

Summary of work activities

Yulia Zimnitskaya

The ECDC Fellowship Programme

Field Epidemiology path (EPIET), 2020 cohort

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.

Both curriculum paths provide training and practical experience using the 'learning by doing' approach in acknowledged training sites across European Union (EU) and European Economic Area (EEA) Member States.

According to Articles 5 and 9 of ECDC's founding regulation (EC No 851/2004) 'the Centre shall, encourage cooperation between expert and reference laboratories, foster the development of sufficient capacity within the community for the diagnosis, detection, identification and characterisation of infectious agents which may threaten public health' and 'as appropriate, support and coordinate training programmes in order to assist Member States and the Commission to have sufficient numbers of trained specialists, in particular in epidemiological surveillance and field investigations, and to have a capability to define health measures to control disease outbreaks'.

Moreover, Article 47 of the Lisbon Treaty states that 'Member States shall, within the framework of a joint programme, encourage the exchange of young workers. Therefore, ECDC initiated the two-year EUPHEM training programme in 2008. EUPHEM is closely linked to the European Programme for Intervention Epidemiology Training (EPIET). Both EUPHEM and EPIET are considered 'specialist pathways' of the two-year ECDC fellowship programme for applied disease prevention and control.

This report summarises the work activities undertaken by Yulia Zimnitskaya, cohort 2020 of the Intervention Epidemiology path (EPIET) at the Baden-Wuerttemberg State Health Office (LGA), Stuttgart, Germany.

Pre-fellowship short biography

Yulia Zimnitskaya holds a Bachelor's degree in Nutritional Science from the Technical University of Munich, Germany, as well as a Master's degree in Public Health (2018) from Ludwig Maximilians University Munich, Germany. During her Bachelor's programme and before continuing her Master's degree, Yulia worked on non-communicable disease topics such as mental health in the elderly at the Institute for Epidemiology, Helmholtz Centre in Munich. After completing her studies, she began working at the Baden-Wuerttemberg State Health Office in 2019, focusing on vaccine-preventable diseases. In September 2020 Yulia started her EPIET-fellowship as a MS-track fellow.

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Stockholm, November 2023

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Methods

This report accompanies a portfolio that demonstrates the competencies acquired during the EPIET fellowship by working on various projects, activities and theoretical training modules.

Projects included epidemiological contributions to public health event detection and investigation (surveillance and outbreaks); applied epidemiology field research; teaching epidemiology; summarising and communicating scientific evidence and activities with a specific epidemiology focus.

The outcomes include publications, presentations, posters, reports and teaching materials prepared by the fellow. The portfolio presents a summary of all work activities conducted by the fellow, unless prohibited due to confidentiality regulations.

Results

The objectives of these core competency domains were achieved partly through project or activity work and partly through participation in the training modules. Results are presented in accordance with the EPIET core competencies, as set out in the ECDC Fellowship Manual¹.

1. Epidemiological investigations

Outbreak investigations

1.1 A presumed outbreak of Legionnaires' disease in the region of Weinsberg, Baden-Wuerttemberg, Germany, 2021

Supervisor: Florian Burckhardt, LGA

On 9 July 2021, the Heilbronn county health authority (LHA) notified the Baden-Wuerttemberg State Health Office (LGA) of four community-acquired Legionnaires' disease (LD) cases caused by *Legionella pneumophila* (*L. pneumophila*) serogroup (sg) 1. The aim was to assess the scale of the outbreak, identify a common source and initiate control measures. A case was a patient with a positive specimen for *L. pneumophila* sg 1 in urine-antigen tests (UAG), RT-PCR, and/or culture, exhibiting pneumonia symptoms with onset during calendar weeks 25–30, 2021, residing or having travelled to the affected municipalities.

