



**ФОНД ЗА ЗДРАВСТВЕНО
ОСИГУРУВАЊЕ НА МАКЕДОНИЈА**

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MONITORING ON ANTIMICROBIALS CONSUMPTION IN REPUBLIC OF MACEDONIA

WHO&ESGAP COURSE: PRACTICAL INTRODUCTION TO RATIONAL PRESCRIBING OF ANTIBIOTICS IN HOSPITALS , 25-26 JANUARY 2017, SKOPJE

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Antibiotics are:



- ✓ One of the most important therapeutic revolutionary discoveries in the medicine history
- ✓ Essential tool of the modern medicine – surgical procedure or transplantation can not be done without AB
- ✓ Prone to abuse - When antibiotics are prescribed for viral infections where they are not effective
- ✓ Subject to analysis in order to achieve their better rational use as a priority for health authorities to combat AMR and protect the health of our future generations



According WHO :

- ✓ Irrational use of medicines is a major problem worldwide
- ✓ More than half of the drugs are prescribed, distributed or sold inappropriately
- ✓ Half of all patients do not use medicines correctly
- ✓ Rational use of medicines can be achieved only if all participants in the healthcare system – health professionals are very active and effective regarding the RUD, starting from the doctors who are prescribing and recommending the drugs, pharmacists who dispense drugs, patients who use drugs, suppliers of drugs, manufacturers, distributors and health authorities.



Why we should measure antibiotics consumption?



If you cannot measure it, then it is not science.

~ Lord Kelvin

- “If you cannot measure it, you cannot improve it” – William Thomson (Lord Kelvin)
- “You cannot control what you cannot measure” – DeMarco
- “The way you measure is more important than what you measure” – Art Gust



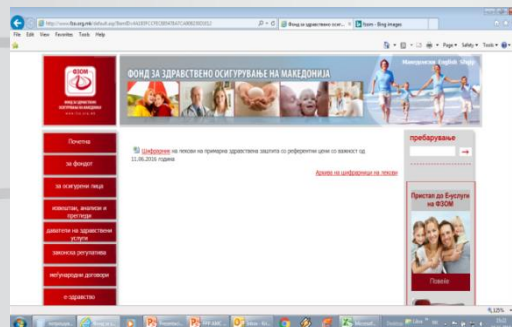
Monitoring the AMC in EU

- ✓ **European Surveillance of Antimicrobial Consumption Network (ESAC-Net)** - European network of national systems for monitoring antimicrobial consumption that provides reference data from Europe, enclosure statistical parameters of the ATC / DDD methodology according to the WHO.
- ✓ **ESAC-Net** - collects and analyzes data on consumption of antimicrobial drugs from Europe and EEA/EFTA countries for outpatient and hospital sectors.
- ✓ **Coordination** of ESAC-Net is transferred from the University of Antwerp, Belgium, the European Centre for Disease Prevention and Disease Control - ECDC (2011).
- ✓ The data should provide timely information and feedback to the EU and EEA/EFTA countries for AMC indicators, which provide a basis for monitoring the rational and safe use of antibiotics



Monitoring on the AMC in RM

Classification and coding of antiinfective drugs for systemic use



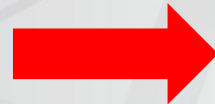
Реден број	Шифра на лек	АТЦ код	Генеричко име-INN	Заштитено име на лекот	Производител
527	85456	J01AA02001	Doxycycline	DOKSICIKLIN капсул. 100 x 100mg	JAKA 80
528	89133	J01AA02001	Doxycycline	DOXYCYCLINE ALKALOID капсул. 100 x 100mg	ALKALOID
529	965669	J01AA02001	Doxycycline	DOKSICIKLIN капсул. 100 x 100mg	REPLEKFARM
530	965685	J01AA02001	Doxycycline	DOKSICIKLIN капсул. 5 x 100mg	JAKA 80
531	965774	J01AA02001	Doxycycline	DOVICIN капсул. 5 x 100mg	GALENKA

We use the WHO methodology for measuring AB consumption (DDD's per 1000 insurers per day):

https://www.whocc.no/atc_ddd_methodology/purpose_of_the_atc_ddd_system/

HIF's electronic invoice system for healthcare services and medicines

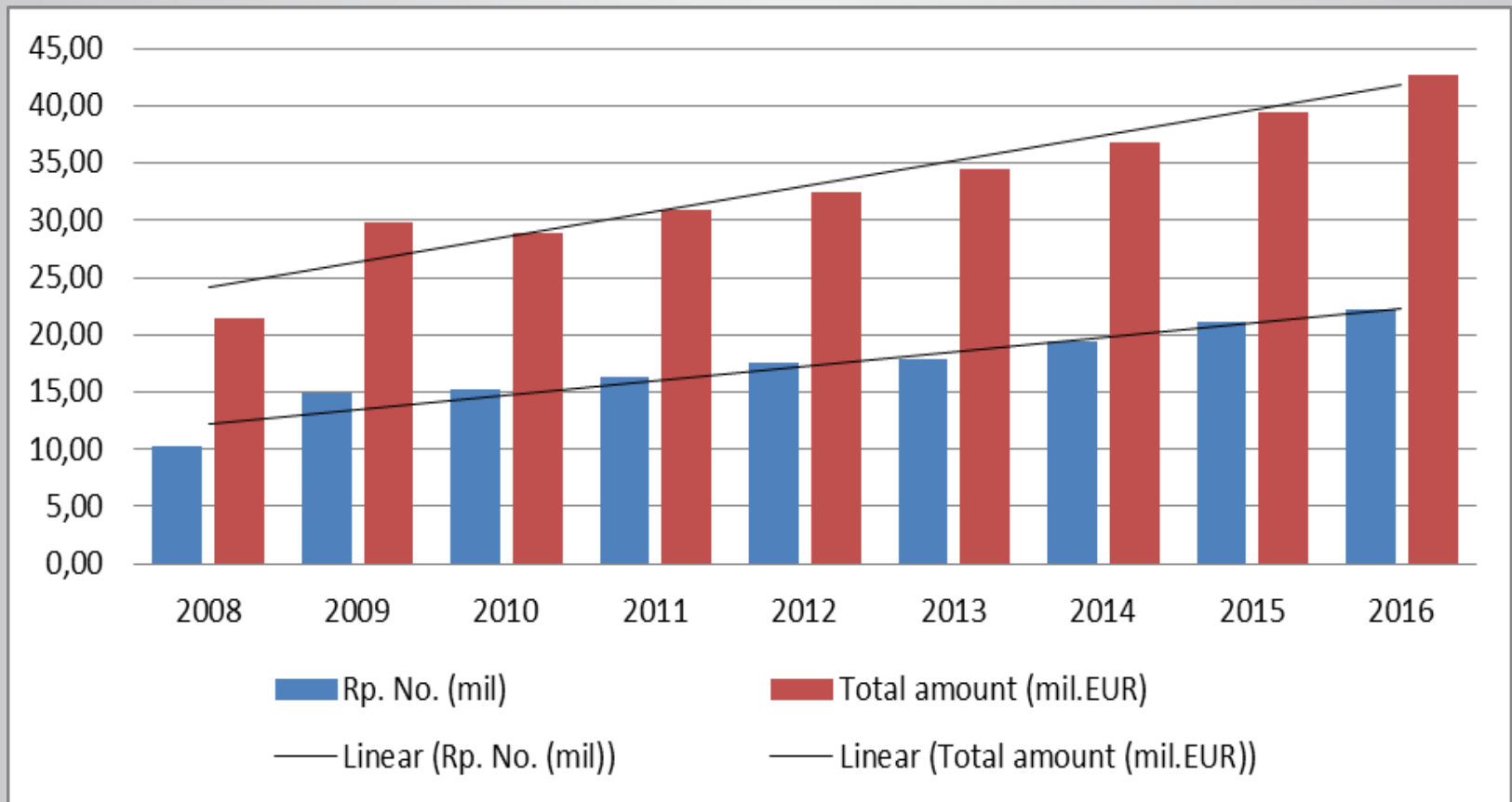
- ✓ Records and quality control of data
- ✓ Tend to have only E-prescription
- ✓ Relevant data basis
- ✓ Analyses
- ✓ Actions



