Deprescribing in an outpatient medical clinic at a tertiary care hospital in Sri Lanka

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Abstract

Introduction: Use of multiple concomitant medications or ‘polypharmacy’ is linked to decreased medication adherence, adverse drug reactions and increased financial burden on patients and the economy. Deprescribing by experienced healthcare personnel can ensure safe and effective use of medications. Many medications, prescribed during hospital stay or at clinic level are continued for unnecessarily long periods, highlighting the necessity for deprescribing. The objectives of this audit were to identify and deprescribe inappropriate medications in patients, identify their comorbidities and explore reasons for the inappropriate medication use.

Methods: This deprescribing audit was conducted by systematic sampling in selected adult patients >18 years, attending a medical clinic at National Hospital, Kandy over one month. The audit standard was the American Academy of Family Physicians (AAFP) ‘5-step process in deprescribing’. Our study was based only on the first 3 steps of the AAFP deprescribing process.

Results: Out of a total of 402 patients, deprescribing was carried out in 135 (33.58%). In this deprescribed group, 59.3% of patients were female and the mean age was 62.3 (±10.9) years. Furthermore, of the deprescribed patients, 52.6% had hypertension, 44.4% had ischaemic heart disease, and 34.1% had diabetes mellitus. The most deprescribed medication was antiplatelets (37.8%), followed by analgesics (24.4%) and diuretics (20%). A clear indication for using the drug was lacking in 68.9%, while 31.1% of patients continued taking the medication for longer than recommended.

Conclusions: In this audit, over one third of patients underwent deprescribing. It provides just a glimpse of the broader issue of inappropriate polypharmacy and the necessity of deprescribing. Future research involving multiple centres is recommended to enhance understanding of medication patterns necessitating deprescribing.

Key words: deprescribing, polypharmacy, inappropriate medications, multiple medications
The use of multiple medications, termed polypharmacy, is a serious problem in our healthcare system at present. In published literature, the term ‘polypharmacy’ has been given many definitions such as ‘use of at least one potentially inappropriate drug’, ‘the presence of five/six or more concurrent medications’ or ‘medication prescribed to treat the side effect of another medication’ interchangeably. The use of multiple or potentially inappropriate medications is linked to numerous adverse health outcomes, including diminished medication adherence, adverse drug reactions (ADRs), increased risk of disability and hospitalisation and increased healthcare utilisation. According to statistics, nearly half of older adults are on five or more concomitant medications, and as many as 1 in 5 of these prescriptions is potentially inappropriate. Moreover, ADRs account for more morbidity and mortality than most chronic diseases.

Despite the fact that some conditions and patients need to be treated with multiple medications, it is the responsibility of the prescriber to use medicines appropriate to the patients’ clinical needs, in doses that meet their individual requirements, for an adequate period, and at the lowest cost to them and their community.

During a medications review, a clinician can identify the drugs which are no longer needed for the patient and ‘deprescribe’. Deprescribing is a process of medication withdrawal, supervised by a healthcare professional to ensure safe and effective use of medications. This process requires knowledge, attention, time, and awareness of the issues associated with multiple medications.

Kutner et al, found that discontinuation of statins in patients with a life expectancy of one year or less, improved quality of life, reduced medication burden, and reduced medication costs by $3.37 per day. Another Australian study evaluated a hospital-based deprescribing intervention designed to reduce total drug burden. No such studies have been done in Sri Lanka. Rising costs attributed to unnecessary medications represent a major concern achieving sustainable health care.

Other than the prescribers’ awareness, there are tools to identify medications objectively for deprescribing. These tools attempt to address the polypharmacy burden, ADR risk, medication regimen optimization, and the decision-making required to implement the deprescribing process. Clinicians must overcome the barriers of deprescribing by liaising with the other specialties, as well as the patient and their family.

In our practice, we have observed that many of our patients in the clinic setting are on multiple medications, prescribed during hospital stay or at the clinic, without being reviewed to evaluate the necessity of long-term continuation. Often these patients’ medications are not reviewed until they are admitted with undue adverse reactions caused by inappropriate medications.

