Implementation of antimicrobial consumption surveillance and stewardship in human health in the former USSR countries: A systematic review

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Introduction

The limited quantity and quality of data from Post-Soviet countries make it difficult to assess health system performance. Although these countries share a common history and legacy, their healthcare performance varies significantly due to differences in healthcare reforms, as well as political and economic factors. Since implementation strongly depends on the health system structure and mechanism, it is crucial to get a profound contextual understanding of the systems in countries to implement country-tailored effective approaches.

This systematic review aims to assess and characterize antimicrobial consumption surveillance (AMC) and antimicrobial stewardship (AMS) implementation in post-Soviet countries.

Methodology

Inclusion criteria: (i) papers on antimicrobial consumption and antimicrobial stewardship in Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan (former USSR-countries); ii) NAPs on combatting antimicrobial resistance in previously mentioned countries in any available language; (iii) papers published from May 1, 2015 to December 31, 2024; (iv) studies describing regions where at least one of the listed above countries was included; (v) publications in English and Russian languages.

Exclusion criteria: (i) animal and plant consumption; (ii) microbiology-related papers; (iii) antiviral, antimycotic, and antifungal consumption; (iv) conference posters and abstracts; (v) MD, MPH, and PhD dissertations; (vi) geographically not relevant studies; (v) policy briefs.; (vi) publications in local languages apart from English and Russian; (v) papers not relevant to the defined time frame (from May 1, 2015, to December 31, 2024).

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Conclusion

The main observations show that high-income countries and upper-middle-income countries generally show a higher level of AMC surveillance and AMS-related elements implementation than lower-middle-income countries. Nevertheless, there are cases when some high-income countries report lower implementation for specific elements than lower-middle-income countries.

These disparities highlight the need for targeted strategies to address regional challenges in AMC surveillance and AMS capacity and implementation.

Results

Figure 1. Antimicrobial consumption monitoring in post-Soviet countries.

Table 1. Antimicrobial consumption monitoring in post-Soviet countries.

Country	AMS in NAP	Anitmicrobial use optimisation	Integration of AWaRe classification to the NEML
Estonia	n/a	Demonstrated	+
Latvia	+	Limited	-
Lithuania	+	Limited	-
Russian Federation	+	Demonstrated	-
Armenia	+	Limited	+
Azerbaijan	n/a	Developed	-
Belarus	n/a	Sustained capacity	+
Georgia	+	Developed	-
Kazakhstan	+	Demonstrated	+
Moldova	+	Developed	+
Turkmenistan	+	Limited	-
Ukraine	+	Developed	+
Kyrgyzstan	+	Limited	+
Tajikistan	+	No capcity	-
Uzbekistan	n/a	Developed	-

AMS - antimicrobial stewardship;
NAP - national action plan;
AWaRe (Access, Watch and Reserve) – WHO Methodology for antibiotic classification;
NEML – national essential medicines list,
n/a - data is unavailable.
Income level according to World Bank – high-income countries – dark blue, upper-middle-income countries – blue, low-income countries – white