**New Quality Indicators for Paediatric Antibiotic Prescribing in Primary Care: a Population Based Cohort Study in the United Kingdom, Italy and the Netherlands from 1995-2010.**

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**Abstract**

### Background

Suboptimal use of antibiotics may lead to antimicrobial resistance. The aim of this study was to develop and assess two new quality indicators (QIs) of optimal community-based prescribing applied to childhood community antibiotic (AB) prescribing in three European countries.

### Methods

A cohort study was conducted using electronic primary care medical records of 2,195,312 children up to 14 (Italy, Pedianet database, 2001-2010) or 18 years of age (UK, THIN database, 1995-2010; the Netherlands, IPCI database, 1996-2010) contributing for a total of 12,079,620 person-years (PYs). Prevalence rates of antibiotic prescribing were defined as the number of children with at least one antibiotic prescription per year and were expressed as the number of users per 100 PYs (%). Quality of prescribing was determined using four QIs: the drug utilisation 90% method, the ratio between users of broad and narrow spectrum penicillins, cephalosporins and macrolides (B/N ratio) and two new QMs: (i) the overall proportion of amoxicillin users (amoxicillin index, AI); (ii) the ratio between users of amoxicillin and those of broad spectrum antibiotics (the A/B ratio).

### Results

The overall annual prevalence of antibiotic prescriptions was 18% in the Netherlands, 36.2% in the UK and 52% in Italy. Prevalence was highest in the youngest children. Almost half of all prescriptions included amoxicillin with or without clavulanic acid. Cephalosporins were frequently prescribed in Italy. The AI provided trends for the utilization of a relatively narrow spectrum option targeting acute respiratory infections, and was highest in the Netherlands and in the UK (50-60%) and lower in Italy (30%), with a slight decrease over time in the UK and Italy. The overall B/N ratio varied between countries from 0.3 to 74.7, whereas the overall A/B ratio varied less from 0.5 to 6.

### Conclusions

The prevalence of antibiotic prescribing varied highly with age and country. A combination of total antibiotic prevalence and quality of prescribing based on amoxicillin use provide a clear picture of community childhood antibiotic prescribing. These measures could be used to evaluate the impact of programs aiming at reduction of AB use and appropriate antibiotic prescribing.