

Retrospective Analysis of Potentially Inappropriate Medications Use in Swiss Nursing Homes

D. Cateau ^{a,b}, O. Bugnon ^{a,b}, A. Niquille ^a

a) Community Pharmacy, Center for Primary Care and Public Health (Unisanté), University of Lausanne, Switzerland

b) Community pharmacy, Institute of Pharmaceutical Sciences of Western Switzerland, University of Geneva, University of Lausanne, Switzerland

Introduction

Potentially Inappropriate Medications (PIMs) are widely prescribed to elderly patients, both in the community and in nursing homes (NHs). These drugs can reduce patient's quality of life and health outcomes, and increase the risk of adverse events, hospitalisation, and death. In two Swiss cantons, integrated pharmacy services (IPSs) have shown that interprofessional practice can reduce drug costs while maintaining a good quality of care¹. This retrospective analysis aims to measure the evolution of PIMs use in NHs participating in an IPS, and identify priorities for action to improve patient safety and efficiency of care in NHs.

Drug or drug class	Beers' recommendation	NORGE-P-NH recommendation	Category
Proton-pump inhibitors	Avoid scheduled use for >8 weeks [...]	-	Reevaluate
Antipsychotics	Avoid, except for schizophrenia, bipolar disorder, or [...]	Consider for deprescribing	Reevaluate
Diazepam	Avoid	Avoid	Avoid
First-generation antihistamines	Avoid	Avoid	Avoid

Table 1: examples of drugs / drug classes in the Avoid and Reevaluate categories, and associated Beers and NORGE-P-NH recommendations

Results

Data concerning 166 NHs were obtained. In 2017, the median number of DDDs per average resident and per day (without regard for appropriateness status) was 7.6 (SD 1.9); the median number of PI-DDD was 0.4 (SD 0.3) for the Avoid category, and 1.9 (SD 0.5) for the Reevaluate category (see Figure 1).

Mixed-effect modelling shows a statistically significant reduction in the overall number of PI-DDDs used between 2014 and 2017, with 0.03 fewer PI-DDD for each passing year (CI₉₅ [-0.05; -0.00], $p = 0.03$). This diminution is, however, unlikely to produce meaningful clinical improvements for NH residents. Models for the individual Avoid and Reevaluate categories show no statistically significant evolution.

ATC class contributing the most to the Avoid category are the Psycholeptics (ATC N05, 0.28 PI-DDD in 2017) and Anti-inflammatory (ATC M01, 0.06 PI-DDD). Psychoanaleptics (ATC N06), Agents acting on the renin-angiotensin system (C09) and Drugs for acid-related disorders (A02) are the classes contributing the most to the Reevaluate category, with respectively 0.49, 0.44 and 0.35 PI-DDD in 2017.



Contact us



See our project

1. Locca JF et al., Pharmacy world & science 2009;31(2):165-73
2. AGS Beers Criteria Update Expert Panel, J Am Geriatr Soc 2015;63(11):2227-46
3. Nyborg G et al, Scand J Prim Health Care 2015;33(2):134-41
4. <http://www.nfp74.ch/en/projects/in-patient-care/project-bugnon>

Methods

Drug consumption data and number of days spent in the NHs taking part in their respective IPS programs were provided by the monitoring group of these programs for 2014 to 2017. Using the WHO Anatomical and Therapeutic Classification (ATC), these data were linked to the defined daily doses (DDDs) of their active ingredient. ATC codes or specific administration routes for which no DDD was defined were assigned an investigator-defined DDD. Data for which no DDD could be defined were excluded from analysis.

These data were cross-referenced with two validated PIMs lists, the 2015 Beers' list² and the Norwegian General Practice – Nursing Home criteria (NORGE-P-NH)³ to determine PIM status. PIMs were classified in "Drugs to reevaluate" or "Drugs to avoid", according to NORGE-P-NH's classification (see Table 1 for examples). The number of potentially inappropriate DDD per average resident and per day (PI-DDD) were computed for each category.

Linear mixed-effects models were used to assess the evolution of PIMs use over time, with the NH as grouping variable.

