

# Pattern of antibiotic prescription in pediatric population: an analysis in Emilia-Romagna Region

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## Background

Population level exposure to antibiotics is associated with antibiotic resistance, and frequent antibiotic prescribing to children is accepted as an indicator for sub-optimal prescribing to outpatients.<sup>1-3</sup> Several studies investigating antibiotic prescribing to children and adolescents identified large variations between countries in choice of therapy and time-related prevalence of prescribing, but comparing results are challenging due to differences in design, inclusion criteria, aggregation of single substances to different antibiotic groups, country specific resistance profiles and aggregation of individual prescription data to age groups. In Italy, Piovani et al.<sup>4</sup> and Cucinotta et al.<sup>5</sup> demonstrated differences in choice of therapy between regions, but did not give age and gender specific estimates on prescription rates. Besides, there is limited knowledge on yearly age specific prescription of antibiotics to children 0-5 years, as individual data often is aggregated to age groups.

The aim of this study is to analyse the pattern of antibiotic prescription and use in children 0-5 years in Emilia-Romagna Region.

## Methods

We performed a retrospective observational study in which data of antibiotic prescription were obtained from the Emilia-Romagna Health Authority Database. Outpatients between 0 and 5 years, with at least 1 antibiotic prescription (Anatomical Therapeutic Chemical, ATC code J01) during 2013 were selected; for each patient we considered the following variables: gender, age, date of prescription, municipality of residence, antibiotic therapy (ATC, number of DDD and number of packages). A descriptive analysis was performed to compare patients and prescriptions of antibiotics among the following 5 age groups: 0-12 months, 13-24 months, 25-36 months, 37-48 months, 49-60 months. Antibiotics consumption at the individual level was analyzed in terms of prevalence of use and of number of prescriptions per patient.

## Results

In 2013, 124011 children received at least 1 prescription of antibiotics. Fifty two percent (64701) of these were male and 87% (107368) were aged 2 years or older. Among all patients, 49709 (40%) received one prescription of antibiotics, 66593 (54%) 2-5 prescriptions and 7709 (6%) 6-27. Prevalence of antibiotic use sharply increased with age, from 2.8% in age group 0-12 to 39.4% in the 13-24 group and 65.6% in the 49-60 group.

Extended spectrum penicillins and combinations of penicillins with  $\beta$ -lactamase inhibitors were the most used drugs (31% and 36% respectively), followed by macrolides (azithromycin and clarithromycin, 10% and 7%) and third-generation cephalosporins (14%).

## Conclusion

Our results showed that prevalence of antibiotic use sharply increased with age, with a maximum in the 5 years old children. More than half patients received more than one prescription in 2013 and 6% patients received even up to 27 prescriptions.

The present data represent a preliminary analysis of a wider project designed to compare the pattern of antibiotic use in Emilia-Romagna Region and Norway.

## References

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