



Important New Evidence Service

In Partnership with The Centre for Medicines Optimisation at Keele University

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Polypharmacy: Potentially inappropriate medication use by people with dementia

Safe, rational prescribing for older patients with dementia is essential in order to improve mortality, morbidity and quality of life.

A **potentially inappropriate medication (PIM)** is a drug which should not be prescribed routinely in a population because there is evidence that the risk of adverse effects outweighs any potential benefit and/or there is a safer alternative available.

The EU(7)-PIM list is a screening tool used to identify PIMs in databases where additional clinical information may not be available. In this first study to prospectively evaluate the prescription of PIM among people with dementia (PwD) from different European countries, a high frequency of PIM was detected using the EU(7)-PIM list, with similarities and differences between countries identified.

Reference: Renom-Guiteras A, Thürmann PA, Miralles R *et al.* [Potentially inappropriate medication among people with dementia in eight European countries](#). Age and Ageing 2017 Sep 1:1-7. doi: 10.1093/ageing/afx147.

What do we know already?

- PwD have [more complex health needs](#) because of higher co-morbidity and polypharmacy than people of comparable age without dementia.
- A [systematic review](#) has previously reported that the prescription of potentially inappropriate medication (PIM) is estimated to range from 10.2 to 56.4% among PwD, and inappropriate prescribing can be associated with adverse effects, potentially leading to [hospitalisation](#) and [death](#).

What does this evidence add?

- In this new study, '**proton pump inhibitors used longer than eight weeks**' was the most prescribed PIM in this European sample.
- The psychotropic drug '**risperidone, used longer than six weeks**' was the second most prescribed PIM, although not in England, where senna laxatives were second. (See table overleaf for England data). The prescribing of low-dose antipsychotics in PwD is the subject of a [NICE Key Therapeutic Topic](#) and much work has been done to reduce inappropriate prescribing, which may explain this difference.
- Based on this study, PwD may benefit from review for PIM with particular focus on acid suppressants and psychotropics. When these drugs are prescribed, this should be with a clear indication, at their lowest dose, for a short duration and with regular review. Furthermore, when PwD develop neuropsychiatric symptoms, the first step is to identify any precipitating factors and rule out or treat a medical cause e.g. pain or superimposed delirium. Environmental, behavioural and non-pharmacological interventions can be effective in PwD and, when appropriate, are preferred over medication.
- The EU(7)-PIM list used in this study differs from other screening tools, such as [STOPP/START](#), which require the clinical context regarding drug use to be known to allow appropriate evaluation, and therefore may be more suitable to guide a comprehensive drug review for an individual.
- The EU(7)-PIM list cannot substitute for individual assessment of prescribing appropriateness which, amongst others, will include knowledge of the aim of treatment, individual response to treatment and an understanding of the values and preferences of the individual.

Study details

Study design:

- The '[RightTimePlaceCare \(RTPC\)](#)' study started in 2010 and included a cohort of PwD from eight European countries. In order to analyse the prescription of PIM in this population, the [EU\(7\)-PIM list](#) was developed, using an expert consensus method, which can be used for the analysis and comparison of prescribing patterns across

European countries. Experts reached consensus that 282 chemical substances or drug classes from 34 therapeutic groups are PIMs for older people; some PIMs are restricted to a certain dose or duration of use.

