



FACULDADE DE MEDICINA  
UNIVERSIDADE DE  
**COIMBRA**

MESTRADO INTEGRADO EM MEDICINA – TRABALHO FINAL

GABRIELA MATOS DE CARVALHO E SILVA

***FACTORS INFLUENCING DEPRESCRIBING DECISION OF  
PRIMARY CARE PHYSICIANS IN PORTUGAL***

ARTIGO CIENTÍFICO ORIGINAL

ÁREA CIENTÍFICA DE MEDICINA GERAL E FAMILIAR

Trabalho realizado sob orientação de:  
CARLOS SEIÇA CARDOSO  
INÊS ROSENDO CARVALHO E SILVA

04/2022



FACULDADE DE MEDICINA DA UNIVERSIDADE DE COIMBRA

TRABALHO FINAL DO 6º ANO MÉDICO COM VISTA À ATRIBUIÇÃO DO GRAU DE  
MESTRE NO ÂMBITO DO CICLO DE ESTUDOS DE MESTRADO INTEGRADO EM  
MEDICINA

**Factors influencing deprescribing decision of primary care physicians in Portugal**

Fatores que influenciam a decisão de desprescrição dos Médicos de Família em Portugal

**Autores e Afiliações:**

Gabriela Matos de Carvalho e Silva<sup>1</sup>, Carlos Seiça Cardoso<sup>2</sup>, Inês Rosendo Carvalho e Silva<sup>3</sup>

<sup>1</sup>Faculdade de Medicina, Universidade de Coimbra, Portugal

<sup>2</sup>Unidade de Saúde Familiar Condeixa, Portugal

<sup>3</sup>Unidade de Saúde Familiar Coimbra Centro, Portugal

Contacto: gabimcsilva97@gmail.com

## Index Page

<b>Abstract</b> .....	5
<b>Resumo</b> .....	6
<b>Introduction</b> .....	7
<b>Materials and Methods</b> .....	8
Participants .....	8
Online Survey .....	8
Statistical Analysis .....	9
<b>Results</b> .....	10
GP characteristics .....	10
Case-vignette analyses .....	10
Barriers to deprescribing in clinical practice .....	13
<b>Discussion</b> .....	14
Summary .....	14
Strengths and limitations .....	14
Comparison with existing literature .....	15
Implications for research and practice .....	15
<b>Conclusion</b> .....	18
<b>References</b> .....	19
<b>Supplementary file I</b> .....	24

## Abstract

**Introduction:** More than half of the elderly population is affected by polypharmacy, which is associated with various known risks, and deprescribing is only recently starting to emerge as an important component of primary care. The goal of this study is to explore whether and how General Practitioners (GPs) in Portugal deprescribe in the elderly, multimorbid and polymedicated population, and to identify which factors most influence this decision.

**Methods:** An online survey was shared with Portuguese GPs, including 3 case vignettes of polymedicated elderly patients with increasing levels of dependency and history of cardiovascular disease (CVD). We compared the percentages of GPs who would deprescribe for each case and evaluated the influence of the CVD history and level of dependency on the decision to deprescribe, using McNemar and Cochran tests. Finally, an open-ended question was included to assess which factors most influence GPs' decision to deprescribe in clinical practice.

**Results:** Of the 285 GPs who responded, 28.8% were men and the mean age was approximately 43 years (SD 12.75). While the level of dependency directly influenced the deprescription of all medications ( $p < 0.05$  in every case), a positive history of CVD was associated with less deprescription (only aspirin, atorvastatin and pantoprazole in all levels of dependency ( $p < 0.001$ )). The most commonly referred barriers to deprescribing were "Patient" (33.3%), "Prescriber Beliefs/Attitude" (19.1%), "Information/Influencers" and "Resources" (both 13.6%).

**Conclusions:** Most of the participating Portuguese GPs were willing to deprescribe at least one medication in elderly multimorbid patients with polypharmacy, especially cardiovascular medication for primary prevention. The rates of deprescription varied directly with the patient's level of dependency and indirectly with CVD risk. Patient related barriers can be the first ones to be addressed in order to improve deprescription among Portuguese GPs.

**Keywords:** Deprescribing, Polypharmacy, Multimorbidity, Elderly, General Practitioners.

## Resumo

**Introdução:** Mais de metade da população idosa é afetada pela polifarmacoterapia, que está associada a vários riscos conhecidos, e a desprescrição só recentemente começou a surgir como um componente importante dos cuidados primários. O objetivo deste estudo é explorar se e como os Médicos de Família em Portugal desprescrevem na população idosa, multimórbida e polimedicada, e identificar quais os fatores que mais influenciam esta decisão.

**Métodos:** Um inquérito online foi partilhado com Médicos de Família portugueses, incluindo 3 vinhetas clínicas de doentes idosos polimedicados, com níveis crescentes de dependência e história de doença cardiovascular (DCV). Comparámos as percentagens de Médicos de Família que desprescreveram para cada caso e avaliámos a influência da história de DCV e nível de dependência na decisão de desprescrever, utilizando os testes de McNemar e de Cochran. Finalmente, foi incluída uma pergunta aberta para avaliar quais os fatores que mais influenciam a decisão de desprescrição dos Médicos de Família na prática clínica.

**Resultados:** Dos 285 Médicos de Família que responderam, 28,8% eram homens e a idade média era de aproximadamente 43 anos (SD 12,75). Embora o nível de dependência tenha influenciado diretamente a desprescrição de todos os medicamentos ( $p < 0,05$  em todos os casos), uma história positiva de DCV foi associada a menor desprescrição (apenas aspirina, atorvastatina e pantoprazol em todos os níveis de dependência ( $p < 0,001$ )). As barreiras mais frequentemente referidas à desprescrição foram "Doente" (33,3%), "Crenças/Atitudes do Prescritor" (19,1%), "Informação/Influências" e "Recursos" (ambos 13,6%).

**Conclusões:** A maioria dos Médicos de Família portugueses que participaram no estudo estavam dispostos a desprescrever pelo menos um medicamento em doentes idosos, multimórbidos e polimedicados, especialmente medicação cardiovascular para prevenção primária. As taxas de desprescrição variaram diretamente com o nível de dependência do paciente e indiretamente com o risco de DCV. As barreiras relacionadas com o paciente podem ser as primeiras a ser abordadas a fim de melhorar a desprescrição entre os médicos de clínica geral portugueses.

