Oral Antibiotics in Germany and the Netherlands in Primary Care from 2012 – 2016: A Comparison

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Background and Objective

Overuse of antibiotics is of concern, but may differ between countries. This study compares the use of oral antibiotics in Germany (DE) and the Netherlands (NL) in primary/ambulatory care where the majority is used (EU/EEA: 22.4 defined daily doses per 1,000 inhabitants per day (DID) compared to 2.1 DID in the hospital sector [1]).

Methods

- Longitudinal drug utilization study of oral antibiotics during the years 2012 to 2016 in DE and NL.
- DE: DAPI database containing dispensings at the expense of the Statutory Health Insurance Funds from > 80% of community pharmacies. NL: Data from the Dutch Foundation for Pharmacetical Statistics, that collects dispensings from nearly 95% of community pharmacies in the Netherlands.
- Use of oral antibiotics was estimated as DID, except for comparison of age groups as packages per 1,000 inhabitants per year.
- National time trends were assessed with linear regression for overall use, stratified for the major antibiotic classes (penicillins, cephalosporins, tetracyclines, quinolones, macrolides, and lincosamides), and individual substances.

Results

Overall use

- In 2016, 14.1 DID of oral antibiotics were dispensed in DE compared to 9.6 DID in NL (Δ = -2.2% in DE and -6.9% in NL, Figure 1).
- In DE, dispensing of oral antibiotics to children was higher compared to NL, especially for the age groups 2 to 6 years and 6 to 15 years (Figure 2).

Major antibiotic classes

- Cephalosporin use is very low in the Netherlands, but the second frequent class dispensed in Germany in 2016 (0.02 DID in NL vs. 2.95 DID in DE, Figure 3).
- Dispensings of lincosamides in NL significantly increased over time (from 0.15 to 0.19 DID, Δ = 27.5%, p=0.001) but decreased in DE (from 0.75 to 0.65 DID, Δ = -10.7%, p=0.014).
- Dispensing of quinolones, tetracyclines, and other antibiotics (including sulfonamides / trimethoprim, aminoglycosides, glycopeptides, fosfomycin and nitrofuran derivatives) in DE and cephalosporins and tetracyclines in NL showed a statistically significant decrease.

Individual substances

- In 2016, amoxicillin was the most frequently dispensed antibiotic in both countries (Tables 1 and 2).
- Three of the 10 most frequently dispensed oral antibiotics in both countries (ciprofloxacin, azithromycin and clarithromycin) belong to the watch group antibiotics according to the WHO [2] (Tables 1 and 2).

Discussion and Conclusions

- From 2012 to 2016, overall use of oral antibiotics in the Netherlands was much lower than in Germany. Antibiotic use in primary care in both countries decreased slightly over time.
- High level of oral cephalosporin dispensings in Germany cannot be explained by national guidelines. In the Netherlands and following the guidelines, oral cephalosporins were hardly used at all.
- Fosfomycin dispensings increased both in DE and NL. Due to its low risk of selection of multiresistant pathogens and bacteriological collateral damage it is recommended in both countries to treat uncomplicated urinary tract infections.

References:


Conflict of interest:

None declared.

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