



Potrošnja rezervnih antibiotika u Vojnomedicinskoj akademiji pre i tokom pandemije Covid-19



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WHO Model List of Essential Medicines – 22nd List (2021)

6.2 Antibacterials

To assist in the development of tools for antibiotic stewardship at local, national and global levels and to reduce antimicrobial resistance, the Access, Watch, Reserve (AWaRe) classification of antibiotics was developed – where antibiotics are classified into different groups to emphasize the importance of their appropriate use.

ACCESS GROUP ANTIBIOTICS

This group includes antibiotics that have activity against a wide range of commonly encountered susceptible pathogens while also showing lower resistance potential than antibiotics in the other groups. Selected Access group antibiotics are recommended as essential first or second choice empiric treatment options for infectious syndromes reviewed by the FMI Expert Committee and are listed as individual medicines on the Model Lists to improve access and promote appropriate use. They are essential antibiotics that should be widely available, affordable and quality assured.

WATCH GROUP ANTIBIOTICS

This group includes antibiotic classes that have higher resistance potential and includes most of the highest priority agents among the [Critically Important Antimicrobials for Human Medicine](#) and/or antibiotics that are at relatively high risk of selection of bacterial resistance. These medicines should be prioritized as key targets of stewardship programs and monitoring. Selected Watch group antibiotics are recommended as essential first or second choice empiric treatment options for a limited number of specific infectious syndromes and are listed as individual medicines on the Model Lists.

RESERVE GROUP ANTIBIOTICS

This group includes antibiotics and antibiotic classes that should be reserved for treatment of confirmed or suspected infections due to multi-drug-resistant organisms. Reserve group antibiotics should be treated as “last resort” options. Selected Reserve group antibiotics are listed as individual medicines on the Model Lists when they have a favourable risk-benefit profile and proven activity against “Critical Priority” or “High Priority” pathogens identified by the [WHO Priority Pathogens List](#), notably carbapenem resistant *Enterobacteriaceae*. These antibiotics should be accessible, but their use should be tailored to highly specific patients and settings, when all alternatives have failed or are not suitable. These medicines could be protected and prioritized as key targets of national and international stewardship programs involving monitoring and utilization reporting, to preserve their effectiveness.

- Svetska zdravstvena organizacija je 2021. objavila novu listu esencijalnih lekova, gde su navedeni i

- antibiotici sa slobodnim pristupom
- antibiotici pod posebnim nadzorom
- rezervni antibiotici



- **U Vojnomedicinskoj akademiji na listi rezervnih antibiotika nalaze se sledeći antimikrobni lekovi:**
- Polimiksini – kolistin (Jo1XB01)
- Glicilciklini – tigeciklin (Jo1AA12)
- Oksazolidinoni – linezolid (Jo1XX08)
- Karbapenemi – meropenem (Jo1DHo2), ertapenem (Jo1DHo3), imipenem/cilastatin (Jo1DH51)
- beta-laktamski antibiotici sa inhibitorom beta-laktamaze - piperacilin/tazobaktam (Jo1CR05)
- cefalosporini 4. generacije - cefepim (Jo1DE01)
- glikopeptidni antibiotici – vankomicin (Jo1XA01), teikoplanin (Jo1XA02)
- Amfenikoli – hloramfenikol (Jo1BA01)



- Na SZO listi, jedino su kolistin i linezolid na **listi rezervnih antibiotika**, dok se ostali nalaze u **grupi antibiotika pod posebnim nadzorom**

- Polimiksini – **kolistin** (Jo1XB01)
- Glicilciklini – **tigeciklin** (Jo1AA12)
- Oksazolidinoni – **linezolid** (Jo1XX08)
- Karbapenemi – **meropenem** (Jo1DH02), **ertapenem** (Jo1DH03), **imipenem/cilastatin** (Jo1DH51)
- beta-laktamski antibiotici sa inhibitorom beta-laktamaze - **piperacilin/tazobaktam** (Jo1CR05)
- cefalosporini 4. generacije - **cefepim** (Jo1DE01)
- glikopeptidni antibiotici – **vankomicin** (Jo1XA01), **teikoplanin** (Jo1XA02)
- Amfenikoli – **hloramfenikol** (Jo1BA01) – **SZO grupa antibiotika sa slobodnim pristupom**

