Vivien Brait

The European Programme for Intervention Epidemiology Training (EPIET), Cohort 2023
Austrian Agency for Health and Food Safety (AGES), Austria

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/2022/16 Rev.01 and ECDC/AD/2023/06 govern the European Union (EU)-track and Member State (MS)-track, respectively, of the ECDC Fellowship Programme, field epidemiology path (EPIET) and public health microbiology path (EUPHEM), Cohort 2023.

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

Vivien Brait, a Hungarian born and raised in Serbia, moved to Austria alone at the age of 19. After becoming fluent in German, she earned a Bachelor of Science in Nutritional Sciences from the University of Vienna in 2019, followed by a Master of Public Health from the Medical University of Vienna in 2023. During her bachelor's degree studies, she gained diverse work experiences through several part-time and full-time student jobs. Later, during her master's programme, she completed an internship at the City of Vienna - Women's Centre, where she acquired hands-on experience in promoting women's health. In 2020, Vivien joined the Austrian Agency for Health and Food Safety (Österreichische Agentur für Gesundheit und Ernährungssicherheit – AGES), working at the Institute for Infectious Disease Epidemiology in various roles, including COVID-19 hotline operator, cluster analyst, surveillance system data manager, epidemiology research assistant, and epidemiologist.

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). Manual for the ECDC Fellowship Programme EPIET and EUPHEM paths. Stockholm: ECDC; 2025. Available at: https://www.ecdc.europa.eu/en/publications-data/ecdc-fellowship-programme-manual

Stockholm, 2025

1. Epidemiological investigations

1.1. Outbreak investigations

1.1.1. Outbreak of **Salmonella** *(S.) Strathcona, multi-country, 2011–2024*

Supervisors: Sabine Maritschnik (AGES), Dirk Werber (AGES), Ziad El-Khatib (AGES)

Category: Food- and waterborne diseases

Aim: The aim of this investigation was to identify the food vehicle for the increase in *S.* Strathcona cases in 2023, to verify the source(s) of infection and describe the outbreak.

Methods: We investigated the genetic relatedness of *S.* Strathcona strains to describe the epidemiology of *S.* Strathcona infections in 14 EU/EEA countries, and Switzerland, England, and Scotland (study area) from 2011 to 2024. Confirmed cases were defined as persons within the study area whose *S.* Strathcona isolate clustered with the outbreak reference strain within seven allelic differences (AD), as determined by core genome multilocus sequence typing (cgMLST).

Results: We identified 662 *S.* Strathcona cases from 17 countries, from 2011 to 2024, with a median age of 35 years (interquartile range (IQR): 18–59), of which 243 (37%) confirmed cases occurred in 2023/2024. Epidemiological and traceback investigations in Austria and Denmark identified small tomatoes from Sicily as the suspected food vehicle in 2023. Since 2011, 469/500 (94%) sequences of clinical (n=496) and environmental isolates (n=4) from 15 countries were within seven AD, showing a high genetic relatedness over time and across the study area.

Public health implications/Conclusions: This suggests a single, recurring outbreak since 2011. We recommend further investigation into the primary food production processes to prevent future cases.

Role: Vivien was the lead investigator. She wrote the outbreak report, developed a web-based questionnaire for the contributing countries and analysed it, coordinated the data collection, as well as drafted and wrote the manuscript.

1.2. Surveillance

1.2.1. Evaluation of the surveillance system for **Bordetella pertussis** *in Austria, 2017–2024*

Supervisors: Andreas Reich (AGES), Lukas Richter (AGES), Ziad El-Khatib (AGES)

Type of project: Evaluating a surveillance system

Aim: To describe Austria's national pertussis surveillance system and evaluate its completeness and timeliness.

Methods: We analysed the pertussis surveillance data for 2017–2024 from the Austrian Epidemiological Reporting System (EMS). The completeness was evaluated across 21 data fields, and timeliness in 2024 was assessed by calculating mean intervals between: a) symptom onset and EMS entry date, b) symptom onset and laboratory sample date, and c) laboratory sample and entry dates.

Results: Of 26 612 pertussis notifications, 25 033 were included. Demographic data showed near-complete reporting (~100%). Notification from physicians, including information on symptoms, ranged from 86–100%, while completeness of administrative fields reached 90%. Laboratory notifications were 89–96% complete, while completeness of sample date ranged from 55–88%. Vaccine status was not recorded. Vaccine number completeness ranged from 0–99%, and for vaccine date from 11–32%. In 2024, 10 970 cases showed a 3–14.5-day interval between symptom onset and entry date; 8 953 cases had a 0–15-day interval between symptom onset and laboratory sample data; and 8 965 cases had a 0–4-day interval between sample collection and entry date across all nine Austrian states.

