

3.2 Literature Review

3.2.1 POLYPHARMACY

3.2.1.1 Polypharmacy

Polypharmacy is the use of multiple drugs by a patient, although there is not a universally accepted definition (1). Various authors stipulate a specific number of medications a patient takes as representing polypharmacy, ranging from 3 up to 10 or more (2).

Polypharmacy presents challenges for residents and aged care providers (3, 4) and is certainly a much maligned issue for nursing staff ‘on the floor’. According to one systematic review, the reported prevalence of polypharmacy, defined as 9 or more medications in RACFs ranges from 12.8% to 74.4% (5). Australian data suggest that over 90% of residents use five or more medicines (6). These figures are in-line with levels evident from Choice Aged Care’s clinical database. International literature suggests that the use of multiple medications is increasing, with one study reporting a rise from 3.1 to 6.6 medicines per resident between 1992 to 2002 (7). More recently in 2016, data indicates a mean number of 8.9 medications per resident (8). Confirming this profound upward trend, preliminary polypharmacy data as at April 2017 from Choice Aged Care’s client base indicates an average of 9.1 medications per resident (9). Reasons for the increase in polypharmacy are multifactorial and understanding those factors may help to develop interventions to manage polypharmacy in residential aged care facilities (RACFs) (10).

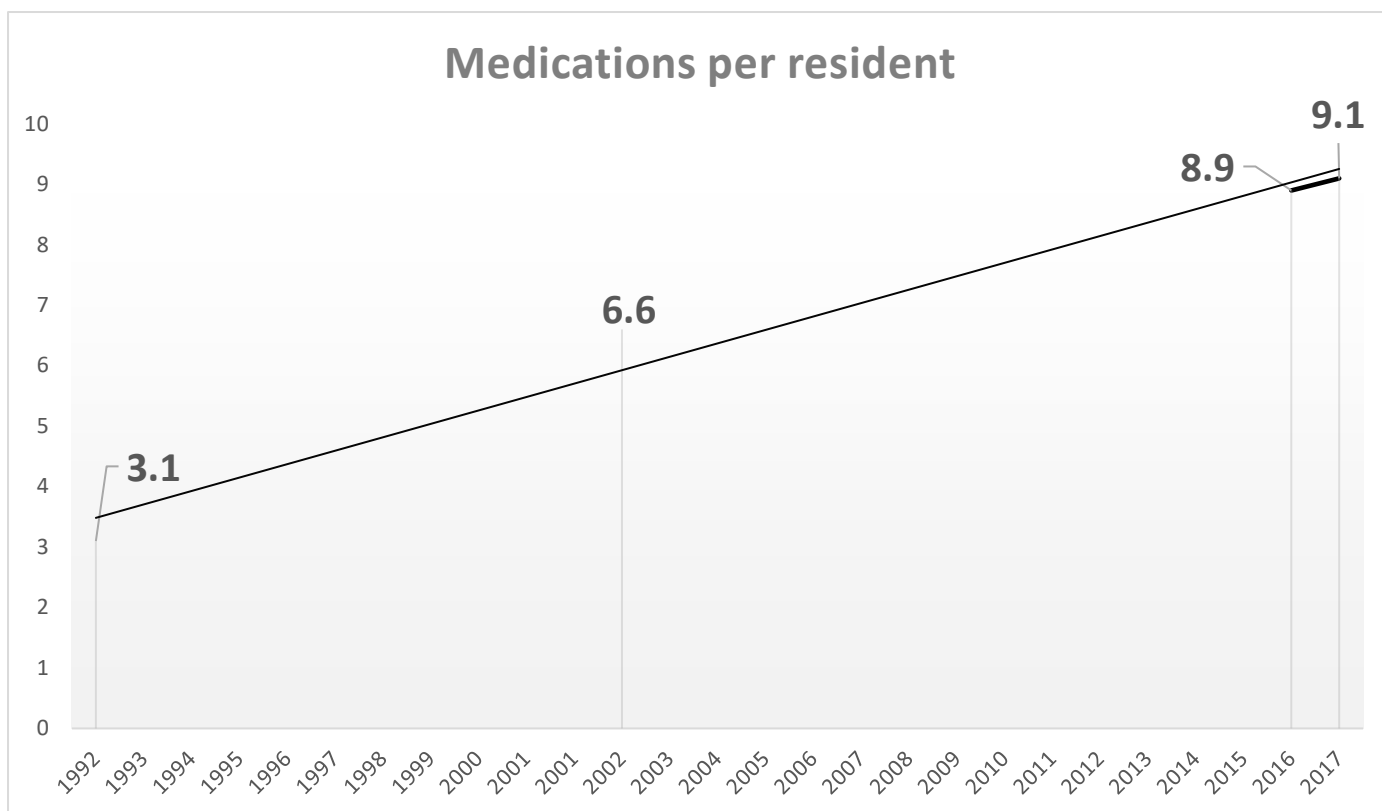


Fig 1: A concerning trend of unabated increasing levels of polypharmacy in aged care facilities.