Antibiotic consumption in Primary Healthcare on HIF's burden in R.Macedonia

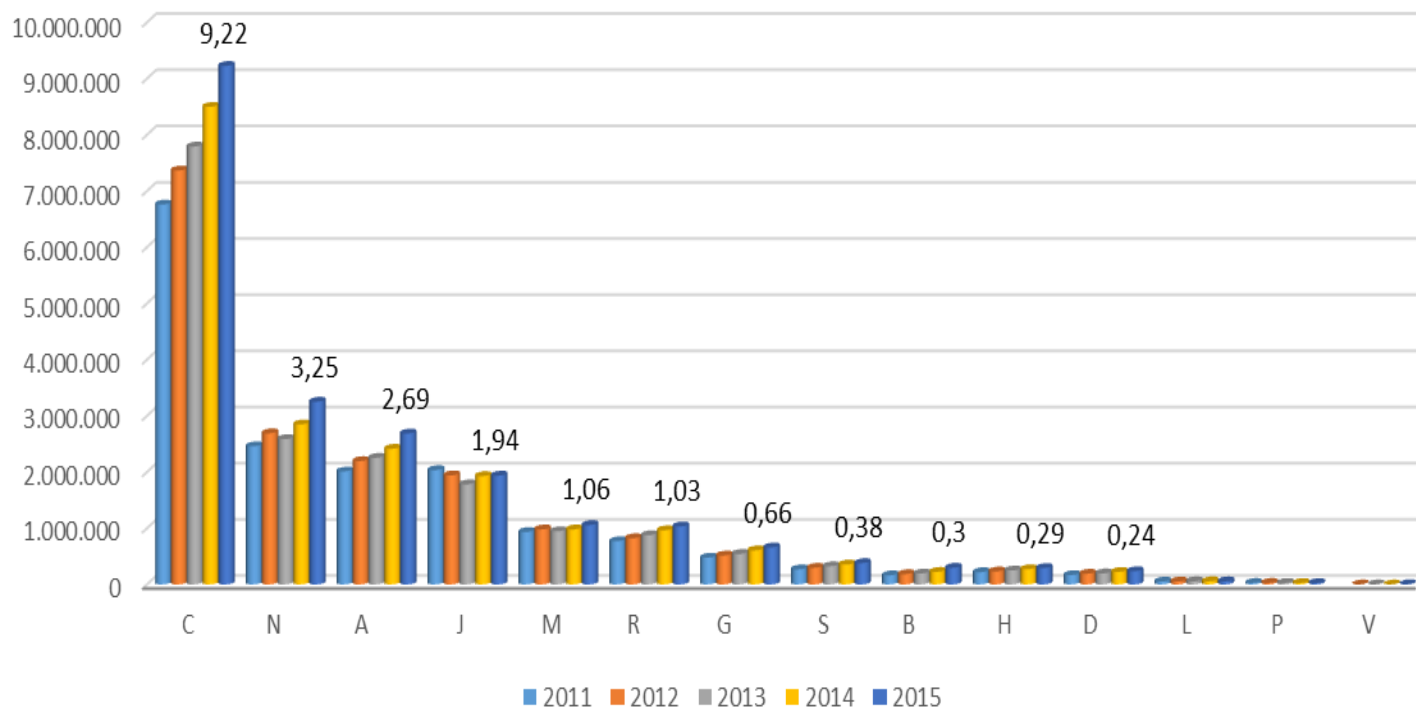


HIF - Medicines consumption in PHC (via pharmacies)



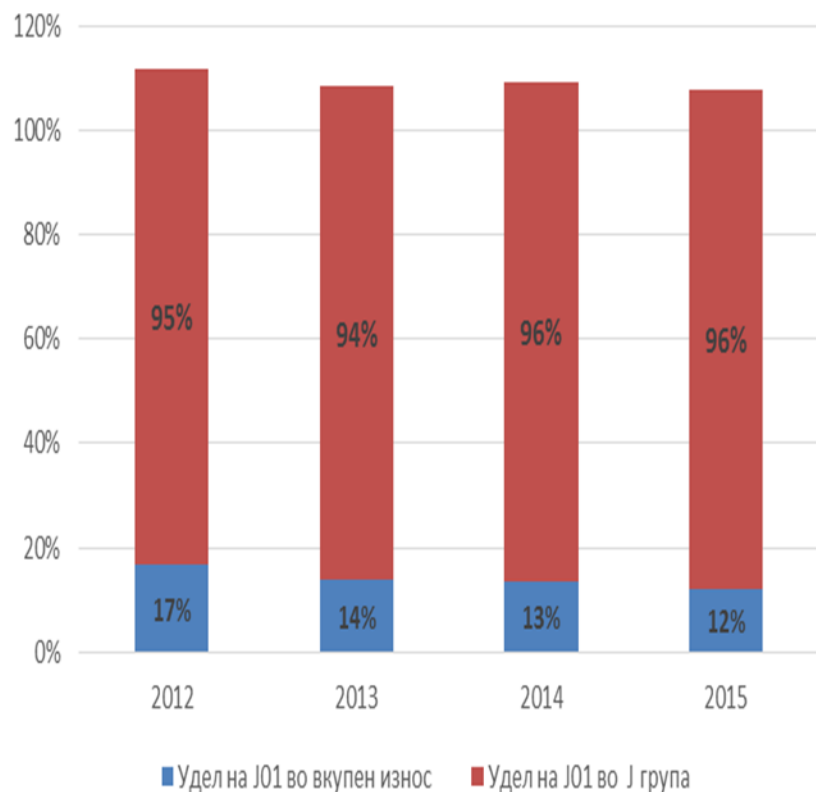
ATC drug groups, Rp.

