

Care of the elderly

Polypharmacy from a pharmacist's perspective

Polypharmacy is the prescribing of too many unnecessary or inappropriate medicines. For the purpose of this article on care of the elderly, I concentrate on the issue of polypharmacy. Polypharmacy is not exclusive to older people, however due to the effect aging and “wear and tear” has on organs, the risk of polypharmacy increases as with age. There is no specific definition of polypharmacy but in general terms, polypharmacy is defined as the use of multiple drugs that is more than is medically necessary. There is no “standard cut of point” with regard numbers of medication prescribed to indicate polypharmacy. The increase in use of numerous medications has many possible negative health consequences including adverse drug reactions, drug-interactions, non-adherence to medications, decreased functional and cognitive status and high costs, all of which put increased strain on a health service that tends to operate on the verge of breaking point. In Ireland, polypharmacy accounts for over half of the annual costs of prescribing to the entire population aged over 50 years¹. The pharmacist has an important role in advising and reviewing prescribing and determining potentially inappropriate prescribing (i.e.) use of a medicine in which harms outweigh the benefits. The role out of a structured Medicine Use Review (MUR) system for pharmacists in Ireland the next few years should be welcomed and will be an important step in reducing inappropriate prescribing.

An Irish perspective.

A 2012 Trinity College Dublin based study called “*Polypharmacy in adults over 50 in Ireland: Opportunities for cost saving and improved healthcare*” gave an interesting insight to polypharmacy in Ireland in terms of health and cost implications.

The study showed that among Irish people aged over 50, 69% report taking medications regularly¹. The average number of medications taken regularly in the over 50s is 2, in the over 65s is 3 and in the over 75s is 4¹. Those reporting polypharmacy are more likely to be older, have attained a lower educational level, have greater morbidity, worse self-rated health and to have medical card eligibility¹. Although one in three people aged over 65 report polypharmacy, they are responsible for more than half of hospital outpatient and inpatient visits in this age group¹.

Residential care settings

The highest number of medications tends to be taken by those residing in residential care settings². This is not necessarily the fault of the residential care setting per se; it has to be borne in mind that the reason people often reside in a nursing home is due to significant and complex health issues that means living independently at home or being cared by family is no longer possible so high levels of medication usage is not surprising. The medical care of patients in residential care settings is a multi-disciplinary approach so all health professionals should have an input in managing the issue of medications prescribed unnecessarily. (i.e.) Doctor, nurse, pharmacist, speech and language therapist, dietician, etc. As much as 50% of older adults are prescribed at least one medication that is not medically necessary². The pharmacist has an important role in managing unnecessary and excessive prescribing. When there is a formal structured medication review process where a pharmacist sits down to review medication with the doctor and/or patient or care giver regularly, the outcome is a significant reduction on inappropriate medications and more targeted prescribing.

My experience as a pharmacist who deals with patients in residential care settings, I find that regular medication reviews (at least every six months) with nurses and GPs results in significant reduction in unnecessary medication and more targeted prescribing. The advent

of more specific guidelines from the *Health, Information and Quality Authority (HIQA)* and the *Pharmaceutical Society of Ireland (PSI)* on the role of the pharmacist in the review of medications for patients in residential care settings has helped in this area as it gives specific and clear guidance on what the role of the pharmacist should be.

Increased risk of adverse drug reactions

A 11-year study published in 2011 indicated that patients taking 5 or more medications had an 88% increased risk of experiencing a side effect compared to those who were prescribed less medications³. In nursing home residents, the number of ADEs are twice as high in patients taking 9 or more medications compared to those taking less⁴.

Risk of Drug interactions

A 2013 study of older hospitalised adults taking 5 or more medications indicated the prevalence of liver related drug-drug interaction was as much as 80%. The probability of a drug-drug interaction increased with the number of medications prescribed. To be more specific, a patient prescribed 5-9 medications had a 50% probability of drug-drug interactions whereas this probability increased to 100% for patients taking 20 or more medications⁵.