**Palavras-chave:** Desprescrição, Polifarmacoterapia, Multimorbilidade, Idoso, Médicos de Família

## Introduction

Polypharmacy is defined as the prescription of five or more drugs, some authors also considering it the use of more medications than are medically necessary.<sup>1</sup> This number of drugs can easily be reached by following the clinical practice guidelines of single conditions in patients with multimorbidity, which affects 55-98% of the elderly population.<sup>2</sup> Therefore, polypharmacy is particularly important towards the end of life, as patients “accumulate” medications to treat and prevent multiple diseases,<sup>3</sup> being linked to an increased risk of falls, fractures, hospitalization, physical and cognitive impairment,<sup>4, 5</sup> as well as increased healthcare costs for both the patient and the healthcare system.<sup>6</sup> Although some studies found an association with increased mortality,<sup>7</sup> it remains unclear whether polypharmacy is a marker for poor health outcomes or an independent risk factor for mortality.<sup>8</sup>

There is little doubt that polypharmacy increases the risks of adverse drug reactions (ADR), medication errors, medication burden and reduced medication adherence.<sup>9</sup> Older patients are particularly vulnerable to these effects, due to age-associated changes in pharmacokinetics and pharmacodynamics,<sup>10</sup> a “drug-ageing paradox”, where older people, who are at higher risk of disease, are the ones where medications have smaller beneficial effects and a greater risk of ADR.<sup>9</sup>

Approximately one in five prescriptions to elderly persons in primary care is inappropriate<sup>11</sup> and the single most important predictor of inappropriate prescribing is the number of prescribed drugs.<sup>12</sup> Potentially inappropriate medications (PIM) include drugs without a clear indication, ineffective drugs and drugs that represent therapeutic duplication.<sup>7</sup> In the elderly population, it is also common to find “prescribing cascades”, which are prescriptions of additional medication to treat an adverse drug event misinterpreted as a new medical condition.<sup>13</sup>

As inappropriate medications are, by definition, exposing the patient to unnecessary risks, effective methods to reduce their use are required.<sup>14</sup> There are tools that help identify PIM use, which include the Beers, STOPP (screening tool of older people’s prescriptions), and START (screening tool to alert to right treatment) criteria, and the Medication Appropriateness Index.<sup>15</sup> However, these tools focus on either educating prescribers about appropriate use of medication or on identification of PIMs, but provide almost no guidance on how to proceed after the PIM has been identified.<sup>14</sup>

Deprescribing is the “process of withdrawal of an inappropriate medication, supervised by a healthcare professional with the goal of managing polypharmacy and improving outcomes”.<sup>16</sup> Deprescribing not only discontinues medications, but also decreases medication dosages, and changes medications to optimize clinical results, taking into consideration not only the risk associated with individual drugs, but also potential drug-drug interactions.<sup>12</sup>

Involving patients in the deprescribing process can improve patients’ knowledge, satisfaction and the identification of drug related problems,<sup>17</sup> which is why an individualized approach is crucial for a successful and sustainable deprescribing.<sup>18</sup> General Practitioners (GPs) are ideally positioned to facilitate deprescribing because of their established relationship with the patient, which provides trust and supports shared decision making.<sup>19, 20</sup>

A 2016 meta-analysis on the feasibility and effect of deprescribing in older adults concluded that patient-specific deprescribing may improve longevity and is often achieved without adverse changes in quality of life or health outcomes.<sup>21</sup> This is supported by a 2019 systematic review of 10 studies investigating the deprescription of at least one medication in older adults, which found that, although deprescribing may not significantly improve quality of life or satisfaction with care, it may also not contribute to additional emergency department visits and hospitalizations.<sup>22</sup>

Implementation of deprescribing into clinical practice remains a challenge,<sup>23</sup> given the difficulties faced by both prescriber and patient. GPs report limited consultation time, poor communication between prescribing physicians and fear of causing disease relapse and drug withdrawal as barriers to deprescribing.<sup>24</sup> Interpretation of deprescribing by the patient as a sign of being given up on, similar to difficult discussions on life expectancy, are other concerns shown by GPs.<sup>25</sup> Also among the highest ranked barriers, were not only the lack of evidence-based deprescribing guidelines,<sup>24</sup> but also the need to manage and treat multiple conditions based on disease-specific guidelines, whose evidence base is derived from trials that often exclude elderly, frail and multimorbid patients.<sup>26, 27</sup>

The goals of this study are to explore whether and how GPs in Portugal deprescribe in the elderly, multimorbid and polymedicated population, to identify which factors might influence the decision process, and to raise awareness to the importance and complexity of deprescribing in these patients.

## **Materials and methods**

### Participants

An online survey was shared both using a mailing list and internet forums including Portuguese GPs. A target sample of 377 participants was calculated for a confidence level of 95% (sample size calculator: <http://www.raosoft.com/samplesize.html>). The inclusion criteria were being a General Practitioner and having treated at least 5 multimorbid patients a week in the last year. The approval of the University of Coimbra, Faculty of Medicine's Ethics Committee for this study was obtained.

### Online Survey

Before participants could assess the online survey content, they had to provide their informed consent. This survey included 3 components: 1) GP's characteristics; 2) Three clinical case-vignettes of old, multimorbid patients with varying degrees of physical and cognitive condition, as well as of third-party dependency. For each case we added a modifying factor – a positive history of CVD (cardiovascular disease); 3) Questions about the participant's perception on the barriers/difficulties of deprescribing in clinical practice. (See supplementary file I).

For the first component, each GP was asked about age, sex, medical career rank, years of experience working as a GP, Healthcare Administrative region (ARS) they belong to and type of Family Medicine Unit they work in. In Portugal there are 3 types of Family Medicine Units according to their organizational setting: Family Medicine Units type A (USF-A), Family Medicine Units type B (USF-B), with higher levels



of administrative autonomy (with performance related remuneration only on the USF-B), and Personalized Primary care Units (UCSP). To conclude this first component of the online survey, GPs were asked to estimate the number of patients they manage each week.

The clinical case-vignettes in the second component were based on the LESS study<sup>28</sup>. Vignettes used on this study were translated to Portuguese and revised by a Portuguese expert in multimorbidity, who supported their applicability to the Portuguese population (Supplemental Material). All hypothetical patients were prescribed the same 7 medications: aspirin 100mg daily, atorvastatin 40mg daily, enalapril 10mg daily, amlodipine 5mg daily, paracetamol 1g TID, tramadol 50mg BID and pantoprazole 20mg daily. For every case-vignette, GPs were asked whether they would deprescribe any medication and, if so, which one(s).

Finally, GPs were asked to evaluate both the importance of deprescribing in their own list of patients and their perception about patients' acceptance to deprescription, using the 5-point Likert scale. A final open-ended question was used for GPs to freely name the factors they perceive to most influence their decision to deprescribe in clinical practice.

### Statistical analysis

To describe baseline characteristics, proportions, means and standard deviations (SD) were calculated. The mean number of medications GPs deprescribed was calculated and, to assess variation in decision to deprescribe, crude percentages and 95% confidence intervals (CI) were calculated per case-vignette and per medication for GPs who would deprescribe. The McNemar's test was used to compare cases with positive and negative history of CVD and non-parametric tests were used to compare cases with low, medium and high levels of dependency for activities of daily living (Cochran Q for case-vignettes analysis and Friedman's two-way analysis for each medication). Finally, the Likert-scale responses in the third component of the survey were reported as percentages and the responses to the final open-ended question were analysed and coded based on thematic analysis.

