Factors influencing deprescribing habits among geriatricians

DANIELLE NÍ CHRÓINÍN1, CHANTELLÉ NÍ CHRÓINÍN2, ALEXANDER BEVERIDGE1

1Department of Geriatric Medicine, St Vincent’s Hospital, 390 Victoria Street, Darlinghurst, Sydney, New South Wales 2010, Australia
2Mater Misericordiae University Hospital, Dublin, Ireland

Address correspondence to: D. Ní Chróinín. Tel: (+61) 283 824 194; Fax: (+61) 283 824 193.
Email: danielle.nichroinin@svha.org.au; dmmnic@umail.ucc.ie

Abstract

Background: deprescribing habits among physicians managing older, frailer, cognitively impaired patients have not been well investigated.

Methods: an anonymised electronic survey was disseminated to all members of an international geriatric society/local advanced trainee network (N = 930). This comprised a Likert-scale analysis of factors influencing desprescribing, and five case vignettes, detailing a patient with progressive cognitive impairment and dependency, on a background of ischaemic heart disease and hypertension.

Results: among 134 respondents (response rate 14.4%), 47.4% were female, 48.9% aged 36–50 years and 84.1% specialists (15.9% trainees). Respondents commonly rated limited life expectancy (96.2%) and cognitive impairment (84.1%) as very/extremely important to deprescribing practices. On multivariable analysis, older respondents less commonly rated functional dependency (odds ratio [OR] 0.22 per change in age category; P < 0.001) and limited life expectancy (OR 0.09, P = 0.04) important when deprescribing, while female participants (OR 3.03, P < 0.001) and trainees (versus specialists OR 14.29, P < 0.001) more often rated adherence to evidence-based guidelines important. As vignettes described increasing dependency and cognitive impairment, physicians were more likely to stop donepezil, aspirin, atorvastatin and antihypertensives (all...
Factors influencing deprescribing habits

P < 0.001 for trend). Aspirin (93.6%) and ramipril (94.1%) were most commonly deprescribed. Commonest reasons cited for deprescribing medications were ‘dementia severity’, followed by pill burden.

Conclusion: In this exploratory analysis, geriatricians rated limited life expectancy and cognitive impairment very important in driving deprescribing practices. Geriatricians more often deprescribed multiple medications in the setting of advancing dependency and cognitive impairment, driven by dementia severity and pill burden concerns. Physician characteristics also influence deprescribing practices. Further exploration of factors influencing deprescribing patterns, and patient outcomes, is needed.

Keywords: geriatrics, dementia, polypharmacy, physician’s practice patterns, inappropriate prescribing, older people

Background

Polypharmacy is common, particularly among older adults, and polypharmacy and inappropriate medication prescription have been associated with adverse clinical and financial outcomes [1–6]. Deprescribing—supervised tapering or cessation of drugs, aiming to minimise inappropriate polypharmacy and improve patient outcomes [7]—is increasingly topical. Australia has seen the advent of an Australian Deprescribing Network [8], and the National Quality Use of Medicines strategy highlights the need for safe and effective medicine choices [9]. Yet a sound evidence base to inform best practice for older patients, often frail and/or cognitively impaired, is often lacking [10].

Deprescribing is not only feasible, [5, 6, 11, 12], but associated benefits include reduced polypharmacy, positive clinical outcomes and increased adherence [4, 12, 13]. To date, drivers of deprescribing, and decision-making processes, have not been well investigated. Individual physician practice varies widely [14, 15]. Limited data from palliative care and advanced dementia settings demonstrate considerable variation and inadequate structures for deprescribing [14, 16, 17].

In addition to patient characteristics, prescriber characteristics may drive medication choices [14, 18, 19]. Furthermore, doctors may side-step deprescribing rather than discuss predicted life expectancy, feel guilt if deviate from guidelines, be disempowered by the involvement of multiple specialists or be influenced by aggressive pharmaceutical marketing [12, 15].

We sought to explore factors influencing deprescribing practices among specialist physicians caring for older patients, with progressive frailty, dependency and cognitive decline.

Methods

An anonymised electronic survey was disseminated to all members of the Australian and New Zealand Society for Geriatric Medicine (ANZSGM) and New South Wales Geriatric Medicine Advanced Trainee (Specialist Registrar) network.

The survey had two components. Firstly, five case vignettes, detailing a patient with progressively increasing cognitive impairment and dependency, with a history of ischaemic heart disease, hypertension, knee osteoarthritis and constipation. Secondly, physicians were asked to rate the importance of factors potentially influencing deprescribing, using a 5-point Likert scale, ranging from ‘not important’ to ‘extremely important’. Ten factors were identified for inclusion (Table 1). See Supplementary data, Appendix 1 available in Age and Ageing online, for details of the survey and statistical analysis.