Non-compliance

Non-compliance with drugs in older adults has been associated with complicated medication regimens and polypharmacy⁶⁻¹⁰. This is an area where the pharmacist has an important role; non-compliance can be significantly reduced where there is pharmacist counselling (including full explanation of what each medication is for), regular medication reviews and the use of compliance aids such as blister packing of medications. Non-compliance with medication regimes risks potential disease progression, treatment failure, hospitalisation and ADEs^{7, 10, 11}.

Functional status

Polypharmacy can cause functional decline in older patients. A community based study indicated increased prescription medication diminished patients' ability to perform instrumental activities of daily living (IADLs) and decreased physical functioning¹². IADLs refers to everyday activities like getting in and out of bed, in and out of chairs, feeding, personal hygiene etc.

Cognitive function

A study of 294 older people showed 22% of those taking 5 or less medications had impaired cognition as opposed to 33% of patients taking 6-9 medications and 54% in patients taking 10 or more medications¹³. This is a double edge sword as while polypharmacy increases the risk of cognitive impairment, medication is often prescribed to counteract or slow down cognitive impairment (e.g. dementia, stroke) which increases number of medications prescribed.

Fall risk

As the number of medications increased, the falls risk index score increases and the duration of the one-leg standing test duration decreases¹⁴. The use of 4 or more medications seems to be especially associated with increased risk of falling and the risk of recurrent falls¹⁵. A study in older patients with dementia reported that those patients who reported a fall had an increased prevalence of polypharmacy¹⁶. A study of older adults in residential care settings indicated the risk of experiencing a fall within the previous 30 days was by 7% for each additional medication¹⁷.

Nutrition

Polypharmacy can affect patients' nutritional status. A three-year study found that 50% of those taking 10 or more medications showed signs of malnourishment¹³. Polypharmacy in older community based patients is associated with reduced intake of fibre, fat-soluble and B vitamins, and minerals as well as increased intake of cholesterol, glucose, and sodium¹⁸. Almost half of women and a third of men reporting polypharmacy in Ireland take food

supplements regularly¹. The most common food supplements taken are calcium carbonate (with or without vitamin D), Omega-3-triglycerides and Glucosamine¹.

Case Study in poly-pharmacy: Dementia

Medications used to treat cardiovascular conditions (mainly high blood pressure and heart disease) are the most common medications contributing to polypharmacy¹. To complete this article I discuss polypharmacy in one condition, namely dementia, and the impact dementia and the often numerous medication prescribed to control its symptoms has on a person's health. My experience of dementia is that it has such a profound effect on both physical and mental health that few other conditions leads to polypharmacy over such a short period of time.

Dementia's impact on health

Dementia is an umbrella term used to describe various conditions which damage brain cells and lead to a loss of brain function over time. Dementia causes a progressive decline in a person's mental functioning. It is a broad term, which describes a loss of memory, intellect, rationality, social skills and normal emotional reactions. There are more than 100 conditions that cause dementia. While the risk of dementia increases with age, it is not a natural part of ageing. Dementia affects approximately one in 20 of people aged over 65 years. This rises to one in five in the 80 plus age group. A person with dementia will live for an average of four to eight years, depending on their age at diagnosis. Average life span will also be affected by gender, other medical conditions and the severity of dementia at the time of diagnosis. Dementia ranks as the fourth leading cause of death among the population aged 65 years and over. Alzheimer's disease (AD), the most common cause of dementia in Ireland, accounts for more than 50% of all cases; the second most common form is vascular dementia, which may be preventable.

A dominant condition

Certain conditions 'dominate' all other health issues both in the impact on daily life and in the impact on prognosis¹⁹. Dementia is good example of a dominant condition; dementia makes decisions on comorbid conditions more complex and the impact of dementia on prognosis and function often overrides any impact of other comorbid disease¹⁹. A highly individualised approach to co-prescribing is often required in dementia, as the severity, impact and course of the illness can be so variable.

