How to define a Potentially Inappropriate Medication (PIM)? Antipsychotics as a case-study

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Background Potentially Inappropriate Medications (PIMs) are drugs where the risk of Adverse Drug Reactions (ADRs) may exceed the treatment benefits in a specific population. Antipsychotics are an example of PIM in the elderly where even less is known when it comes to understand their concept as PIMs.

Purpose The main goals of this study are: (a) to understand the concept of Antipsychotics as PIMs in tools addressing inappropriate prescribing; (b) and to assess which factors should be considered when defining a PIM.

Method A systematic overview of PIMs associated with negative outcomes was previously undertaken and 24 inappropriate prescribing tools were extracted. Antipsychotics were selected as a model drug-class for further studies, given their off-label use in some conditions (e.g. dementia) that affect the elderly. For each tool, antipsychotics were analysed in terms of: (a) group (typical vs atypical); (b) associated risks (e.g. metabolic side effects, cardiac problems, CNS side effects and blood disorders); (c) dosage; and (d) duration of treatment. The nature of each tool was assessed to understand some limitations. Descriptive statistics were undertaken using univariate analysis (IBM SPSS v.24.0.).

Findings From the initial 24 tools considered, 20 (83.3%) described Antipsychotics as PIMs. Typical antipsychotics were described in 17 (of the initial 20 tools) and atypical antipsychotics in only five tools. In some tools, distinction between typical and atypical was not made. Clozapine was the most frequently described atypical antipsychotic. Levomepromazine, haloperidol and chlorpromazine were examples of typical antipsychotics listed. In all the tools, CNS side effects were the major risk considered (e.g. extrapyramidal side effects, and cerebrovascular accident ? stroke). Cardiac problems (n=6), metabolic disorders (n=1) and blood disorders (n=3) were also described. Treatment duration(n=3), dosage (n=2) and mechanism of action (n=2) were described to a lower extent in these tools. The 24 analyzed tools were drug-oriented and, therefore, do not assess the individual risk for each patient.

Conclusion When defining a PIM, special attention should be given to three major aspects: mechanism of action, dosage and, finally, duration of treatment. Future work will test this hypothesis by quantifying the risk of cardiac major events after antipsychotics exposure, using real life data.