The primary objective of this audit was to identify and deprescribe inappropriate medications (i.e., medications not indicated, medications being used beyond the recommended duration, multiple medications with similar action, unnecessary vitamins etc.) in a sample of patients attending a medical clinic at National Hospital Kandy (NHK). Specific objectives included identifying the medications that needed deprescribing, evaluating the comorbidities of these patients, and exploring reasons for the inappropriate medication use.

**Methods**

The audit was conducted in adult patients aged 18 and above attending a weekly medical clinic at NHK over the course of one month. A systematic sampling method was utilised to select participants from the clinic’s registry, where every third patient was chosen, and their medications were reviewed. We obtained informed consent from the patients whose medications needed to be deprescribed. The process of deprescribing was conducted by clinicians; consultant physicians and senior registrars, and registrars under the supervision of consultant physicians.

As the audit standard, we adhered to the American Academy of Family Physicians (AAFP) 5-step process in deprescribing. The five steps are 1) identifying potentially inappropriate medications; 2) determining if the medication dosage can be reduced or the medication stopped; 3) planning tapering; 4) monitoring for discontinuation symptoms or the need to restart and support the patient; and 5) documenting outcomes. It was decided to carry out the first 3 steps initially and the next 2 steps during a follow-up period of six months. This paper describes only the first 3 steps.

Initially, potentially inappropriate medications were identified. Subsequently, decisions were made...
regarding whether to omit or reduce the dose as necessary. In cases where immediate cessation was not practical or feasible, tapering off was performed. With regards to antiplatelets, the necessity of single antiplatelet therapy as primary prophylaxis or dual antiplatelets one year after acute coronary syndrome or revascularization was assessed according to the current guidelines. (17,18) Antiplatelets were discontinued in the absence of an indication to continue. Throughout this process, there was constant discussion with patients, explaining the reasons for deprescribing, and it was done only with their clear consent.

Data was collected using a validated interviewer-based questionnaire. Demographic information such as age and sex, comorbidities, deprescribed medications along with their classes, and reasons for continuation were collected from patients. Personal information such as names and addresses were not collected to ensure privacy. Institutional administrative and ethical approval were obtained. Numerical data was presented with means and standard deviations, while categorical data was presented as percentages. Data analysis was performed using SPSS statistical analysis software.

Results

Out of the 402 patients included in the study, deprescribing was carried out in 135 (33.58%) patients. Majority of these patients (59.3%) were female. The age range of deprescribed patients was 30-87 years, while the mean age was 62.3 (± 10.9) years. Among the patients who had deprescribing, 52.6% were on treatment for hypertension, 44.4% had ischaemic heart disease, and 34.1% had diabetes mellitus (table 1).

The most deprescribed medication was antiplatelets (37.8% of patients). Diuretics, vitamins/supplements, and acid-lowering medications were deprescribed in 20%, 12.6% and 11.9% respectively. Analgesics were omitted in 24.4% of patients (table 2).

Upon analysing the reasons for the deprescribed medications, the main reasons for deprescribing were as follows: 93 (68.9%) of patients lacked a clear indication for using or continuing the medication, and 42 (31.1%) of patients continued taking medication for a longer duration than recommended. Out of the patients who lacked a clear indication to continue, some were on vitamin supplements such as vitamins B, vitamin C, folate and calcium, and some were on antiplatelets for primary prevention which is no longer recommended in the current guidelines. Analgesics like gabapentin and amitriptyline, which can increase the risk of falls in the elderly, were also inappropriately used.