3.2.1.2 Polypharmacy and adverse health outcomes

The elderly have a relatively high risk of medication misadventure and associated complications, which often results in lower quality of life and represents a burden to the health system. Polypharmacy has been associated with adverse drug reactions, drug-drug interactions, drug-disease interactions, non-adherence, functional decline, cognitive impairment, falls, hospitalisation and mortality (11 - 19). Falls are the most common cause of accidents among the older population, leading to both fatal and non-fatal injuries (20, 21). Falls studies have determined that taking ≥ 4 drugs is associated with an increased incidence of falls, recurrent falls, and injurious falls (22). Furthermore, the use of ≥ 5 drugs is associated with an 88% increased risk of an ADR-related visit to an outpatient clinic or emergency department (23).

A direct positive correlation has been found between ageing, polypharmacy and an increased risk of drug related problems and negative clinical outcomes related to medicines (24) with associated economic burden (25). The aging population and increasing rates of polypharmacy represents a significant and increasing cost to the health budget. In addition, increased medicine utilisation further contributes to rising costs to patients and the health care system (26). Therein lies a key reason for this research in providing policy makers with useful data on the actual impact of the RMMR service.

Measurable adverse health outcomes which will be analysed in this research project will target falls, hospitalisations and mortality. As a practicality of the research, these 'outcomes' reflect the most important and feasibly trackable parameters using a RACF's clinical care software which is required to accurately document such events.

3.2.1.3 The impact of medication reviews on polypharmacy

An RMMR is undertaken by an accredited pharmacist in collaboration with the resident's GP and involves a comprehensive assessment to identify, resolve and prevent medication related problems (27). RMMRs are an independent source of medication and QUM information directed to the GP (and also nurses). This is important as Doctors in general receive a great deal of information about the indication for starting medicines but very little guidance on when and how to stop them (28). Possible triggers (e.g. ineffective or unnecessary treatment or a possible adverse effect) that may prompt consideration of ceasing a drug can only be identified by medication review (29). Indeed, independent clinical pharmacists often bear the burden, and do so proudly, of proactively targeting medications that may no longer be indicated. A retrospective analysis demonstrated that RMMRs can reduce prescribing of drugs in older people, resulting in a significant decrease in the Drug Burden Index score (30). A number of studies have also demonstrated that RMMRs identify clinically important medication related problems and improve medicine use in residents of RACFs (31-34). Specific to polypharmacy, a randomised control study completed by Roberts et al (40) found that clinical pharmacy services reduced medication use in the intervention group by 11 - 15%. A finding further supported by a Study (35) that found clinical medication reviews routinely conducted by pharmacists contribute to a reduction of drug related problems in the medication of older patients with polypharmacy. The term 'routinely' may be of interest to policy makers who in early 2014 sought to contain pharmacy costs by reducing the RMMR service from annual to biennial. Evidence would suggest that reducing the frequency of medication review may only serve to increase the costs to other areas of the health budget (i.e. the PBS via increased polypharmacy or the hospital system via increased admissions). Indeed, evidence suggests that deprescribing is not occurring as often as it should be: between 21 and 79 percent of older adults are taking a potentially inappropriate medication (36).

3.2.2 PSYCHOTROPICS

3.2.2.1 Psychotropic medications

Psychotropic medication is a broad term, usually referring to medications that affect mental function, behaviour and experience (37). The psychotropic medications specifically studied in this research project are limited to antipsychotics, benzodiazepines and antidepressants.

The use of psychotropics in older adults remains controversial given the risk of adverse effects, in contrast to the limited effectiveness (38). Supported by usage rates in CAC's clinical database, high rates of psychotropic medications use have been reported in Australian nursing homes, particularly antipsychotics (24-29%) and benzodiazepines (15-37%) (39, 40). Also corroborated by CAC's data, other studies in Australia point to a combined rate of psychotropic drug use in long term care facilities that varies from 39% to 78% (41). Up to 80% of residents with dementia receive psychotropic medications and there is evidence to suggest that in some cases these medications have been prescribed inappropriately (42). Hence the use of psychotropic medications in the aged care setting reflects a somewhat emotive and politically charged issue.

