Margarita Buckeviča

The European Programme for Intervention Epidemiology Training (EPIET), Cohort 2023
Centre for Disease Prevention and Control, Latvia

Background

The ECDC Fellowship Programme is a two-year competency-based training with two paths: the field epidemiology path (EPIET) and the public health microbiology path (EUPHEM). After the two-year training, EPIET and EUPHEM graduates are considered experts in applying epidemiological or microbiological methods to provide evidence to guide public health interventions for communicable disease prevention and control. The Administrative Decisions ECDC/AD/2023/23 and ECDC/AD/2023/06 govern the EU-track and MS-track, respectively, of the ECDC Fellowship Programme, field epidemiology path (EPIET) and public health microbiology path (EUPHEM), Cohort 2024.

Both curriculum paths provide training and practical experience using the 'learning by doing' approach at acknowledged training sites across the European Union/European Economic Area (EU/EEA). This final report describes the experiences and competencies the fellow acquired by working on various projects, activities, theoretical fellowship training modules, other modules or trainings, and international assignments or exchanges during the fellowship.

Pre-fellowship short biography

Margarita Buckeviča is an experienced epidemiologist and public health professional with a Master's degree in Public Health. She works as a Senior Epidemiologist in the Infectious Disease Prevention and Anti-Epidemic Measures Unit at the Centre for Disease Prevention and Control of Latvia. In addition to her public health work, she is actively involved in academic teaching at both the University of Latvia and Riga Stradiņš University. Holding both Bachelor's and Master's degrees in healthcare from Riga Stradiņš University, Margarita combines extensive practical experience with strong academic expertise. She has delivered numerous lectures and training sessions for healthcare professionals, students, social care workers, and the general public on infectious disease epidemiology, outbreak investigation, disease prevention, and control measures.

Results

The objectives of the core competency domains were achieved partly through project and activity work and partly by participating in the training modules. Results are presented in accordance with the EPIET/EUPHEM core competencies, as set out in the ECDC Fellowship Manual[1].

[1] European Centre for Disease Prevention and Control (ECDC). European public health training programme. Stockholm: ECDC; 2020. Available from: https://www.ecdc.europa.eu/en/publications-data/ecdc-fellowship-programme-manual

Stockholm, 2024

1. Outbreak investigations

Food-borne outbreak in a social care institution in Dobele Municipality, Latvia, July 2024

Supervisor: Ieva Rimšāne, CDPC of Latvia

Category: Food- and waterborne diseases

Introduction: On 12 July 2024, the Centre for Disease Prevention and Control (CDPC) of Latvia was notified of a gastrointestinal disease outbreak affecting 181 individuals, including 170 residents and 11 employees, at a social care institution in Dobele Municipality, Latvia. An epidemiological outbreak investigation was conducted to identify the source of infection, interrupt pathogen transmission, and implement appropriate control measures to prevent further spread and future outbreaks.

Methods: A retrospective cohort study was conducted, with data on cases and non-cases collected using a structured paper-based questionnaire. Descriptive epidemiological analysis was performed to describe the distribution of cases by person, place and time. Univariate analysis was conducted by calculating food-specific attack rates (AR), relative risks (RR) and corresponding p-values to assess the association between individual food exposures and illness. Data analysis was conducted in R.

Results: Analysis of 71 completed questionnaires and the epidemic curve suggested a point-source food-borne outbreak associated with the lunch served on 11 July 2024. Univariate cohort analysis identified significant associations between illness and consumption of fried chicken (AR: 64.4%; RR: infinite, all identified cases had consumed the food items, $p < 0.001$), milk sauce (AR: 65.8%; RR:5.43) and steamed cauliflower (AR: 72.5%; RR: Inf). Laboratory testing detected enteropathogenic *Escherichia coli* in one patient and *Aeromonas spp*. in three patients, while food and environmental samples were negative.

Conclusions: Consumption of the fried chicken, milk sauce, and steamed cauliflower served at lunch on 11 July 2024 was significantly associated with illness. However, because these items were consumed together, the specific contaminated food could not be identified. The investigation highlighted the value of rapid epidemiological analysis in identifying likely sources when microbiological confirmation is inconclusive and underscores the importance of strict food safety, environmental hygiene and infection prevention measures in social care institutions to prevent similar outbreaks.

Role: During the outbreak investigation, the fellow worked closely with colleagues from the Regional Unit of the CDPC of Latvia. She developed the case definition, designed the paper-based questionnaire, and coordinated its distribution to and collection from the social care institution. She also contributed to the epidemiological investigation by providing recommendations and advising on outbreak control measures. She performed data entry, conducted descriptive and univariate statistical analyses using RStudio and prepared the final outbreak investigation report.