Рецепти 2011-2015 година АТЦ I ниво, групи на лекови

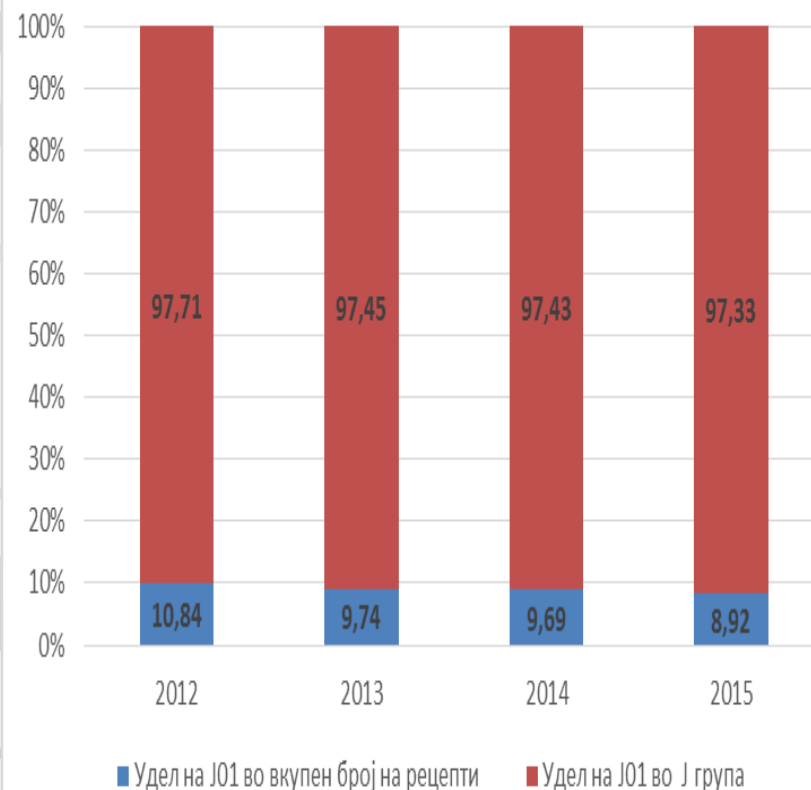


AB shares, 2012-2015

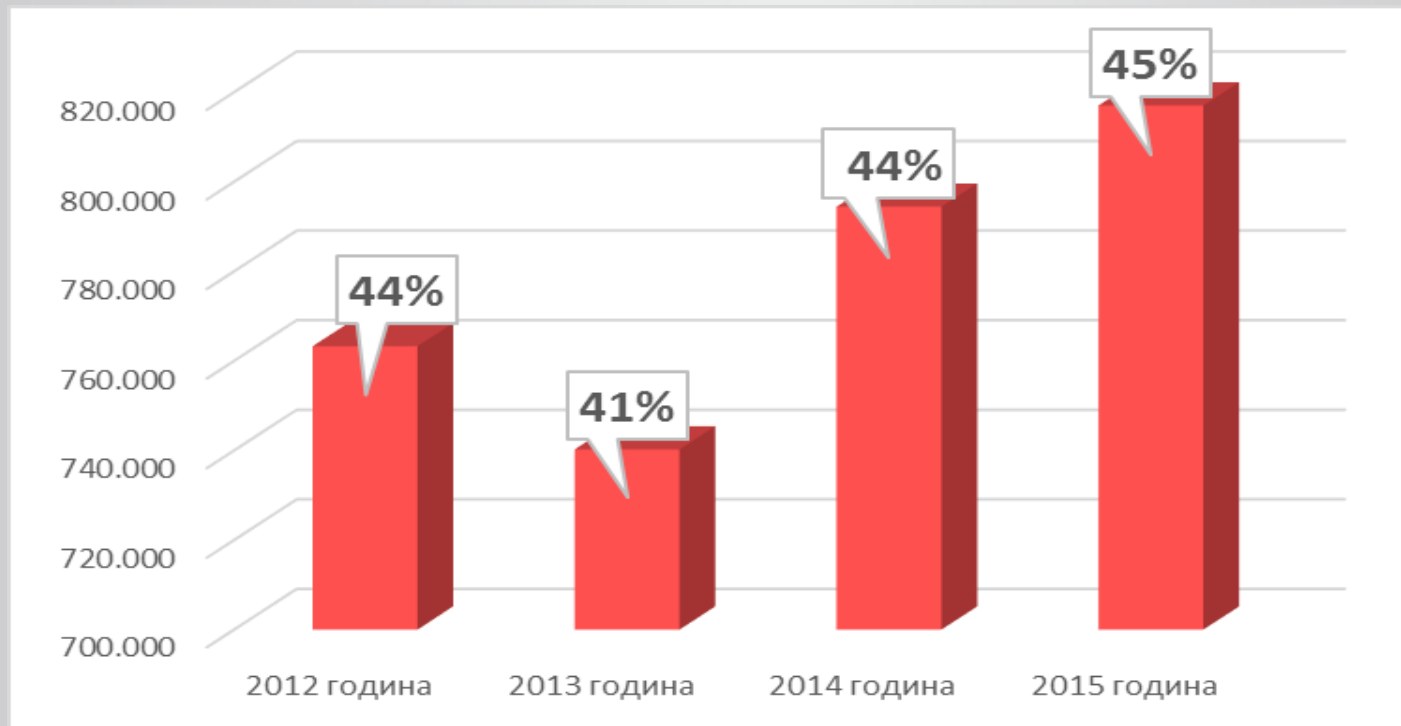
AB share regarding overall medications and anti-infective drugs (amounts)



AB share regarding overall medications and anti-infective drugs (no. of prescriptions)

