



Strong downward trend of outpatient antibiotic prescriptions in German children and adolescents in the years 2010 to 2019

Holstiege J, Akmatov M, Steffen A, Bätzing J



Conflict of Interest



<input checked="" type="checkbox"/>	No, Nothing to disclose
<input type="checkbox"/>	Yes, please specify

Company / Name	Honoraria / Expense	Consulting / Advisory Board	Funded Research	Royalties / Patent	Stock Options	Ownership / Equity Position	Employee	Other (Please specify)



Introduction



- Exposure to antibiotics is a leading cause for the emergence of antibacterial resistance on the individual and population level
- Due to a high burden of respiratory infections high antibiotic use is common in paediatric populations
- However, a majority of respiratory infections are caused by viruses
- High outpatient antibiotic prescribing to paediatric populations is a recognised indicator for inappropriate prescribing patterns
- Study aim: To assess trends of antibiotic prescribing among German children (0-14 years) during 2010-2019



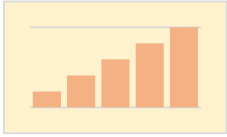


Methods

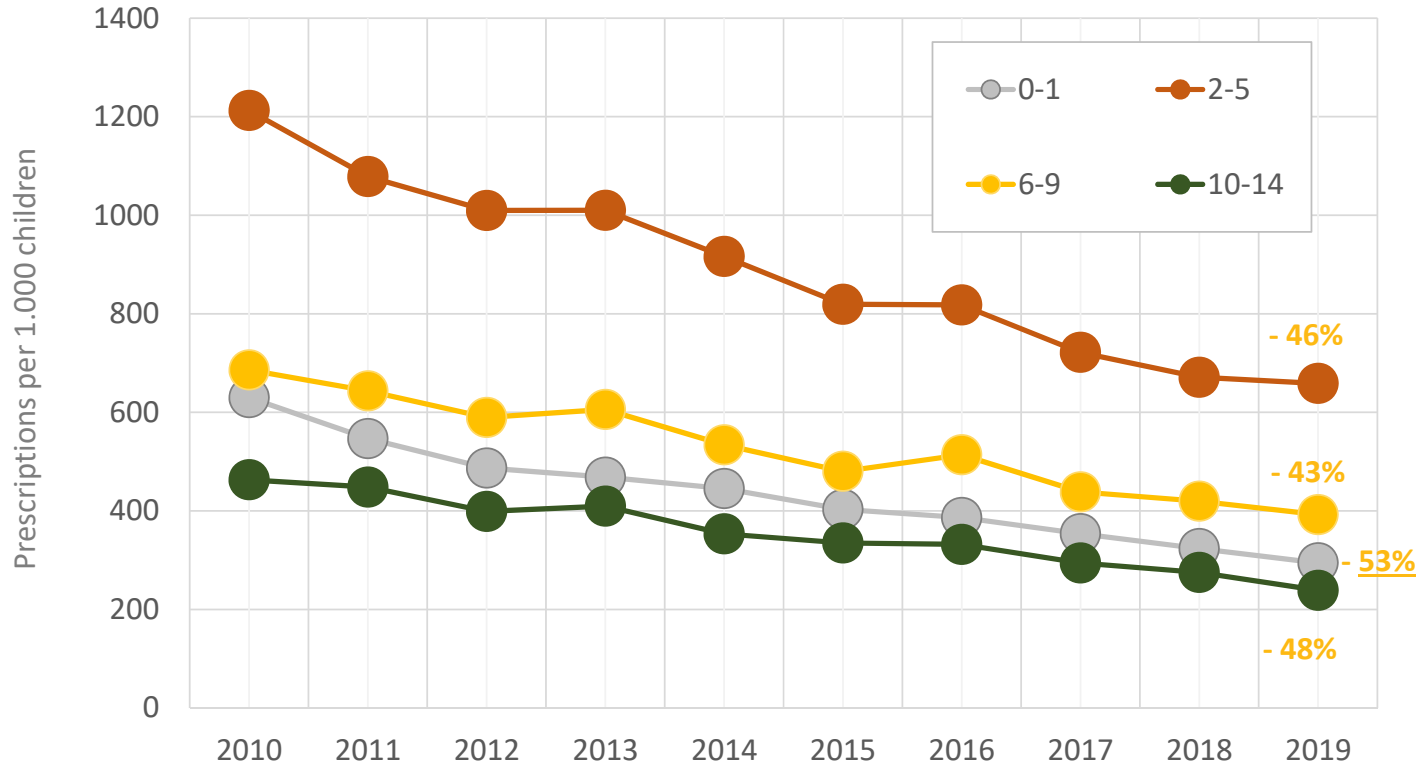


- Database: nationwide outpatient prescription claims from the German by statutory health insurance
 - 87% of German population in 2019
- Design: annual consecutive cross-sectional analyses from 2010 to 2019
 - Inclusion of all children aged 0-14 years (2019, n= 9.500.009)
- Measure of use: annual antibiotic prescription rate, i.e. prescriptions per 1.000 persons per year
 - robust towards variations of dosage across age groups = more appropriate than DDD per population in paediatric studies
 - robust towards alterations of dosage over time due to changes in practice or changes in mix of antibiotics used



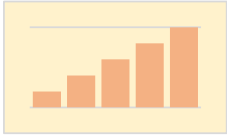


Results: Agespecific Rx rates

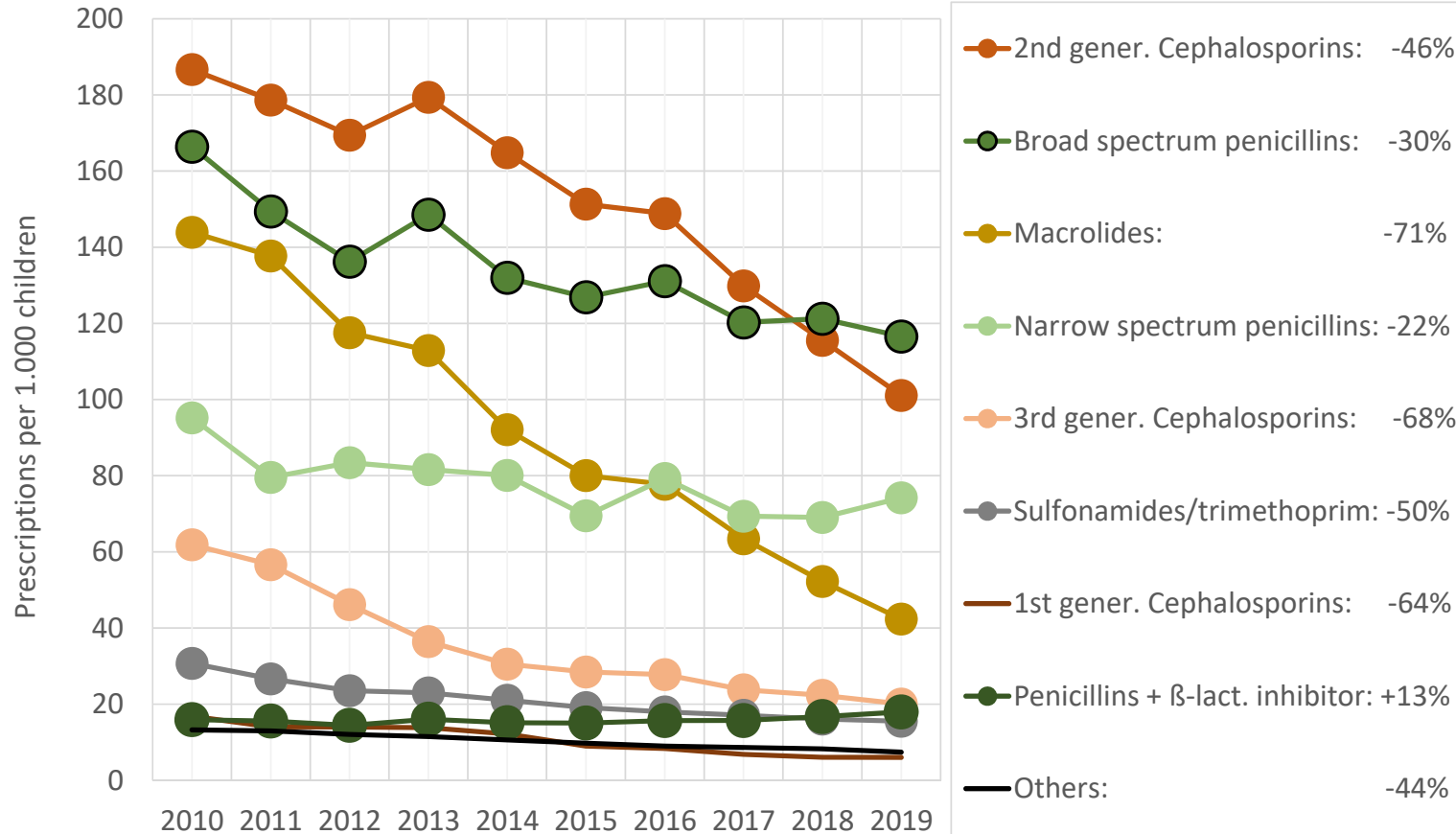


- Overall reduction: - 46%
- Highest use and strongest absolute decline (-558 Rx) in preschool children (2-5 years)
- Marked relative decrease (- 53%) in 0-1 year olds



