Short Report

Drug-specific quality indicators assessing outpatient antibiotic use among French general practitioners

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Quality indicators assessing the use of antibiotics among general practitioners (GPs) would be useful to target antibiotic stewardship interventions. We adapted to an individual GP level a set of 12 drug-specific quality indicators of outpatient antibiotic use in Europe developed by the European surveillance of antimicrobial consumption project. We performed a cross-sectional study analysing reimbursement data on outpatient antibiotic prescriptions in adults in south-eastern France in 2009. Substantial heterogeneity in antibiotic prescribing among French GPs was observed, and opportunity to improve antibiotic prescribing can be identified.

Introduction

Improving antibiotic use is necessary to curb antibiotic resistance. Wide variations in outpatient antibiotic use are well described, including some studies having shown differences between general practitioners (GPs).1–3 Quality indicators assessing in detail the use of antibiotics among GPs would then be useful to target antibiotic stewardship interventions, but few indicators have been studied in the literature.4–8 European surveillance of antimicrobial consumption (ESAC; www.esac.ua.ac.be) developed evidence-based disease-specific quality indicators,4 but in France, as in other countries, no information system exists that provides easy access to data linking drug use to clinical conditions. However, data regarding types and quantity of antibiotics prescribed are easily available from the databases of the National Health Insurance (NHI). Using these reimbursement data, we performed a cross-sectional study in 2009 in south-eastern France to describe in detail GPs’ antibiotic prescribing profiles in a standardized way without clinical data. For that purpose, we adapted at the GP level a set of 12 valid drug-specific quality indicators initially developed by Coenen et al. to compare ESAC data on outpatient antibiotic use between European countries.5

Methods

We conducted the study in adults aged ≥16 years in south-eastern France (Provence-Alpes-Côte-d’Azur region) in 2009. In France, patients pay health service fees, which are refunded by the NHI. Everyone, even those with low or no income, is covered by the NHI program. All antibiotics are subjected to reimbursement by the NHI. Data were collected from the outpatient reimbursement database of the General Health Insurance Fund, which covers salaried workers and socio-professional groups, such as the unemployed, i.e. 73% of the population in our region in 2009. Each time a prescribed drug was dispensed, information on the drug dispensed, the prescribing physician and the patient identification number are recorded and electronically sent to the NHI, with
Results regarding the 12 drug-specific quality indicators calculated at the GP level (table 1) showed that GPs prescribed, for 1000 active adult patients, an average of 11 DDD of antibiotics each day with a rather important IQR (7.46–14.55), demonstrating wide variations of prescribing between GPs. The indicator assessing seasonal variation of total antibiotic use showed that total antibiotic prescriptions were on average 50% more frequent in winter compared with summer, with wide variations between GPs.

### Discussion

We could adapt the 12 ESAC drug-specific quality indicators at the GP level. This allowed us to describe in detail each GP’s antibiotic prescribing profile in a standardized way. Substantial heterogeneity in antibiotic prescribing among French GPs was observed for all indicators, including seasonal variation of antibiotic use.

Our main objective was to describe antibiotic prescribing profiles at the GP level. Our data can nevertheless be looked at globally, at the region level, to compare them with the ESAC data published in the literature. Comparing our results with national or European data is not possible for indicators evaluating crude antibiotic use (i.e., the first five indicators) because our selected population is different. As an example, the French mean consumption of antibacterials for systemic use (‘TotalAB’) was 29.6 DDD/1000 inhabitants/day in 2009 (all outpatients and all prescribers), whereas the median value for this indicator in our study in 2009 was 10.8 DDD/1000 active patients per day, calculated at the GP level. This allowed us to describe in detail each GP’s antibiotic prescribing profile in a standardized way. Substantial heterogeneity in antibiotic prescribing among French GPs was observed for all indicators, including seasonal variation of antibiotic use.
Indicators targeting seasonal variations of antibiotic use can also be compared with European values (in 2009): seasonal variations are more pronounced in our study (’Total AB seasonal variation’: ≈26% in Europe vs 49% in our study, and ’Quinolone seasonal variation’: ≈8% vs 25%). Winter peaks of antibiotic use are thought to represent treatments of respiratory tract infections, which are mainly viral, suggesting that seasonal variation of antibiotic use is a good indicator of antibiotic misuse. Our study brings original data and is strengthened by the use of thoroughly validated drug-specific quality indicators, developed at the European level. Our work has, however, some limitations. Firstly, we used DDD because this standardized unit of measure is recommended worldwide to ensure comparability of the results; however, the same DDD/1000 active patients/day result could correspond either to GPs prescribing few antibiotic courses for long durations, or to GPs prescribing many courses but for shorter durations. Secondly, these indicators calculated at the GP level allow describing each GP’s antibiotic prescribing profile, but clinical data are necessary to definitely assess the appropriateness of these antibiotic prescriptions.

In conclusion, drug-specific indicators could be calculated using reimbursement data to describe outpatient antibiotic prescriptions at the GP level and showed wide variations in antibiotic use among French GPs. These indicators could be used by each GP as a self-assessment tool, in comparison with other GPs’ results used as a way to motivate change. Further investigations are however needed to look for associations of each of these indicators with antibiotic misuse based on medical records review, or on a comparison with disease-specific quality indicators. In countries where data linking antibiotic prescriptions with patients’ age/gender and diagnosis are easily available for all GPs through a computerized system, the set of 21 evidence-based valid disease-specific quality indicators recently developed by the ESAC project group can be used. If some of the 12 drug-specific indicators we calculated proved to be associated with antibiotic misuse at the GP level, they could be useful for benchmarking or pay-for-performance purposes.

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Conflicts of interest: None declared.

Key points

- Quality indicators assessing the use of antibiotics among GPs would be useful to target antibiotic stewardship interventions.
- We calculated a set of 12 drug-specific indicators at the GP level to evaluate their antibiotic prescribing behaviour.
- The 12 indicators showed wide variations of antibiotic prescriptions between GPs.
- A comprehensive set of indicators is necessary to assess GPs’ antibiotic prescribing behaviour, but the association of these indicators with antibiotic misuse must be studied before using them for benchmarking or pay-for-performance purposes.

References