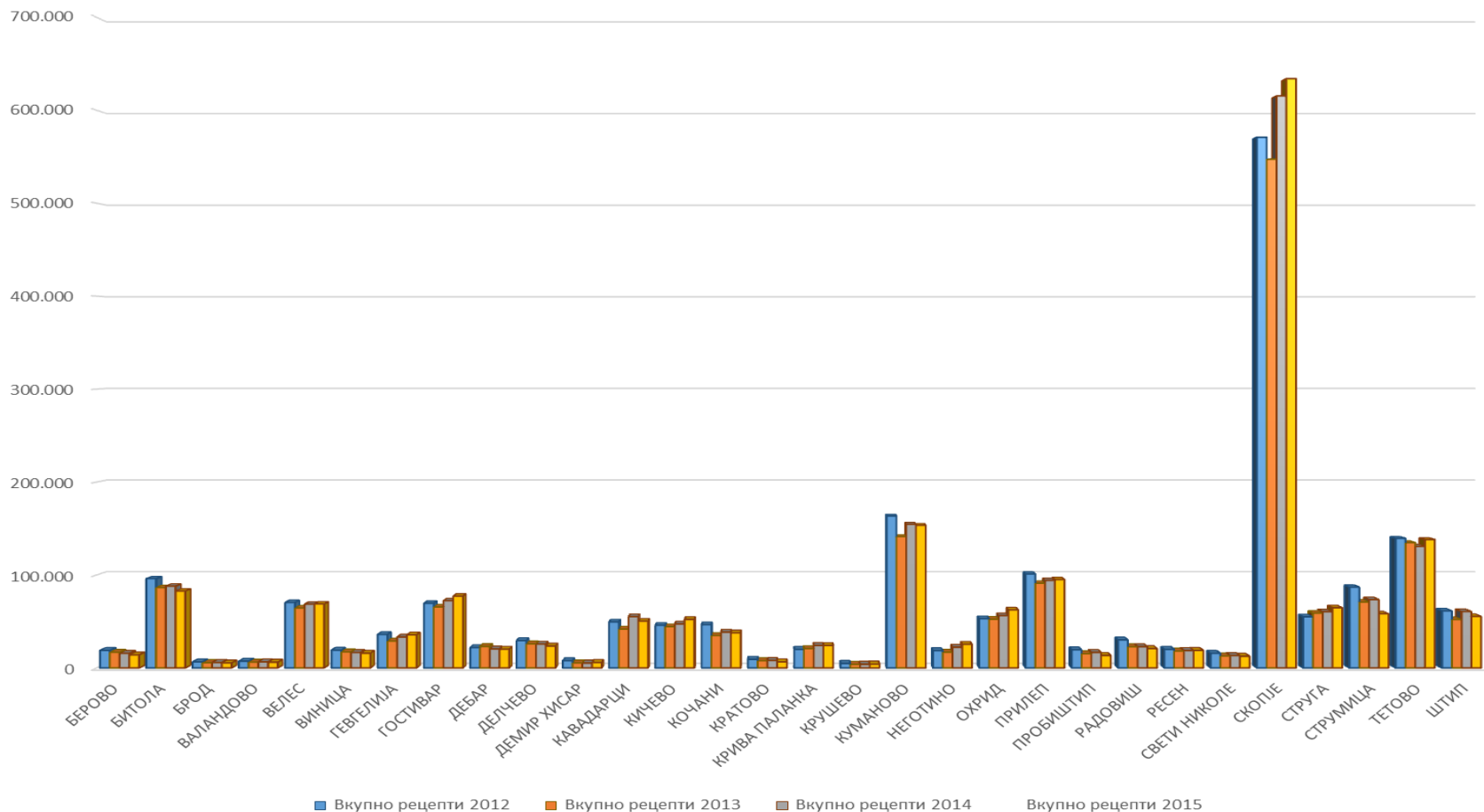


Insured persons who received antibiotic, 2012-2015



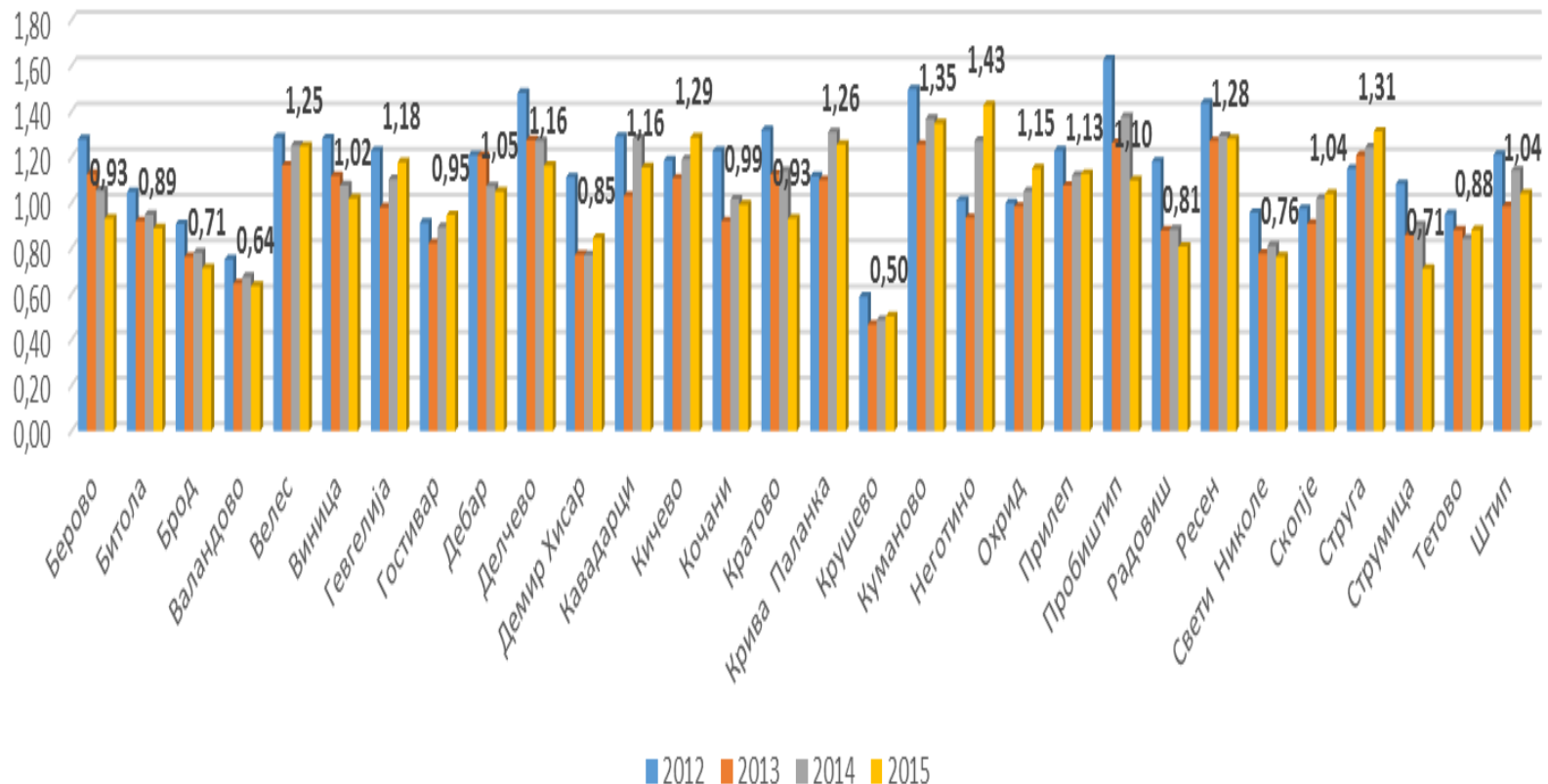
*Number of insurers is growing true the years

AB Prescriptions (2012-2015)