2. Surveillance

Hepatitis A virus infection in Latvia: a description of surveillance data, 2019–2024

Supervisor: Ieva Rimšāne, CDPC of Latvia

Type of project: Analysing data from a surveillance system

Introduction: In 2024, Latvia experienced an unexpected increase in hepatitis A cases, but the epidemiological characteristics and transmission patterns were not fully understood. A study was conducted to describe the epidemiological situation, molecular surveillance findings, and transmission dynamics of hepatitis A cases reported in Latvia between 2019 and 2024.

Methods: A descriptive analysis of hepatitis A surveillance data in Latvia was conducted using data from the national infectious disease surveillance system (VISUMS). Surveillance records were cleaned and validated before analysis. Descriptive epidemiological methods were used to summarise case numbers, incidence, demographic characteristics, imported and locally acquired infections, geographical distribution, travel history, contact tracing and molecular sequencing results.

Results: Between 2019 and 2024, 144 hepatitis A cases were reported in Latvia, including 35 cases in 2024. Sequencing analysis identified multiple circulating hepatitis A virus (HAV) genotypes, with 14 cases linked to a genotype associated with Belarus and three cases linked to a strain previously detected in Central and West Africa. Several locally acquired cases without travel history shared identical sequences with imported cases, indicating secondary transmission within Latvia, while additional unique genotypes suggested multiple independent introductions of HAV into the country.

Public health implications/Conclusions: The increase in hepatitis A cases highlighted the importance of continuous surveillance, molecular typing and rapid epidemiological investigations to detect transmission chains and guide control measures. Strengthening vaccination uptake among travellers and people at higher risk of infection, together with timely contact tracing and public health interventions, remain essential to prevent further transmission.

Role: The fellow analysed the surveillance data and prepared a study protocol and report.

Weekly epidemiological surveillance and reporting

Activities and role: Margarita contributed to the preparation of weekly epidemiological surveillance reports on the incidence and trends of infectious diseases in Latvia. She extracted and analysed surveillance data from the national Electronic Infectious Disease Surveillance System, evaluated temporal trends by comparing weekly incidence with previous reporting periods, and prepared epidemiological summaries describing the distribution and dynamics of infectious diseases at both the national and regional levels.

In July 2025, she delivered four presentations at the weekly online meetings of the CDPC of Latvia, Department of Infectious Disease Risk Analysis and Prevention. During these meetings, she presented current epidemiological trends, reported on significant infectious disease outbreaks identified during the surveillance period, and provided updates on unusual or rarely reported infectious diseases, including measles, cholera, and diphtheria.

3. Applied public health research

Effectiveness of seasonal COVID-19 vaccine among older adults in Latvia – retrospective cohort study for the 2023/2024 season

Supervisors: Ieva Rimšāne, CDPC of Latvia; Jurijs Perevoščikovs, CDPC of Latvia

Introduction: Seasonal vaccination continues to play an important role in reducing COVID-19-related hospitalisation and mortality among older adult populations. A study was conducted to evaluate the effectiveness of seasonal COVID-19 vaccination against hospitalisation and mortality among adults 60 years old and above in Latvia during the 2023/2024 season.

Methods: The study was conducted using linked national electronic surveillance, vaccination, hospitalisation and mortality databases in Latvia and covered the period from 1 September 2023 to 30 April 2024. The study population included 542 374 residents ≥60 years old. Individuals who were hospitalised or deceased within seven days after vaccination were excluded. Vaccine effectiveness (VE) was estimated using relative risk (RR) calculations comparing vaccinated and unvaccinated individuals. Outcomes included COVID-19-related hospitalisation and mortality. Subgroup analyses were performed for age groups 60–69, 70–79, and ≥80 years.

Results: Among the study population, 21 809 individuals (4.02%) received seasonal COVID-19 vaccination. Compared with the vaccinated older adults, the unvaccinated older adults had a higher risk of COVID-19-related hospitalisation (RR: 2.8) and mortality (RR: 2.1), corresponding to VE estimates of 64% and 52%, respectively. The strongest protective effect was observed among individuals aged ≥80 years. In this age group, the relative risk of hospitalisation among unvaccinated older adults was 4.9, while the relative risk of COVID-19-related mortality was 7.0 compared with vaccinated older adults, corresponding to VE estimates of 80% and 86%, respectively.

Conclusions/Public health implications: Seasonal COVID-19 vaccination was associated with substantially reduced risks of hospitalisation and mortality among older adults in Latvia. Despite the demonstrated benefits, vaccination uptake among older adults remained low. These findings support continued implementation of seasonal vaccination strategies and targeted public health interventions to increase vaccine uptake among populations at higher risk of infection.