The LHA conducted active case finding and exploratory case interviews. Five cases were identified with symptom onset between 29 June and 7 July 2021, confirmed through UAG. The hospitalised cases, aged 49 to 91, included four men and one woman, with three out of the four patients ventilated in the intensive care unit and two fatalities. All visited facilities during the incubation period, including workplaces, supermarkets and car washes, were mapped alongside registered evaporative cooling systems, cooling towers, and wet separators in the cadastre to generate hypotheses. All seven environmental samples analysed from cooling or sewage treatment plants tested negative for *Legionella spp.* at the LGA laboratory. Genotyping was performed on three patient isolates cultivated from tracheal secretions. These isolates had different *L. pneumophila* sg1 complex types, differing by at least 787 alleles based on 1 521 cgMLST targets, and were therefore considered epidemiologically unrelated. All patients' domestic installations were sampled, and none of the positive samples matched any patient isolate.

The main control measure implemented by the LHA was a disinfection order for all surrounding facilities within a two-kilometre radius to the cases registered in the cadastre. Disinfection quality was assessed four weeks after the order. The public was informed about the presumed LD outbreak. All LHAs in Baden-Wuerttemberg were advised to inform operators of evaporative cooling systems about legal obligations to carry out laboratory testing annually between 1 June and 31 August.

Role: Yulia played a role in coordinating the various stages of the outbreak investigation in collaboration with the local outbreak investigation team and the LGA's laboratory. She was a co-investigator who described the outbreak, deliberated on potential environmental exposures using mapping, wrote an outbreak report and presented the outbreak at a German FETP (PAE) *jour fixe* in Berlin (11).

¹ European Centre for Disease Prevention and Control. European public health training programme. Stockholm: ECDC; 2020. Available from: <https://www.ecdc.europa.eu/en/publications-data/ecdc-fellowship-programme-manual-cohort-2021>

1.2 International patient transfers causing healthcare associated outbreaks of carbapenem-resistant *Acinetobacter baumannii* in Germany, August – September 2021: Baden-Wuerttemberg's investigations

Supervisor: Christiane Wagner-Wiening, LGA

During calendar weeks (CW) 31 and 36 of 2021, an outbreak of carbapenem-resistant *Acinetobacter baumannii* (CRAb) occurred in a hospital in Baden-Wuerttemberg. The outbreak involved six cases aged 32 to 67 years across three wards with one unrelated fatality. The hospital conducted routine laboratory screenings for multidrug-resistant organisms in intensive care and burn units at admission and at a weekly basis. Additional screenings for roommates of positive cases were implemented. The National Reference Centre (NRC) for multidrug-resistant gram-negative bacteria for used pulsed-field gel electrophoresis for carbapenemase determination and sequencing for relationship. The NRC identified that all CRAb isolates shared OXA-23 acba_191. Environmental investigations showed negative results for CRAb on various surfaces, including boxes from the incineration area, the incineration bath, and a patient's room.

The suspected index case, the first of two burn patients transferred to Germany for treatment from different clinics in Romania, tested positive for CRAb OXA-23 upon admission. The probable route of transmission was associated with compromised hygiene practices during wound care and interventions for emergency patients. In October 2021, the outbreak was concluded with revised hygiene protocols being implemented. The investigation underscored the importance of regular screening and effective hygiene management in mitigating the spread of multidrug-resistant pathogens in healthcare settings.

Notably, this Baden-Wuerttemberg outbreak was part of a larger investigation in several federal states, including Rhineland-Palatinate and Hesse, where multiple nosocomial outbreaks of CRAb occurred in the aforementioned CW. The multistate investigation was a collaborative effort between the Robert Koch Institute (RKI), NRC, state and local health authorities, and hospital hygiene departments.

Role: Yulia was part of the investigation team as a co-investigator for this Baden-Wuerttemberg outbreak, responsible for data management, descriptive analyses and an outbreak report. Yulia was co-author on a poster related to the multistate outbreak investigation presented at the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE) 2021 (9). Additionally, Yulia is a co-author of RKI's publication in *Deutsches Ärzteblatt international* (2).

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course – This module introduces fellows to the core outbreak investigation principles. Covering the different outbreak investigation steps, diverse study designs, and data analysis, the course employed lectures, case studies, and practical exercises.

Outbreak Investigation Module – This module deepened knowledge across each step using examples, lectures, and case studies, while including essential analytical epidemiology skills. It enhanced fellows' field investigation readiness through multi-day outbreak case studies, building on the introductory course. Additionally, it provided practical experience in scientific report writing.