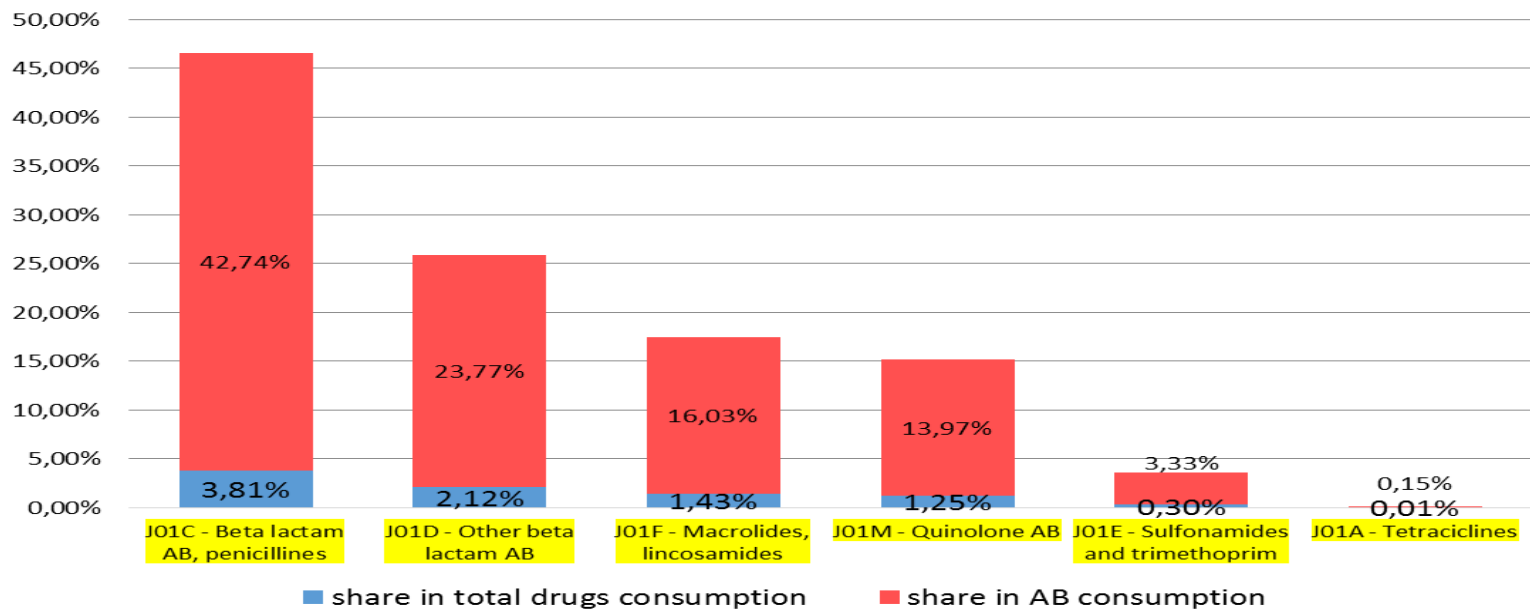
Average number of prescriptions per insurer, by town, 2012-2015

Просечен број на рецепти по осигуреник



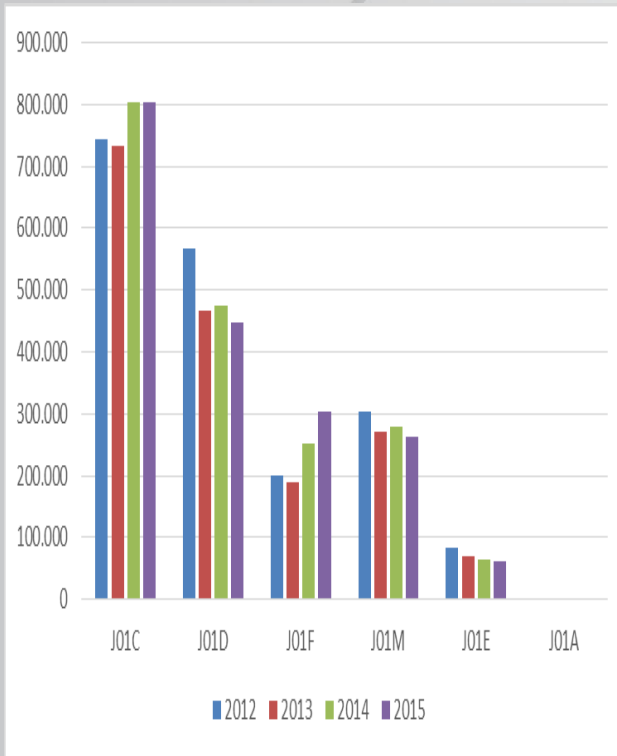
AB prescriptions, share in 2015

2015	Rp.	share in total drugs consumption	share in AB consumption
J01C - Beta lactam AB, penicillines	805.647	3,81%	42,74%
J01D - Other beta lactam AB	448.109	2,12%	23,77%
J01F - Macrolides, lincosamides	302.243	1,43%	16,03%
J01M - Quinolone AB	263.334	1,25%	13,97%
J01E - Sulfonamides and trimethoprim	62.788	0,30%	3,33%
J01A - Tetracyclines	2.821	0,01%	0,15%

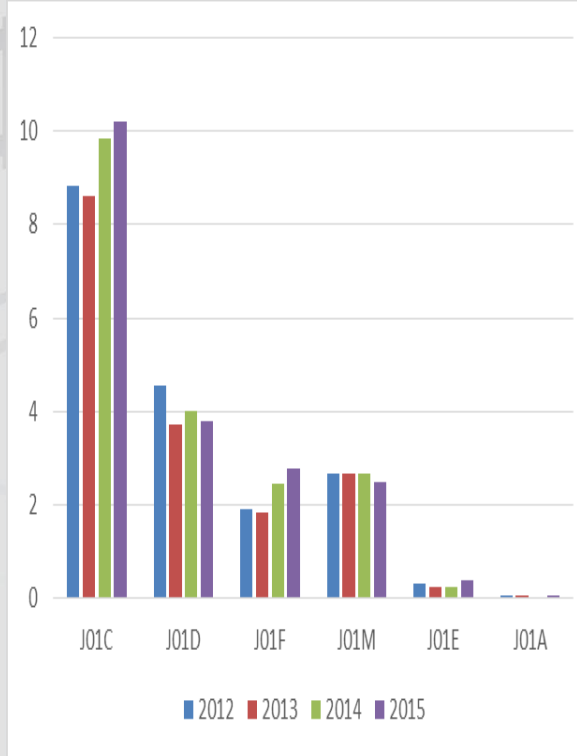


AB consumption for systemic use, ATC level 3 (2012-2015)