Role: Margarita wrote the study protocol, prepared an ethical application, calculated the RR and VE, and wrote a research report.

4. Teaching and pedagogy

Rīga Stradiņš University, 2023

Margarita taught two groups of third-year Bachelor's students in the Public Health programme at Rīga Stradiņš University (24 students in total). She delivered lectures and practical exercises on 'Surveillance of Infectious Diseases and Elimination Programmes' and 'Outbreak Investigation' (six teaching hours in total). Margarita developed all lecture materials, practical exercises using infectious disease datasets and case studies, and the final examination. Following the course, she also designed and administered a student evaluation questionnaire using KoboToolbox.

University of Latvia, 2023

Margarita served as a lecturer for infectious disease resident physicians at the University of Latvia. She delivered online training on infectious disease surveillance and the surveillance system in Latvia. The lecture content and practical exercises were developed and prepared by Margarita. Following the course, she designed and distributed a student evaluation form using KoboToolbox to collect participant feedback.

University of Latvia, 2024

Margarita served as both lecturer and course coordinator for the study course 'Epidemiology of Infectious Diseases' in the Master's programme 'Epidemiology and Medical Statistics' at the University of Latvia. The course was delivered from October to December 2024 and was attended by nine students. In addition to teaching, she coordinated contributions from guest lecturers representing various institutions, including the Emergency Medical Service of Latvia, the National Microbiology Reference Laboratory of Latvia and the Robert Koch Institute. Margarita developed the lectures, practical exercises and final examination for the course.

5. Communications related to the EPIET/EUPHEM fellowship

5.1 Manuscripts submitted to peer-reviewed journals

Buckevica M, Perevoscikovs J, Geida S, Rimsane I, El-Khatib Z. Large outbreak of Escherichia coli O26:H11 and O103:H2 infection in Latvia linked to dairy products with severe illness among children, March–April 2025. *Eurosurveillance*. 2026 [Submitted]**.** The manuscript was reviewed by *Eurosurveillance* but was not accepted for publication. The fellow received constructive feedback from the reviewers and will revise the manuscript accordingly.

5.2 Conference presentations

Buckevica M, Perevoscikovs J, Geida S, Rimsane I. Large outbreak of Escherichia coli O26:H11 and O103:H2 infection in Latvia linked to dairy products with severe illness among children, March–April 2025 (oral presentation). Presented at: ESCAIDE; 21 November 2025; Warsaw, Poland (the presentation was delivered at the MediPIET Alumni Network Meeting).

6. EPIET/EUPHEM modules attended

- Introductory Course, 24 September–14 October 2023, Spetses, Greece
- Study Protocol and Scientific Writing, 26–27 October and 7–8 November 2023, virtual
- European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE) 2023, 22–24 November 2023, Barcelona, Spain
- Multivariable Analysis, 19–23 February 2024, Berlin, Germany
- Vaccinology, 4–8 March 2024, virtual
- Public Health Microbiology II – Biorisk and Quality Management, 21–23 May 2024, virtual
- Public Health Microbiology I - Basic phylogeny, 17–18 June 2024, virtual
- Project Review Module, 26–30 August 2024, Lisbon, Portugal
- Ethics, 6 November 2024, virtual
- European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE) 2024, 20–22 November 2024, Stockholm, Sweden
- Time Series Analysis, 9–13 December 2024, Utrecht, the Netherlands
- Social Behavioural Sciences (SBS), 24–28 March 2025, virtual
- Writing Abstracts for Scientific Conferences, 31 March 2025, virtual
- Rapid Assessment and Survey Methods, 9–13 June 2025, Athens, Greece
- Project Review Module, 25–29 August 2025, Lisbon, Portugal
- European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE) 2025, 19–21 November 2025, Warsaw, Poland

7. Other training

- Introduction to R for Applied Epidemiology, 19–22 September 2023, virtual
- Cross-Sectoral One Health Conference on Antimicrobial Resistance, 7 December 2023, virtual
- Recovery from infectious diseases outbreaks – Pilot, 14 December 2023, virtual
- Latvian Preventive Medicine Association Conference, 15 December 2023, Riga, Latvia
- Vaccine Acceptance and Behaviour Change e-learning, 20 December 2023, virtual
- Strengthening Pandemic Preparedness and Response through Integrated Modelling, 15 February 2024, virtual
- Tick-borne Encephalitis: Time and Evidence for Change, 1 March 2024, virtual
- Rethinking External Assistance for Health, 14 March 2024, virtual