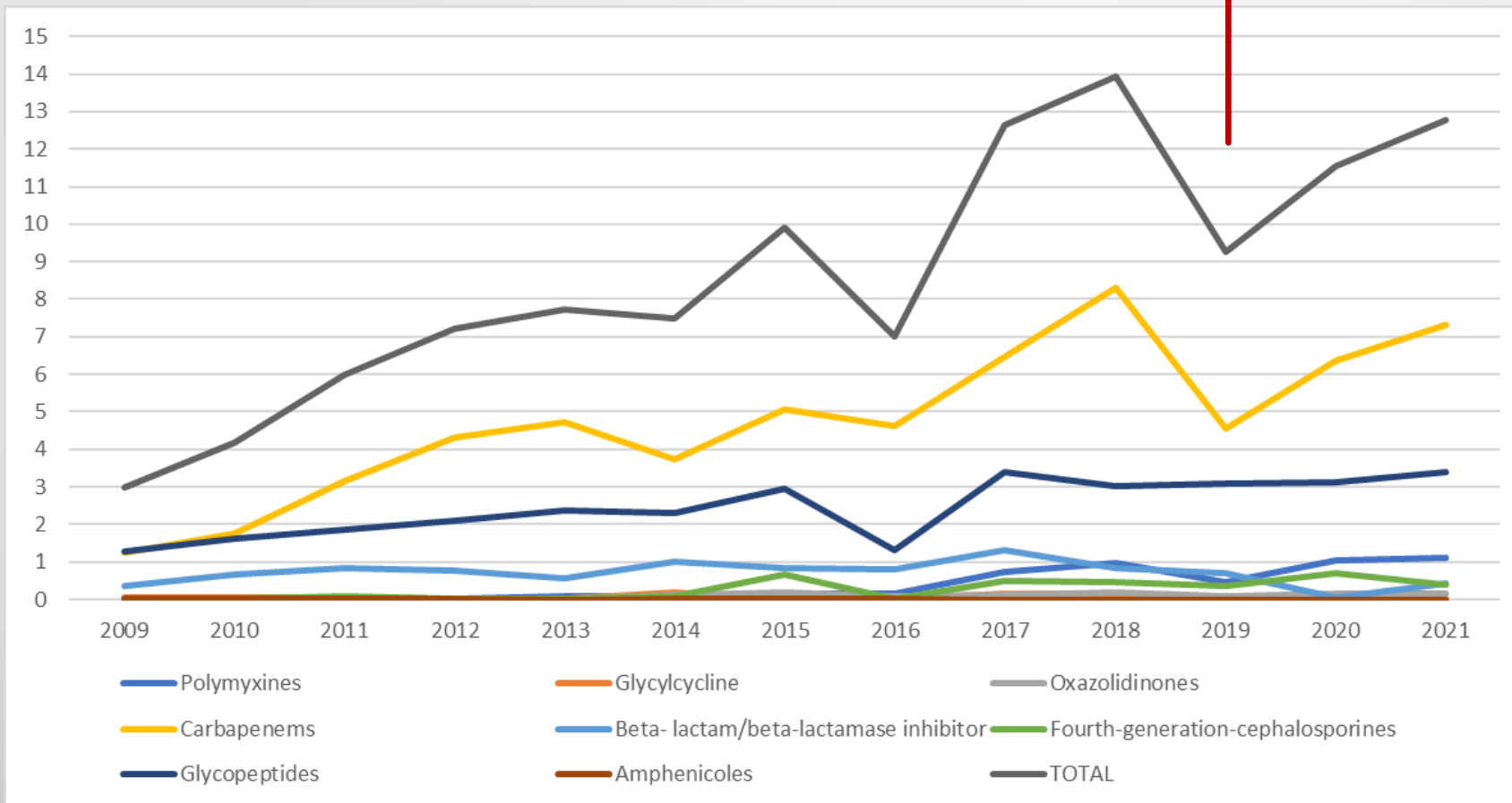
Specijalan režim propisivanja u VMA



Potrošnja rezervnih antibiotika po grupama i godinama

DDD/100 BD

→ pre Covid-19 Covid-19



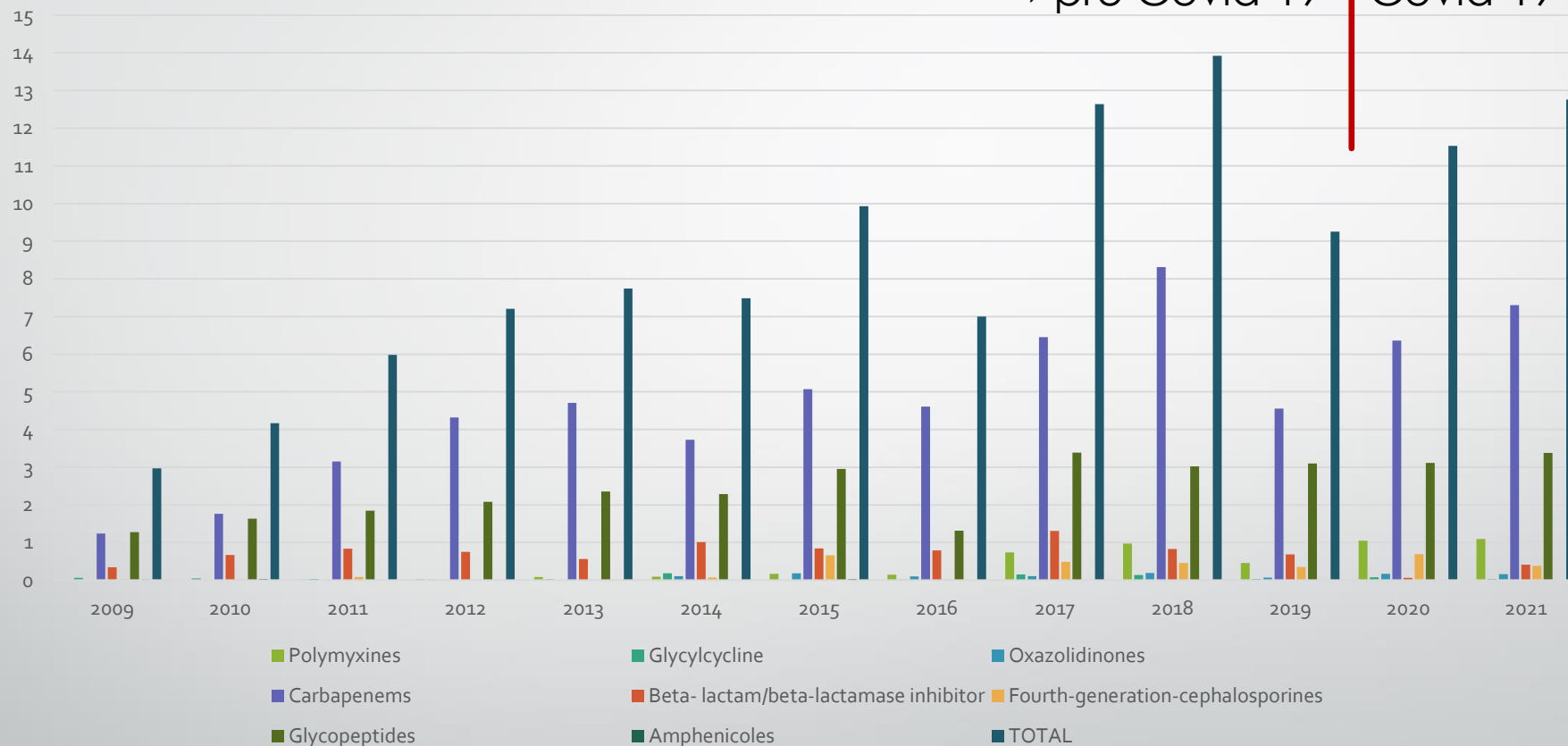
- Praćena je i analizirana potrošnja rezervnih antibiotika u VMA
- Period praćenja: 2009.-2019. god. (pre pandemije COVID-19) i 2020.-2021. god. (tokom pandemije COVID-19)



Najveća potrošnja svih rezervnih antibiotika zabeležena je u 2018. god. (13,92 DDD/100BD), kao nastavak trenda porasta potrošnje iz prethodnih godina, da bi nastao značajan pad u 2019. godini (9,26 DDD/100BD).