The loss of the person's mental faculties leads to many psychological and physical conditions which can quickly lead to complex health issues and numerous prescribed medications. As dementia progresses, various conditions develop that may lead to death, such as septicaemia, pneumonia and upper respiratory infections, nutritional disorders, pressure sores, fractures, and wounds. Various psychosocial issues can result from dementia including behavioural disorders, depression and anxiety disorders. Description of the treatment of the various physical health issues associated with dementia is too far-ranging for the scope of this article however I will give a brief outline of the challenges in treating the cognitive and psychological issues associated with dementia.

Drugs used for cognitive impairment

Four drugs are approved for treatment of cognitive impairment in dementia of Alzheimer's Disease (AD): donepezil, galantamine, rivastigimine and memantine. The first three are cholinesterase inhibitors and memantine is a NMDA receptor antagonist. The most common side effects are cholinergic, namely nausea, vomiting, diarrhoea and anorexia. These can be a particular problem because many people with AD lose weight. However, tolerance to these adverse effects normally develops. Trials on cholinesterase inhibitors demonstrated modest improvement in cognitive symptoms. Some studies demonstrated a beneficial effect for up to two years after starting treatment.

Of the four drugs available memantine is the only one licensed to treat moderate severe AD. However, according to NICE (National Institute for Health and Clinical Excellence) in the UK, memantine should only be used for moderately severe to severe AD in patients unable to take an acetylcholinesterase inhibitor. Treatment with memantine must be initiated by a consultant. There are no guidelines to recommend one drug over the others but prescribing considerations include compliance issues. For example, only donepezil and modified release galantamine can be taken once a day. Under specialist supervision, some patients may be prescribed memantine along with a cholinesterase inhibitor.

Anti-psychotic drugs

Antipsychotic drugs are frequently prescribed with the aim of reducing behavioural and psychological symptoms of dementia (BPSD) in older people. In the UK, studies indicate up to 20% of patients diagnosed with dementia are prescribed anti-psychotics for PBSD²⁰. The first line treatment for psychotic symptoms in dementia is atypical antipsychotic (olanzapine, risperidone). These are associated with fewer extrapyramidal effects than conventional or older antipsychotics such as haloperidol. Extrapyramidal effects can include Parkinson symptoms (Tremor), dystonia (abnormal face and body movements), akathisia (restlessness) and tardive dyskinesia (rhythmic, involuntary movements of tongue, face and jaw)

Despite this high rate of use, antipsychotics have only limited benefit in treating BPSD in older people with dementia and carry risk of harm. In 2009, antipsychotics were estimated to cause approximately 1800 deaths and 1620 cerebrovascular events in people with dementia in the UK annually for treatment of PBSD²⁰. However, clinical trial evidence in nursing home patients with dementia indicates that chronically prescribed antipsychotic drugs can be safely discontinued in many patients, with longer term follow-up suggesting a significant reduction in mortality. However this needs to be balanced against the fact that antipsychotics can greatly improve quality of life in some dementia patients suffering with the likes of severe agitation with dementia.

Why should anti-psychotics be prioritised for review?

Patients who have dementia and who have been on antipsychotics for more than 3 months and have stable symptoms should be reviewed with a view to reducing or stopping antipsychotic medication. Antipsychotics are associated with an increased risk of falls, delirium, cerebrovascular events and all-cause death.

Depression

Depression is a common with dementia. Exercise may help reduce the symptoms of depression, and randomised controlled trials support the use of antidepressants. Newer selective serotonin reuptake inhibitors are the preferred class, rather than the older tricyclic agents, which have troublesome side effects. Small studies have demonstrated beneficial effects with trazodone and citalopram²¹. Anxiolytics are also prescribed for anxiety related to dementia but must be restricted to short term use.

Conclusion

Frequent review of the person's medication is essential to prevent unnecessary prescriptions and the harm this can cause. The pharmacist has an important role in reducing risks in reducing over-prescribing, especially in older patients who can be more susceptible to adverse effects.

References upon request

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