

Outpatient Antibiotic Consumption Trends in Belgium: A Comparative Analysis of Reimbursement and Sales Data, 2013-2022

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Background

In Belgium, surveillance of antimicrobial consumption (AMC) is traditionally assessed through reimbursement data, excluding over-the-counter, non-reimbursed or imported products, and it is obtained with a time lag. **This study investigates differences in AMC in the primary care sector between reimbursement and sales data, aiming to provide insights into AMC variations and to quantify the accuracy of current surveillance methods.**

Method

- **Data.** Reimbursement data for systemic antibacterials (ATC group J01) were obtained from the National Institute for Health and Disability Insurance (NIHDI) and contains all reimbursed products dispensed in outpatient pharmacies. Retail sales data were sourced from IQVIA and contains all pharmaceutical products purchased by dispensing pharmacies from wholesalers.
- **Measures.** The AMC volume was measured in defined daily doses per 1000 inhabitants per day (DID), using as denominator total population data from Eurostat.
- **Analysis.** Bland-Altman plots were used to assess the agreement in DID between reimbursement and retail datasets. Relative differences in DID (RD) between the two datasets were computed for the J01 group and its ATC-3 subclasses.

Results

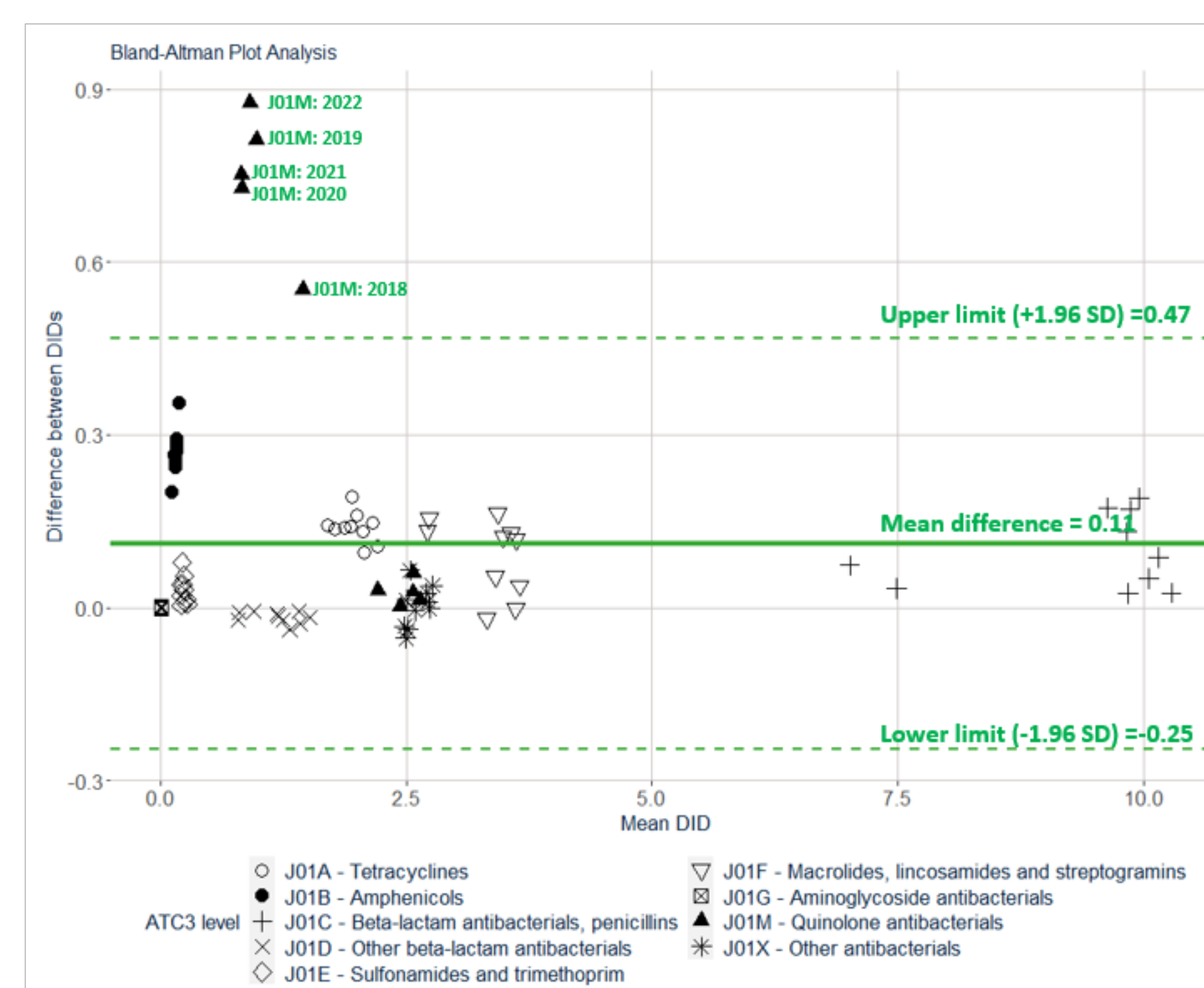
1. Agreement between datasets

- The results show **high agreement between the two datasets**, with a mean difference (DID based on retail minus DID based on reimbursement) of 0.1 (Figure 1).
- Substantial outliers were observed for fluoroquinolones (J01M) for the years 2018, 2019, 2020 and 2021 and 2022.

2. Consumption of antibacterials for systemic use (J01)

- J01 antibacterial sales declined from 22.89 DID in 2013 to 20.50 DID in 2022 (-10.4%), with a notable deviation during the Covid-19 pandemic – dropping from 21.31 DID in 2019 to 16.55 in 2020 (-22.3%) (Figure 2, Graph B).
- Reimbursement data slightly underestimated retail data with RDs ranging from 2% (2013) to 9% (2022) when including fluoroquinolones (Graph C) and 2 to 4% when excluding them (Graph D).

