medication reviews.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflict of interest statement

The authors declare no conflict of interest in preparing this article.

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