Results

The survey was disseminated to 930 physicians, and 134 (14.4%) responded. Forty-seven per cent (63) were female, 84.1% (111) specialists (trainees 15.9%), 74.8% (98) Caucasian and 25.2% Asian. Twenty per cent (27) of respondents were <35 years old, 48.9% (65) aged 35–50 years, 29.3% (39) aged 51–75 years and 1.5% (2) >75 years.

Factors potentially influencing deprescribing: Likert-scale analysis

Table 1 details the proportion of respondents reporting each of the listed factors to be very/extremely important in influencing their deprescribing practices. The factors most commonly rated very/extremely important were limited life expectancy (96.2%) and cognitive impairment (84.1%). Budgetary considerations, and whether someone else initiated the medication, were least often prioritised (see Supplementary data, Appendix 2 available in Age and Ageing online, for response distribution).

Physician characteristics also affected the factors deemed important. On univariate analysis, older respondents were less likely to consider functional dependency, cognitive impairment, limited life expectancy and pill burden important when deprescribing (all P ≤ 0.03; Table 2a). Female
participants \(P=0.05\) and trainees (versus specialists, \(P=0.001\) more often rated adherence to evidence-based guidelines as important.

On multivariate analysis, adjusting for respondent’s age category, gender and trainee-versus-specialist status, increasing respondent’s age was independently associated with lower likelihood of reporting both functional dependency \(P<0.001\) and limited life expectancy \(P=0.04\) to be very important when deprescribing (Table 2b). The associations between rating guideline adherence important, and both female gender \(P<0.001\) and trainee status \(P<0.001\), were also maintained. See Supplementary data, Appendix 3 available in Age and Ageing online.

**Case vignette analysis**

On analysis of the case vignettes, portrayal of progressively worse cognitive impairment and dependency was associated with increasing likelihood of deprescribing each of donepezil, aspirin, atorvastatin, ramipril and amiodipine, or any antihypertensive (all \(P<0.001\) for trend) (Supplementary data, Appendix 4 are available in Age and Ageing online). Findings were similar when ‘symptomatic’ medications (donepezil, analgesics, laxative) and secondary prevention medications (aspirin, statin, antihypertensives) were grouped (both \(P<0.001\) for trend).

On univariate analysis, males (odds ratio [OR] 1.44, \(P=0.03\) and trainees (OR 2.13, \(P<0.001\) were more likely to deprescribe antihypertensives, and males (OR 1.78, \(P=0.02\) and older respondents (OR 1.98, \(P<0.001\)) to discontinue the laxative. On adjusted analysis, males (OR 1.41, \(P=0.05\) and trainees (OR 2.27, \(P<0.001\)) remained more likely to deprescribe antihypertensives, and males (OR 1.63, \(P=0.05\)) and older respondents (OR 1.89, \(P<0.001\)) to discontinue senna. See Supplementary data, Appendix 5 available in Age and Ageing online. Trainees, versus specialists, more often discontinued secondary prevention medications, on univariate (OR 1.47, \(P=0.04\)) and multivariate (OR 1.92, \(P=0.02\)) analysis.

**Reasons for discontinuing medications**

On thematic analysis of the reasons cited for deprescribing, several common themes emerged (Supplementary data, Appendix 6 available in Age and Ageing online). ‘Dementia severity’ was the commonest reason cited for discontinuing donepezil (in 49.6% of deprescriptions), aspirin (93.6%), atorvastatin (72.8%), ramipril (94.1%) and amlodipine (40.8%), with ‘pill burden’ the next commonest theme identified. Pill burden was the commonest theme cited for deprescribing paracetamol (at 98.3%).

**New medication initiation**

In total, 219 new medication prescriptions were suggested (across 670 interactions [134 respondents × 5 case scenarios]). The commonest new medications mooted were opiate analgesia \((N=52)\), topical analgesic \((N=43)\), and laxatives \((N=42)\). See Supplementary data, Appendix 7 available in Age and Ageing online. A statistical trend was observed whereby new medications were less frequently initiated as case vignettes described increasing cognitive impairment and dependency \(P<0.007\). Older respondents (adjusted OR 0.72 per increase in age category, \(P=0.02\)) and specialists (adjusted OR 0.39, \(P<0.001\)) were less likely to start a new medication (Supplementary data, Appendix 5 available in Age and Ageing online).

**Discussion**

Geriatricians manage older, frailer and often cognitively impaired patients, and medication review is an inherent part of patient care. However, to date, the factors influencing deprescribing in geriatric practice have not been well explored. Although numbers were limited, this is the largest published Australian/New Zealand study of factors influencing deprescribing habits in geriatric medicine. It provides preliminary data regarding factors considered important by geriatricians when deprescribing, and as such is hypothesis generating, but given the low numbers, must be interpreted with caution. Geriatric Physicians particularly rated limited life expectancy and cognitive impairment as important drivers of deprescribing and were more likely to deprescribe multiple medications in the setting of advancing dependency and cognitive impairment. Common themes driving deprescribing included dementia severity and pill burden. Characteristics of the individual prescriber were associated with both deprescribing practices and influencing factors. This was evidenced both in rating the importance of factors potentially influencing deprescribing and in managing medications within hypothetical case vignettes.

