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ҚАЗАҚСТАН РЕСПУБЛИКАСЫ ДЕНСАУЛЫҚ САҚТАУ МИНИСТРЛІГІ

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Evidence-based practice and policy to improve antibiotic stewardship and reduce antimicrobial resistance in Central Asia (CRP 2024-2026)

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Antibiotic consumption at the community level in Kazakhstan

Study materials

- Data on antibiotic sales by pharmacies in Kazakhstan and antibiotics distributed through the free prescription program of primary healthcare facilities from **2019 to 2023**.
- The data was procured from **Vi-ORTIS** Consulting Company, which collects data on the procurement and sales of medicines by pharmacies in Kazakhstan.
- The data on systemic antibacterials (**J01** code) was downloaded from Vi-ORTIS web portal.

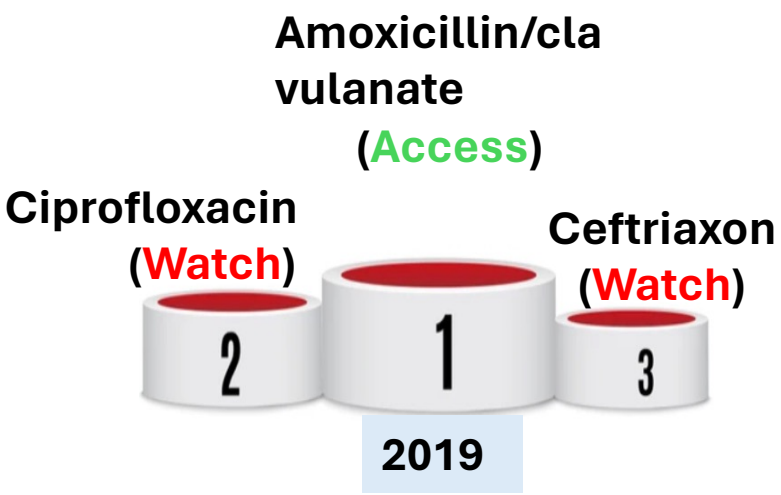
Study methods

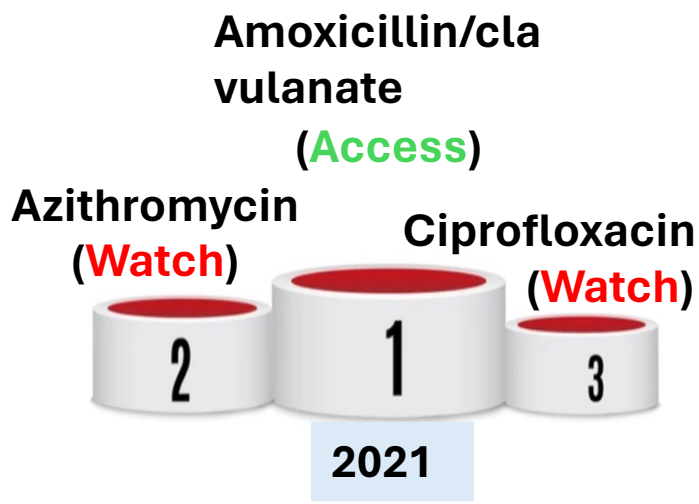
- Data disaggregation at the ATC5 level was applied to upload information for each systemic antibacterial sold into the **GLASS** (Global Antimicrobial Resistance and Use Surveillance System).
- Defined Daily Doses (**DDD**) per 1000 inhabitants were used to estimate the proportion of the population receiving each type of antibiotic on a given day.
- Based on the DDD per 1000 inhabitants, all antibiotics were classified according to **AWaRe** categories: **Access**, **Watch, and Reserve**.
- SPSS version 26.0 was used for statistical analysis.

