HRB Centre for Primary Care Research
Research Briefs

Potentially inappropriate prescribing in middle-aged people

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Prescribing for patients with two or more chronic conditions (multimorbidity) is now common practice in primary care and can often be associated with the use of multiple medications, or polypharmacy. Polypharmacy increases the risk of adverse drug events or hospitalisation and is the main determinant of potentially inappropriate prescribing (PIP). However, polypharmacy can be necessary in many conditions, and the appropriateness of prescribing may be assessed using explicit prescribing criteria.

There has been a paucity of research to date on PIP in middle-aged adults (aged between 45 and 64 years), despite approximately one-third of this age-group living with multiple conditions. This population is particularly important as it represents a group which will be the focus for health provision in the future.

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Development of the PROMPT criteria and prevalence in two middle-aged populations

Researchers at the HRB Centre for Primary Care Research (www.hrbcentreprimarycare.ie) have developed a set of explicit prescribing criteria specifically for middle-aged adults called PROMPT (PRescribing Optimally in Middle-aged People's Treatments).[1] The project aimed to produce criteria that could be applied to prescribing or dispensing datasets, independent of clinical information, to determine the prevalence of PIP in middle-aged people. The criteria were developed using a two-round Delphi process, involving an expert panel of general practitioners, pharmacists and clinical pharmacologists from the United Kingdom and Republic of Ireland. Consensus was reached on 22 criteria, covering a range of physiological systems [gastro-intestinal system (n = 3), cardiovascular system (n = 4), respiratory system (n = 4), central nervous system (n = 6), infections (n = 1), endocrine system (n = 1), musculoskeletal system (n = 2), duplicates (n = 1)].

Following this, a study was undertaken using the PROMPT criteria to determine the prevalence of PIP in middle-aged adults in two populations with differing socio-economic profiles, and to investigate factors associated with PIP.[2] This study included over 440,000 patients from the Enhanced Prescribing Database (EPD) in Northern Ireland and nearly 310,000 patients from the Health Services Executive Primary Care Reimbursement Service (HSE-PCRS) database in the Republic of Ireland.

This study found that polypharmacy was common in middle-aged people; and although age group, female gender and polypharmacy were significantly associated with PIP, polypharmacy had the strongest association. The most frequent prescribing issues in both populations were the use of strong opioids without a laxative, long-term proton pump inhibitors above maintenance dose and long-term benzodiazepines.

This study found that the prevalence of PIP was higher in the HSE-PCRS database, with 42.9% of participants having any instance of PIP, compared to 21.1% in the EPD. However, the HSE-PCRS cohort represents a more socio-economically deprived population than in the EPD meaning these two populations are not directly comparable. Differences observed may relate to heterogeneity in healthcare services between the included populations. However, as multimorbidity and polypharmacy are more common in more deprived groups, the higher prevalence of PIP in the HSE-PCRS may be due to the socio-economic profile.

The articles can be viewed at:

[1] Cooper JA, Ryan C, Smith SM, Wallace E, Bennett K, Cahir C, Williams D, Teeling M, Fahey T, Hughes CM. The development of the PROMPT (PRescribing Optimally in Middle-aged People's Treatments) criteria. BMC Health Serv Res 2014, 14:484. www.ncbi.nlm.nih.gov/pubmed/25410615

[2] Cooper JA, Moriarty F, Ryan C, Smith SM, Bennett K, Fahey T, Wallace E, Cahir C, Williams D, Teeling M, Hughes CM. Potentially inappropriate prescribing in two populations with differing socio-economic profiles: a cross-sectional database study using the PROMPT criteria. Eur J Clin Pharmacol. 2016; 72(5): 583-91. www.ncbi.nlm.nih.gov/pubmed/26820292