The themes and subthemes that were used for the qualitative analysis were those defined by Anderson et. al in the systematic review of prescriber barriers and enablers to minimising potentially inappropriate medications in adults<sup>25</sup>. The four main themes are: Awareness (prescriber's level of insight into the appropriateness of his/her prescribing); Inertia (failure to act, despite awareness that prescribing is potentially inappropriate), Self-efficacy (factors that influence a prescriber's belief and confidence in his or her ability to address PIM use); and Feasibility (factors, external to the prescriber, which determine the ease or likelihood of change). "Inertia" is divided into prescriber's "beliefs/attitudes" towards deprescribing, like fear of unknown negative consequences, or belief that drugs appear to work with few adverse events; and "behavior", when there is devolvement of responsibility to another party to make the decision to deprescribe. "Self-Efficacy" involves "Knowledge/skill deficits", including difficulty in balancing benefits and harms of therapy, recognizing adverse drug events, and/or establishing clear diagnoses/indications for medicines; and "Information/Influencers", which incorporates difficulty obtaining the patient's complete clinical picture, pressure to comply with recommendations from

guidelines and other specialist and lack of evidence for deprescribing. Finally, “Feasibility” includes resistance from the “Patient”; lack of “Resources”, like time or reimbursement; “Work practice”, particularly absence of scheduled medication reviews; the “Medical culture” of respecting other prescribers’ autonomy and hierarchy; “Health beliefs and culture”, especially the idea that prescribing validates illness; and lastly “Regulatory”, which refers to a guideline-based quality measurement.

The software SPSSv27® was used for quantitative analysis and MAX-QDA® for qualitative.

## Results

### GP characteristics

Of the 285 GPs that responded: 82 (28.8%) were men; mean age was approximately 43 years (SD 12.75); and 86% were specialists (Table 1). The majority of participants belonged to ARS Norte (35.4%), followed by ARS Centro (29.8%) and ARS Lisboa e Vale do Tejo (27.4%). Almost half of GPs worked in a USF-B (46%). The mean years of experience working as a GP was 16.05 (SD 12.95) and the average number of consultations per week was 118 (SD 55), including teleconsultations.

**Table 1.** Baseline characteristic of GPs that participated in the study.

<b>Baseline characteristics (n=285)</b>	
Age, years (SD)	42.85 (12.747)
Female, n (%)	203 (71.2)
Medical career, n (%)	
○ Intern	40 (14)
○ Specialist	245 (86)
ARS, n (%)	
○ Açores	2 (0.7)
○ Alentejo	7 (2.5)
○ Algarve	8 (2.8)
○ Centro	85 (29.8)
○ Lisboa e vale do tejo	78 (27.4)
○ Madeira	4 (1.4)
○ Norte	101 (35.4)
Family medicine unit, n (%)	
○ USF-A	90 (31.6)
○ USF-B	131 (46)
○ UCSP	64 (22.5)
Experience as GP, years (SD)	16.05 (12.953)
Number of consultations on average per week (in person and remotely), n (%)	117.66 (55.074)

### Case-vignette analyses

In the case-vignettes without CVD history, approximately 95-98% of the participating GPs reported they would deprescribe at least one medication for all three levels of dependency (Table 2). On average, they would deprescribe 2.6 to 3.6 of the possible seven medications. In the cases with CVD history, a lower proportion of GPs would deprescribe at least one medication, which increased for higher levels of dependency (around 75-90%). The average of medications’ deprescription in these cases was 1.3 to 2.5 medications. The history of CVD was confirmed to influence the decision to deprescribe in each

case ( $p < 0.001$ ), with a significantly lower proportion of GPs deprescribing in patients with a recent history of myocardial infarction (Table 2). For patients with a history of CVD, the level of dependency significantly influenced the decision to deprescribe ( $p < 0.001$ ). However, there was no significant variation in the decision to deprescribe in patients without CVD history with varying levels of dependency ( $p = 0.113$ ).

**Table 2.** Comparison of percentages of GPs reporting to deprescribe sorted by level of dependency and history of CVD.

Level of dependency	History of CVD		P-value <sup>1</sup>
	No	Yes	
	% of GPs (mean <sup>3</sup> ± SD)	% of GPs (mean <sup>3</sup> ± SD)	
Low (Case 1)	96.8% (2.64 ± 1.13)	75.1% (1.35 ± 1.05)	< 0.001
Medium (Case 2)	95.4% (2.90 ± 1.24)	81.4% (1.64 ± 1.14)	< 0.001
High (Case 3)	97.9% (3.62 ± 1.35)	90.2% (2.52 ± 1.52)	< 0.001
<b>Cochran Q (p-value)<sup>2</sup></b>	4.353 (0.113)	44.413 (< 0.001)	

<sup>1</sup>P-value from McNemar's test comparing percentages of GPs deciding to deprescribe by CVD; <sup>2</sup>Cochran test comparing percentages of GPs deciding to deprescribe by each level of dependency; <sup>3</sup>Mean number of deprescribed medications in each case

Table 3 shows the percentage of GPs who would deprescribe each medication depending on the history of CVD and level of dependency. In the case-vignettes without history of CVD, the most deprescribed medications were aspirin and pantoprazole, followed by pain medication (paracetamol and tramadol). Atorvastatin was also frequently deprescribed in patients with medium to high levels of dependency. Comparatively, in the case-vignettes with history of CVD, the most deprescribed medications were identical (pantoprazole, paracetamol and tramadol), with the exception of aspirin. The least deprescribed medications in these patients were anti-hypertensive agents like enalapril and amlodipine. Overall, a positive history of CVD was associated with less deprescription of cardiovascular preventative medication like aspirin and atorvastatin, as well as of pantoprazole, for all levels of dependency ( $p < 0.001$ ). This factor had, however, no influence on the deprescription of pain medication ( $p > 0.05$  in every case) (Table 3). On the other hand, the level of dependency for activities of daily living influenced the decision to deprescribe every medication. In the case-vignettes with low level of dependency, the most deprescribed medications, regardless of CVD history, were pain medications and pantoprazole. In the cases with high levels of dependency, there was a willingness to deprescribe almost all medications, the least frequent being anti-hypertensive medications (Table 3).

**Table 3.** Comparison of crude percentages of general practitioners (GPs) reporting to deprescribe the medications in the case vignettes, sorted by medication type, history of cardiovascular disease (CVD), and dependency level (N = 285).