3.2.2.2 Psychotropic medications and adverse health outcomes

The use of psychotropic medications in long term care facilities is associated with significant adverse effects and morbidity (43) and the incidence of side effects in the older population is especially high, such as psychomotor and cognitive impairment, falls and fractures (44-46). As a result, there have been increasing concerns regarding the efficacy, tolerability and safety of antipsychotic agents in older adults (38). Serious adverse events have been reported (increased mortality rate and stroke) along with other risks (arrhythmias, pneumonia, falls, fractures, metabolic disorders and extrapyramidal effects) (47). The next psychotropic, benzodiazepines, also has high utilisation in older adults, which is especially worrying since age-related pharmacokinetic and pharmacodynamic alterations may lead to an increased risk of confusion, sedation, hangover effects and subsequent risk of falling (38).

The final psychotropic for this research are antidepressants. Depression is often reported to be under-recognised and undertreated in older adults (48). An item for investigation in this research project will be whether there is any correlation or trends between utilisation of the different psychotropics (e.g. do RACFs with high utilisation of antidepressants achieve lower usage rates of benzodiazepines or antipsychotics?). In any case, the use of antidepressants in the nursing home population has increased over the last decade (38) and because these medications are associated with a range of adverse effects (e.g. sedation, hyponatraemia, GIT effects) the potential benefit must be weighed against the risks (49).

3.2.2.3 The impact of medication reviews on psychotropic drug usage

Medication reviews performed by an accredited pharmacist are seen as one avenue that can be employed by the health team to minimise the use of high risk medications. Several strategies to ensure the appropriate use of psychotropic drugs in long term care facilities have been implemented and most of these interventions have focused on the delivery of medication review services (41). A literature review of 26 publications (41) concluded that medication reviews are effective at reducing psychotropic prescribing in long term facilities. Anecdotally, nursing staff often seek the support of the RACF's clinical pharmacist to target prescribing of psychotropics (particularly antipsychotics). The combined strategies of a clinical pharmacist medication review and education for nursing staff led to a decrease in both antipsychotic and benzodiazepine use (40). Strategies that reduce the psychoactive medicines burden are likely to translate into significant health benefits (50). This research will attempt to identify whether a reduced psychotropic burden does indeed translate in health benefits.

3.2.3 ANTICHOLINERGICS

3.2.3.1 Anticholinergic medications

Anticholinergic use is a less 'visible' issue for RACF nurses and certainly it does not garner the same level of contempt as polypharmacy or psychotropic use. However, increased exposure to anticholinergic medication is problematic, particularly in those aged 80 years and older (51). Older people are commonly subjected to a high anticholinergic load or burden due to the widespread use of anticholinergic / antimuscarinic medications and the wide range of medications possessing anticholinergic side effects (such as antihistamines, antidepressants, anti-Parkinson agents, antipsychotics, antispasmodics, and skeletal muscle relaxants) (52). Similar to psychotropics, studies have also demonstrated a high anticholinergic load among people with dementia with reports of between 40 – 60% of dementia patients using at least one anticholinergic medication, and 10 – 25% using higher potency anticholinergic drugs or medications with clinically significant anticholinergic activity (53). The lack of genuine awareness from nursing staff is likely due to simply not being aware of which drugs exert an anticholinergic effect. Instruments have been devised to measure the cumulative effect of exposure to medications with anticholinergic effects, such as the Anticholinergic Cognitive Burden (ACB) Scale (54) which reflects the chosen tool used in this research project and CAC's clinical software. CAC RMMR reports highlight the ACB score for the resident, benchmarked against the average ACB score for that site, affiliated organisation/company, and also CAC's client's base.

3.2.3.2 Anticholinergic medications and adverse health outcomes

Anticholinergics exhibit a wide spectrum of adverse effects, particularly in the elderly (51). There is a growing body of evidence that medicines with anticholinergic properties have adverse effects on a range of cognitive capacities, from mild cognitive impairment and memory loss to acute confusion and delirium (54). Taking more anticholinergic medications is associated with greater risk of hospitalisation for confusion or dementia (54). This should warrant considerable concern given the aforementioned high-usage rate of anticholinergic medications in the elderly. Furthermore, increased exposure to anticholinergic medication is associated with physical impairment and an increased frequency of falls (51).

3.2.3.3 The impact of medication reviews on anticholinergic drug use

Strategies to reduce anticholinergic medication burden are likely to translate into significant health benefits (54). A retrospective analysis (30) demonstrated that pharmacist recommended dose regimen changes for anticholinergic medications were accepted by the GP, which resulted in a statistically significant change in the drug burden index score. However, one study from Norway (55) showed that while pharmacist initiated drug changes significantly reduced the anticholinergic drug scale score, this did not reflect in improved cognitive function in nursing home residents. Similarly, another study from the UK (56) found that taking a low dose anticholinergic medication (ABS score of 1) in persons with Alzheimer's did not predict more impaired cognition or more rapid cognitive decline over an 18 month period. There is however evidence that cognitive dysfunction has improved 1-4 years after withdrawal of anticholinergic drugs (57, 58), a consideration that will need to be accommodated when analysing the results from this particular research project.

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