

Antibiotics in dentistry facts and trends in Germany

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Introduction: Antibiotics alongside with analgesics and local anesthetics are the most frequently used drugs in dentistry. Reliably structured figures concerning the actual number of prescriptions of antibiotics by dentists are hardly available. **Materials & Methods:** All antibiotic prescriptions of dentists for patients who are members of statutory health insurances in Germany from 1 January 2012 to 31 December 2015 were included. The annual reports of the scientific institute of the AOK, the biggest statutory health insurance in Germany, were used as data basis. The types of antibiotics, the amount of prescriptions and therefore the prescribed defined daily doses (DDD) were analyzed. The results were compared to antibiotic prescriptions of German physicians and to data of international studies. **Results:** During the period of investigation an average of 8.8% per year of all antibiotic prescriptions are issued by dentists. Between 2012 and 2015 the dental share on all antibiotics fell by 12.1% ($p < 0.05$). The mostly prescribed antibiotic is amoxicillin, the share of which on all dental prescriptions increased from 35.6% in 2012 to 45.8% in 2015 ($p < 0.01$). About three-quarters of all dentally prescribed DDD can be attributed to amoxicillin and clindamycin. On the part of the German physicians and compared to international studies the structure of the prescriptions is much more heterogeneous. **Conclusion:** Dental and medical antibiotic prescriptions in Germany show statistically significant differences regarding the types and the shares of the prescribed antibiotics. In the context of international studies on dental prescribing behavior the high proportion of clindamycin and the low share of metronidazole in Germany are noticeable.

Comparison of oral antibiotic use between DE and NL was achieved by the assessment of DIDs. DIDs dispensed in DE and NL were calculated in total, for the various major antibiotic classes (penicillins, cephalosporins, tetracyclines, quinolones, macrolides, lincosamides, et al. comprising sulfonamides/trimethoprim, aminoglycosides, glycopeptides, fosfomycin, and nitrofurans derivatives) and for various individual substances. Annual differences (increase or decrease) between 2012 and 2016 were

calculated for DE and NL for the entire oral antibiotic drugs and on the extent of antibiotic classes and substances, respectively.

The total annual package numbers of oral antibiotics dispensed per 1000 inhabitants in DE and in NL were compared within different age groups. Increase/decrease from 2012 to 2016 was calculated for every age bracket in DE and NL.

Furthermore, rectilinear regression analyses were performed to research associations between time (as increasing calendar year) and therefore the amount of antibiotic dispensings within both countries. For these analyses, a linear relationship was assumed between time and antibiotic dispensings. The typical annual change estimates also because the corresponding t-test P-values were calculated. Statistical analyses were conducted using IBM SPSS.

National guidelines for many common infections in DE and NL were comparable for his or her recommendations in antibiotic use. Consequently, this might not account for the upper antibiotic use in DE compared with NL. Obviously, in NL the rules need to be better implemented than in DE for appropriate antibiotic prescribing. Pharmacists might play a role in this as well by monitoring GP prescribing and counseling patients. In NL, pharmacists confront GPs in regular pharmacotherapy audit circles with their prescription data for different diseases and drug classes.