Figure 1. Bland–Altman plots of Belgian community reimbursement and retail data of antimicrobial agents at ATC-3 by year level (2013-2022)



Note: The difference between reimbursement and retail sales data (expressed in DID) is plotted against the average of reimbursement and retail consumption. The mean difference represents the systematic bias between the two metrics, and its 95% limits of agreement are shown.

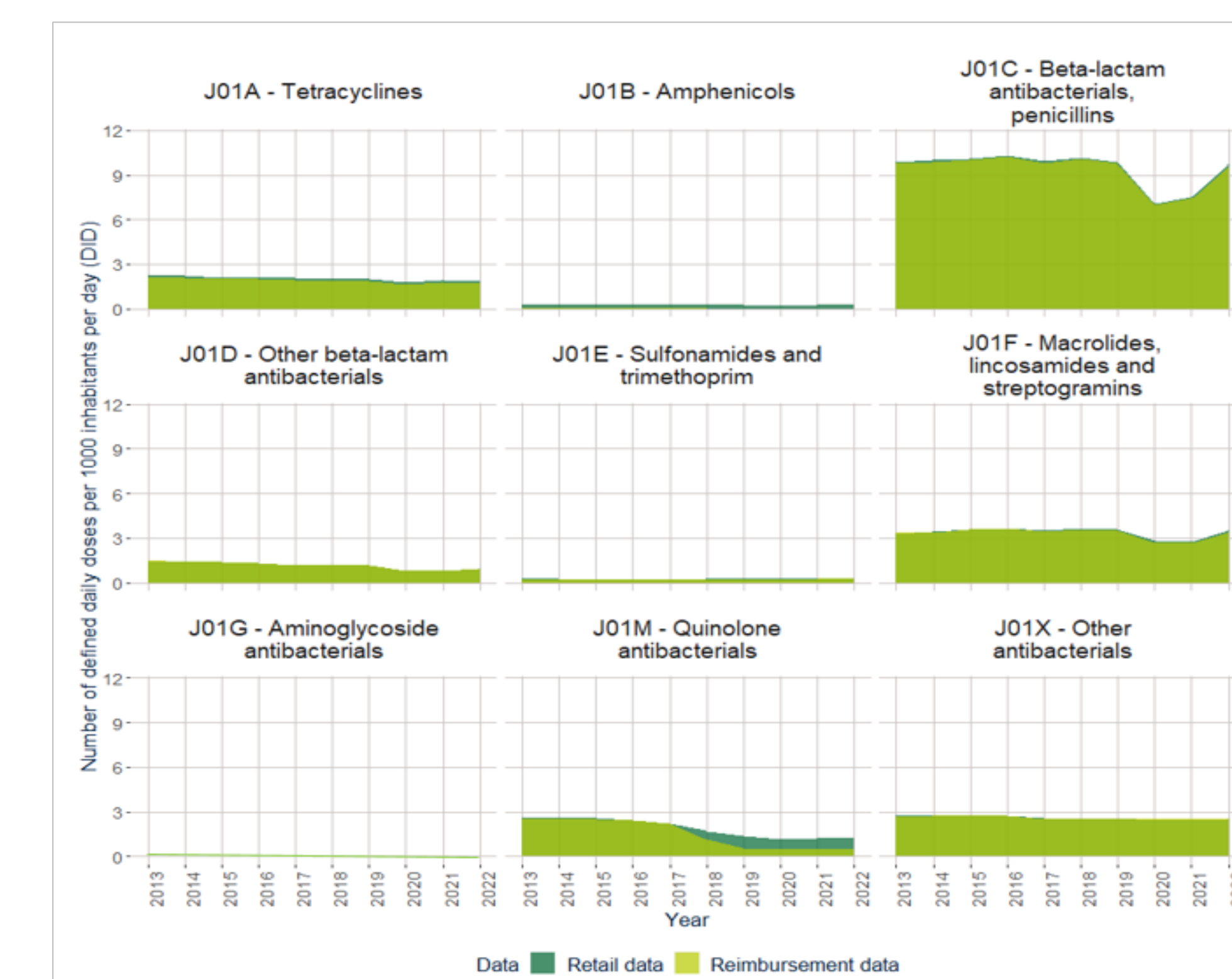
Figure 2. Evolution of outpatient J01 antibacterial consumption including and excluding fluoroquinolones (J01M) based on reimbursement and retail data (2013-2022)



3. Consumption of antibacterials for systemic use at ATC-3 level

- Highly similar ten-year trends were observed in both datasets for five out of the nine subclasses: J01A, J01C, J01D, J01E, J01F, and J01X (Figure 3).
- Striking relative differences were observed for substances consumed in low quantities (<0.5 DID), such as amphenicols (J01B), aminoglycoside antibacterials (J01G) and sulfonamides and trimethoprim (J01E).
- Reimbursement and retail datasets show similar consumption levels until 2017 for quinolones (J01M), after which high RD variations emerge.

Figure 3. Evolution of reimbursement and retail sales data of J01 antibacterials for systemic use (J01) by ATC-3 level (2013-2022)



Conclusion

Reimbursement data serves as a reliable tool for outpatient AMC monitoring, with only slightly lower estimates than sales data across most J01 subclasses. However, a notable exception is observed with quinolones due to a 2018 governmental change in reimbursement criteria aimed at reducing their consumption. This highlights the importance of incorporating sales data for accurate assessments in this specific category. The synergistic use of both reimbursement and sales datasets is essential for gaining a comprehensive understanding of consumption patterns and for supporting AMR mitigation strategies in Belgium.