Number of prescriptions

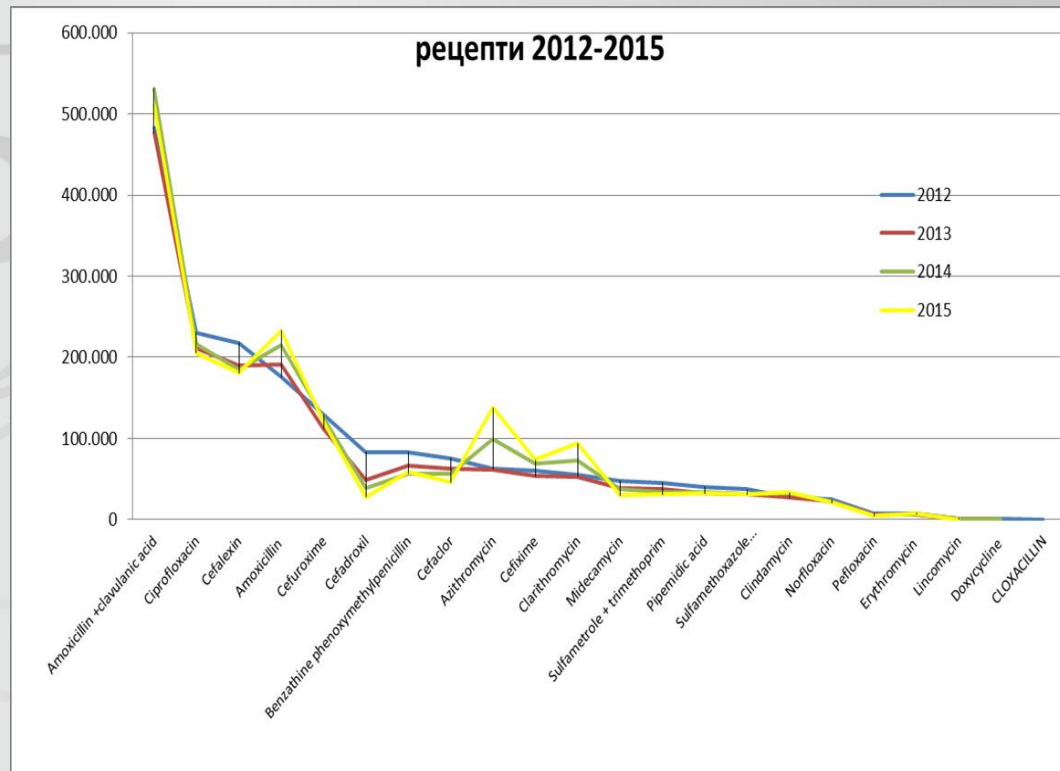
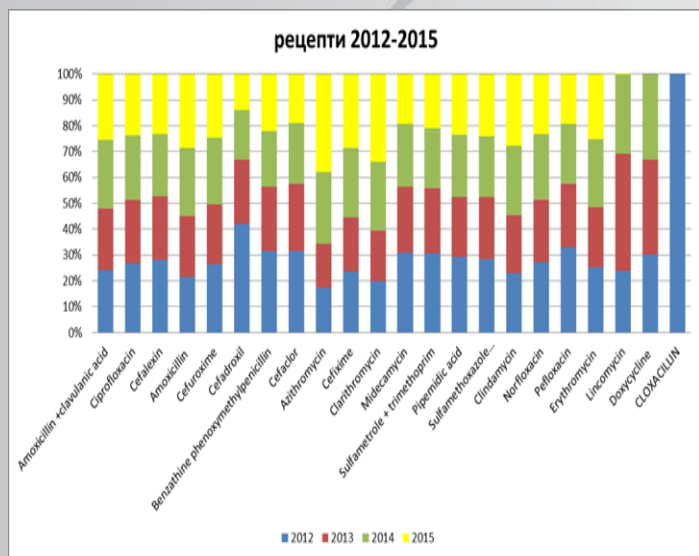


DDD's/ 1000 inh/day



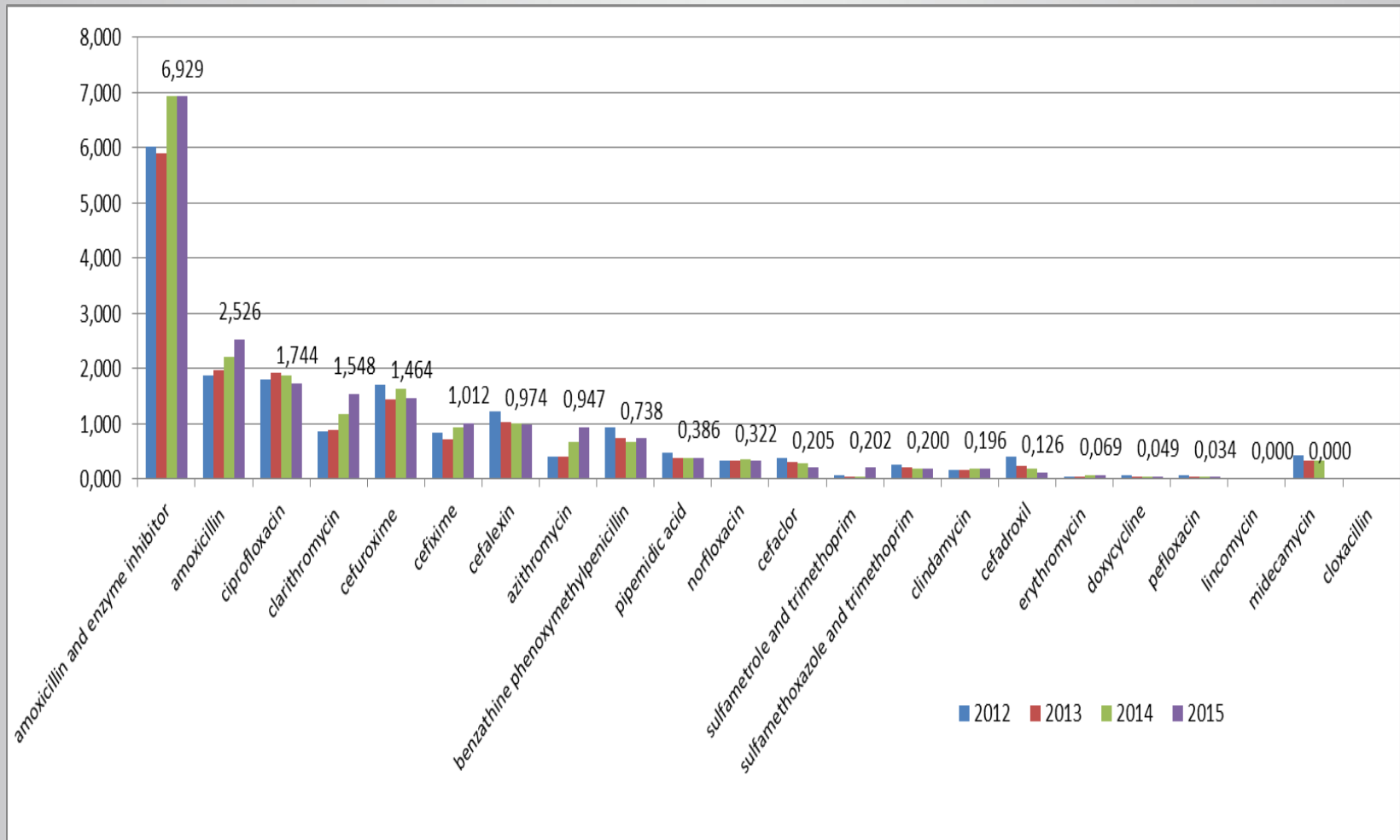
- J [ANTIINFECTIVES FOR SYSTEMIC USE](#)
- J01 [ANTIBACTERIALS FOR SYSTEMIC USE](#)
- J01A [TETRACYCLINES](#)
- J01B [AMPHENICOLS](#)
- J01C [BETA-LACTAM ANTIBACTERIALS, PENICILLINS](#)
- J01D [OTHER BETA-LACTAM ANTIBACTERIALS](#)
- J01E [SULFONAMIDES AND TRIMETHOPRIM](#)
- J01F [MACROLIDES, LINCOSAMIDES AND STREPTOGRAMINS](#)
- J01G [AMINOGLYCOSIDE ANTIBACTERIALS](#)
- J01M [QUINOLONE ANTIBACTERIALS](#)
- J01R [COMBINATIONS OF ANTIBACTERIALS](#)
- J01X [OTHER ANTIBACTERIALS](#)