Potrošnja rezervnih antibiotika po grupama i godinama

DDD/100 BD





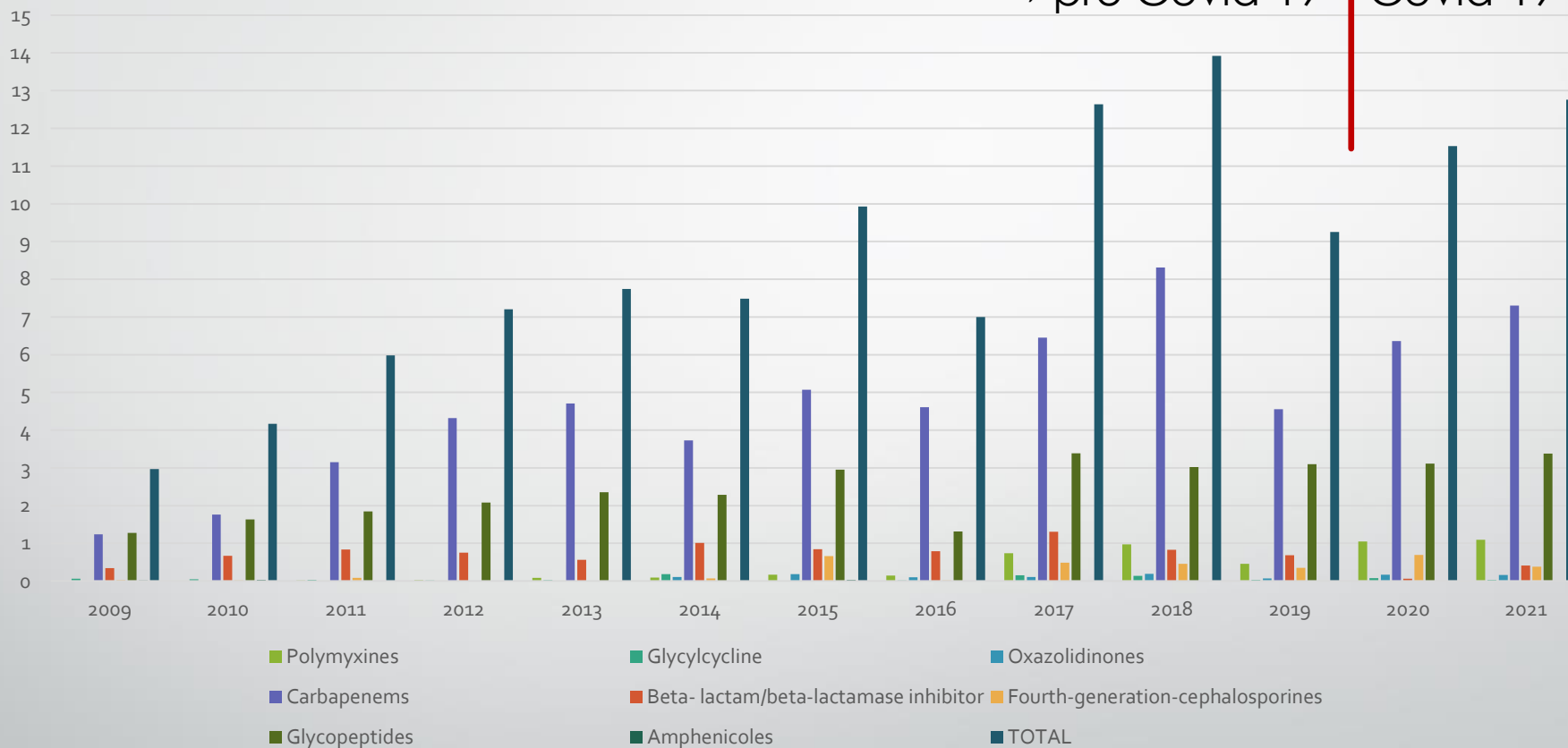
U godinama pandemije, zabeležen je porast potrošnje

11,53 DDD/100 BD u 2020.

12,76 DDD/100BD, u 2021.