- The aims of this study were to prospectively evaluate the frequency of PIM prescriptions (according to the EU(7)-PIM list) among community-dwelling and nursing-home populations of PwD from eight European countries (England, Estonia, Finland, France, Germany, the Netherlands, Spain and Sweden), and to explore factors that may be associated with the prescription of PIM.
- Two groups with a confirmed diagnosis of dementia were included in the RTPC study: PwD who were newly admitted to an institutional long-term care (ILTC) facility, and PwD who received homecare but were at risk of admission to an ILTC facility within 6 months. PwD who were younger than 65 years of age and those with a primary psychiatric diagnosis of Korsakoff's syndrome were excluded.
- The study sample consisted of 2,004 PwD who were assessed at baseline and again at 3 months gathering data on age, sex, prescription medication, cognitive status, functional status, co-morbidity, setting and admission to hospital, fall-related injuries and mortality in the time between baseline and follow-up.
- Patients had a mean age of 83 years. 67.5% were female and 39.3% were living in nursing homes. Cognitive status, as assessed by Mini Mental State Examination (MMSE), showed a median score of 14 (*the MMSE score range is 0 to 30, with a lower score indicating greater cognitive impairment*). Co-morbidity, as assessed using the Charlson index score, showed a median of 2 (*Charlson comorbidity index range: 0 to 32, with a higher score indicating greater co-morbidity*).
- For each individual country and for all countries together, the frequency of PwD prescribed 'one or more', and 'two or more' PIMs at baseline was calculated and therapeutic subgroups and PIMs identified.

Results:

- For all countries (combined n = 2,004 PwD), 60% of participants were prescribed at least one PIM and 26% were prescribed at least two PIMs. For England, (n = 153), the comparative results were 66% and 28.1% respectively.
- The PIM therapeutic subgroup '**psycholeptics**' was the most frequently prescribed subgroup in the whole European sample (26.52%, 529 of total number of 1,995 PIM prescriptions), with '**risperidone used longer than 6 weeks**' the second most commonly prescribed PIM. This PIM was in the 'top 10 PIM list' of all countries, with the exception of England and France.
- '**Drugs for acid-related disorders**' was the second most commonly prescribed PIM therapeutic subgroup (21%, 419 of 1,995 PIM prescriptions) in the European sample. '**Proton pump inhibitors used longer than 8 weeks**' was the most frequently prescribed PIM (19.1% of all PIM prescriptions).
- '**Cardiac therapy**' (7.92%), '**psychoanaleptics**' (7.27%) and '**antithrombotic agents**' (4.76%) completed the 'top 5' list of most frequently prescribed PIM therapeutic sub-groups for all countries combined.
- Aged over 80, higher dependency in activities of daily living, higher co-morbidity, having mild cognitive impairment compared with severe cognitive impairment and living in an ILTC facility were all associated with the prescription of two or more PIMs. (The association between severe cognitive impairment and reduced PIM may be due to a number of reasons, including a lack of detection of certain clinical problems or more cautious prescribing by clinicians in this population.)
- The prescription of two or more PIMs (compared with no PIM) was associated with a higher chance of suffering at least one fall-related injury ([Odds Ratio \[OR\]: 1.54, 95% Confidence Interval \[CI\]: 1.04 to 2.30; p = 0.033](#)), and with undergoing at least one episode of hospitalisation (OR: 1.6, 95% CI: 1.13 to 2.27; p = 0.008) between baseline and follow-up.

PIMs most frequently prescribed among older people with dementia in England	Top 'PIM therapeutic subgroups' prescribed in older people with dementia in England
Proton pump inhibitors (>8 weeks) (18.94%) Senna glycosides (9.47%) Doxazosin (7.69%) Zopiclone (>3.75 mg/d) (5.91%) Diazepam (5.33%) Iron/ferrous sulfate (>325 mg/d) Digoxin (2.96%) Tolterodine (2.96%) Amitriptyline (2.96%) Fluoxetine (2.37%) Oxybutynin (2.37%) Nifedipine (2.37%) Dipyridamole (2.37%)	Drugs for acid-related disorders (20.71%) Psycholeptics (18.34%) Laxatives (11.83%) Psychoanaleptics (8.28%) Antihypertensives (7.69%) Urologicals (6.51%) Antianaemic preparations (4.73%) Calcium-channel blockers (3.55%) Cardiac therapy (2.96%) Antithrombotic agents (2.37%)
(data represent % of the total number of PIM prescriptions [total n = 169]). Ref: Renom-Guiteras et al (2017)	

Level of evidence: Level 2 according to the [SORT criteria](#).

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