Medication	Level of dependency			P-value <sup>2</sup>
	Low (Case 1)	Medium (Case 2)	High (Case 3)	
	% of GPs (95% CI)	% of GPs (95% CI)	% of GPs (95% CI)	
<b>Aspirin 100mg id</b>				
○ No CVD history	84.2% (79.9 to 88.4)	79.3% (74.6 to 84.0)	87.7% (83.9 to 91.5)	0.001
○ With CVD history	2.8% (2.7 to 2.9)	7.4% (4.3 to 10.4)	27.0% (21.9 to 32.2)	< 0.001
○ p-value <sup>1</sup>	< 0.001	< 0.001	< 0.001	
<b>Atorvastatin 40mg id</b>				
○ No CVD history	21.1% (16.3 to 25.8)	38.2% (32.6 to 43.9)	68.1% (62.7 to 73.5)	< 0.001
○ With CVD history	2.1% (0.4 to 3.8)	11.2% (7.5 to 14.9)	38.9% (33.3 to 44.6)	< 0.001
○ p-value <sup>1</sup>	< 0.001	< 0.001	< 0.001	
<b>Enalapril 10mg id</b>				
○ No CVD history	2.5% (0.7 to 4.3)	5.6% (2.9 to 8.3)	11.6% (7.9 to 15.3)	< 0.001
○ With CVD history	0.3% (0 to 1.0)	2.8% (0.9 to 4.7)	9.1% (5.8 to 12.5)	< 0.001
○ p-value <sup>1</sup>	0.031	0.057	0.118	
<b>Amlodipine 5mg id</b>				
○ No CVD history	2.8% (0.9 to 4.7)	10.2% (6.7 to 13.7)	22.8% (17.9 to 27.7)	< 0.001
○ With CVD history	2.8% (0.9 to 4.7)	8.4% (5.2 to 11.6)	18.6% (14.1 to 23.1)	< 0.001
○ p-value <sup>1</sup>	1.000	0.267	0.008	
<b>Paracetamol 1g 3id</b>				
○ No CVD history	38.6% (32.9 to 44.2)	33.0% (27.5 to 38.4)	36.1% (30.6 to 41.7)	0.012
○ With CVD history	37.5% (31.9 to 43.2)	32.6% (27.2 to 38.1)	37.9% (32.3 to 43.5)	0.007
○ p-value <sup>1</sup>	0.508	1.000	0.180	
<b>Tramadol 50mg 2id</b>				
○ No CVD history	30.9% (25.5 to 36.2)	40.7% (35.0 to 46.4)	48.8% (43.0 to 54.6)	< 0.001
○ With CVD history	28.8% (23.5 to 34.0)	38.2% (32.6 to 43.9)	46.3% (40.5 to 52.1)	< 0.001
○ p-value <sup>1</sup>	0.146	0.092	0.118	
<b>Pantoprazole 20mg id</b>				
○ No CVD history	83.5% (79.2 to 87.8)	82.8% (78.4 to 87.2)	87.0% (83.1 to 90.9)	0.035
○ With CVD history	61.1% (55.4 to 66.7)	62.8% (57.2 to 68.4)	73.3% (68.2 to 78.5)	< 0.001
○ p-value <sup>1</sup>	< 0.001	< 0.001	< 0.001	

<sup>1</sup>P-value from McNemar's test comparing percentages of GPs deciding to deprescribe each medication by CVD;

<sup>2</sup>Friedman's two-way analysis comparing percentages of GPs deciding to deprescribe each medication by level of dependency

### Barriers to deprescribing in clinical practice

Most GPs (88.8%) considered the need for deprescribing in their patients to be “Necessary” or “Very necessary”, but only 34.8% “Agree” or “Strongly agree” that patients would be open to the possibility of deprescribing (Table 4).

**Table 4.** Analysis of Likert-scale questions to GPs.

What's your perception on the need for deprescribing in your patients? n (%)	
<input type="radio"/> Not necessary	0 (0)
<input type="radio"/> Rarely necessary	2 (0.7)
<input type="radio"/> Neutral	30 (10.5)
<input type="radio"/> Necessary	112 (39.3)
<input type="radio"/> Very necessary	141 (49.5)
In your experience, are the patients open to the possibility of deprescribing? n (%)	
<input type="radio"/> Strongly disagree	9 (3.2)
<input type="radio"/> Disagree	80 (28.1)
<input type="radio"/> Neutral	97 (34.0)
<input type="radio"/> Agree	78 (27.4)
<input type="radio"/> Strongly agree	21 (7.4)

The responses to the open-ended question “In your experience, which do you consider to be the main barriers/difficulties to deprescribing?” were coded according to the themes and subthemes defined by Anderson et. al<sup>25</sup> and summarized in table 5. From the 285 responses, we obtained 450 codes, which include 23 (5.1%) non classifiable codes and 5 (1.1%) with no answer. The most commonly referred barriers were related to “Patient” (33.3%), “Prescriber Beliefs/Attitude” (19.1%), “Information/Influencers” and “Resources” (both 13.6%). The factors “Prescriber behavior”, “Work practice” and “Regulatory” were not considered to be barriers to deprescribing by the participating GPs. One of the barriers included in the theme “Information/Influencers”, was the fact that “another doctor in the past told the patient to take the medication forever”, given that it was imposed by other healthcare professionals. Mentioned by 34 GPs (7.56%), this is a barrier that influences deprescription on the patient level as well, who becomes resistant to cease a medication they were told they needed until they died. It was, however, not included in the “Patient” category so as to not overestimate its importance. Another multilevel factor that was mentioned 24 times (5,33%) was the “wrong perception of disinvestment of the patient”. Although few GPs considered they had patients who felt disinvested on when faced with the possibility of deprescribing, most of the GPs only feared this reaction. For this reason, this factor was only included in the “Prescriber beliefs/attitude” category and was not considered to be a barrier of the patient.

**Table 5.** Analysis of the barriers reported by the GPs in the final open-ended question, arranged by theme<sup>25</sup> and with illustrative quotations for each one.

Code System		Frequency (%)
<b>Awareness</b>		
	<ul style="list-style-type: none"> <li>“The doctor’s sensitivity”</li> </ul>	1 (0.2%)
<b>Inertia</b>	Prescriber Beliefs/Attitude <ul style="list-style-type: none"> <li>“Fear of negative consequences of deprescribing”</li> <li>“Fear of transmitting the idea of disinvestment on the patient”</li> <li>“Doctor’s inertia”</li> <li>“Fear that new events will be attributed to the deprescription”</li> <li>“Insecurity”</li> </ul>	86 (19.1%)
	Prescriber Behavior	0 (0%)
<b>Self-efficacy</b>	Skills/Knowledge gaps <ul style="list-style-type: none"> <li>“Hard to balance benefits and harms of therapy”</li> <li>“Lack of training in the area”</li> <li>“Difficulty understanding indications for medicines”</li> </ul>	42 (9.3%)
	Information/Influencers <ul style="list-style-type: none"> <li>“Another doctor in the past told the patient the medication had to be forever”</li> <li>“Lack of consensus between prescribers/too many prescribers”</li> <li>“Lack of evidence”</li> <li>“Incomplete clinical information”</li> </ul>	61 (13.6%)
<b>Feasibility</b>	Patient <ul style="list-style-type: none"> <li>“Habit of the patient/psychologic dependency”</li> <li>“Difficulty accepting change”</li> <li>“Lack of literacy on health”</li> <li>“Patients’ beliefs/myths”</li> <li>“Fear of aggravating a stable condition”</li> </ul>	150 (33.3%)
	Resources <ul style="list-style-type: none"> <li>“Lack of time in a consult, to explain the procedure and monitor the results”</li> <li>“Excess of patients”</li> </ul>	61 (13.6%)
	Work Practice	0 (0%)
	Medical culture <ul style="list-style-type: none"> <li>“Respect for prescriptions made by other specialists”</li> <li>“Being a Family Medicine Intern”</li> </ul>	18 (4%)
	Health beliefs and culture <ul style="list-style-type: none"> <li>“Not prescribing is the same as doing nothing”</li> <li>“The more medication, the more protected the patient is”</li> <li>“Doctor shopping”</li> </ul>	3 (0.7%)
	Regulatory	0 (0%)
<b>Non classifiable</b>		23 (5.1%)
<b>No answer</b>		5 (1.1%)
<b>Total</b>		450 (100%)

## Discussion

### Summary

In this study of 285 Portuguese GPs, we analysed GPs’ deprescribing decisions in hypothetical 82-year-old patients on 7 long-term medications. Approximately 95-98% of GPs would deprescribe at least one medication in cases with no CVD and around 75-90% in cases with CVD history. A positive history of CVD was associated with less deprescription of aspirin, atorvastatin and pantoprazole in all levels of dependency ( $p < 0.001$ ) but had no influence on the rate of deprescription of pain medication, which fluctuated between 28% and 48%. On the other hand, patient’s level of dependency for activities of daily living and cognitive impairment directly influenced the deprescription of all medications ( $p < 0.05$  in every case). The most commonly referred barriers to deprescribing in general were “Patient” (33.3%), “Prescriber Beliefs/Attitude” (19.1%), “Information/Influencers” and “Resources” (both 13.6%).