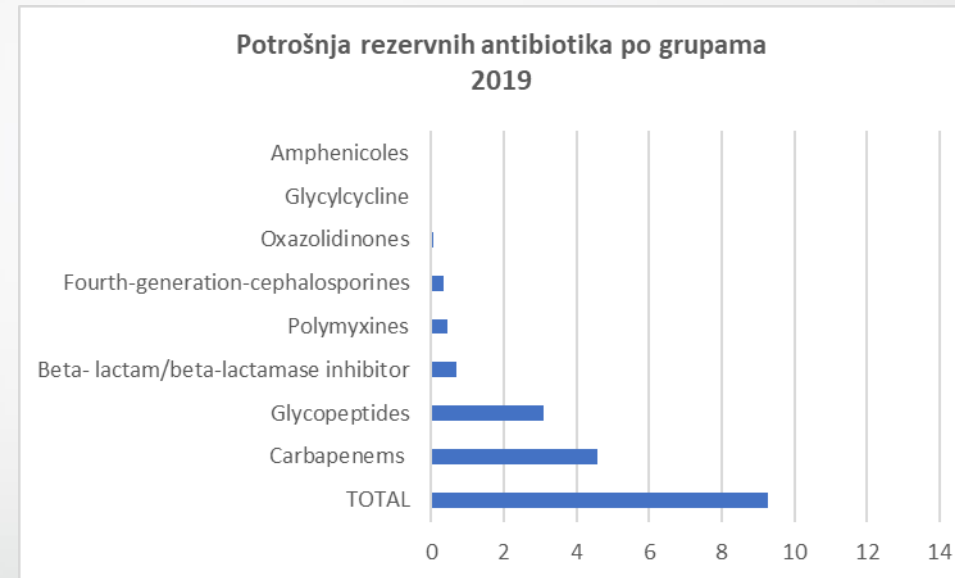
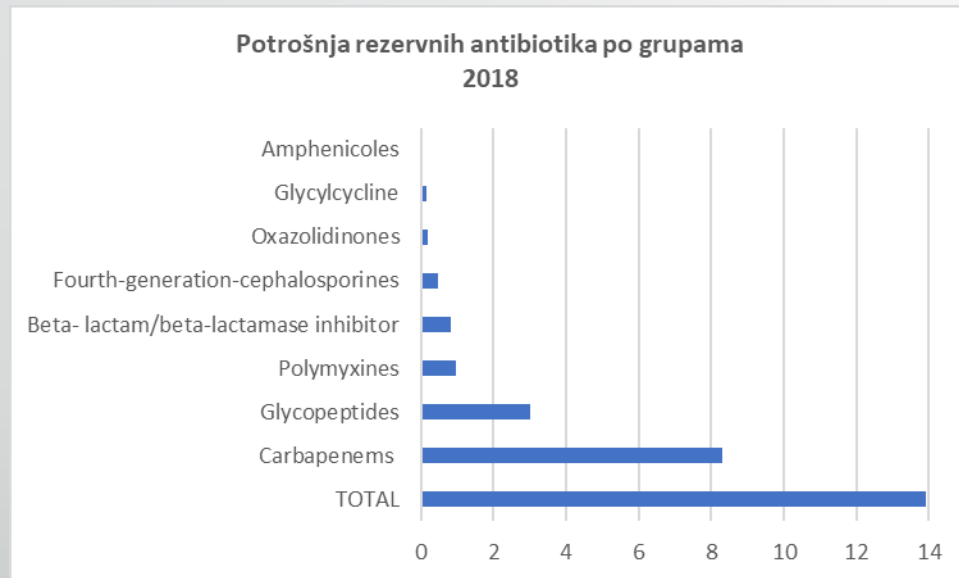
Potrošnja rezervnih antibiotika po grupama i godinama