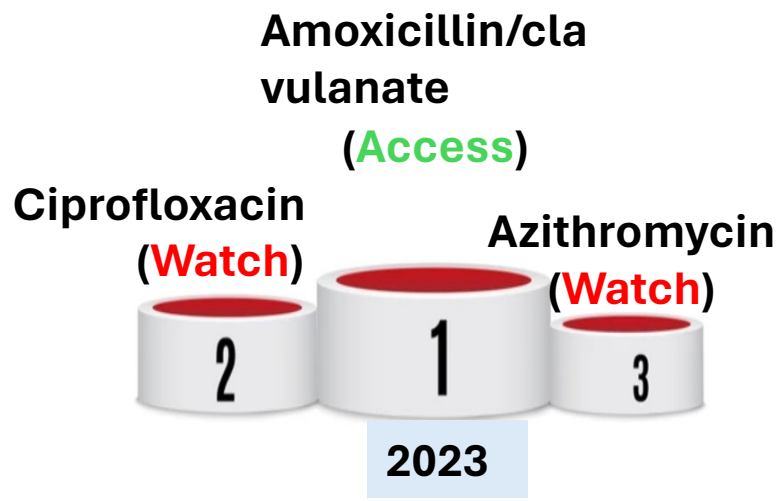
Consumption of antibiotics by AWaRe categories

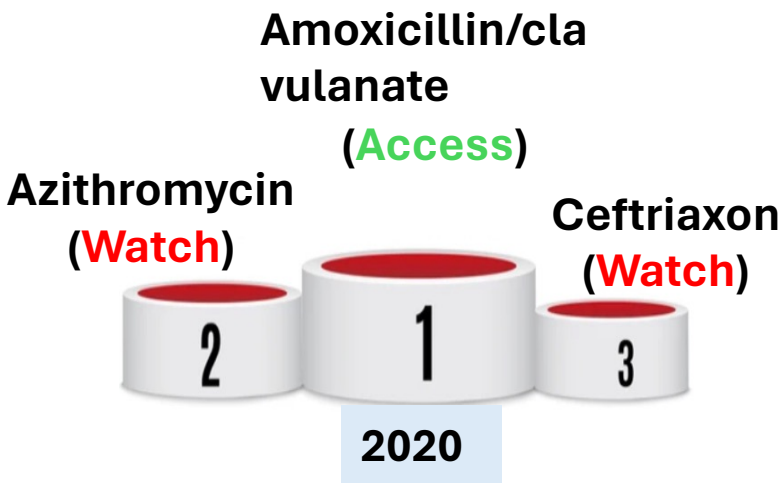
Defined Daily Dose per 1000 inhabitants	2019	2020	2021	2022	2023	Average change per annum; p-level
Total DDD per 1000 inhabitants	8.81	9.27	8.54	8.44	8.17	-2.42%; p=0.049
«Access» group	4.95	4.31	3.93	3.91	3.92	-5.48%; p=0.029
Percentage (%) of the total DDD	57.01	47.09	46.57	46.81	48.34	-3.30%; p=0.132
«Watch» group	3.73	4.85	4.51	4.44	4.19	1.45%; p=0.353
Percentage (%) of the total DDD	42.98	52.90	53.43	53.19	51.66	3.80%; p=0,154
«Reserve» group	0.00042	0.00035	0.00029	0.0001	0.000002	-69.72%; p=0.036
Percentage (%) of the total DDD	0.00492	0.00388	0.00346	0.00121	0.00002	-70.41%; p=0.039

