

MediPIET Summary report of work activities

Zoran Milosavljević

Serbia, Cohort 4 (2021)

Background

1. About MediPIET

The Mediterranean and Black Sea Programme for Intervention Epidemiology Training (MediPIET) aims to enhance health security in the Mediterranean and the Black Sea region by supporting capacity building for prevention and control of natural or man-made threats to health posed by communicable diseases. It is a competency-based **in-service two-year fellowship** during which selected fellows conduct projects and field investigations at a MediPIET Training Site in their home country and attend MediPIET modules.

Since mid-2021, MediPIET is implemented by ECDC as a part of the [EU Initiative on Health Security](https://www.ecdc.europa.eu/en/training-and-tools/training-programmes/fellowships/medi Piet). You can find more information about the programme at: <https://www.ecdc.europa.eu/en/training-and-tools/training-programmes/fellowships/medi Piet>

2. Pre-fellowship short biography

Zoran Milosavljevic, MD, PhD, is an epidemiologist in training and medical anthropologist based in Belgrade, Serbia. He holds a PhD in social anthropology from the School of Social Sciences, University of Hull, United Kingdom (UK). He is a research associate at the Ethnographic Institute of the Serbian Academy of Sciences and Arts (SASA), and works in the Department for the prevention of HIV/AIDS and Sexually Transmitted Infections (STIs) of the Institute of Public Health of Serbia in Belgrade.

Fellowship

On 20 September 2021, Zoran Milosavljević started his MediPIET fellowship at the Institute of Public Health of Serbia, in Belgrade. This report summarises his work performed during the fellowship.

National supervisors: Danijela Simić, Mitra Drakulović

Scientific coordinator: Kostas Danis

Fellowship projects

3. Surveillance

HIV infection and AIDS in Serbia, 2012–2021

Introduction: Serbia is a low prevalence country (0.05%), with UNAIDS estimating the number of individuals living with HIV at the end of 2021 at 3 600 (2 700–4 500). Of those, 85% knew their HIV status; 75% of those who knew their status were on antiretroviral therapy. We aimed to describe HIV/AIDS cases in Serbia.

Methods: In Serbia, exhaustive HIV surveillance was established in 1985. Since 2002, the system has been case-based. An asymptomatic case was defined as laboratory-confirmed HIV infection without any symptoms/signs, and a late presenter was a laboratory-confirmed HIV case with <350 CD4 T-lymphocyte/mm³ at the time of diagnosis. We used linear regression to estimate p-values for trend.

Results: Between 2012 and 2021, 1 640 HIV cases were reported in Serbia, with an increasing ($p<0.05$) trend in 2012–2019 and a decreasing trend in 2020–2021 during the COVID-19 pandemic. The male-to-female ratio was 16:1. Of all cases, 72% (1 181/1 640) were men who have sex with men (MSM), 56% (880/1 569) were asymptomatic, 58% (732/1 274) were late presenters. 39% (498/1 274) presented with an advanced HIV infection where CD4+ count was <200 /mm³. The annual proportion of late presenters ranged from 45% in 2015 to 69% in 2014 (median: 58%). 37% (245/662) of late presenters were among asymptomatic cases.

Conclusions: A large proportion of HIV cases in Serbia had late diagnosis leading to later start of antiretroviral treatment and resulting in an overall negative health impact. MSM dominated among newly reported cases, with the male to female ratio (16:1) being one of the highest in Europe. The large number of asymptomatic cases and late presenters highlight the importance of regular testing and counselling services for HIV infection. We recommend further exploring reasons for late diagnosis using qualitative studies and focus groups, and further planning and implementing interventions to reduce late access to treatment.

Role and outputs: Principal investigator. Zoran performed the data analysis, wrote the report, and presented orally in the MediPIET Scientific Event.

Supervisor: Danijela Simić

4. Outbreaks

Tuberculosis outbreak in a care home for mentally disabled individuals, Serbia

Introduction: On 24 January 2023, the post-mortem forensic examination of a male patient from a psychiatric care home in the village of Kulina confirmed active tuberculosis (TB) (index case). We aimed to identify potential additional cases and implement control measures.