DDD/100 BD





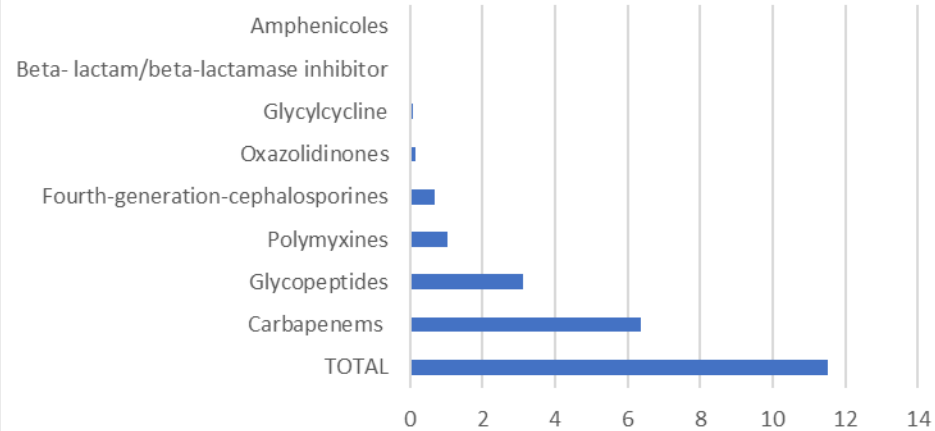
Potrošnja rezervnih antibiotika za 2018. i 2019. god. pre COVID-19 pandemije