Consumption of antibiotics, ATC fifth level 2012-2015



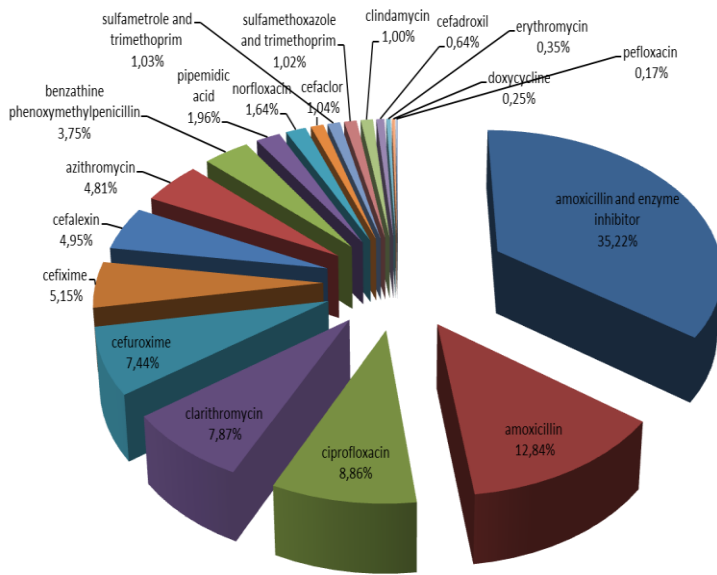
↑ Amoxicillin, Azithromycin, Clarithromycin, Clindamycin

Consumption of antibiotics, ATC J01 level V, DDD/1000 insurers per day 2012-2015

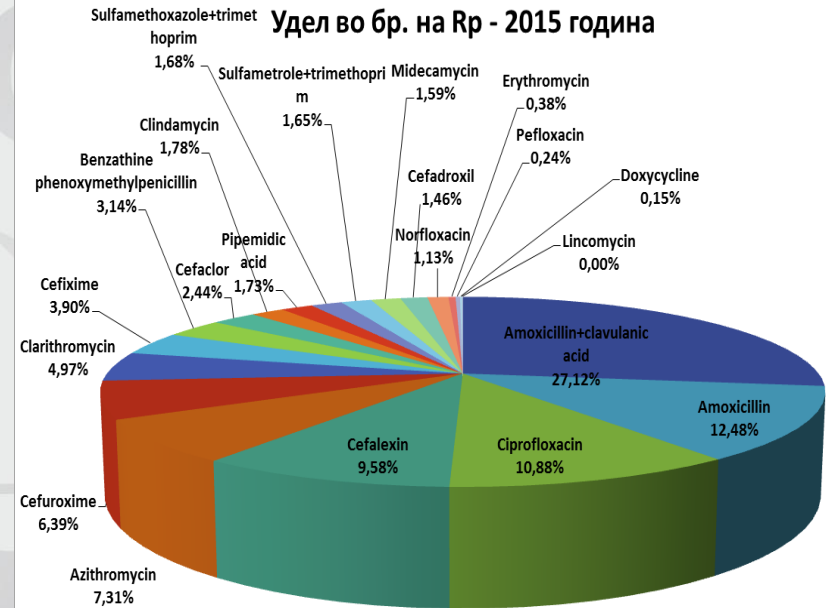


AB Share in 2015 (ATC level 5)

Удел по ИНН од АТЦ група J01, ДДД/1000осиг./ден, 2015 година

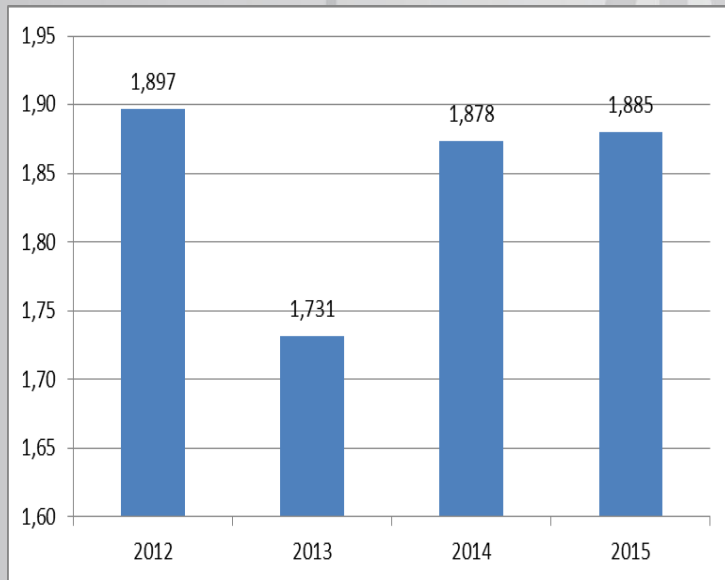


Удел во бр. на Rp - 2015 година

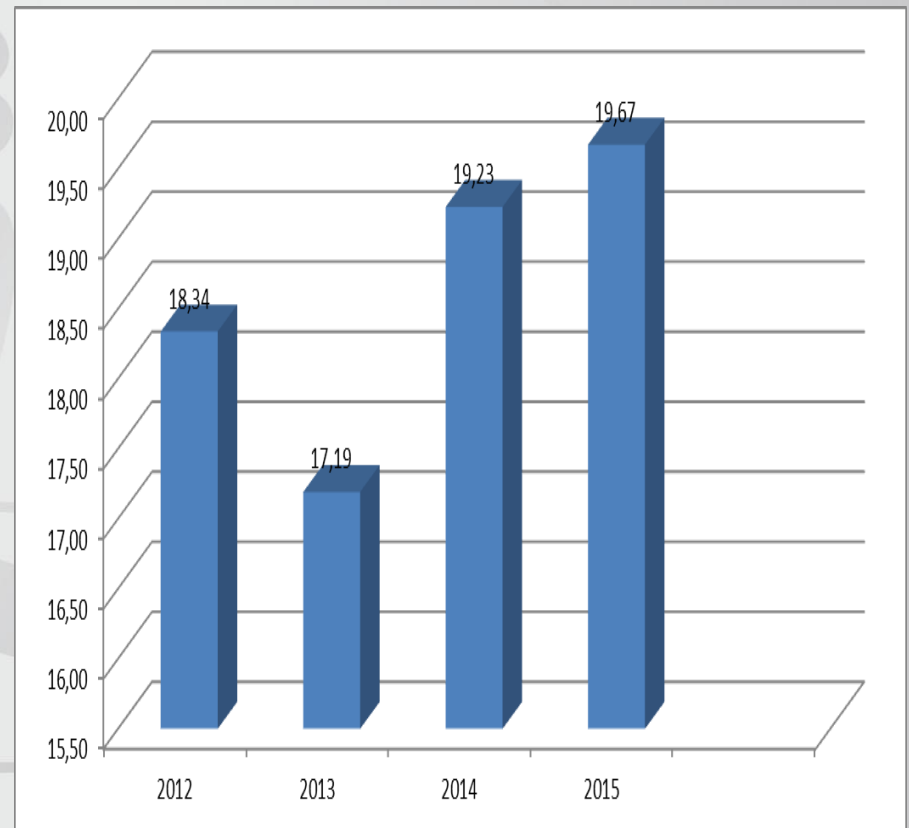


Consumption of antibiotics in RM, 2012-2015

Number of prescriptions (mil.)