Public health implications/Conclusions: The evaluation of Austria's pertussis surveillance system highlights strong demographic reporting, which enables basic epidemiological analysis. However, inconsistent case definitions, incomplete symptom and vaccination data, and variability in laboratory confirmation methods affect data quality. An increase in median reporting time may suggest system overload, delays in diagnostics, or administrative constraints. Although most relevant date fields are available, they are not routinely prioritised as timeliness indicators. Addressing these gaps will improve case classification, outbreak detection, and public health response.

Role: Vivien wrote a report and performed data analysis.

Routine surveillance activities

National surveillance of pertussis, **Haemophilus influenzae***, pneumococci, meningococci, measles and rubella in Austria*

Activities and role:

- Supported routine operations of the Austrian Epidemiological Reporting System (EMS);
- Performed daily surveillance of data quality and plausibility checks in the Austrian surveillance system for measles, rubella, pneumococci, meningococci, *Haemophilus influenzae* and pertussis between September 2023 and December 2024;
- Reviewed annual reports for each of these diseases;
- Attended meetings with quality assurance and senior epidemiologist teams;
- Participated in outbreak investigations of food-borne pathogens and vaccine-preventable diseases;
- Conducted literature reviews for various outbreak pathogens;
- Shared information and collaborated with Austrian public health authorities, national reference centre and other stakeholders;
- Performed contact tracing.

2. Applied public health research

2.1. Pertussis vaccine effectiveness among children aged 1–9 in Upper Austria, 2024

Supervisors: Dirk Werber (AGES), Ziad El-Khatib (AGES)

Aim: Pertussis (whooping cough) is a highly contagious notifiable disease in Austria. Following a significant increase in pertussis cases in Upper Austria in 2023 (more than any other federal state), this study aimed to evaluate the effectiveness of the pertussis vaccine, particularly the 6-in-1 combination, among children in 2024.

Methods: A descriptive cohort study was planned, using a questionnaire-based survey. The target population included children aged 1–9 years in Upper Austria who contracted pertussis in 2024, as recorded in the national epidemiological reporting system. Sample size was calculated for point prevalence estimation. Vaccine effectiveness was assessed based on the age-specific vaccination rates and proportion of vaccinated cases.

Results: The project was ultimately cancelled. However, the working hypothesis was that vaccination coverage for the 6-in-1 pertussis vaccine combination in birth cohorts 2015–2024 was below the 94% threshold recommended by ECDC for effective infection control.

Public health implications/Conclusions: Although not completed, the study was designed to assess the impact of pertussis vaccination efforts in Upper Austria and inform public health strategies aimed at protecting children and reducing disease burden.

Role: Vivien attended meetings, wrote the protocol, prepared an ethical application, calculated random sample size, and developed both online and paper-based questionnaires.

2.2. Determinants of sexual health communication – a cross-sectional study in Austria, 2024

Supervisor: Ziad El-Khatib (AGES)

Aim: To explore patients' experiences, perceptions, and expectations regarding communication with healthcare practitioners (HCP) about sexual health (SH). The study seeks to identify challenges, barriers, and potential improvements to enhance patient-centred communication on topics such as sexuality, sexual orientation, gender identity, and sexually transmitted infections (STIs).

Methods: We conducted an online cross-sectional survey on SH in Austria between March and December 2024. We used descriptive and multivariate logistic regression analysis (odds ratio (OR), 95% confidence interval (CI)), to identify determinants of discussing sexuality with the HCP.

Results: Out of 553 respondents, 424 (76.7%) reported having discussed their SH with an HCP. More than half (54.3%) were under the age of 34, 45.6% identified as women, 42.8% as heterosexual, 24.8% as men who have sex with men (MSM), and 12.4% as women who have sex with women. The vast majority (91.5%) believed that discussing SH is important. Additionally, 42.2% chose their HCP based on how open they were perceived to be about SH, and 18.6% were willing to travel farther to avail the services of a provider open to these discussions. In bivariate analysis, disclosure was more common among those aged 25–34 (OR: 1.95; 95% CI: 1.09–3.48), MSM (OR: 1.74; 95% CI: 1.03–2.94), those choosing providers based on openness (OR: 3.76; 95% CI: 2.27–6.23), and those willing to travel for such talks (OR: 2.71; 95% CI: 1.35–5.41). In the multivariate regression analysis, significant determinants associated with discussing SH included HCP willing to talk about SH (OR: 3.5; 95% CI: 1.97–6.12).

Public health implications/Conclusions: HCP should proactively initiate open, inclusive conversations about SH, in particular with vulnerable groups. Training HCP to support such dialogue is essential to equitable, person-centred care.

Role: Vivien wrote the protocol, finalised the report, and performed data analysis.

3. Teaching and pedagogy

Measles re-emergence in Europe: addressing the growing concern, Karolinska Institutet, Sweden, 2024

A 27-minute self-recorded online video of Vivien was presented to eight PhD students at the Karolinska Institutet in Sweden. The presentation was recorded on Microsoft PowerPoint. The video detailed the current measles situation in the EU/EEA, using reports and publications from ECDC and the World Health Organization (WHO) as references. There was no post-presentation evaluation.