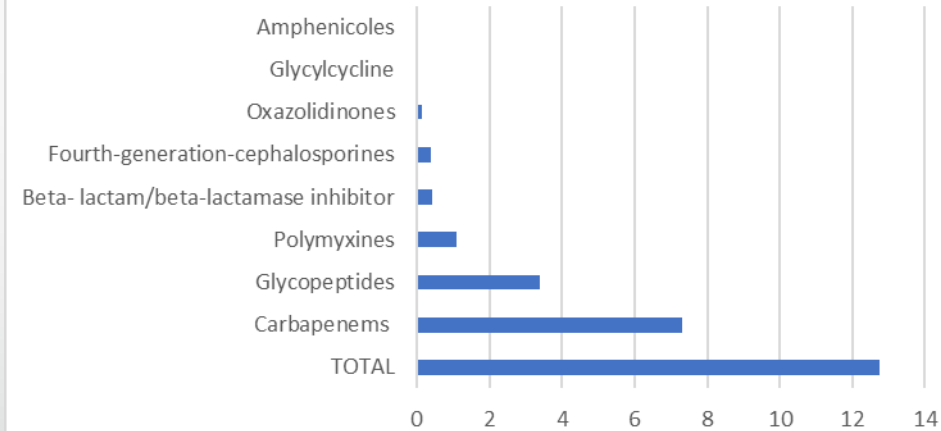


Potrošnja rezervnih antibiotika za 2020. i 2021. god. tokom COVID-19 pandemije

Potrošnja rezervnih antibiotika po grupama
2020



Potrošnja rezervnih antibiotika po grupama
2021

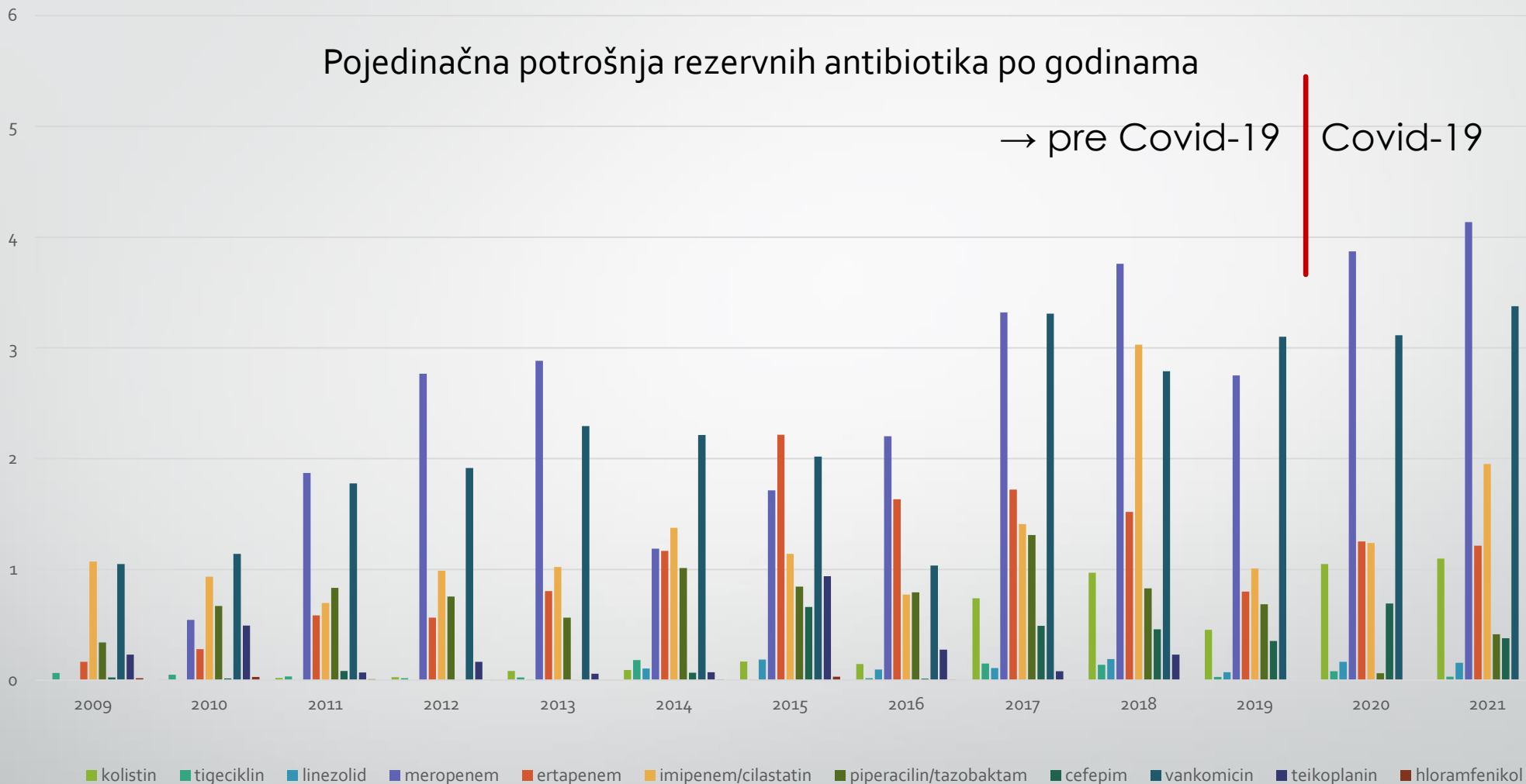




DDD/100 BD

Pojedinačna potrošnja rezervnih antibiotika po godinama

→ pre Covid-19 Covid-19



- U svim navedenim godinama, najviše su korišćeni **meropenem**, **vankomicin** i **imipenem sa cilastatinom**.



- U celokupnom posmatranom periodu, najveću potrošnju (preko 80% ukupnih DDD/100 BD svih rezervnih antibiotika) ostvaruju dve grupe lekova, karbapenemi i glikopeptidni antibiotici.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ukupno DDD/100 BD	2.97	4.17	5.98	7.20	7.74	7.48	9.93	7.00	12.64	13.92	9.26	11.53	12.76
Karbapenemi	1.24	1.76	3.15	4.32	4.71	3.73	5.07	4.61	6.45	8.31	4.56	6.36	7.30
Glikopeptidni antibiotici	1.28	1.63	1.85	2.08	2.35	2.29	2.96	1.31	3.39	3.02	3.10	3.11	3.38
% udeo (karbapenemi + glikopeptidni)	84.73	81.51	83.61	88.86	91.22	80.37	80.88	84.62	77.85	81.39	82.75	82.21	83.71



- U navedenoj analizi, pokazano je da nije došlo do promene obrasca potrošnje rezervnih antibiotika ni u toku pandemije COVID-19.
- Kontinuirani porast potrošnje je primećen u celokupnom posmatranom periodu, a lekovi iz grupe karbapenema i glikopeptidnih antibiotika su nepromenjeno bili najkorišćeniji tokom navedenog perioda, sa udelom od preko 80% svake godine.



- Rezervne antibiotike treba čuvati za lečenje potvrđenih infekcija multirezistentnim mikroorganizmima, kao poslednju liniju odbrane.
- Moraju biti dostupni ali njihova upotreba treba biti strogo kontrolisana i prilagođena individualnim potrebama svakog pacijenta u slučajevima kada su sve alternativne opcije iscrpljene, u svrhu očuvanja njihove efikasnosti.
- U tom smislu, praćenje njihove potrošnje i upotrebe je među prioritarnim zadacima u Vojnomedicinskoj akademiji.