Rapid Assessment and Survey methods module – This module trained the fellows on risk communication during an outbreak investigation and crises.

Educational outcome

Engaging in several outbreak investigations, Yulia participated in most steps of an outbreak investigation and developed a thorough understanding of outbreak management in Germany across local, state, and national levels. Besides refining analytical skills essential for outbreak investigations, Yulia strengthened her management and communication skills. Involvement also provided insights into laboratory techniques such as whole genome sequencing as integral part of surveillance and outbreak studies.

2. Surveillance

2.1 Evaluation of surveillance on COVID-19 vaccination coverage in employees and residents of full and semi-residential care facilities as pandemic response in Baden-Wuerttemberg

Supervisor: Maylin Meincke, LGA

An ad-hoc surveillance system for monitoring Coronavirus disease 2019 (COVID-19) vaccination coverage among employees and residents of full and semi-residential care facilities in the state of Baden-Wuerttemberg, Germany, was established in December 2021. Reporting was implemented nationally by law and aimed to provide monthly insight into vaccination rates for residents and employees in this vulnerable setting. The law did not account for recent PCR-confirmed SARS-CoV-2 infections, which influenced the vaccine doses administered during the reporting timeframe. We analysed data from December 2021 to March 2022, assessing the surveillance system attributes timeliness, completeness, validity, and acceptability.

The surveillance system faced challenges in timely reporting, with varying rates of local health authorities (LHA) and facilities submitting data on time, ranging from 72.1% to 95.3% for reports submitted with a one working day delay among LHAs. Data completeness fluctuated between 74.0% (n=1 501) in March 2022 to 90.8% (n=1 593) in December 2021, with discrepancies in numbers and missing information leading to lower data quality. Errors in data entry, especially concerning numbers per vaccination category, handling of previous SARS-CoV-2 infection status, and sum not adding up, negatively impacted the system's validity. Acceptability was evaluated by participation rates, which varied but remained relatively high among LHA and facilities during the whole reporting period.

The LGA recommended improving communication about the reporting process, introducing standardised electronic reporting forms with logical and mandatory entry fields, and conducting pilot runs with LHA to refine the system. Also, proper assessment of the number of individuals under surveillance and an overview of software preferences of reporting entities are needed beforehand, while surveillance results need to be provided at smaller scales to enhance compliance and inform targeted actions.

Overall, the evaluation underscored the importance of clear instructions, ideally before implementation of a surveillance system, standardised reporting tools, and data quality control mechanisms in ensuring the effectiveness of ad-hoc surveillance systems for vaccination coverage.

Role: Yulia conducted this surveillance evaluation as independent lead investigator, utilising ECDC's handbook on data quality monitoring and surveillance system evaluation. She selected and further defined the evaluation surveillance system attributes for this evaluation, collected, analysed, and reported the data, with the results not being publicly available.

2.2 Increase in Puumala virus infections during the COVID-19 pandemic in the state of Baden-Wuerttemberg, Germany in 2021

Supervisor: Christiane Wagner-Wiening, LGA

Baden-Wuerttemberg is a known endemic region for *Puumala* virus (PUUV). PUUV is a zoonotic orthohantavirus transmitted by bank voles and causes a mild form of haemorrhagic fever with renal syndrome in humans. Phylogenetic analyses of PUUV nucleotide sequences have highlighted distinct clusters in specific geographical areas as Swabian Jura, with stable patterns observed over a 13-year time span. PUUV is notifiable in Germany since 2001 and outbreaks generally occur every two to three years, linked to factors such as beech tree seed production, human population density, climatic conditions, and preferred vole habitats.

During the 2020–2021 season, 1 331 laboratory-confirmed PUUV cases (66% were male) were notified in Baden-Wuerttemberg, resulting in a cumulative incidence of 12.0 per 100 000 population, with the highest incidence in the 20- to 59-year age groups. With the season starting in calendar week 40 and running until week 39 of the following year, cases peaked in week 20/2021 after which notifications declined. This season's case numbers were the second highest after the 2011–2012 season (n=1 803) since 2006. The Swabian Jura region was the residence for the majority of cases, comprising 70%. Symptoms reported by at least 65% of cases were fever, renal impairment, muscle ache, joint or back pain and headache. Some 782 cases were hospitalised with a median stay of six days (range: 1 to 282 days). Two fatal PUUV cases were reported, of which one had a concurrent asymptomatic SARS-CoV-2 infection.

