

# QUANTITATIVE ANALYSIS OF THE CONSUMPTION OF ANTIBACTERIALS PRESCRIBED IN THE AMBULATORY CARE AND REIMBURSED BY HII IN ALBANIA DURING 2011-2012

*Iris Hoxha, MSc*

*Admir Malaj, PhD*

*Ledjan Malaj, Prof. Asoc.*

Faculty of Pharmacy, University of Medicine, Tirana

*Elizana Petrela, Prof. Asoc.*

Statistic Service, Faculty of Public Health,

University of Medicine, Tirana

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## Abstract

**Background:** Emphasis on the misuse of antibacterials in Albania and an increased sensibility on the antibacterial resistance have been reported in the grey literature lately. However, until now there are no consistent data on antibacterial use, its related misuse and antibacterial resistance, either other reports produced by health institutions.

**Objective:** The objective of this study is to assess the trend of antibacterial utilization reimbursed by the Health Insurance Institute (HII) in the ambulatory care in Albania during the period 2011-2012.

**Materials and Methods:** Data from the HII database for all the reimbursed and dispensed antibacterial in the ambulatory care were taken and the methodology of ATC/DDD for the study of antibacterial utilization was applied. Antibacterial grouped in ATC class were measured in defines daily doses (DDDs) and DDD/1000 inhabitant/day (DIDs) and then compared with the data of the European Surveillance of Antimicrobial Consumption Network (ESAC-Net) reports.

**Results:** Results of the total consumption of antibacterials reimbursed by the HII measured during 2011 are (3.174 DIDs) and in 2012 (2.794 DIDs). The penicillin's total consumption in 2011 are (1.604 DID) and in 2012 (1.306 DID). From 2011 to 2012 there are no significant differences in the total antibacterial consumption. However, an enhancement of the use of third generation of cephalosporin's was distinguished within the class of

cephalosporin's during the year 2012 (0.038 DID) whereas in the year 2011 was (0.006 DID).

**Conclusions:**The quantities of antibacterial reimbursed for HII covered population during 2011 and 2012 are lower than the average consumption of EU/EAA countries part of ESAC-Net project. However, cephalosporin's and tetracycline's quantities reimbursed and dispensed were similar with the relative data of some countries of EU/EAA countries part of the ESAC-Net project.

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**Keywords:** Antibacterial consumption, drug utilization, ambulatory care, Albania

### **Introduction**

The use of antibacterial has been very important worldwide and has brought huge benefits in terms of health and fundamental in preventing and decreasing infection diseases.(WHO, 2000, 2001)

The positive correlation between the use of antibacterial and antibacterial resistance in Europe has been reported (Goossens, 2005) and preliminary investigations revealed the presence of clusters of consumption associated with antibacterial resistance. Another study reported a positive association between highly significant antibacterial resistance and the use of antibiotics. (Masiero, 2007)

Since 2001 the WHO is engaged in guiding the response of antibacterial resistance with the rational use of old antibacterial, in implementing strategies and country policies for the proper surveillance. The WHO has issued a global strategy and guidelines to help countries in setting up systems to monitor antibacterial resistance and implement interventions (WHO, 2001.2). The collection and analysis of the antibacterial consumption from EU/EAA countries, both in the community and in the hospital sector is done by the European Surveillance of Antimicrobial Consumption Network, (ESAC-Net), founded and coordinated by the European Centre for Disease Prevention and Control (ECDC) (ECDC, 2013).

Emphasis on the misuse of antibacterials in Albania and an increased sensibility on the antibacterial resistance have been reported in the grey literature lately. However, until now there are no data on antibacterials, use, its related misuse and antibacterial resistance. Reports produced by health institutions in Albania have not tackled these problems.

For these reasons, the aim of this study is to define quantitatively the antibacterial consumption in Albania, but due to the fact that actually, there are not reliable databases for the antibacterial consumption, and generally for the drug consumption, we were able to analyse only the antibacterial consumption in the ambulatory care prescribed by the physicians contracted

by the HII and dispensed by the community pharmacies to the covered population with an active healthcare card.