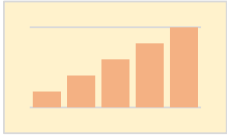


Results: Rx rates by antibiotic subgroup

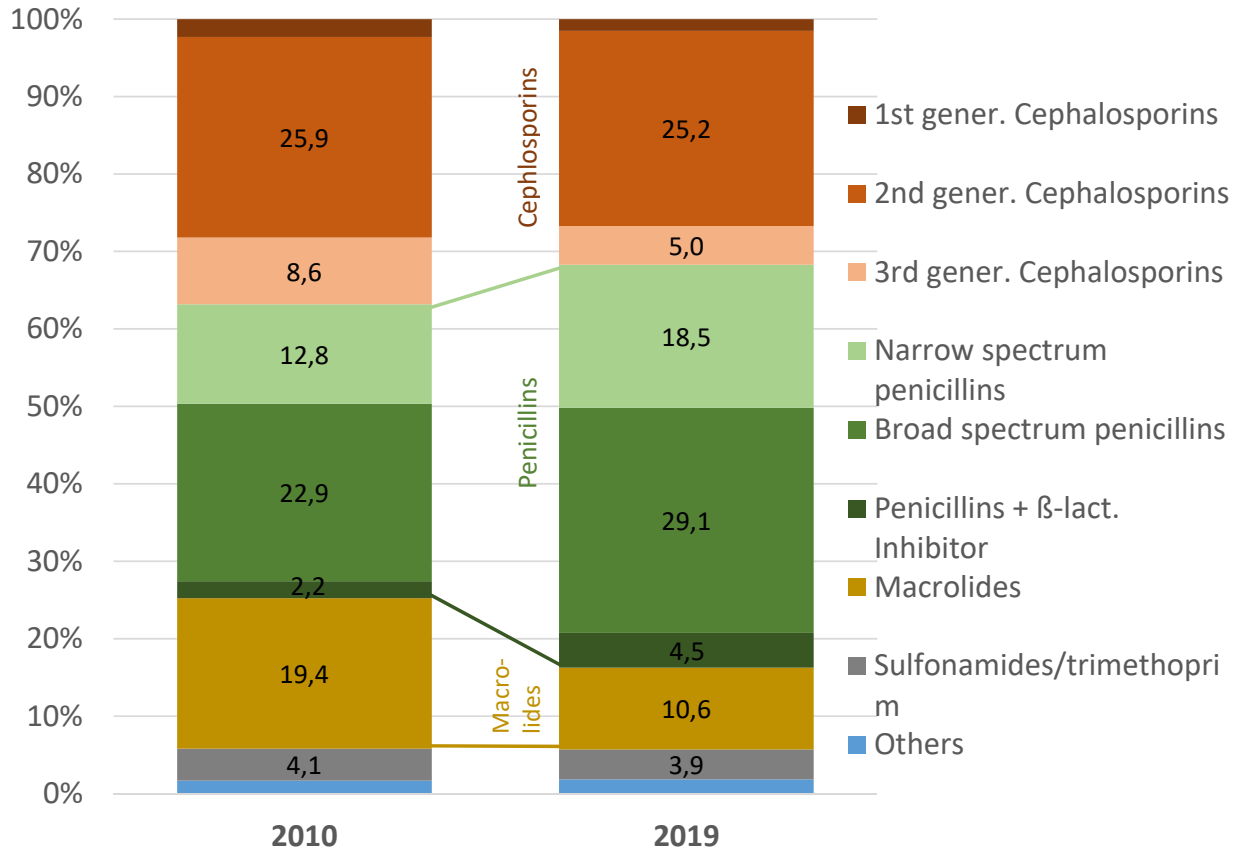


- Declining Rx rates in vast majority of subgroups
- Exception: Penicillin plus β -lactamase inhibitor
- Greatest reductions for:
 - Macrolides (-71%)
 - Third gener. Cephalosporins (-68%)