This seasonal PUUV increase could be attributed to weather conditions influencing human behaviour, with a reduction in outdoor activities due to cold and rainy weather. Occupational and recreational activities, influenced by COVID-19 restrictions, might have contributed to infection risk. Recommendations consisted of promoting the use of particle-filtering masks as a previously under-utilised preventive tool, alongside other preventive measures. Additionally, GPs and specialists were made aware on this strong seasonal increase of cases.

Role: Yulia's tasks involved PUUV data monitoring, descriptive analysis, and drafting a manuscript as first author intended for rapid communication in early summer 2021 in an international scientific journal, although this manuscript was ultimately not submitted (3). Results were communicated with the LHAs (10). The R-script Yulia produced can be repurposed for future PUUV outbreaks.

2.3 Coronavirus disease 2019 (COVID-19) surveillance in Baden-Wuerttemberg (routine surveillance activities), 2020 - 2022

Team: COVID-19 surveillance and response team, LGA

COVID-19 was designated a notifiable disease in Germany starting from 1 February 2020, and the Baden-Wuerttemberg State Health Office (LGA) was responsible for receiving case notifications from local health authorities. These notifications were processed through the SurVNet notification software and subsequently shared with the Robert Koch Institute (RKI). The comprehensive surveillance data sources included, among others, data from the German Hospital Association, the Association of Accredited Medical Laboratories, and RKI.

The surveillance reports generated under the fellow's involvement covered a broad spectrum of key indicators, including notified cases, deaths, seven-day case incidence, and hospitalisation rates. As the pandemic evolved,

additional metrics such as vaccination coverage and the proportion of COVID-19 patients in intensive care units were included in the reports. The fellow's activities involved ongoing data analysis, updating R scripts (originally developed by Iris Finci during EPIET C2019), interpreting data, and creating and maintaining instructions for the COVID-19 surveillance report. The fellow also engaged in quality control and assurance as well as training new team members to ensure efficient reporting. The fellow actively participated in further projects using surveillance data, including investigations of attack rates among children and adolescents, estimation of secondary attack rates in a Delta cluster, creation of questionnaires for enhanced outbreak surveillance in residential care facilities (RCF), and analysis of the vaccination situation in RCF.

Role: As an active member of the COVID-19 surveillance and response team, Yulia played an important role in COVID-19 surveillance activities. This included contributing to daily and extended surveillance reports (4) shared with stakeholders, press and the public, conducting data analysis, and the development and maintenance of surveillance instructions. Additionally, the fellow engaged in projects that helped the understanding of COVID-19 trends and impacts in the region (5,6,8).

Training modules related to assignment/projects

EPIET/EUPHEM introductory course – This module introduced the fellow to setting up a new surveillance system, evaluating a surveillance system, and analysing surveillance data.

Multiple modules – Several modules required the use of R statistical software, ranging from data management to analysis and data visualisation. This training was helpful as it provided fellows with the skills to effectively handle large amounts of data and use it for actionable reporting.

Educational outcome

Yulia has demonstrated expertise in analysing routine surveillance data, interpreting insights for informed decisions, and composing surveillance reports. Furthermore, Yulia acquired the ability to improve and evaluate existing or newly set-up surveillance systems. Also, she provided epidemiological advice for surveillance enhancement on vulnerable settings, and integrated epidemiological and laboratory data for specific questions.

3. Applied public health research

Outbreak response eradicated COVID-19 Delta-clone during early Delta wave in Germany, 2021.