Methods: A confirmed TB case was a resident or staff of the care home in Kulina with prolonged cough, fever, weight loss or night sweats between 1 December 2022 and 30 June 2023, and laboratory confirmation (isolation of *Mycobacterium tuberculosis* complex from a clinical specimen). A latent TB infection (LTBI) had no clinical symptoms, but positive laboratory confirmation with interferon gamma release assay – QuantiFERON IGRA test. We defined close contacts as people exposed to the index case in the care home, including roommates/housemates, during 1 December 2022 to 30 June 2023. We calculated attack rates (AR) using the total number of care home residents as the denominator.

Results: We traced 114 contacts (66 staff members and 48 residents). Three male confirmed cases were identified among residents in the department M of the care home six weeks after the index case. The median age of all TB cases was 31 (range 28–37) years. An additional three LTBI cases were identified among the residents, one male case from the same department and two female cases from an adjacent department (AR=5.3%). The median age of all cases was 34 (range 31–36) years. In December 2022, the care home was refurbished, relocating patients in overcrowded dormitories.

Conclusions: Close contact with the index case in crowded rooms during refurbishment may have led to aerogenic TB transmission. The late diagnosis and reporting of the index case resulted in delayed initiation of contact tracing and infection control measures, probably favouring TB transmission in this care home. We recommended constant medical supervision of residents and staff, chemoprophylaxis for close contacts, reducing indoor activities, HIV testing, the use of protective equipment for staff, and additional education on TB transmission.

Role and outputs: Zoran was one of the principal investigators. Together with Dr Maja Stosić, an epidemiologist and TB country coordinator from the Institute of Public Health of Serbia, Zoran was involved in all the steps of the investigation, collected data, wrote the report and recommended epidemiological measures.

Supervisor: Maja Stosić

5. Research

Knowledge, attitudes and practices on HIV infection and STIs among first- and fifth-year medical students, Belgrade, Serbia

Introduction: Students in Serbia enter medical school with limited knowledge about sexually transmitted infections (STIs) such as HIV. We aimed to evaluate STI-related knowledge, attitudes and behaviours of medical students to inform prevention programmes.

Methods: We conducted a cross-sectional study from March to May 2023 among medical students in the first and the fifth years at the University of Belgrade. Participants completed an online questionnaire consisting of 43 questions on their knowledge of HIV and STIs, attitudes towards people living with HIV (PLWH), and practices (KAP). We calculated scores and adjusted odds ratios (aORs) using logistic regression.

Results: Overall, 402 (38%) students responded. The total knowledge score was higher among older students (median 12 vs. 9 out of 14, $p < 0.001$). Students in the first and the fifth year of study both had a median attitude score of 12, but 58% reported condom use at last sexual intercourse. The odds of condom use were higher among male students (OR 0.37; 95%CI 0.17-0.78), and those having previous sex education (OR 1.73; 95%CI 1.01-3.11), but lower among those not being partnered (OR 0.55; 95% CI 0.30-0.99), those not practicing anal sex (OR 0.23; 95%CI 0.10-0.53), and those not practicing binge drinking (OR 0.81; 95%CI 0.68-0.95).

Conclusions: Despite observing overall good knowledge towards STIs/HIV and positive attitudes towards PLWH, condom use was suboptimal. Sex education is needed to raise awareness and increase condom use among medical students.

Role and outputs: Principal investigator. Zoran was involved in all the steps of the study. He wrote the protocol, developed the questionnaire and submitted them to two ethical committees, performed data entry, data analysis, developed informed consent form and study information document for participants and submitted a manuscript to a peer-reviewed journal.

Supervisor: Kostas Danis, Dr Danijela Simić, Dr Mitra Drakulović

6. Scientific communication

Conference presentations

Zoran Milosavljevic. HIV infection and AIDS in Serbia, 2012–2021. MediPIET scientific event, Stockholm, 21 November 2022.

Publications and outputs

- Milosavljevic, Z. (2023) 'Back to the future': The rise of chemsex in Serbia and transformation of gay intimacy. *Serbian Journal of Public Health*, March 2023, 97/1. doi: 10.5937/serbjph2301020M
- Milosavljevic, Z. (2024) Knowledge, attitudes and practices on HIV infection and STIs among 1st and 5th year medical students, Belgrade, Serbia. *Plos One*. Forthcoming [submitted].

