

Introduction

Health Insurance Fund of the Republic of North Macedonia (HIFRNM) is a buyer of health services that include medicines from the List of medicines on the burden of the HIFRNM (Positive list).

At the primary level of health care, the insured persons have the right to a medicine on the burden of HIFRNM through private health institutions (PHI)-pharmacies, based on a prescription for medicine, prescribed by a family doctor, in accordance with Law for health insurance and contractual provisions of the contract between PHI pharmacies and HIFRNM.

Pharmacy department has been monitoring the consumption of medicines since 2007. The results obtained from the monitoring and analysis of the issued medicines and the financial resources allocated for them are used for further activities and policy making decisions for the coming years.

Table 1. Number of prescriptions, total amount, DDD, (2018-2021)

Year	2018	2019	2020	2021
Number of total Rp. (mil)	23,67	24,30	24,55	24,77
Number of DDD	724	713	721	743
Total amount (bil)	2,80	2,82	2,78	2,79
Number of "J01" Rp. (mil)	1,74	1,72	1,55	1,56
Total amount for "J01" (bil)	0,30	0,30	0,29	0,30
Number of "J01" DDD	16,57	15,59	14,45	15,32
% of "J01" in total Rp.	7,37%	7,07%	6,32%	6,30%
% of "J01" in total amount	10,54%	10,63%	10,30%	10,94%
% of "J01" in total DDD	2,36%	2,19%	2,00%	2,06%

Methods and Materials

Comparison of medicine consumption by years according to the following parameters

- ATC classification of medicines.
- HIF branch offices.
- Number of prescriptions.
- Total amounts on the burden of HIF.
- DDD/1000 insured/day.
- Other.

Chart 1. Consumption of antibiotics, by issued prescriptions, at ATC level V, 2018-2021 year

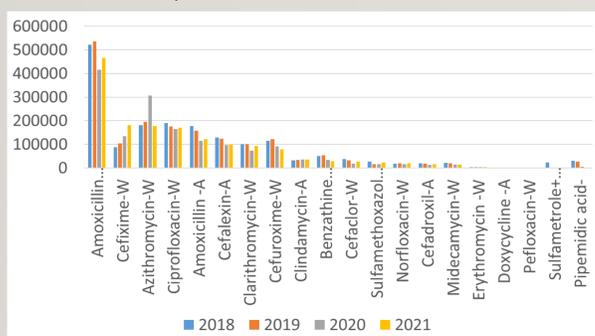


Chart 2. Consumption of antibiotics, by DDD, at ATC level V, 2018-2021 year

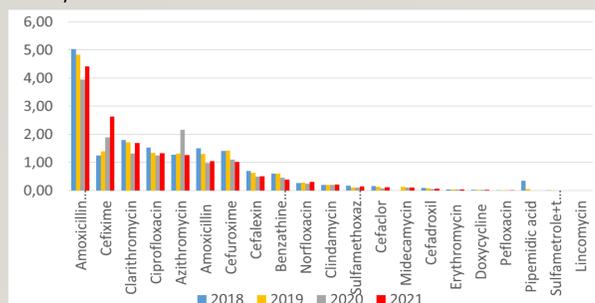
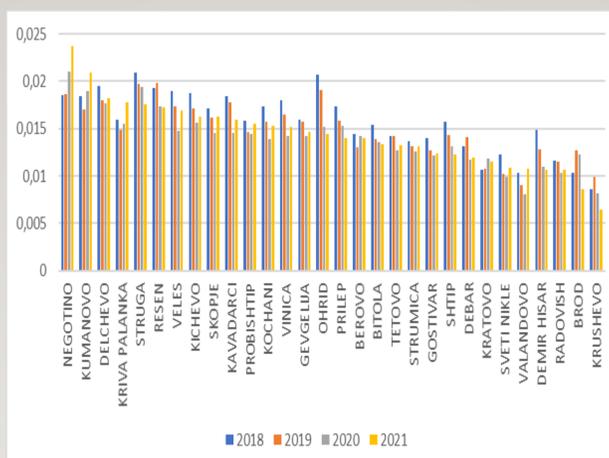


Chart 3. Consumption of antibiotics by HIF branch offices (2018-2021)



Results and Discussion

In 2021 there is a slight increase in the number of issued prescriptions on the burden of HIFRNM for medicines from the group of antibiotics for about 0.6% compared to 2020. Correspondingly, the invoiced amount is also higher (~6,5%). In the year 2021 percentage in the total consumption is around 6,3%, and according to DDD this percentage is around 2 (Table 1).