### Strengths and limitations

Although we aimed to obtain 377 responses from Portuguese GPs, we were only able to collect 287, of which 2 did not meet the inclusion criterium. Although higher than the number of participants in the

LESS study<sup>28</sup>, 285 responses corresponds to a confidence level of 91.05%. Nonetheless, this is the largest Portuguese study of factors influencing deprescribing habits among general practitioners.

Our sample nearly matches the general Portuguese population of GPs in gender, with a slightly higher percentage of women (63% vs. 71.2% in our sample), but is fairly younger (mean age 42 years vs. median age [61-65] years), which raises the possibility of a selection bias and might limit the generalizability of our results. Because our survey was shared online, we might not have reached the GPs who are less connected to the internet, who are perhaps the older GPs. Furthermore, the GPs who chose to answer the survey might have been more interested in deprescribing than the general population of Portuguese GPs. They could have also been encouraged to deprescribe given the aim and hypothetical nature of the study. However, the anonymous nature of the survey and the interest in the greatest possible accuracy of the results, may have minimized this social desirability bias.

Another limitation of this study is the simplicity of the case-vignettes, for the reasons already mentioned in the original study.<sup>28</sup> In particular, is the fact that the patients take no medications that cause dependency nor that pose a risk when deprescribed. One important example of such medications are benzodiazepines, which, according to the Annual Report of the Portuguese Observatory on Health Systems, is taken chronically by over 60% of the Portuguese elderly population. Nevertheless, we chose these case-vignettes, not only because they had already been validated for research, but also because they closely matched the typical Portuguese elderly patient in terms of chronic health problems and medication list.<sup>29</sup> Furthermore, a study design with case-vignettes ensured that the variance in GPs' decisions to deprescribe was attributed to no other clinical aspects, besides CVD history and level of dependency in activities of daily living.

### Comparison with existing literature

In line with previous research, our study showed that CVD history influences GPs' deprescribing decisions<sup>28</sup>, mainly of cardiovascular preventive medication like atorvastatin and aspirin (and consequently pantoprazole). Comparatively to the study of 31 countries<sup>30</sup>, we found higher rates of deprescription of aspirin for primary prevention (cases with no CVD history). This decision is supported by recent findings that suggest that use of aspirin for primary prevention in elderly patients is associated with higher all-cause mortality<sup>31</sup> and does not lower the risk of major cardiovascular events when CVD risk is low.<sup>32</sup> On the other hand, we found that Portuguese GPs had a tendency to deprescribe less atorvastatin in patients with no CVD history than other studies<sup>28, 30, 33</sup>, especially in cases with low to medium levels of dependency. This might be explained by the fact that the Beers and STOPP criteria do not consider lipid-lowering medications as inappropriate. The 2019 European Society of Cardiology (ESC) guidelines for treatment of dyslipidemia also recommend the use of statins in the elderly with few restrictions<sup>34</sup>, even though studies have shown increased risk of adverse effects from statins among patients with limited life expectancy.<sup>35</sup> Stopping statin therapy has already been found to be safe and to improve quality of life, however, statins are still the most frequently used inappropriate preventive medication in patients with limited life expectancy.<sup>36</sup>

Consistent with the previous findings<sup>30, 37</sup>, deprescription of enalapril and amlodipine (antihypertensive medication) was uncommon, although significantly increased with the level of dependency. Sussman et. al had also found that only few older patients whose treatment resulted in very low levels of blood pressure underwent deintensification of therapy, which was considered a “lost opportunity to reduce overtreatment”.<sup>38</sup> It is still not clear if lowering systolic blood pressure in multimorbid and frail patients does in fact lead to better outcomes<sup>37</sup>, but a 2016 meta-analysis found that a higher systolic blood pressure reduced the risk of mortality in frail patients aged over 70.<sup>39</sup> Safe deprescription of antihypertensive medication can therefore only be achieved with close monitoring of blood pressure levels, which can be hard to accomplish in primary care, especially in elderly patients with low healthcare access. In addition to this, the reliability of a single blood pressure measurement in a consultation setting might not be enough for a physician to risk undertreatment of hypertension.<sup>38</sup>

Overall, it is clear from our results that the deprescription of cardiovascular preventive medications increased with higher levels of cognitive impairment and dependency for activities of daily living, which dovetails with the results from previous case-vignette based research.<sup>30, 40</sup> This could also support the idea that use of chronic preventive medications in general should be reconsidered for patients whose life expectancy is limited.<sup>35</sup>

Considering that Portuguese elderly are particularly fragile<sup>41</sup>, a focus on symptomatic relief is likely to be of greatest value in this context.<sup>9</sup> This might explain why our findings show a lower rate of deprescription of pain medication, in particular tramadol, in comparison with the original study.<sup>30</sup> It could be argued that the use of opioids in the elderly might not be appropriate, given the risk of adverse drug events, like constipation, cognitive decline and delirium (mentioned in the Beers and STOPP criteria). However, it is also true that multiple negative outcomes, like functional impairment, falls, slow rehabilitation, and mood changes (depression and anxiety), can stem from persistent pain or its inadequate treatment.<sup>42</sup> Worth noting is the fact that patients with moderate-to-severe cognitive impairment have been shown to be especially vulnerable to inadequate pain control.<sup>43</sup> This is because pain has a subjective nature and is therefore normally assessed through patient self-reports, which are evidently compromised in this kind of patients. Even so, our findings show that deprescription of pain medication increased directly with cognitive impairment and level of dependency, which highlights the tension that still exists between avoiding the risks of medications and providing access to therapies that have a beneficial effect on quality of life.<sup>27</sup>

The prescription of pantoprazole in this case was associated with the chronic intake of aspirin, however the rates of deprescription of this medication in patients with CVD history remained high, despite aspirin almost not being deprescribed. These rates were higher than those reported in other countries<sup>30</sup> and could be related to the release of new therapeutic recommendations by Infarmed in 2017, which shed light on the risks associated with long-term use of proton pump inhibitors (PPI) and provided recommendations on how to deprescribe them.<sup>44</sup> A recent meta-analysis found that the evidence supporting co-administration of PPIs in users of low dose aspirin with low hemorrhagic risk is rather weak and that its benefits might not outweigh potential harms.<sup>45</sup> It has also been shown that the



achlorhydric environment provided by PPIs does not protect against aspirin-induced ulcers.<sup>46</sup> In fact, the 2021 ESC guidelines on cardiovascular disease prevention only recommend the use of PPIs in patients at high risk of gastrointestinal bleeding.<sup>47</sup>

