

Antimicrobial use in Armenia: First results of the WHO/Europe-ESAC project

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Introduction and purpose

There is no reliable data on antibiotic use in non-European-Union (EU) south-eastern European countries (SEE) and newly independent states (NIS). We aimed to collect valid, representative, comparable total national wholesales data on systemic antimicrobial use in Armenia, a NIS with a population of 3.100.200 (<http://hdrstats.undp.org>).

Methods

Valid 2011 total antimicrobial use data of Armenia were analysed according to the WHO Anatomical Therapeutic Chemical (ATC)/Defined Daily Doses (DDD) methodology and expressed in DDD/1000inhabitants/day (DID). Wholesales data on antibacterials (ATC group J01), antimycotics (J02) and antifungals (D01BA) were provided by the Medicinal Agency, covering 100% of the population. Quarterly data was also submitted allowing studying seasonal variation.

Results

Total (outpatients and hospital care) antibacterial use was 15.3 DID, similar to northern EU countries (Fig.1)

The top 5 antibacterial subgroups (ATC level 3) were: penicillins, ATC group J01C (6.1 DID, 39.5% of all antibacterials); tetracyclines, ATC group J01A (2.0 DID, 13.0%); quinolones, ATC group J01M (1.9 DID, 12.6%); sulfonamides and trimethoprim, ATC group J01E (1.5 DID, 9.5%) and macrolides, lincosamides and streptogramins, ATC group J01F (1.3 DID, 8.2%) (Fig.2). The top 5 antibacterials (ATC level 5) were: amoxicillin (4.1 DID, 26.6%); doxycycline (1.6 DID, 10.5%); sulfamethoxazole/trimethoprim (1.4 DID, 8.9%), ciprofloxacin (1.1 DID, 6.9%), and amoxicillin and enzyme inhibitor (co-amoxiclav, 1.0 DID, 6.5%). Parenteral antibiotic use in Armenia (1.7 DID; 11.5%) covered primarily third-generation cephalosporins (1.0 DID; 7% of total antibiotic use), mainly ceftriaxone. Seasonal variation of quinolones showed a ten-fold increased use of levofloxacin during the winter season. Armenia mainly imported antibiotics manufactured in India (3.5 DID, 23.1% of all antibacterial use) followed by Korea (2.8 DID, 18.1%) and Belarus (1.9 DID, 12.3%). Total antimycotic and antifungal use was 1.03 DID. The top 3 were: fluconazole (0.79 DID, 76.6% of all antimycotics and antifugals), ketoconazole (0.18 DID, 17.3%) and terbinafine (0.05 DID, 5.3%) (Fig.3).

