

Global estimates of the relative pediatric consumption and cost of oral amoxicillin and amoxicillin plus clavulanic acid

G. A. Levine¹, M. Sharland², S. Ellis³, Y. Ferrisse³, C. Loze³, Y. Hsia², G. Fink¹, J. Bielicki²; for the PediCAP project

¹ Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Basel, Switzerland

² Paediatric Infectious Diseases Research Group, St George's University of London, London, UK

³ Global Antibiotic Research and Development Partnership, Geneva, Switzerland



BACKGROUND & OBJECTIVES

- Amoxicillin and amoxicillin plus clavulanic acid (co-amoxiclav) are commonly used antibiotics for community-acquired infections in young children
- Both are “Access antibiotics” for pediatric respiratory infections in WHO Essential Medicines List for Children
- Despite higher cost, additional clinical benefit of co-amoxiclav in primary care settings is not well established
- We aimed to estimate consumption and costs of oral amoxicillin and co-amoxiclav for young children and identify variations across countries and income groups

MATERIALS & METHODS

- Consumption from 2015 IQVIA-MIDAS antibiotic wholesale data for 75 low- and middle-income (LMIC) and high-income (HIC) countries/regions, for sales volume of all child-appropriate formulations (CAF), in standard units (SU) (single tablet/capsule solid or 5 mL liquid preparation)
- Sales value estimated by applying 2015 median global buyer prices from International Medical Products Price Guide
- Global consumption estimated by consumption rates by World Bank income group to the size of the population not represented in IQVIA (based on UN Population data)
- Cost savings estimated under different plausible scenarios of the distribution of use, compared with 2015 observed consumption

Figure 1. Relative consumption of oral child-appropriate formulations of co-amoxiclav and amoxicillin in 75 countries/regions

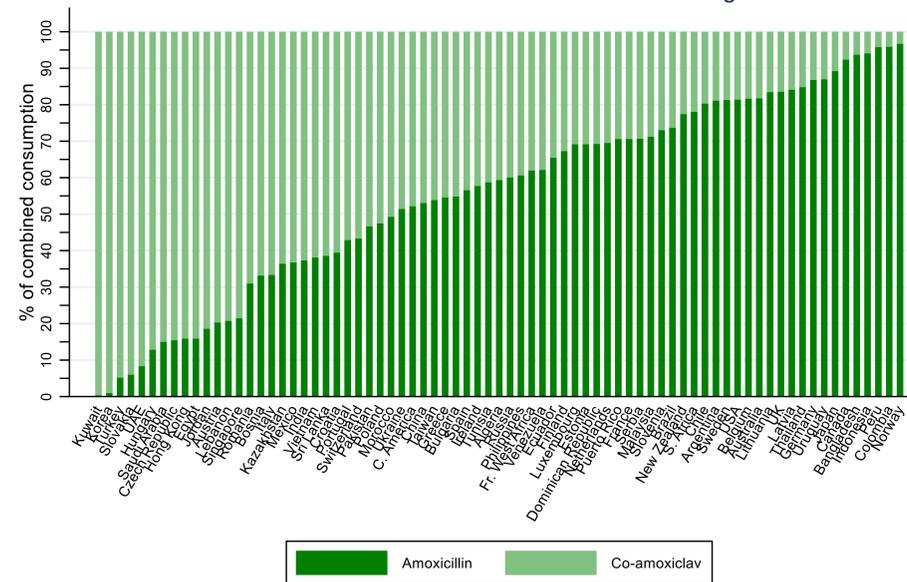
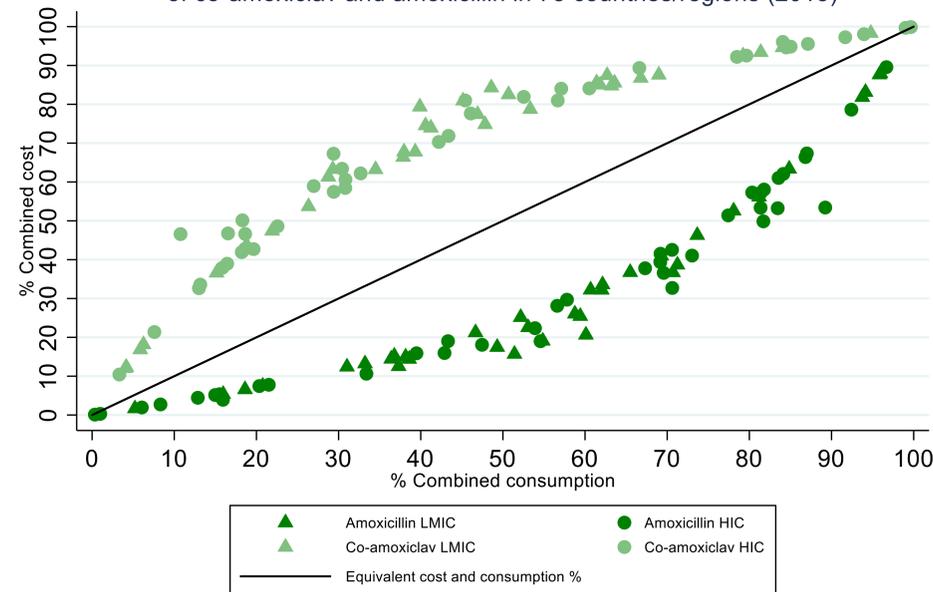


Figure 2. Relative % consumption and % cost of child-appropriate formulations of co-amoxiclav and amoxicillin in 75 countries/regions (2015)



RESULTS

- Global sales value (2015) CAFs of co-amoxiclav 540 million USD and amoxicillin 171 million USD.
- Median consumption rate per child-year 8.2 SUs co-amoxiclav (IQR: 3.2, 16.0) and 11.6 SUs amoxicillin (IQR 3.5- 20.5)
- Co-amoxiclav accounted for 45.8% of consumption and 75.5% of sales value. Co-amoxiclav consumption as a proportion of the two antibiotics ranged from 3.3% (Norway) to 99.7% (Kuwait)
- LMICs and HIC had similar patterns of relative use and relative spending on the two antibiotics
- If co-amoxiclav accounted for a maximum of 10% of combined use, globally, approximately 219 million USD annually could be saved (38% cost reduction)

CONCLUSION

- Co-amoxiclav use is very common for pediatric treatment in some countries and accounts for a disproportionate fraction of cost, relative to consumption
- Estimates represent only wholesale purchases and are only a fraction of total cost and consumption
- Substantial cost savings could be made by clearer global guidance on the optimal use of amoxicillin versus co-amoxiclav for childhood infections

ACKNOWLEDGEMENTS

This work was supported by the PediCAP project, which aims to optimize antibiotic treatment for children with severe/very severe community-acquired pneumonia in South Africa, Uganda, Zambia and Zimbabwe. This project is part of the EDCTP2 programme, supported by the European Union, Grant number RIA2017MC-2023. <https://projectpedicap.org>