6. Teaching activities

Seminar on tuberculosis, Institute of Public Health of Serbia, 14 April 2022

Zoran organised a seminar on tuberculosis as part of the continual medical education at the Institute of Public Health of Serbia 'Dr Milan Jovanović Batut', Belgrade. The continual medical education for 2022 was approved by the Health Council of the Ministry of Health of the Republic of Serbia in January 2022. The seminar took place on 14 April 2022. The target audience were general practitioners and trained nurses from Primary Health Care centres and General Hospitals from several regions in Serbia.

Zoran gave lectures to remind participants of evidence-based facts on tuberculosis. The lectures included epidemiological data, but also introduced some new approaches in diagnostics, treatment and prevention of tuberculosis such as Whole Genome sequencing for multi-resistant tuberculosis. Participants reported that the key messages, including the emphasis on testing comorbidities (tuberculosis +HIV) and stressing the role of WGS in multi-resistant tuberculosis, were conveyed well.

7. Other activities

- COVID-19-related activities: weekly on-call telephone duty for general population (from March 2020 to May 2022); on-call daily telephone duty for diplomatic personnel in Serbia and their families; daily hospitalization report; vaccination of Serbian citizens and foreign nationals (2021-2022); COVID-19 vaccine effectiveness data collection in Serbia; weekly and monthly vaccination reports in Serbia, blood plasma donation of COVID-19 re-convalescents
- Active member of the Committee for HIV infection and TB of the Republic of Serbia (2021-2022); active member of the Scientific Committee of the Institute of Public Health of Serbia (2022-2023)

8. MediPIET modules attended

- Introductory Module Part 1, 20 September 2021 to 6 October 2021, online
- Inject Day Phylogeny, 20 October 2021, online
- Inject Days Operational Research, 26 and 27 October 2021, online
- Inject Days Data Collection, 10 – 11 November 2021, online
- Outbreak Investigation, 6 to 10 December 2021, online
- Multivariable Analysis, 14 to 18 March 2022, online
- Multivariable Analysis Inject Day, 30 March 2022, online
- PRM and Introductory Course Part 2, 20 to 29 April 2022, online
- Rapid assessment and survey method + Mass gatherings, 6 to 10 June 2022, online
- Project Review Module 2022, 29 August to 2 September 2022, Lisbon, Portugal, attended face-to-face
- Time Series Analysis, 7 to 11 November 2022, Utrecht, the Netherlands, attended face-to-face
- Qualitative Research Inject Days, 31 January 2023 and 3 February 2023, online
- CBRN module, 13 to 17 March 2023, Petrovac na moru, Montenegro, attended face-to-face
- Vaccinology Inject Day, 29 March 2023, online
- One Health and VBD, 2 to 4 May 2023 and 15 to 17 May 2023, online
- Project Review Module 2023, 28 August to 2 September 2023, Lisbon, Portugal, attended face-to-face

9. Personal conclusions of the fellow

The knowledge and skills I gained during my MediPIET program were extremely helpful for my residency in Epidemiology at the Medical School of the University of Belgrade. The themes and materials from field epidemiology provided through MediPIET modules, case studies, group activities, and learning by doing activities contributed to my professional development as a future epidemiologist. The training exceeded my expectations as it was very comprehensive and provided good learning opportunities across a wide range of relevant topics.

Sharing experiences with colleagues from other countries also gave me a broader picture of specific problems and challenges that we face as public health professionals today. My involvement in outbreak investigations, surveillance of communicable diseases, and epidemiological studies during MediPIET equipped me with the core skills to respond to future epidemics/pandemics. The topics and themes during the modules were addressed professionally by ECDC staff and other visiting scholars. The friendship and community feeling were invaluable bonus of the MediPIET fellowship program.

10. Acknowledgements

This work would not be possible without enormous help from Dr Kostas Danis, my MediPIET frontline coordinator based at ECDC, Prof Dr Verica Jovanović, Associate Prof Dr Tatjana Gazibara, Associate Prof dr Maja Stošić, Dr Danijela Simić, and Dr Mitra Drakulović.