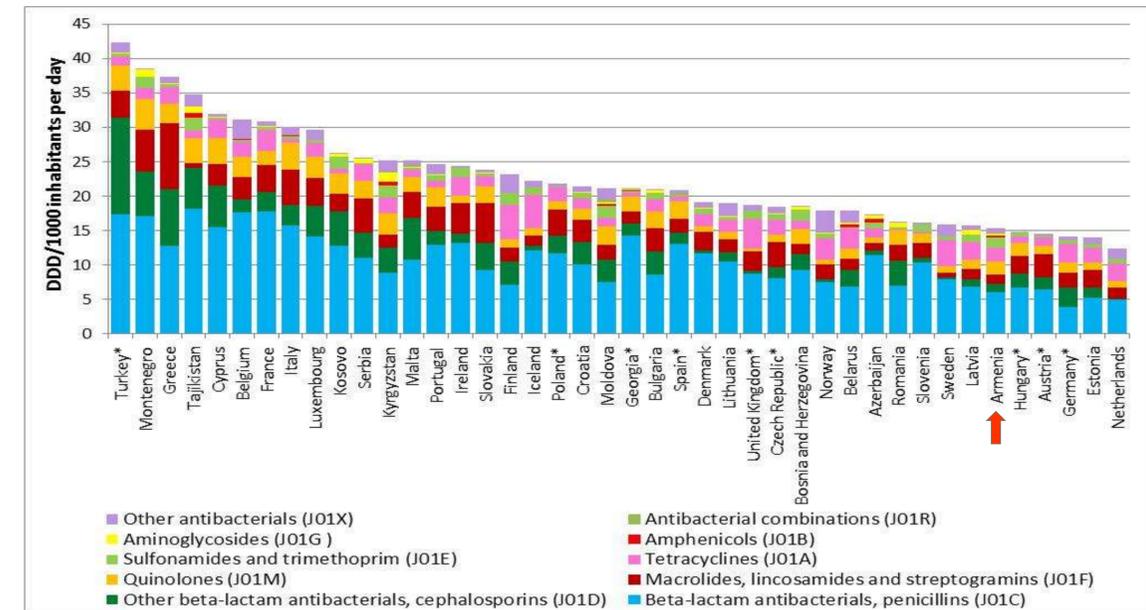


Figure 1 Total antibiotic use in 2011, expressed in number of DDD per 1000 inhabitants per day in 12 European countries and Kosovo as compared to 29 ESAC-Net countries (http://www.ecdc.europa.eu/en/healthtopics/antimicrobial_resistance/esac-net-database/Pages/database.aspx)

*Countries reporting only outpatient antibiotic use
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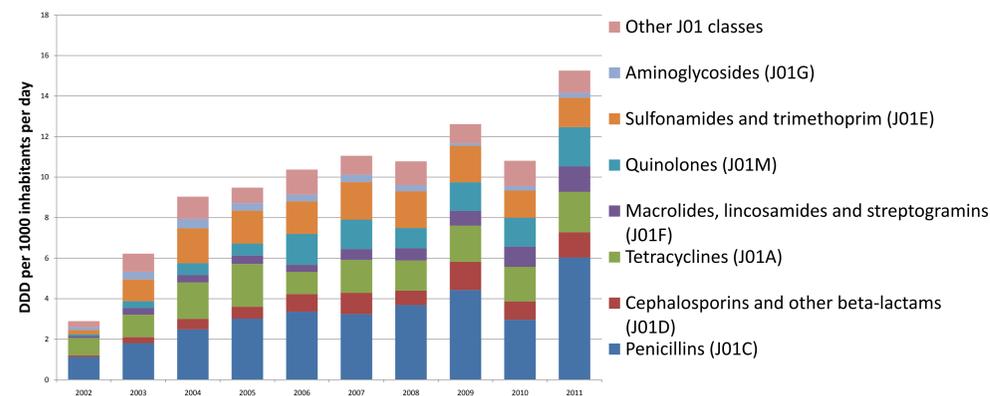


Figure 2 J01 Antibacterials for systemic use
Absolute volume of use at ATC3 level, expressed in DDD per 1000 inhabitants per day (DID)

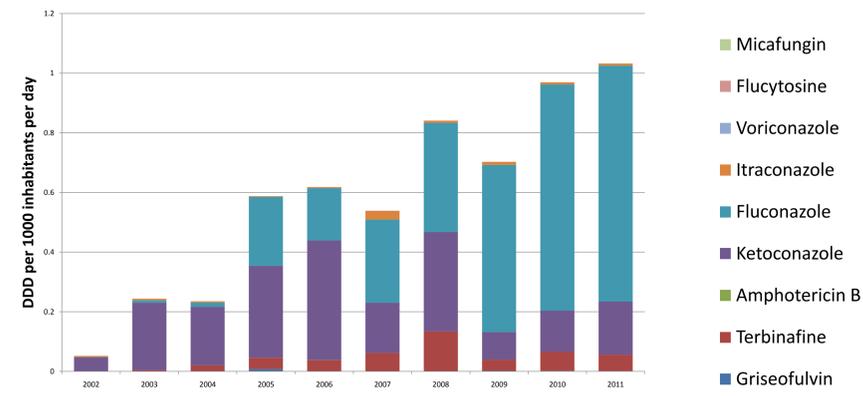


Figure 3 J02 & D01BA Antimycotics and antifungals for systemic use
Absolute volume of use at ATC5 level, expressed in DDD per 1000 inhabitants per day (DID)

Conclusion

We present for the first time a standardised and validated data set of systemic antimicrobial use in Armenia. We observed low total antibiotic use. It may reflect underuse due to limited access to drugs for a significant part of the population. Seasonal variation of quinolones may indicate inappropriate use for respiratory tract infections during the winter season. The lack of regulatory requirement of compliance of registered medicines with requirement of good manufacturing practice for some of the imported countries is a concern because it may lead to poor quality of antimicrobials. These data facilitate auditing of antimicrobial use and evaluation of the implementation of guidelines and public health policies to promote its judicious use.