In fact, the only institution that keeps track of the drug consumption is the HII, that gathers data only for the patients in the ambulatory care, which benefit reimbursed services for financial purpose.

According to the regulatory environment, all the population should be insured and covered by HII, which should reimburse them for the health expenditure, like drug prescription and consumption. This permits the traceability of the drug consumption, in this case of the antibacterial (LAW, 1994).

We refer to the covered population to the population with an active healthcare card, the one that benefits from the HII scheme.

In this study we gathered the data from the HII and determined the antibacterial consumption of every class. ATC/DDD index offered by the WHO (version 2013) was used, DDD and DID per every antibacterial used in Albania was found. Final data were compared with those of ESAC-Net project, which collects reference data on the consumption of antimicrobials for systematic use in the community and in the hospital sector in EU and EEA/EFTA countries through the European Surveillance System (WHO, 2013).

This data will allow the analysis of the reimbursed antibacterial from the HII in the ambulatory care to the covered population, and compare them with the available data of the EU/EAA countries part of the ESAC-Net project.

## **Methods**

Data for antibacterial reimbursed in the ambulatory care were obtained by HII for the years 2011 and 2012. This data include all the antibacterials prescribed by the physicians contracted by the HII to the covered population and dispensed to them by the community pharmacies.

The antibacterial were divided by ATC code and the quantities were expressed as in units of the pharmaceutical form (tablets, pills bottles, ampoules etc.). Total amount of active principle was found for every antibacterial classified by ATC code and pharmaceutical form for the years 2011 and 2012.

Total amount of DDDs was found for every antibacterial classified by ATC code and pharmaceutical form for the years 2011 and 2012. Referring to the guidelines of WHO for using the ATC/DDD system which gives ATC classification and DDD assignment linked to the ATC level. ATC/DDD values were taken by the WHO web updated ATC/DDD index in 7 January 2013 (WHO, 2013).

DDDs per 1000 inhabitants per day were found using the guidelines of WHO:

DDDs per 1000 inhabitants per day = (Total consumption measured in DDDs \* 1000 inhabitants) / (No. Population \* 365 days). (Hutchinson, 2004).

The population in this case is represented by the number of covered population by HII with an active healthcare card.

Data of the European countries were taken by the web ESAC- Net active database (country data 2011, which is the latest year reported) (ECDC, 2011) and then compared with the HII data for the antibacterial consumption of covered population in Albania.

Tables, graphics and calculations were made in an excel sheet.

## Results

Results of the total consumption of antibacterials reimbursed by the HII measured during 2011 are 3.174 DIDs and in 2012 are 2.794 DIDs.

The values of DDDs per 1000 inhabitants per day for every antibacterial class in the Albanian covered population, HII in 2011 and 2012 are presented in tab. 1 and graph 1.

The penicillin was slightly reduced but still they are the most notable class of the antibacterials being reimbursed with 50.5% of the total consumption in 2011 of (1.604 DID) and 46.7% of the total consumption in 2012 of (1.306 DID), shifting to cephalosporin's, tetracycline's, macrolides and other substances of antibacterial.

From 2011 to 2012 there are no significant differences in the total antibacterial consumption. However, an enhancement of the use of third generation of cephalosporin's was distinguished within the class of cephalosporin's during the year 2012 (0.038 DID) whereas in the year 2011 was (0.006 DID).

The scheme of reimbursement for antibacterial during 2011-2012 has not meet significant changes regarding the reimbursed items, only one penicillin sub-class, J01CE01 was taken off the reimbursement scheme in the 2012 list of reimbursement by the HII.

## Discussion

The antibacterial consumption of the HII covered population during 2011 and 2012 is lower than the consumption of antibacterials in the countries part of ESAC-Network during 2011 (ESAC Report, 14), which varies from 11.4 DIDs of the Netherlands to the 35.1 DIDs of Greece, with a median of 19.5 DIDs for all the EU countries.