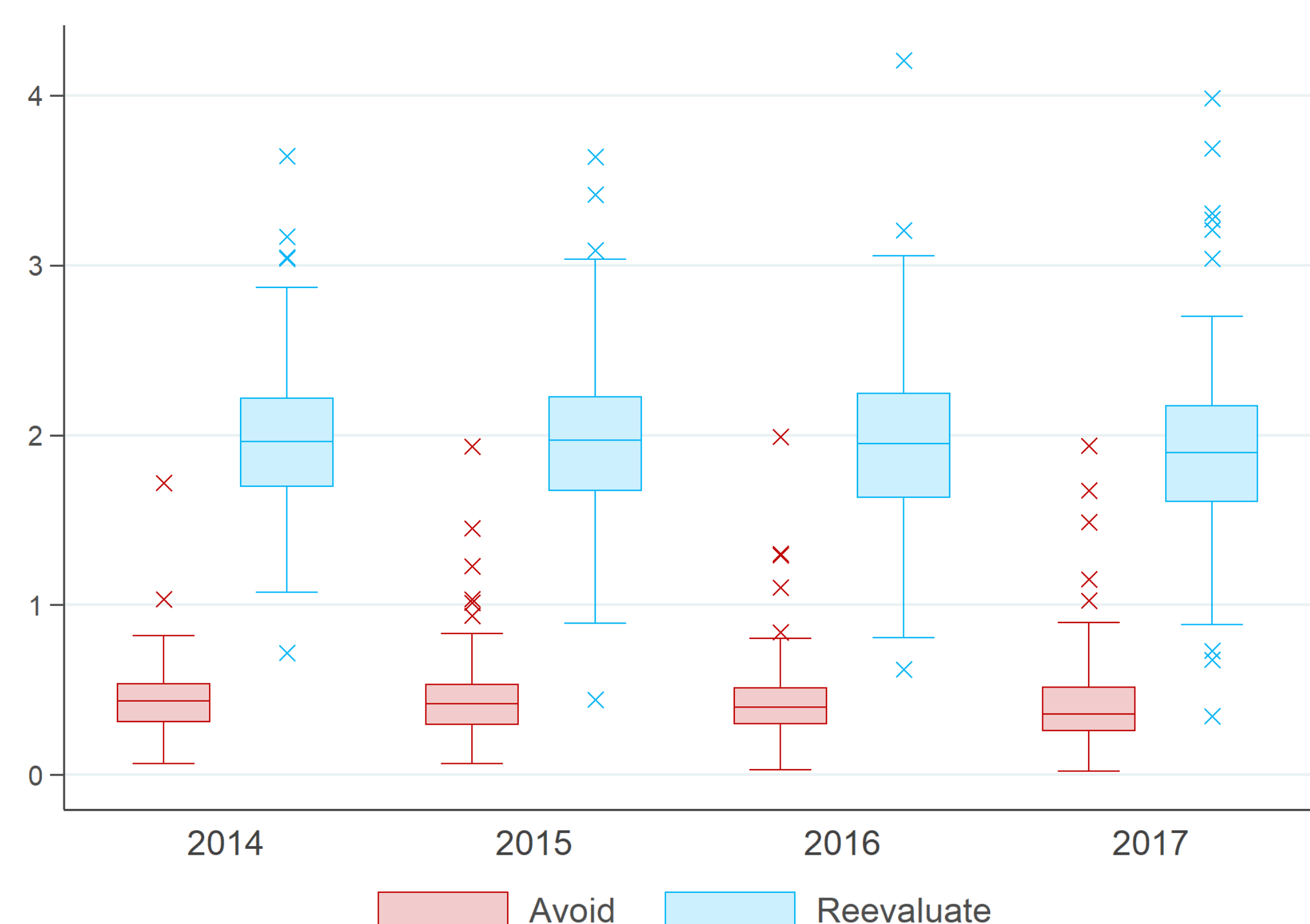


Figure 1: Number of potentially inappropriate DDD per average resident and per day, by NH

Conclusion

PIMs remain a significant issue in Swiss NHs, with more than a quarter of all DDDs received by resident considered potentially inappropriate. Hardly any clinically meaningful improvement was seen between 2014 and 2017. The various education campaigns on the risk of PIMs targeting clinicians, as well as professional societies guidelines, seem not to have curbed their use.

Other strategies to reduce the use of these risky drugs are needed. One of them, currently being tested, is to enact deprescribing through interprofessional interventions⁴, building on the good collaboration fostered by the IPSs between physicians, nurses, and pharmacists.

This analysis will help clinicians focus their efforts on the most common PIMs, and the methodology developed will enable the monitoring of these efforts.