Majority of the patients who continued taking

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Number of patients (%)</th>
</tr>
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<tbody>
<tr>
<td>Hypertension</td>
<td>71 (52.6)</td>
</tr>
<tr>
<td>Ischaemic heart disease</td>
<td>60 (44.4)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>46 (34.1)</td>
</tr>
<tr>
<td>Stroke</td>
<td>18 (13.3)</td>
</tr>
<tr>
<td>Heart failure</td>
<td>10 (7.4)</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>10 (7.4)</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>8 (5.9)</td>
</tr>
<tr>
<td>COPD and Asthma</td>
<td>4 (2.9)</td>
</tr>
<tr>
<td>Arthritis</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Valvular heart disease</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>GORD</td>
<td>1 (0.7)</td>
</tr>
</tbody>
</table>

*COPD - Chronic Obstructive Pulmonary Disease, GORD - Gastro-oesophageal Reflux Disease*
Table 2 - Medications deprescribed

<table>
<thead>
<tr>
<th>Medication</th>
<th>Number deprescribed %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antiplatelets</strong></td>
<td></td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>34 (25.2)</td>
</tr>
<tr>
<td>Aspirin</td>
<td>17 (12.6)</td>
</tr>
<tr>
<td><strong>Analgesics</strong></td>
<td>33 (24.4)</td>
</tr>
<tr>
<td>Paracetamol</td>
<td>10 (7.4)</td>
</tr>
<tr>
<td>Diclofenac sodium</td>
<td>8 (5.9)</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>8 (5.9)</td>
</tr>
<tr>
<td>Amitriptyline</td>
<td>7 (5.2)</td>
</tr>
<tr>
<td><strong>Vitamins/ Supplements</strong></td>
<td></td>
</tr>
<tr>
<td>Vitamin B</td>
<td>12 (8.9)</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Calcium</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Folic acid</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td><strong>Acid-lowering medications</strong></td>
<td></td>
</tr>
<tr>
<td>Omeprazole</td>
<td>12 (8.9)</td>
</tr>
<tr>
<td>Famotidine</td>
<td>4 (3.0)</td>
</tr>
<tr>
<td><strong>Antiemetics</strong></td>
<td>7 (5.2)</td>
</tr>
<tr>
<td>Domperidone</td>
<td>4 (3.0)</td>
</tr>
<tr>
<td>Prochlorperazine</td>
<td>3 (2.2)</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>11 (8.1)</td>
</tr>
<tr>
<td>Betahistine</td>
<td>6 (4.4)</td>
</tr>
<tr>
<td>Cetirizine</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Isosorbide mononitrate</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Enalapril</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>1 (0.7)</td>
</tr>
</tbody>
</table>

Medication for a longer duration than recommended, were on dual antiplatelets (aspirin and clopidogrel) after their revascularization or acute coronary syndrome. Medications such as omeprazole, famotidine, domperidone, and betahistine were continued for months to years.

Discussion

In our study, deprescribing was conducted in nearly one-third of the patients. The most commonly deprescribed medication was antiplatelets, followed by analgesics, diuretics and acid lowering medications.

Potentially inappropriate medication use presents a clinical challenge because we are more focused on improving the health of patients under our care by initiating medications rather than reducing the dose or discontinuation. However, we must appreciate that
one of the most important components of good prescribing is deprescribing.

Initially patients with hypertension or diabetes had been prescribed aspirin for primary prophylaxis without adequate cardiovascular risk assessment. Wever, it is not recommended in the current guidelines.(17) Upon evaluating their cardiovascular risk, aspirin was discontinued in some patients.

Furthermore, patients who had acute coronary syndrome or who underwent revascularization were using dual antiplatelet therapy for several years without being reassessed, contrary to the current recommendation to discontinue one antiplatelet after a year.(18) Prolonged use of antiplatelets can potentially lead to adverse effects such as gastric irritation and life-threatening bleeding. We rectified the inappropriate antiplatelet therapy in these patients.

Acid-lowering medications, such as proton pump inhibitors (PPIs) that were started alongside antiplatelets for acute coronary syndrome had been continued for years, and some patients were taking over-the-counter PPIs on their own, without any review. These were deprescribed after explaining the potential harmful effects to the patients. In a study conducted in Slovenia, two third of hospitalised patients underwent deprescribing of inappropriate PPI.(19)

In our deprescribing process, we adhered to the first 3 steps of the 5 step deprescribing process outlined by the AAFP.(16) Current evidence indicates that most older adults would prefer to alleviate their medication burden and are receptive towards medication deprescribing.(20)

Halliday et al, assessed the safety of withdrawing heart failure medication in a randomised clinical trial involving patients with recovered (ejection fraction ≥50%) dilated cardiomyopathy. Although further research is necessary, this trial revealed that approximately 40% of participants experienced relapses when their heart failure medications were withdrawn, suggesting that long-term administration of these medications is often, though not always, necessary.(21) In the deprescribing process undertaken in our study, considering that patients may experience symptoms and relapses after deprescribing, they were advised to return if they encountered any issues.