Supervisor: Florian Burckhardt, LGA

In 2021, Baden-Wuerttemberg (BW) (population: 11 million inhabitants) reported more than 781 000 PCR-confirmed cases. To enhance disease surveillance, a genomic sentinel surveillance for COVID-19 was launched in January 2021, with the German Electronic Sequence Hub (DESH) collecting viral sequences from various laboratories. Each sequence was assigned an integrated molecular surveillance ID and shared with local health authorities (LHAs). The aim was to sample 5–10% of weekly PCR-positive cases, prioritising vaccine breakthroughs and novel variants. BW State Health Office (LGA) introduced COVID-19 sequencing for variant surveillance and outbreaks. From April to August 2021, state-wide sequencing rates in counties ranged from 0% to 65%, with a median of 16.5%.

A Delta variant outbreak occurred in the county of Heidenheim (population: 132 958), affecting 94 confirmed cases in May–June 2021. The outbreak triggered intensive interventions, including enhanced contact tracing, rapid testing, and isolation measures. A dedicated sampling team ensured quick collection of contact samples, which were PCR-diagnosed within hours. The subsequent genomic analysis focused on the single nucleotide polymorphism (SNP) distance to the outbreak clone. A distance below 3 SNP was defined as 'Heidenheim-outbreak-clone' (HOC). Among the 29 697 sequenced COVID-19 cases in BW from April until August 2021, the HOC were present in 92 sequences, with 72.8% of HOC sequences belonging to Heidenheim and 3.3% found in the neighbouring counties. Remaining sporadic HOC cases appeared in counties other than Heidenheim during and after the outbreak.

The study emphasised the effectiveness of rapid non-pharmaceutical interventions in controlling the Delta variant's spread during a mainly Alpha variant setting. The success of the containment strategy demonstrated the significance of contact tracing and rapid testing during an emerging variant outbreak. Additionally, the study pointed out the importance of seamless information exchange between notification and laboratory systems for effective disease monitoring and control.

Role: Yulia was the lead investigator of the research. She wrote the study protocol, obtained and combined data from multiple sources and performed data analysis. Yulia submitted the abstract and presented the first part of the study as an oral presentation at one of ESCAIDE 2021 fireside sessions (7), and submitted a manuscript to an international scientific peer-reviewed journal (1).

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course – This module outlined in its operational research part how to write a study protocol, along with an overview of study designs and sample size calculation.

Project Review Module – This module provided a platform to practice communication and presentation skills within a multidisciplinary audience. It offered the chance to give and receive feedback on both the scientific content and the way project results are communicated.

Outbreak Investigation Module – This module taught how to formulate precise case definitions, hypothesis, and relevant study objectives. It refined the abilities to analyse data, interpret results, and develop appropriate public health recommendations.

Educational outcome

Yulia conducted all stages of an applied research project. She developed competencies in formulating a research question and identifying appropriate methodologies. Yulia's expertise grew in data analysis, working with varied datasets, and she improved report writing skills through manuscript creation.

4. Teaching and pedagogy

4.1 One-day training course for containment scouts, online

From December 2020 to March 2021, as part of the teaching team, Yulia conducted one-day online training courses for containment scouts and local health authority staff, focusing on valuable skills for SARS-CoV-2 contact tracing. She covered the basis of infectious disease epidemiology and SARS-CoV-2 data management using presentations, and practical exercises. Some of the teaching material was developed from scratch. Feedback from participants was positive, although some suggested a two-day format for better content absorption.

4.2 Case study facilitation of a point-source *Salmonella* outbreak for practical training of hygiene inspectors, online and on-site at LGA

Yulia facilitated twice an online case study session for hygiene inspectors' practical training, due to the COVID-19 pandemic. The selected case study focused on a 'Salmonella outbreak at a wedding party', adapted from an EPIET case study. The objectives were to apply all outbreak investigation steps, interpret epidemic curves, and understand foodborne disease rates and relative risks. Feedback was generally positive, yet on-site training was preferred.

4.3 Vaccinology module for EPIET/EUPHEM cohort 2021, online

Yulia facilitated two case studies in a training of trainer format: one on measles and the other on adverse events. For measles, participants had to interpret surveillance data, investigate an outbreak, and calculate vaccine effectiveness. The adverse events study covered vaccine safety evaluation phases. Yulia's role included guiding fellows of cohort 2021 towards case study objectives provided by module organisers.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course – This module introduced the basic concepts of epidemiology, including measures of association and helped guiding what could be taught to new students. The insights in adult education methods and people's different learning styles and sensory preferences, were helpful for developing teaching material.