- DigiHealth2024, 18 April 2024, virtual
- Latvian Preventive Medicine Association Conference, 17 May 2024, Riga, Latvia
- EU Health Task Force Webinar, 17 June 2024, virtual
- Public Health Emergency Operations Centre – Olympic Games in France 2024, 19 July 2024, virtual
- Global Burden of Foodborne Diseases, 4 September 2024, virtual
- EPI Masterclass: Application of Spatial Modelling to Uncover Geographical Disparities and Improve Public Health Surveillance Data – A Case Study for Antimicrobial Resistance, 12 September 2024, virtual
- Introduction to Evidence-Based Public Health, 16–17 September 2024, virtual
- Latvian Preventive Medicine Association Conference, 20 September 2024, Riga, Latvia
- Latvian Association of Infectious Diseases, Hepatologists and HIV/AIDS Specialists: Bioterrorism, CBRN and Biological Threats, Smallpox, Biological Agent Testing in the National Reference Laboratory, 26 September 2024, Riga, Latvia
- Health Economics, 16 October 2024, virtual
- EPI Masterclass: A 15-Year Journey Towards Universal Rotavirus Vaccination in the Netherlands, 24 October 2024, virtual
- Focus on the Agents of Whooping Cough, 4–5 November 2024, virtual
- Building and Maintaining Trust in Policies, Programmes and Communication for Infectious Disease Prevention, 8 November 2024, virtual
- EPI Masterclass: Target Trial Emulation in Observational Research, 14 November 2024, virtual
- Epidemics in Winter: Influenza and Other Respiratory Viruses, 19 February 2025, virtual
- Latvian Preventive Medicine Association Conference, 23 May 2025, Riga, Latvia
- National-level Civil Protection and Disaster Management Training – RADEX 2025, 21 August 2025, Riga, Latvia
- EUHTF Training – Outbreak Investigation Tools: R Training, 7–9 October 2025, Stockholm, Sweden
- Cross-sectoral Biorisk Awareness and Mitigation Training (BAM2026), 21–23 April 2026, St. Julian's, Malta

8. Other activities

- Organisation of training 'Basic Principles of Data Collection, Epidemiological Surveillance, Genomic Surveillance and Outbreak Investigation to Ensure Good Practices for Managing Public Health Threats', 4–5 June 2024, Riga, Latvia
- RKI Site Visit to the CDPC of Latvia – Implementation and Use of Outbreak Detection Tool Opportunities in Latvia: Best Practices for Surveillance and Outbreak Investigation, 8–10 July 2024, Riga, Latvia
- Site Visit to Latvia and Midterm Review, 10–11 September 2024, Riga, Latvia
- Meeting on National Prevention, Preparedness and Response Plans, 9–11 October 2024, Riga, Latvia
- Participation in the Interinstitutional Working Group on Epidemiological Surveillance, Monitoring and Intelligence Processes, 3 February–26 March 2025, Riga, Latvia
- Organisation and Delivery of Training on Personal Protective Equipment and Public Health Emergency Response for the Infectious Disease Prevention and Anti-Epidemic Measures Unit (CDPC of Latvia), 13 March 2025, Riga, Latvia
- ECDC Public Health Emergency Preparedness Assessments in Latvia, 17–21 March 2025, Riga, Latvia
- EU Health Task Force Meeting within the Session on Latvia's Collaboration with the EUHTF, 19 November 2025, Warsaw, Poland
- EU Health Task Force Meeting, 2–3 December 2025, Stockholm, Sweden
- Electronic Infectious Disease Surveillance System Enhancements within an EU Project for Clinical University Hospitals, 1 January–30 June 2026, Riga, Latvia
- Scenario Development and Tabletop Exercise on Public Health Emergencies, 11 March 2026, Riga, Latvia
- Preparation for and Participation in the After Action Review of the Leptospirosis Outbreak in Latvia with ECDC Experts, 19–20 March 2026, Riga, Latvia

Acknowledgements

The fellow would like to express her sincere gratitude to her supervisor, Ieva Rimšāne, and her frontline coordinator, Ziad El-Khatib, for their continuous guidance, support, encouragement, and moral support, especially during challenging moments throughout the fellowship. Their expertise, constructive feedback and willingness to provide advice at every stage of the programme were instrumental to the fellow's professional development. The fellow also wishes to thank the colleague Jurijs Perevoščikovs, for his professional guidance, valuable ideas and insightful recommendations, which greatly contributed to the fellow's learning and development. Special thanks are extended to the fellow's colleague Sigita Geida, for her unwavering moral support, kindness and readiness to help at all times. Finally, the fellow would like to express her deepest gratitude to her mother and her husband, for their unconditional love, patience, encouragement and continuous support throughout this remarkable journey. Their belief in her made the successful completion of the fellowship possible.