We found that, according to Portuguese GPs, the patients are the main barriers to deprescribing, probably because they are too used to taking certain medications and believe that their stable condition is dependent on the number of medications they take. It is understandably hard for patients to accept that when they become older and sicker, they need less medications than before. This is further aggravated by the fact that other doctors frequently tell patients that certain medications must be taken forever. The patients' lack of literacy in health highlights the importance of a patient-centered approach to deprescribing.<sup>24, 48</sup> Only when patients are well informed on the benefits and risks of medications, namely considering their age, and are included in the decision-making process, can deprescribing be more successful and sustainable.<sup>18, 21, 49</sup> Ideally, patients should be informed of the likely duration of treatment and the need for regular review of its appropriateness, right when a medication is first prescribed.<sup>9, 50</sup> That being said, time constraints, mentioned by 13.6% of GPs, clearly limit the feasibility of this approach.<sup>15, 24</sup>

The second most reported barrier to deprescribing was the prescriber's own beliefs, namely fear of negative consequences of deprescribing, which aligns with the findings of previous studies.<sup>19,24,51</sup> The fear that the patient would interpret deprescribing as a sign of being given up on was also mentioned in various other studies<sup>23, 51, 52</sup>, but was proven to be unfounded by a 2019 study of Swiss patients, where no patient felt devalued as a consequence of the deprescribing offer.<sup>23</sup> Although Swiss and Portuguese populations are different, this is a sign that patients could be more open to the idea of deprescribing than previously assumed. Clinical inertia, whereby the clinician is aware of the potential harmful effects of medications but chooses not to act on this knowledge<sup>25</sup>, was also repeatedly reported by Portuguese GPs. The belief that the patient is unlikely to come to harm by continuing the medication, emphasizes the need for more robust evidence on the benefits of deprescribing<sup>53</sup>, as well as for clear guidelines on how medications should be deprescribed in elderly patients.<sup>1, 26</sup> Lack of actual training in the area was also identified as a barrier to deprescribing. Even more so than guidelines, experience is the key to recognizing when a specific medication is starting to be more harmful than beneficial in a particular patient.

Finally, it is important to underline the need for better communication between healthcare professionals, in particular between GPs and other specialist physicians. In the same way that other specialists are potentially more informed about treatment guidelines of specific diseases, GPs have a clearer and more holistic view of the patient. It is undoubtedly important to maintain the prescriptions made by other healthcare professionals, but it should never be more important than the principle of doing no harm.

### Implications for research and practice

We suggest researchers explore clinical cases with medication lists including antidepressants, anxiolytics and sedative hypnotics, frequently used by Portuguese patients. It would also be very interesting to analyse the barriers to deprescribing in Portugal, but from the patients' point of view.

### **Conclusion**

With this study, we showed that Portuguese GPs are conscious of the need to deprescribe in elderly multimorbid patients and are willing to do so in clinical practice. We also presented the main barriers to deprescribing experienced by Portuguese GPs, which will hopefully contribute to the development of tools to overcome these difficulties.

## References

1. Simões PA, Santiago LM, Simões JA. Deprescribing in primary care in Portugal (DePil17-20): a three-phase observational and experimental study protocol. *BMJ Open* 2018;8(7):e019542.
2. Marengoni A, Angleman S, Melis R, Mangialasche F, Karp A, Garmen A, et al. Aging with multimorbidity: a systematic review of the literature. *Ageing Res Rev* 2011;10(4):430-9.
3. Schenker Y, Park SY, Jeong K, Pruskowski J, Kavalieratos D, Resick J, et al. Associations Between Polypharmacy, Symptom Burden, and Quality of Life in Patients with Advanced, Life-Limiting Illness. *J Gen Intern Med* 2019;34(4):559-566.
4. Fried TR, O'Leary J, Towle V, Goldstein MK, Trentalange M, Martin DK. Health outcomes associated with polypharmacy in community-dwelling older adults: a systematic review. *J Am Geriatr Soc* 2014;62(12):2261-72.
5. Gnjjidic D, Hilmer SN, Blyth FM, Naganathan V, Waite L, Seibel MJ, et al. Polypharmacy cutoff and outcomes: five or more medicines were used to identify community-dwelling older men at risk of different adverse outcomes. *J Clin Epidemiol* 2012;65(9):989-95.
6. McGrath K, Hajjar ER, Kumar C, Hwang C, Salzman B. Deprescribing: A simple method for reducing polypharmacy. *J Fam Pract* 2017;66(7):436-445.
7. Jyrkkä J, Enlund H, Korhonen MJ, Sulkava R, Hartikainen S. Polypharmacy status as an indicator of mortality in an elderly population. *Drugs Aging* 2009;26(12):1039-48.
8. Richardson K, Ananou A, Lafortune L, Brayne C, Matthews FE. Variation over time in the association between polypharmacy and mortality in the older population. *Drugs Aging* 2011;28(7):547-60.
9. Woodford HJ, Fisher J. New horizons in deprescribing for older people. *Age Ageing* 2019;48(6):768-775.
10. Le Couteur DG, McLachlan AJ, de Cabo R. Aging, drugs, and drug metabolism. *J Gerontol A Biol Sci Med Sci* 2012;67(2):137-9.
11. Opondo D, Eslami S, Visscher S, de Rooij SE, Verheij R, Korevaar JC, et al. Inappropriateness of medication prescriptions to elderly patients in the primary care setting: a systematic review. *PLoS One* 2012;7(8):e43617.
12. Scott IA, Hilmer SN, Reeve E, Potter K, Le Couteur D, Rigby D, et al. Reducing inappropriate polypharmacy: the process of deprescribing. *JAMA Intern Med* 2015;175(5):827-34.
13. Rochon PA, Gurwitz JH. The prescribing cascade revisited. *Lancet* 2017;389(10081):1778-1780.
14. Reeve E, To J, Hendrix I, Shakib S, Roberts MS, Wiese MD. Patient barriers to and enablers of deprescribing: a systematic review. *Drugs Aging* 2013;30(10):793-807.

15. Halli-Tierney AD, Scarbrough C, Carroll D. Polypharmacy: Evaluating Risks and Deprescribing. *Am Fam Physician* 2019;100(1):32-38.
16. Reeve E, Gnjjidic D, Long J, Hilmer S. A systematic review of the emerging definition of 'deprescribing' with network analysis: implications for future research and clinical practice. *Br J Clin Pharmacol* 2015;80(6):1254-68.
17. Willeboordse F, Hugtenburg JG, Schellevis FG, Elders PJ. Patient participation in medication reviews is desirable but not evidence-based: a systematic literature review. *Br J Clin Pharmacol* 2014;78(6):1201-16.
18. Zechmann S, Senn O, Valeri F, Essig S, Merlo C, Rosemann T, et al. Effect of a patient-centred deprescribing procedure in older multimorbid patients in Swiss primary care - A cluster-randomised clinical trial. *BMC Geriatr* 2020;20(1):471.
19. Duncan P, Duerden M, Payne RA. Deprescribing: a primary care perspective. *Eur J Hosp Pharm* 2017;24(1):37-42.
20. Reeve E, Low LF, Hilmer SN. Beliefs and attitudes of older adults and carers about deprescribing of medications: a qualitative focus group study. *Br J Gen Pract* 2016;66(649):e552-60.
21. Page AT, Clifford RM, Potter K, Schwartz D, Etherton-Beer CD. The feasibility and effect of deprescribing in older adults on mortality and health: a systematic review and meta-analysis. *Br J Clin Pharmacol* 2016;82(3):583-623.
22. Pruskowski JA, Springer S, Thorpe CT, Klein-Fedyshin M, Handler SM. Does Deprescribing Improve Quality of Life? A Systematic Review of the Literature. *Drugs Aging* 2019;36(12):1097-1110.
23. Zechmann S, Trueb C, Valeri F, Streit S, Senn O, Neuner-Jehle S. Barriers and enablers for deprescribing among older, multimorbid patients with polypharmacy: an explorative study from Switzerland. *BMC Fam Pract* 2019;20(1):64.
24. Ailabouni NJ, Nishtala PS, Mangin D, Tordoff JM. Challenges and Enablers of Deprescribing: A General Practitioner Perspective. *PLoS One* 2016;11(4):e0151066.
25. Anderson K, Stowasser D, Freeman C, Scott I. Prescriber barriers and enablers to minimising potentially inappropriate medications in adults: a systematic review and thematic synthesis. *BMJ Open* 2014;4(12):e006544.
26. Cullinan S, Raae Hansen C, Byrne S, O'Mahony D, Kearney P, Sahm L. Challenges of deprescribing in the multimorbid patient. *Eur J Hosp Pharm* 2017;24(1):43-46.
27. Gurwitz JH. Polypharmacy: a new paradigm for quality drug therapy in the elderly? In: *Arch Intern Med*. United States; 2004. p. 1957-9.