DDD/1000 in./day



AB consumption in EU countries, 2011

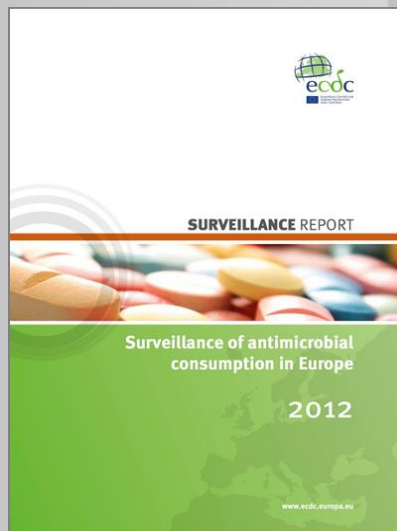
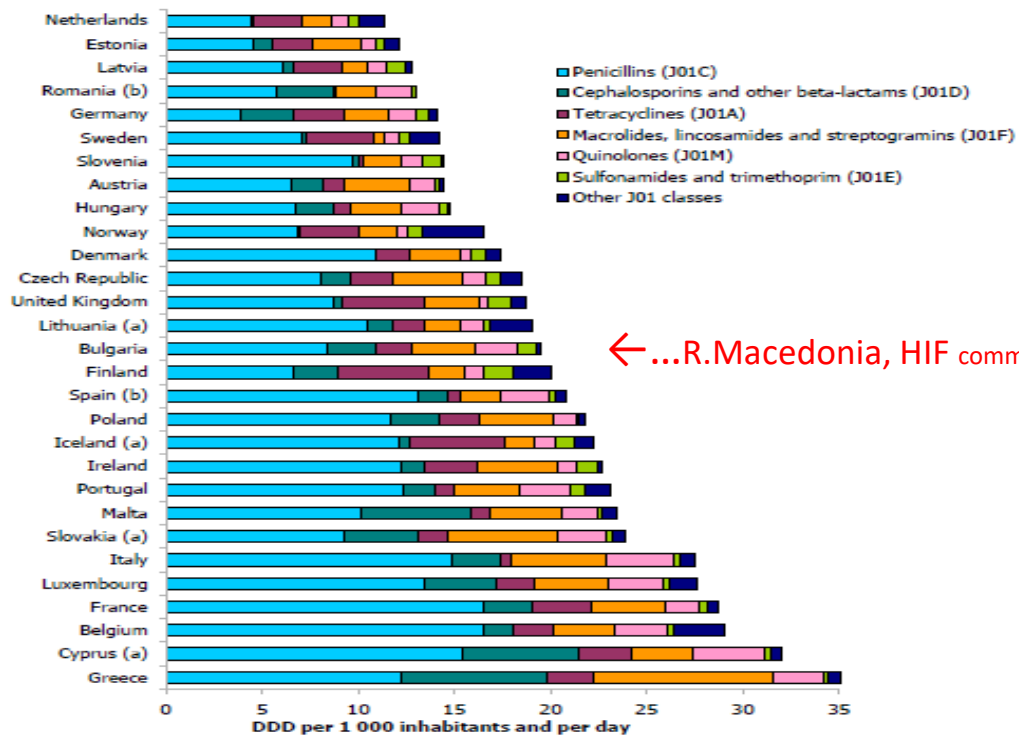


Figure 3.1. Consumption of antibacterials for systemic use (ATC group J01) at ATC group level 3 in the community, EU/EEA countries, 2011, expressed as DDD per 1 000 inhabitants and per day



← ...R.Macedonia, HIF community level

(a) Cyprus, Iceland, Lithuania and Slovakia provided total care data, i.e. including the hospital sector.
 (b) Romania and Spain provided reimbursement data, i.e. not including consumption without a prescription and other non-reimbursed courses.



Consumption of antibacterials in Europe - key findings

- **Community level** (outside hospitals) - consumption of antibacterials for systemic use (ATC group J01) in 2012 reported by 30 countries:
- Consumption **varied by a factor of 2.8** between the highest (**31.9 DDD** per 1 000 inhabitants per day in Greece) and the lowest (**11.3 DDD** per 1 000 inhabitants per day in the Netherlands)
- The population-weighted EU/EEA mean consumption was 21.5 DDD per 1 000 inhabitants per day and no significant trends in the mean consumption are apparent for the last 5 years.

Consumption of antibacterials in Europe - key findings

- The most commonly used subgroups of antibacterials:
 - Combinations of penicillins including beta-lactamase inhibitors (ATC group J01CR) and
 - Penicillins with extended-spectrum (ATC group J01CA)
 - Followed by macrolides (ATC group J01FA) and tetracyclines (ATC group J01AA).

Estimation for total AB usage in R. Macedonia

- **HIF contracted pharmacies (community level)**
 - approx. **20** DDD/1000 in./day **in 2015**
- **Hospitals, GP, - ?**
- **Sales in private commercial pharmacies - ?**
- **Other factors**

Estimation - Approx.35-40 DDD' s per 1000 in. per day, TOTAL AB USE

Conclusions



In 2015, AB consumption in RM is almost 20 DDD/1000 insurers per day regarding data collected via HIF contracted pharmacies

Most used are beta-lactam antibiotics (ATC subgroup J01C)

Amoxicillin + clavulanic acid is first in AB consumption

The biggest increase in the number of prescriptions in 2015 is for Azithromycin, Clarithromycin and Amoxicillin

The total consumption of antibiotics in R. Macedonia is estimated to 35 – max. 40 DDD's for 1000 insurers per day

Actions in RM

- ✓ National strategy to deal with AMR
- ✓ Government project "Rational use of medicines, especially antibiotics"
- ✓ Control of the implementation of regulations - dispensing medicines only on medical prescription
- ✓ EBM - comply with the recommendations and guidelines for treatment or their appropriate adjustment
- ✓ Changes in the positive list
- ✓ Activities for defining and introducing new electronic controls for drugs
- ✓ Activities for obtaining a complete electronic database for the overall consumption of drugs in all HC levels in Macedonia, public and private sector
- ✓ Improving the contractual provisions of the agreement between the Fund and healthcare institutions, regarding Rational prescribing of prescription drugs paid by the Fund, especially for antibiotics and anxiolytics
- ✓ Other

Effects



- ✓ Raising general awareness of the importance of Rational use of AB
- ✓ Measures to promote rational use of medicines, especially antibiotics
- ✓ Protecting health now for all citizens and for our future generations
- ✓ Health is a factor affecting social status of the population and economic development of the country!

Thank you for your attention!



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