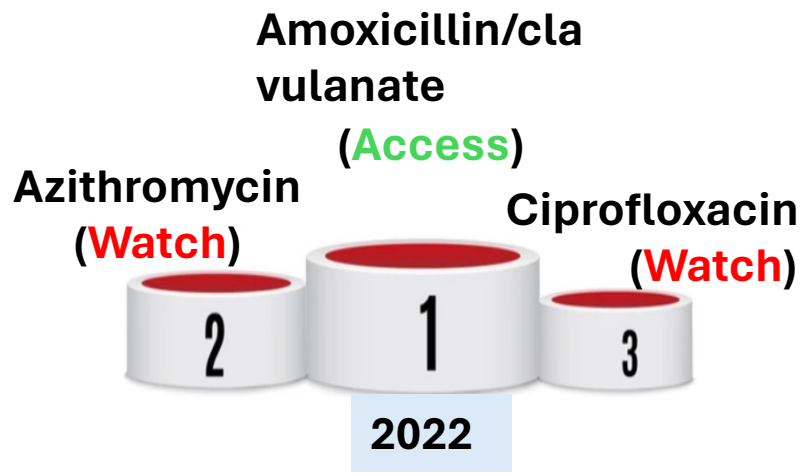
The champions of consumption, determined by DDD per 1000 inhabitants



