

HRB Centre for Primary Care Research Research Briefs

PIPc study: development and application of indicators of potentially inappropriate prescribing in children



There is limited evidence regarding the quality of prescribing for children in primary care. Medicines are generally considered appropriate in an adult population when they have a clear evidence-based indication, are well tolerated in the majority of patients and are cost effective. Medicines or prescribing patterns that do not fit this description can be considered inappropriate. Several prescribing criteria (indicators) have been developed to assess the appropriateness of prescribing in older and middle-aged adults but few are relevant to children.

Two recent studies from the Health Research Board (HRB) Centre for Primary Care Research (www.hrbcentreprimarycare.ie) have created indicators of potentially inappropriate prescribing in children based on commonly prescribed medications to children in primary care and are supported by international best practice guidelines, and assessed the prevalence of these in a national database of prescribed medications.



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The first of these two studies, published in BMJ Open and led by Dr Emma Barry (Royal College of Surgeons in Ireland), used a modified Delphi process to develop the PIPc indicators. A preliminary list of indicators was compiled based on a review of published studies, clinical guidelines and formularies. Sixteen indicators that met the eligibility criteria were presented to a Delphi panel of 15 experts (GPs, pharmacists and paediatricians) from the Republic of Ireland and the UK. Following two Delphi rounds, consensus was reached on 12 indicators, categorised by respiratory system (n=6), gastrointestinal system (n=2), neurological system (n=2) and dermatological system (n=2).

The second study, also published in BMJ Open and led by Dr Emma Barry (RCSI), applied these indicators to assess the national prevalence of potentially inappropriate prescribing in children. This study used administrative pharmacy claims data on dispensed medications from the Primary Care Reimbursement Service. The analysis include all those aged <16 years who were eligible for the General Medical Services (GMS) scheme and were prescribed a medication in 2014. The GMS scheme is a form of public health cover for households with low incomes. Overall prevalence of PIPc by commission was 3.5% and for PIPc by omission was 2.5%, which rose to 11.5% when the indicator on omission of prescribing of spacer devices for children with asthma was included. The most common individual PIPc by commission was the prescribing of carbocisteine to children under 16 years of age (3.3% of eligible children). The most common PIPc by omission (after excluding spacer devices) was failure to prescribe an emollient to children prescribed greater than one topical corticosteroid (54% of eligible children).

These studies illustrate that it is feasible to apply prescribing criteria developed for use in children in primary care without clinical information, and that the overall prevalence of PIP in children is low.

However, the research suggests that there is an opportunity to improve adherence to asthma prescribing guidelines. This includes appropriate use of spacer devices, short-acting beta agonists in children with regular inhaled corticosteroid use, and inhaled corticosteroids in children prescribed a long-acting beta agonist. Future interventions could be considered to target this area of prescribing and the PIPc indicators could be used to measure adherence to relevant guidelines and any impact on appropriate prescribing.

The articles can be viewed at:

[1] Barry E, O'Brien K, Moriarty F The PIPc Project Steering group, et al PIPc study: development of indicators of potentially inappropriate prescribing in children (PIPc) in primary care using a modified Delphi technique BMJ Open 2016;6:e012079.

<https://www.ncbi.nlm.nih.gov/pubmed/27601499>

[2] Barry E, Moriarty F, Boland F, et al The PIPc Study—application of indicators of potentially inappropriate prescribing in children (PIPc) to a national prescribing database in Ireland: a cross-sectional prevalence study BMJ Open 2018;8:e022876.

<https://www.ncbi.nlm.nih.gov/pubmed/30344174>