28. Mantelli S, Jungo KT, Rozsnyai Z, Reeve E, Luymes CH, Poortvliet RKE, et al. How general practitioners would deprescribe in frail oldest-old with polypharmacy - the LESS study. *BMC Fam Pract* 2018;19(1):169.
29. Prazeres F, Santiago L. Prevalence of multimorbidity in the adult population attending primary care in Portugal: a cross-sectional study. *BMJ Open* 2015;5(9):e009287.
30. Jungo KT, Mantelli S, Rozsnyai Z, Missiou A, Kitanovska BG, Weltermann B, et al. General practitioners' deprescribing decisions in older adults with polypharmacy: a case vignette study in 31 countries. *BMC Geriatr* 2021;21(1):19.
31. McNeil JJ, Nelson MR, Woods RL, Lockery JE, Wolfe R, Reid CM, et al. Effect of Aspirin on All-Cause Mortality in the Healthy Elderly. *N Engl J Med* 2018;379(16):1519-1528.
32. Gaziano JM, Brotons C, Coppolecchia R, Cricelli C, Darius H, Gorelick PB, et al. Use of aspirin to reduce risk of initial vascular events in patients at moderate risk of cardiovascular disease (ARRIVE): a randomised, double-blind, placebo-controlled trial. *Lancet* 2018;392(10152):1036-1046.
33. Parsons C, McCorry N, Murphy K, Byrne S, O'Sullivan D, O'Mahony D, et al. Assessment of factors that influence physician decision making regarding medication use in patients with dementia at the end of life. *Int J Geriatr Psychiatry* 2014;29(3):281-90.
34. Mach F, Baigent C, Catapano AL, Koskinas KC, Casula M, Badimon L, et al. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. *Eur Heart J* 2020;41(1):111-188.
35. Maddison AR, Fisher J, Johnston G. Preventive medication use among persons with limited life expectancy. *Prog Palliat Care* 2011;19(1):15-21.
36. Poudel A, Yates P, Rowett D, Nissen LM. Use of Preventive Medication in Patients With Limited Life Expectancy: A Systematic Review. *J Pain Symptom Manage* 2017;53(6):1097-1110.e1.
37. Streit S, Verschoor M, Rodondi N, Bonfim D, Burman RA, Collins C, et al. Variation in GP decisions on antihypertensive treatment in oldest-old and frail individuals across 29 countries. *BMC Geriatr* 2017;17(1):93.
38. Sussman JB, Kerr EA, Saini SD, Holleman RG, Klamerus ML, Min LC, et al. Rates of Deintensification of Blood Pressure and Glycemic Medication Treatment Based on Levels of Control and Life Expectancy in Older Patients With Diabetes Mellitus. *JAMA Intern Med* 2015;175(12):1942-9.
39. Zhang XE, Cheng B, Wang Q. Relationship between high blood pressure and cardiovascular outcomes in elderly frail patients: A systematic review and meta-analysis. *Geriatr Nurs* 2016;37(5):385-392.

40. D NC, C NC, Beveridge A. Factors influencing deprescribing habits among geriatricians. *Age Ageing* 2015;44(4):704-8.
41. Gagesch M, Chocano-Bedoya PO, Abderhalden LA, Freystaetter G, Sadlon A, Kanis JA, et al. Prevalence of Physical Frailty: Results from the DO-HEALTH Study. *J Frailty Aging* 2022;11(1):18-25.
42. Pharmacological management of persistent pain in older persons. *J Am Geriatr Soc* 2009;57(8):1331-46.
43. Tait RC, Chibnall JT. Under-treatment of pain in dementia: assessment is key. In: *J Am Med Dir Assoc. United States*; 2008. p. 372-4.
44. Infarmed. Recomendações terapêuticas - Inibidores da bomba de protões (IBP); Março, 2017. Available from: <https://www.infarmed.pt/documents/15786/1909769/Inibidores+da+Bomba+de+Protões/fe44c351-515c-4ab4-a437-689f2f8c1aae>
45. Tran-Duy A, Vanmolkot FH, Joore MA, Hoes AW, Stehouwer CD. Should patients prescribed long-term low-dose aspirin receive proton pump inhibitors? A systematic review and meta-analysis. *Int J Clin Pract* 2015;69(10):1088-111.
46. Janssen M, Dijkmans BA, Vandenbroucke JP, Biemond I, Lamers CB. Achlorhydria does not protect against benign upper gastrointestinal ulcers during NSAID use. *Dig Dis Sci* 1994;39(2):362-5.
47. Visseren FLJ, Mach F, Smulders YM, Carballo D, Koskinas KC, Bäck M, et al. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. *Eur Heart J* 2021;42(34):3227-3337.
48. O'Mahony MS, Parbhoo A. Deprescribing in older people. *Br J Hosp Med (Lond)* 2020;81(1):1-9.
49. Armistead LT, Sanders KA, Larson CK, Busby-Whitehead J, Ferreri SP. A-TAPER: A Framework for Deprescribing Medications effectively. *Res Social Adm Pharm* 2021.
50. Reeve E, Shakib S, Hendrix I, Roberts MS, Wiese MD. Review of deprescribing processes and development of an evidence-based, patient-centred deprescribing process. *Br J Clin Pharmacol* 2014;78(4):738-47.
51. Wallis KA, Andrews A, Henderson M. Swimming Against the Tide: Primary Care Physicians' Views on Deprescribing in Everyday Practice. *Ann Fam Med* 2017;15(4):341-346.
52. Schuling J, Gebben H, Veehof LJ, Haaijer-Ruskamp FM. Deprescribing medication in very elderly patients with multimorbidity: the view of Dutch GPs. A qualitative study. *BMC Fam Pract* 2012;13:56.

53. Turner JP, Edwards S, Stanners M, Shakib S, Bell JS. What factors are important for deprescribing in Australian long-term care facilities? Perspectives of residents and health professionals. *BMJ Open* 2016;6(3):e009781.