Results: Distribution of antibiotic subgroups 2010 vs. 2019

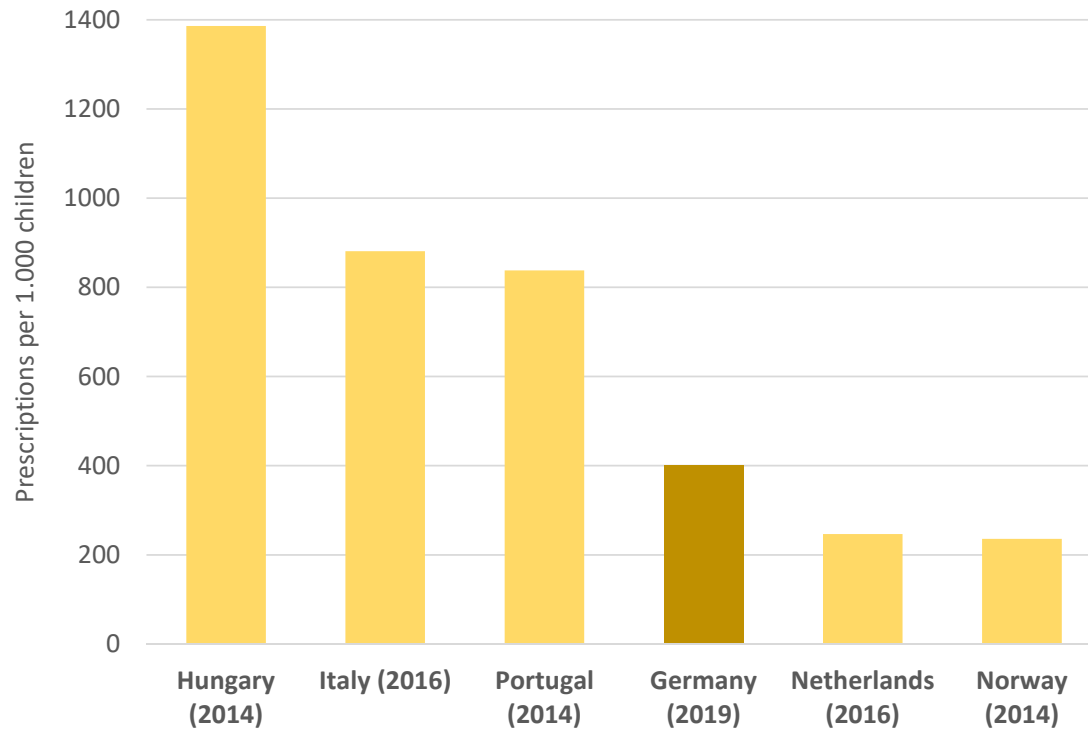


- Decrease of cephalosporins from 37 (2010) to 32% (2019)
- Decrease of macrolides from 19 (2010) to 11% (2019)
- Increase of penicilins from 38 (2010) to 52% (2019)



Comparison to other European countries

Total outpatient use among children aged 0-14 years



- Total paediatric use: Figures were found from Italy (2016), Hungary (2014), Portugal (2014), the Netherlands (2016) and Norway (2014)
- Rx rates vary by a factor of 5,9 (!) between Hungary and Norway
- Use in Italy and Portugal more than 2 times higher than in Germany
- Still: German rates 70% higher than Norwegian rates





Conclusions

- Considerable reductions in antibiotic prescription rates over the last decade indicate a change towards more judicious prescribing patterns in German paediatric care
- This change can not be linked to specific interventions as the majority of large-scale programmes to promote prudent antibiotic use was not introduced before 2016
- 70% higher Rx rates compared to Norwegian and Dutch children may indicate further room for reductions
- Compared to other European countries prescribing of second- and third-generation cephalosporins remains alarmingly high
 - suggests first-line use of these substances in common respiratory infections
 - may accelerate the emergence of AB resistance among Gram-negative bacteria, including the selection of extended-spectrum beta-lactamases



Thank You
For Your Attention



Dr. Jakob Holstiege
Department of Epidemiology and Health Care Atlas
www.versorgungsatlas.de

Central Research Institute of Ambulatory Health Care in
Germany (ZI)
Salzufer 8
10587 Berlin

Tel: 030 4005 2467
Fax: 030 4005 27 2467
E-Mail: jholstiege@zi.de