Several tools, predominantly focused on care of older adults, are available to identify medications that may be appropriate for deprescribing.(22) The AGS Beers Criteria is an evidence-based, expert consensus list of medications that are often inappropriate in older adults due to excess risk of harm and/or limited benefits in this population.(23) For persons approaching end of life, the STOPP Frail (Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy) tool is a particularly useful reference.(24) A list of ‘Modified STOPP/START criteria for Sri Lanka’ has been developed. These criteria are currently being validated through a multi-center study.(25)

Barriers to deprescribing are multifactorial: resistance from patients and/or caregivers, beliefs regarding the consequences of deprescribing, inadequate organisational support for standardised medication review, a relative scarcity of evidence and/or guidelines on deprescribing, prescribers' behaviour such as inertia, and a lack of knowledge in deprescribing.(26-29) We faced considerable resistance from some patients when we tried to deprescribe their long-term medications, but after explaining the rationale of the decisions they understood and agreed with us.

Deprescribing is a complex process and demands the clinician spend a considerable time on each prescription. The limited time that can be allocated for an individual patient in our busy clinic settings is perhaps the most significant barrier in a country such as Sri Lanka.

Another instance where there is undue continuation of medications is when drugs have been prescribed by a specialist. In these situations, fellow colleagues and primary care clinicians may not be comfortable in deprescribing due to the subjective feeling of the need to honour professional hierarchies.(30,31) Therefore, effective communication and collaboration with patients, families, and other professionals is essential, if we are to achieve an effective deprescribing policy in Sri Lanka. Regular medication reviews, ideally annually or bi-annually, are crucial for patients with chronic conditions.

**Limitations**

As this study was conducted as an audit, the positive and/or negative outcomes of deprescribing were not assessed, for which long-term follow-up is necessary. This study was conducted at a single medical unit in a tertiary care institution in Sri Lanka, providing just a glimpse of the broader issue of inappropriate polypharmacy and the necessity of deprescribing.
Deprescribing addresses polypharmacy challenges by prioritising ongoing treatment. Over one third of the patients included in this audit underwent deprescribing. These patients were either on long-term medications that were not indicated or taking medications beyond the recommended duration. The most common drug classes that were deprescribed included antiplatelets, analgesics and diuretics.

Conclusion

Follow-up of patients is necessary to identify the outcomes and address any adverse effects of deprescribing. Continuous auditing and deprescribing protocols are recommended across healthcare settings in Sri Lanka. Future research involving multiple centres could enhance understanding of medication patterns necessitating deprescribing. We would like to suggest authorities to strengthen local guidelines on deprescribing in order to benefit patients in the long run.

Recommendations

Follow-up of patients is necessary to identify the outcomes and address any adverse effects of deprescribing. Continuous auditing and deprescribing protocols are recommended across healthcare settings in Sri Lanka. Future research involving multiple centres could enhance understanding of medication patterns necessitating deprescribing. We would like to suggest authorities to strengthen local guidelines on deprescribing in order to benefit patients in the long run.

Declarations

Author contributions

All authors contributed to the conceptualization and design of the study. Perera UAWL, Jayasinghe IK, Wijesingha WMCR, Rathnayaka DL and Rupasinghe S contributed to the acquisition of data. Perera UAWL, Wijesingha WMCR and Abeywickrama UK conducted the data analysis. Perera UAWL, Jayasinghe IK and Abeywickrama UK contributed to data interpretation and writing the manuscript. All authors read and approved the final manuscript.

Conflicts of interest

The authors declare that they have no conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics approval

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References