The consumption remains far lower for each class of antibiotics with little exceptions as follows (ESAC Report, 14). The consumption of

tetracycline's in Albania was similar to Romania (0.1 DIDs), the consumption of cephalosporin's was similar to United Kingdom (0.4DIDs), Latvia (0.5DIDs) and overcomes the consumption in Netherlands (<0.1DIDs), Sweden (0.2DIDs), Norway (0.1 DIDs), Slovenia (0.3DIDs)and Denmark (0.1DIDs). Finally the consumption of macrolides is similar to Sweden (0.6 DIDs).

In addition, from 2011 to 2012 there has been a slight decrease in antibacterial reimbursement and consumption, this could be linked with the increased enforcement of the protocols of treatment for the covered population.

The above mentioned low consumption of reimbursed antibacterial may depend from several factors like the low use of insurance services or low access to these services from the covered population in the ambulatory care. Due to the fact that we don't have data for the antibacterial consumption which are paid out of pocket, in the ambulatory care in Albania, we are not able to determine the overall consumption of antibacterial in the country.

We were not able to determine whether the population chose to not benefit from the reimbursement of the antibacterial prescriptions, bypassing the medical protocols and the HII procedures, which can be a clue to the inappropriate prescription.

A recent reports by (Malaj, 2012) represent the differences between reimbursed and non reimbursed antibacterial prescription and suggested that there is a tendency of the physicians to prescribe last generation antibacterial, which are more expensive, when prescriptions are not reimbursed and that these prescriptions weren't filled correctly, with missing information.

Still our study is limited to the covered population, which have an active healthcare card and can benefit from the reimbursed services. The other population is not included because they don't have the healthcare card and don't have access to the reimbursed services, in this case to the reimbursed antibacterial.

For these reasons, actions must be taken to monitor and control the prescribing and dispensing of antibacterial, in order to quantify the overall antibacterial consumption, even if they are paid out of pocket.

Even if this analysis does not show the total consumption of antibacterial class of drugs in Albania, it may be a first step to sensitize the healthcare institutions to give a re-dimension of the protocols of the HII and monitor the non-official consumption of antibacterial and antibacterial resistance too.

## **Acknowledgments**

We thank the Health Insurance Institute (HII) for providing the data needed to perform this study.

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Tab. 1 Average values of DDDs per 1000 inhabitants per day for every antibacterial class in the Albanian covered population, HII in 2011 and 2012

Antibacterial	ATC	DDD's per 1000 inhabitants per day	
		2011	2012
<b>Penicilins</b>	<b>J01C</b>	<b>1.60</b>	<b>1.41</b>
Penicillin's with extended spectrum	J01CA	0.57	0.52
Combinations of penicillin's, incl. $\beta$ -lactamase inhib.	J01CR	1.02	0.88
Beta-lactamase sensitive penicillins	J01CE	0.0087	0.0004
<b>Cephalosporins</b>	<b>J01D</b>	<b>0.37</b>	<b>0.41</b>
First-generation cephalosporin's	J01DB	0.20	0.19
Second-generation cephalosporin's	J01DC	0.17	0.17
Third-generation cephalosporin's	J01DD	0.003	0.013
<b>Macrolides</b>	<b>J01F</b>	<b>0.57</b>	<b>0.58</b>
<b>Quinolones</b>	<b>J01M</b>	<b>0.23</b>	<b>0.23</b>
<b>Tetracyclines</b>	<b>J01A</b>	<b>0.13</b>	<b>0.15</b>
<b>Sulphonamides</b>	<b>J01E</b>	<b>0.056</b>	<b>0.055</b>
<b>Others</b>		<b>0.44</b>	<b>0.42</b>
<b>Total</b>		<b>3.4050</b>	<b>3.2469</b>

Graph 1. Values of DDDs per 1000 inhabitants per day for every antibacterial class in the Albanian covered population HII in 2011 and 2012