According to the number of issued prescriptions on the burden of HIFRNM (Chart 1) and to the number of DDD/1000 insured/day (Chart 2), in the first place, most consumed medicine is the generic name Amoxicillin + clavulanic acid. According to the AWARe classification increase in the consumption of the Watch group is higher compared to Access group, and in general, higher consumption is observed in the Watch group compared to Access group (Chart 1). From Chart 1, also it can be observed significant increase in the consumption of the medicine with generic name Azithromycin, an antibiotic that was widely used during the SARS-CoV-2 virus (Covid-19) pandemic in year 2020. In Chart 3 is presented consumption of antibiotics by HIF branch offices, where results are presented as number of DDD/day/insured person of branch office. From the chart it can be observed that in Negotino, Kumanovo and Delchevo branch offices, consumption of antibiotics is highest per insured person in 2021. From Chart 4 it can be observed that during the analyzed period antibiotics were consumed more at females compared to males. Females use 25-30 % more antibiotics compared to males. Only for medicine with INN Amoxicillin+Clavulanic acid suspension (400+57) mg higher consumption is observed among males. According to the age of insured persons, from Chart 5, it can be observed that during the analyzed period, insured persons between age 36-60 consume antibiotics the most. In second place are elderly insured persons. Insured persons between 13-18 age use the least amount of antibiotics. According to diagnosis, (Chart 6), antibiotics are most used for acute tonsillitis, acute pharyngitis, and acute bronchitis. In 2020, in top ten diagnosis where antibiotics were used, the diagnosis corona virus infection also occurs. For this diagnosis in 2020 year were issued around 30.000 prescriptions and in 2021 year were issued around 42.500 prescriptions.

Chart 4. Consumption of top 10 antibiotics by gender, 2019-2021

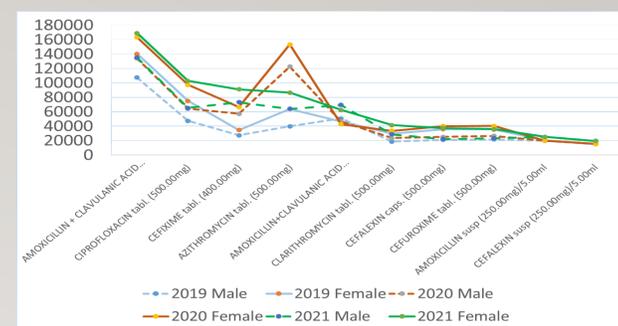


Chart 5. Consumption of antibiotics by age, 2019-2021.



Conclusions

During the analyzed period number of issued prescriptions has a slightly increase especially in last 3 years this increase is very low. In 2021 and 2020 increase is around 1% and in 2019 around 2,7%. Total amount of financial resources slightly decreased in 2020 and again increased for 0,2% in 2021.

Anti-infectives for systemic use (ATC "J") takes fourth place in the total consumption according to issued prescriptions in the analyzed period. From all prescription, around 6-7% are issued for antimicrobials for systemic use, ATC code "J01". Corresponding to that around 10% from total amount are allocated for this ATC code. If consumption is analyzed due to DDD/1000/day, around 2% from all DDD/1000/day are antibiotics for systemic use.

According to the number of issued prescriptions on the burden of HIFRNM and to the number of DDD/1000 insured/day, in the first place, most consumed medicine is the generic name Amoxicillin + clavulanic acid.

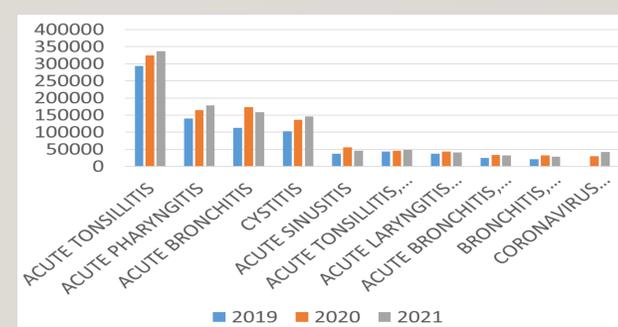
The highest consumption of antibiotics by insured person is in Negotino branch office.

In the analyzed period females use 25-30% more antibiotics compared to males.

According to the age of insured persons, those between age 36-60 consumes antibiotics the most.

Acute tonsillitis is the diagnose for which antibiotics are used the most.

Chart 6. Consumption of antibiotics by diagnosis (top ten), 2019-2021



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