---

**Table 2.** Association between respondent characteristics and factors rated as very/extremely important when deprescribing

<table>
<thead>
<tr>
<th>Factor influencing deprescribing</th>
<th>OR</th>
<th>95% CI</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a. Univariate analysis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondent’s age (^a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional dependency</td>
<td>0.27</td>
<td>0.13–0.54</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Limited life expectancy</td>
<td>0.13</td>
<td>0.02–0.67</td>
<td>0.02</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>0.49</td>
<td>0.25–0.96</td>
<td>0.03</td>
</tr>
<tr>
<td>Pill burden</td>
<td>0.51</td>
<td>0.29–0.89</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adherence to evidence-based guidelines</td>
<td>2.08</td>
<td>0.99–4.35</td>
<td>0.05</td>
</tr>
<tr>
<td>Trainee (V specialist)</td>
<td>6.5</td>
<td>2.17–20.0</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>b. Multivariate analysis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondent’s age (^a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional dependency</td>
<td>0.22</td>
<td>0.10–0.50</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Limited life expectancy</td>
<td>0.09</td>
<td>0.01–0.88</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adherence to evidence-based guidelines</td>
<td>3.03</td>
<td>1.33–7.14</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Trainee (V specialist)</td>
<td>14.29</td>
<td>3.70–50</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

\(^a\)OR per change in respondent’s own age category.
Despite recent economic crises and health service prioritisation of cost-effectiveness, budgetary concerns were infrequently considered an important driver of deprescribing. Life expectancy and cognitive impairment were considered very important, but questions abound. When is the right time to stop? Are estimations of life expectancy sufficiently accurate to determine when to cease medication? What role have primary and secondary preventative therapies in dementia cohorts?

Like other authors [14, 19], we observed an association between individual physician characteristics and prescribing decisions. Older physicians less commonly rated functional dependency and limited life expectancy important when deprescribing. We do not wish to over-interpret our data, but perhaps older physicians adopt a more ‘global’ approach, rather than focussing on specific functional measures or remaining life years. Female participants and trainees more often rated adherence to evidence-based guidelines important, and females were less likely to discontinue antihypertensives in the case scenarios, even in the context of increasing dependency and dementia. There is no uncontested psychological rationale explaining why gender might be associated with prioritising adherence to rules [20]. As regards the trainee-versus-specialist disparity, trainee physicians may be more sensitised to guideline adherence during training. However, in the case vignettes, trainees were more likely to discontinue secondary prevention medications in the context of progressive impairment, despite a diagnosis of ischaemic heart disease.

While numbers were not large, strengths of this study include the focus on physicians who manage older, frailer and cognitively impaired patients, across two countries, including both qualified specialists and those in training. Multiple factors might influence deprescribing were assessed.

The low response rate of 14.4% obviously raises the possibility of selection bias and is a significant weakness. These respondents may not be subject to the same influences when deprescribing as the physician population at large. In investigating geriatricians alone, we cannot extrapolate findings to other cohorts. Other studies, such as that by Parsons et al. [14], have also been limited by low response rates. Efforts were made to increase response rate: a user friendly, online format, short (15 min) completion estimate, plus reminder emails. E-surveys may incur lower response rates than paper surveys [21]. Amidst a plethora of emails, recipients may be forgiven for not engaging with requests to partake in yet another questionnaire. Administration over the Christmas period may have further impacted on response [21].

We adopted a practical approach, utilising an ordinal (Likert) scale to investigate the importance attributed to factors influencing deprescribing. However, this is at heart a qualitative concept. Furthermore, case vignettes and self-reported assessment of drivers of deprescribing may not mirror real-world practice. And even establishing actual clinical practice will only identify current, and not best, practices. Strengthening of the evidence base is needed, both for appropriate medication use and deprescribing, in older persons, including those with progressive multimorbidity. The Opti-Med trial, investigating the impact of deprescribing amongst persons aged ≥65 years in residential care facilities, will provide valuable data regarding healthcare utilisation and clinical outcomes [22]. Similar randomised controlled trials are needed to establish gold standards of mediation management in other groups of older persons.

Key points

- Factors driving deprescribing (medication reduction to reduce polypharmacy/improve outcomes) have not been well investigated.
- In this exploratory survey, limited life expectancy and cognitive impairment were rated very important in driving deprescribing practices.
- Geriatricians were more likely to deprescribe in the setting of advancing dependency and cognitive impairment.
- Physician characteristics also influenced deprescribing practices.
- Common themes underlying deprescribing decisions included dementia severity and pill burden.

Conflicts of interest

None declared.

Supplementary data

Supplementary data mentioned in the text are available to subscribers in Age and Ageing online.

References