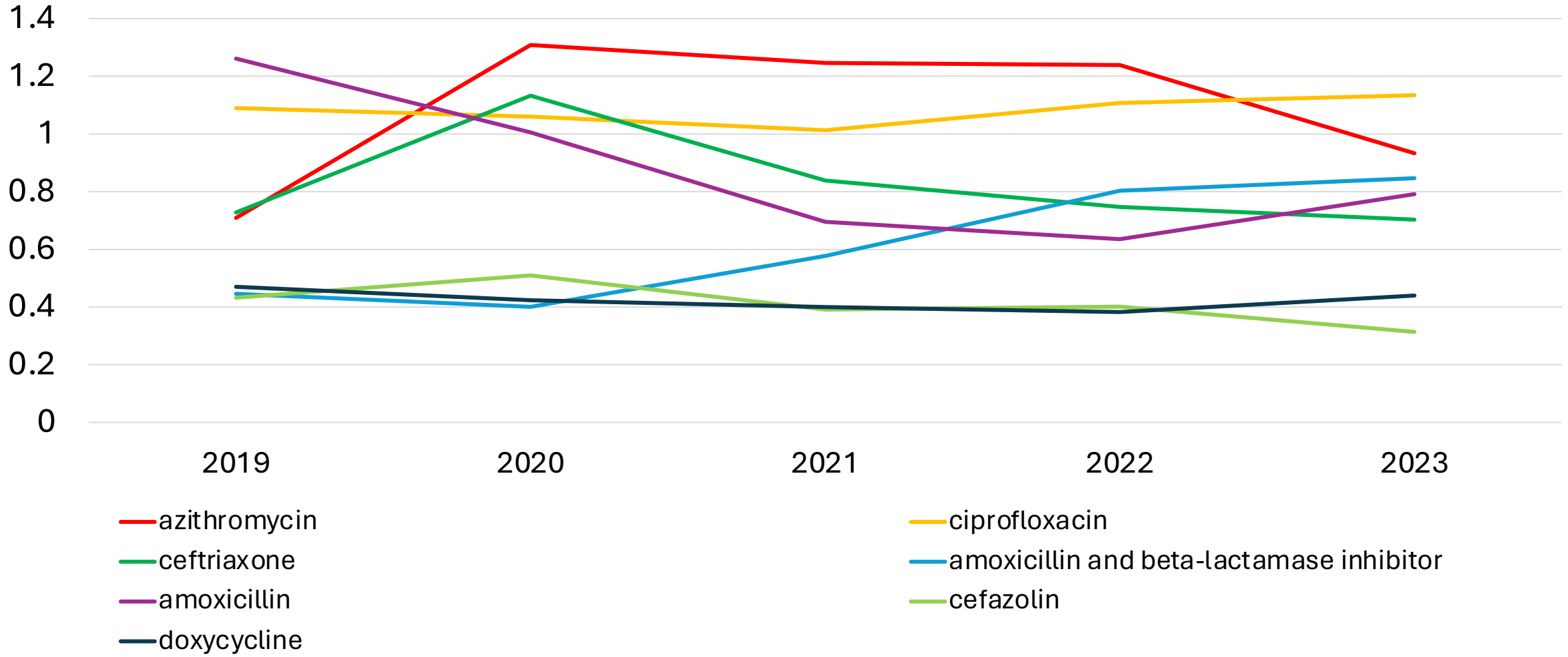




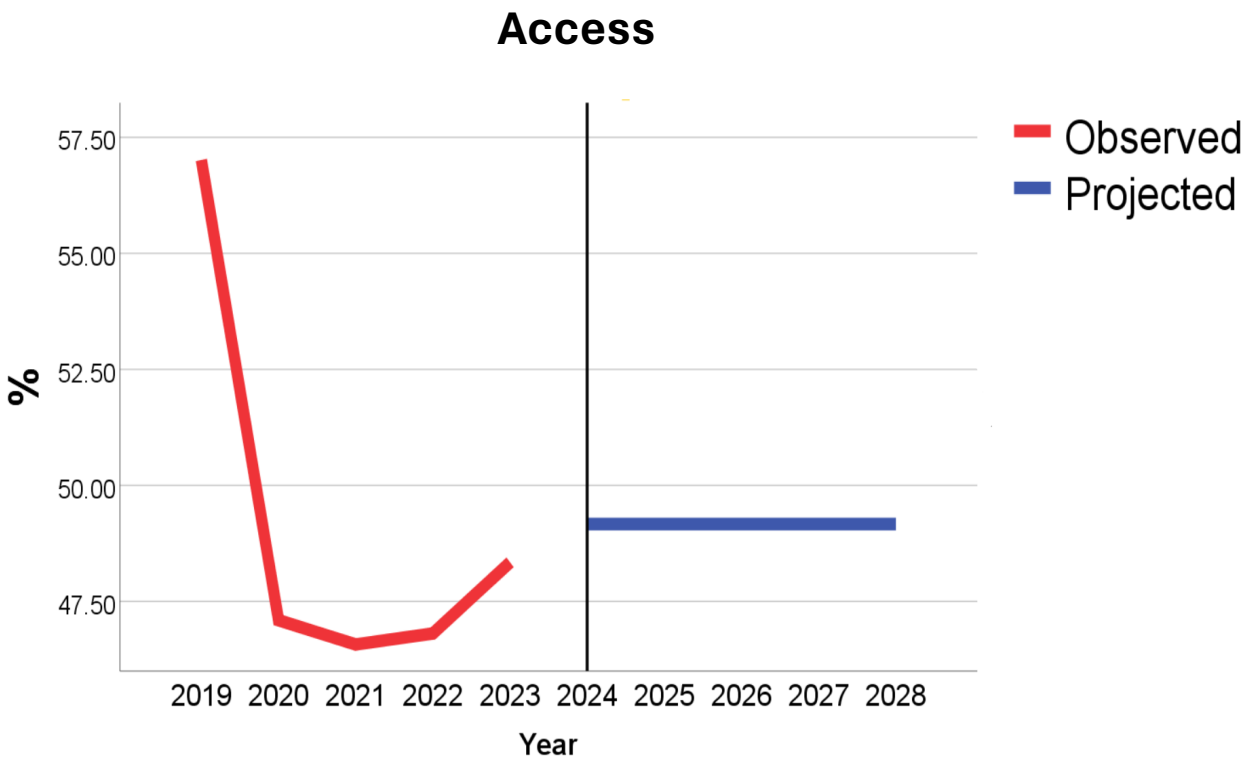


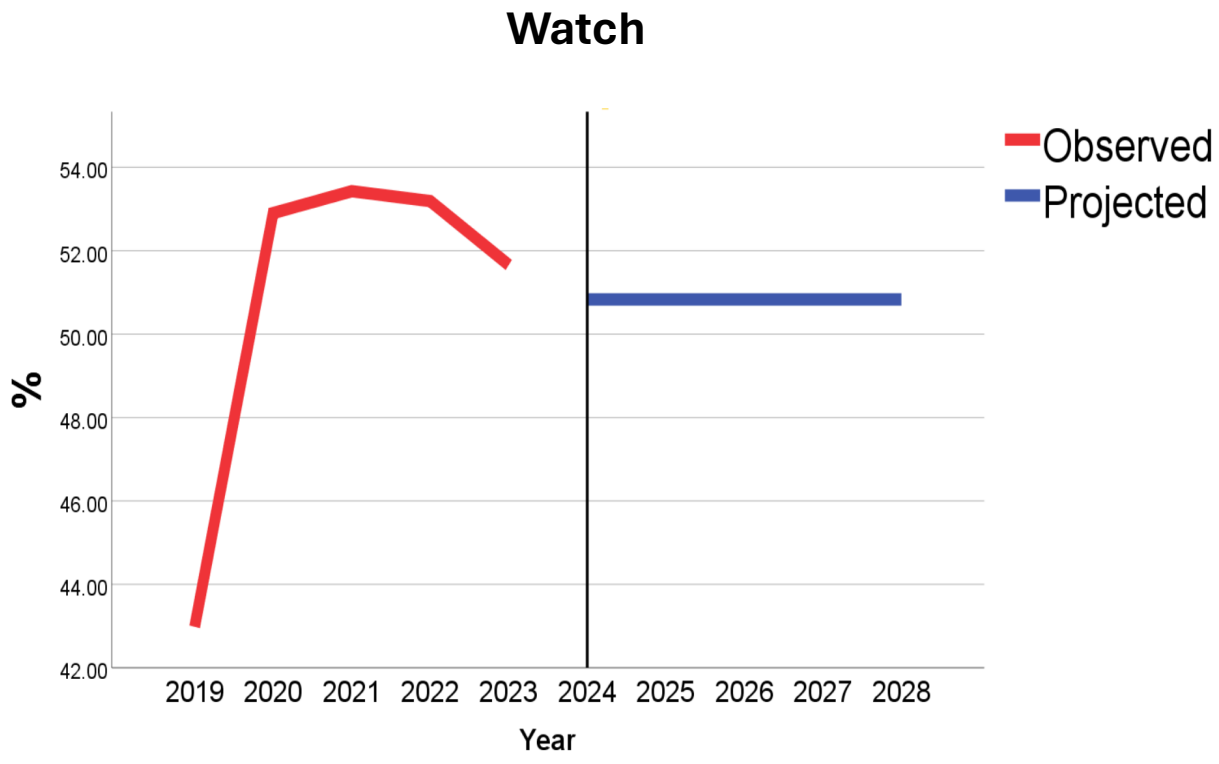


Top 7 antibiotics, determined by DDD per 1000 inhabitants



Prognostic modelling of antibiotic consumption





2024	2025	2026	2027	2028
49.2	49.2	49.2	49.2	49.2

2024	2025	2026	2027	2028
50.8	50.8	50.8	50.8	50.8

Recommendations

- Creating and putting into action a national antibacterial drug formulary that restricts certain antibiotics' usage to specific indications or scenarios where there are no alternatives.
- Promoting awareness among both the public and healthcare professionals regarding the risks associated with AMR and the crucial role of antibiotic stewardship.
- Implementing antibiotic stewardship programs in primary care settings to aid physicians in prescribing appropriately. This involves incorporating updated clinical protocols, employing delayed antibiotic prescribing strategies, and providing patient education materials.

Recommendations

- Enhancing the accessibility of rapid diagnostic tests at the primary healthcare level, enabling the differentiation between bacterial and viral infections, is paramount.
- Enforcing mandatory prescriptions for all antibiotics and closely monitoring their sale and distribution.
- Identifying healthcare professionals as "champions" for the rational use of antibiotics, individuals capable of assuming leadership roles within their professional spheres.
- Promoting vaccination will help prevent infections that require antibiotic treatment.

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Thank you for attention!