## Supplementary file I – Online Survey

### 0) Consentimento informado

Caro Colega,

Este questionário destina-se à realização de um estudo no âmbito da Tese de Mestrado da Faculdade de Medicina da Universidade de Coimbra, que tem como objetivo perceber quais os fatores que influenciam a decisão de desprescrição dos Médicos de Família em Portugal.

Este está dividido em 3 partes:

- A. Características do Médico de Família e frequência com que desprescreve no doente polimedicado
- B. três vinhetas clínicas de doentes idosos com multimorbilidade e polimedicados, com introdução de um fator modificador – história de evento cardiovascular nos últimos 3 anos.
- C. Questões sobre a perceção do participante quanto às barreiras/dificuldades na desprescrição na prática clínica

Solicito assim a sua participação no preenchimento deste questionário, com uma duração total de aproximadamente 25 minutos. Por favor, leia atentamente e responda a todas as questões de forma honesta.

A participação nesta investigação tem um carácter voluntário, pelo que pode negá-la ou decidir interromper o preenchimento do questionário, a qualquer momento, se assim o entender. Todos os dados recolhidos são anónimos, confidenciais e servirão exclusivamente para fins de investigação científica. Ao submeter a sua resposta está a autorizar a recolha e tratamento de dados para os fins visados por esta investigação.

Se pretender algum esclarecimento sobre este estudo, por favor não hesite em contactar-me pelo e-mail: [gabimcsilva97@gmail.com](mailto:gabimcsilva97@gmail.com)

- Declaro ter lido e compreendido este documento e aceito participar neste estudo e permito a utilização dos dados que de forma voluntária forneço, confiando em que apenas serão utilizados para esta investigação e nas garantias de confidencialidade e anonimato que me são dadas pela investigadora.

### A) Informação base

1. Idade
2. Sexo (Feminino / Masculino)
3. Grau de carreira médica (Interno/Especialista)
4. ARS
  - a. ARS Norte
  - b. ARS Centro
  - c. ARS Lisboa e Vale do Tejo
  - d. ARS Alentejo
  - e. ARS Algarve



- f. ARS Açores
  - g. ARS Madeira
5. Unidade Funcional
- a. USF-A
  - b. USF-B
  - c. UCSP
6. nº de anos de prática
7. Quantos doentes vê em média em consulta por semana? (presencial e não presencial)
8. **Viu pelo menos 5 pessoas por semana com multimorbilidade no último ano?**
- a. Sim
  - b. Não (critério de exclusão deste estudo)

## B) Vinhetas Clínicas

Vamos apresentar-lhe 3 vinhetas clínicas de doentes semelhantes: todos apresentam a mesma idade, comorbilidades e medicação habitual. Em cada caso será apenas alterada a condição física e cognitiva e o grau de dependência de terceiros.

### Caso 1

Paciente 1, 82 anos de idade:

**História social:** carpinteiro reformado, vive sozinho com a mulher em casa. Prepara a sua medicação independentemente, vai ao supermercado e faz alguns trabalhos em casa e no jardim. O casal não necessita de qualquer ajuda de terceiros.

**Saúde geral:** boa condição física e cognitiva. MMSE 28/30

**Antecedentes pessoais:** Lombalgia crónica, hipertensão arterial; não fumador, sem história de eventos cardiovasculares e sem história familiar de doença cardiovascular.

**Valores laboratoriais:** Dislipidemia (c-LDL 146,9 mg/dl); Funções renal e hepática normais tendo em conta a idade do doente, hemograma sem alterações. As últimas tensões arteriais sistólicas medidas oscilaram entre 130 a 140mmHg.

### Medicação diária:

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id
- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

### Neste caso clínico, considere o doente:

- com boa condição física
- totalmente independente
- **sem** défice cognitivo
- com **baixo** risco de eventos cardiovasculares

1. **Desprescreveria ou reduziria a dose de um/vários medicamento(s)?** Sim/Não

2. **Qual medicamento desprescreveria ou reduziria?**

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id
- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

Considere agora que o Paciente 1 teve um **enfarte agudo do miocárdio há 3 anos**.

3. **Desprescreveria ou reduziria a dose de um/vários medicamento(s)?** Sim/Não

4. **Qual medicamento desprescreveria ou reduziria?**

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id
- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

## Caso 2

Considere agora o Paciente 2, que difere unicamente do Paciente 1 nos seguintes aspetos:

**História social:** Vive também sozinho com a mulher, que tem boa condição física e cognitiva. No entanto, está a tornar-se cada vez mais dependente; as tarefas da casa são feitas pela sua mulher; necessita de ajuda de terceiros para higiene pessoal, para se vestir e despir e para preparar a sua medicação.

**Saúde geral:** ritmo da marcha tendo vindo a diminuir significativamente ao longo dos anos, instável em ortostatismo. Esquecimento e défice de atenção crescentes nos últimos meses. MMSE 22/30.

Considere por isso este doente:

- com capacidade física reduzida
- cada vez mais dependente nas atividades de vida diárias
- com défice cognitivo **moderado**
- com **baixo** risco de eventos cardiovasculares

5. **Desprescreveria ou reduziria a dose de um/vários medicamento(s)?** Sim/Não

6. **Qual medicamento desprescreveria ou reduziria?**

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id

- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

Considere agora que o Paciente 2 teve um **enfarte agudo do miocárdio há 3 anos**.

**7. Desprescreveria ou reduziria a dose de um/vários medicamento(s)?** Sim/Não

**8. Qual medicamento desprescreveria ou reduziria?**

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id
- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

### **Caso 3**

Considere por fim o Paciente 3, que difere dos anteriores nos seguintes aspetos:

**História social:** Vive com a sua mulher num lar de idosos.

**Saúde geral:** Caminha muito pouco, com auxílio de um andador. Necessite de apoio diário para higiene pessoal e para se vestir e despir. Desorientado no tempo e no espaço. Perda ponderal involuntária de 8kg nos últimos 2 meses. MMSE 12/30

**Considere por isso este doente:**

- com capacidade física muito reduzida
- completamente dependente nas atividades de vida diárias
- com défice cognitivo **grave**
- com **baixo** risco de eventos cardiovasculares

**9. Desprescreveria ou reduziria a dose de um/vários medicamento(s)?** Sim/Não

**10. Qual medicamento desprescreveria ou reduziria?**

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id
- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

Considere agora que o Paciente 3 teve um **enfarte agudo do miocárdio há 3 anos**.

**11. Desprescreveria ou reduziria a dose de um/vários medicamento(s)?** Sim/Não

**12. Qual medicamento desprescreveria ou reduziria?**

- Aspirina 100mg id
- Atorvastatina 40mg id
- Enalapril 10mg id
- Amlodipina 5mg id
- Paracetamol 1g 3id
- Tramadol 50mg 2id
- Pantoprazol 20mg id

**C) Barreiras à desprescrição**

1. Qual a sua percepção sobre a **necessidade** de desprescrição nos seus doentes?
  - a. Nada necessário / Pouco necessário / Neutro / Necessário / Muito necessário
  
2. Tendo em conta a sua experiência, os doentes mostram-se **recetivos** à possibilidade de desprescrição?
  - a. Discordo totalmente/ Discordo / Não concordo nem discordo / Concordo / Concordo totalmente
  
3. **Tendo em conta a sua experiência, quais considera serem as principais barreiras/dificuldades à desprescrição?**