Introduction to food-borne disease outbreak investigations, AGES, 2024

AGES hosted a one-day workshop for 22 employees and medical officers from the Municipal Department 15 – Health Service of the City of Vienna. The focus was on food-borne outbreak investigations, including a case study based on a real event handled by the department. Vivien revised the German teaching materials, including the case study, and delivered a lecture on the surveillance system, data entry basics, and data validation. She also served as a group facilitator during the case study session.

4. Communications related to the EPIET/EUPHEM fellowship

4.1. Manuscripts published in peer-reviewed journals

- **Brait V**, Böff L, Zmarlak-Feher N, et al. Insights into an international, prolonged outbreak of *Salmonella* Strathcona associated with tomatoes, 2011–2024. [Publication pending]

4.2. Other reports

- European Centre for Disease Prevention and Control (ECDC), European Food Safety Authority (EFSA). Prolonged multi-country outbreak of *Salmonella* Strathcona ST2559 linked to consumption of tomatoes in the EU/EEA and the UK. Stockholm: ECDC; Parma: EFSA; 2024. Available at: https://www.ecdc.europa.eu/sites/default/files/documents/salmonella-strathcona-ST2559-tomatoes-rapid-outbreak-assessment-november-2024.pdf

4.3. Conference presentations

- **Brait V**, Werber D, El-Khatib Z, Kornschober C, Maritschnik S. An outbreak of salmonellosis linked to organic cherry tomatoes with secondary transmission to a laying hen flock, Austria, 2023–2024 (poster presentation). Presented at: 8th World One Health Congress 2024; 24 September 2024; Cape Town, South Africa.
- Novacek A, **Brait V**, Brunner A, Lex S, Küffel F, Chalupka A, Richter L, Werber D, El-Khatib Z. Inclusive sexual communication matters in the LGTBQ+ community – a cross-sectional study in Austria, 2024; Berlin, Germany.
- Cardoso M, Borsodi C, **Brait V**, Springer D, Ruppitsch W, Aberle S, Reich A, Weseslindtner L. Comprehensive genotyping supports the epidemiological investigation of Austrian measles virus outbreaks in 2023; Barcelona, Spain.
- Maritschnik S, **Brait V**, Werber W, Kornschober C. Multi-country outbreak of *Salmonella* Strathcona related to small tomatoes from Italy in 2023 and 2024 – the Austrian perspective, Saint-Malo, France.

5. EPIET/EUPHEM modules attended

- Introductory Course, 25 September–13 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
- Time Series Analysis, 11–15 December 2023, Rome, Italy
- Multivariable Analysis, 19–23 February 2024, Berlin, Germany
- Writing Abstracts for Scientific Conferences, 14 March or 20 March 2024, virtual
- Qualitative Research, 19 and 22 March 2024, virtual
- Rapid Assessment and Survey Methods, 15–19 April 2024, Dublin, Ireland

- Public Health Microbiology I – Basic phylogeny, 17–18 June 2024, virtual
- Project Review Module, 26–30 August 2024, Lisbon, Portugal
- Study Protocol, Ethics and Scientific Writing, 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
- Multivariable Analysis, 17–21 February 2025, Berlin, Germany
- Social Behavioural Sciences, 24–28 March 2025, virtual
- One-Health, 12–15 May 2025, virtual
- Project Review Module, 25–29 August 2025, Lisbon, Portugal
- Public Health Leadership, 1–3 September 2025, Lisbon, Portugal.

6. Other training

- Introduction to Epidemic Intelligence from Open Sources (EIOS), 9 July 2024, virtual
- Rapid Risk Assessment, 15 July 2024, virtual
- Epidemic intelligence, 20 July 2024, virtual
- Introduction to the Emergency Response Framework (ERF), 24 July 2024, virtual
- Every Outbreak is a Story! Using Qualitative and Descriptive Data Clues to Complete the Story, 23 October 2024, virtual
- GenEpi BioTraining for Whooping cough, 4–5 November 2024, virtual

7. International assignments

- Enhanced event-based surveillance and epidemic intelligence during mass gathering events at ECDC epidemic intelligence group, 29 July–10 August 2024, Stockholm, Sweden.

8. Other activities

- Participated in measles outbreak investigation: collaboration with national public health departments, drafted reports to the Ministry of Health, was involved in the epidemiological field investigation in Lower Austria, collaborated with the National Reference Centre for Measles, attended meetings with the Regional Public Health Office
- Visit to the Rapid Alert System for Food and Feed (RASFF) Contact Point, 25 January 2024, Salzburg, Austria
- EPIET 'Mentor' Support for the 2024 EPIET Fellow at AGES
- Participated in the 2025 *S.* Infantis food-borne disease outbreak investigations: conducted interviews, wrote a report for the Austrian Zoonosis Commission
- Was involved in work packages for the biggest project in AGES, 'Reinforcing Austrian Integrated Surveillance and Epidemiology (RAISE)'
- Developed generic training materials

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