Outbreak Investigation Module – This module helped the fellow become familiar with case studies and enabled her to apply the different teaching methods that were used for her own facilitation of case studies.

Educational outcome

Yulia further developed her teaching skills in field epidemiology. She applied the methods from the fellowship modules to identify training needs, design materials, organise training sessions, facilitate case study discussions, and evaluate training effectiveness.

5. Communication

5.1 Publications related to the EPIET fellowship

1. **Zimnitskaya Y**, Licht K, Tornseifer O, Bauer C, Burckhardt F. Outbreak response eradicated COVID-19 Delta-clone during early Delta wave in Germany, 2021. [Manuscript submitted for publication]
2. Hecht J, Eisfeld J, Baum JHJ, Wagner-Wiening C, Leuze D, **Zimnitskaya Y** et al. An Outbreak of Carbapenem-Resistant *Acinetobacter baumannii* in Multiple Federal States in Germany. *Dtsch Arztebl International* 2022; 119(29-30):508–9. Available from: <https://www.aerzteblatt.de/int/article.asp?id=226317>
3. **Zimnitskaya Y**, Meincke M, Finci I, Wagner-Wiening C, Burckhardt F. Increase in Puumala virus infections during the COVID-19 pandemic in the state of Baden-Wuerttemberg, Germany in 2021. [Manuscript not submitted for publication]

5.2 Reports

The following list does not include deliverables like study protocols and final reports, which are required to complete all assignments and are mentioned in the project roles.

4. Contribution to 'Daily report COVID-19' [in German]. Baden-Wuerttemberg State Health Office (LGA), Stuttgart, Germany. Available from: <https://www.gesundheitsamt-bw.de/lga/de/fachinformationen/infodienste-newsletter/infektnews/seiten/lagebericht-covid-19-archiv>
5. Investigation of SARS-CoV-2 infections in children and adolescents in Baden-Wuerttemberg to record secondary infections due to transmissions after infection in school and nursery, Baden-Wuerttemberg, Germany. LGA 2020. [internal report]
6. Vaccination situation in full and semi-residential care facilities in Baden-Wuerttemberg. Analysis of notification data according to §28b IfSG, Baden-Wuerttemberg. Fourth report (25.03.2022) [in German]. LGA 2022. Available from: https://sozialministerium.baden-wuerttemberg.de/fileadmin/redaktion/msm/intern/downloads/Anhang_PM/Auswertung_Impfsituation_Pflegeheime_220325.pdf
7. **Zimnitskaya Y**, Diedler A, Leher A. Vaccinations in focus: current developments in the state [in German]. Annual report 2019/2020. LGA 2021. p.14. Available from: https://www.gesundheitsamt-bw.de/fileadmin/LGA/Startseite/Deutsch/Oeffentlicher_Gesundheitsdienst_BW/LGA/DocumentLibraries/Documents/Jahresbericht_2019_20.pdf

5.3 Conference presentations

8. **Zimnitskaya Y**, Licht K, Tornseifer O, Bauer C, Burckhardt F. Phylogeny-assisted estimation of secondary attack rate in a large regional COVID-19-Delta cluster in the South of Germany at the beginning of Delta-transmission, May/June 2021. ESCAIDE 2021. Online, Oral presentation, Abstract ID: 279. Available from: https://www.escaide.eu/sites/default/files/documents/ESCAIDE2021_Abstract-Book.pdf
9. Baum J, Hecht J, Eisfeld J, Wagner-Wiening C, Leuze D, **Zimnitskaya Y** et al. International patient transfers causing healthcare associated outbreaks of carbapenem-resistant *Acinetobacter baumannii* in Germany, August – September 2021. ESCAIDE 2022. Stockholm, Sweden, Poster presentation by J. Baum, Abstract ID: 456. Available from: https://www.escaide.eu/sites/default/files/documents/ESCAIDE2022_AbstractBook.pdf

5.4 Other presentations

10. Hantavirus epidemic year 2021 in Baden-Wuerttemberg. 6. Specialist exchange with local health authorities on topics related to the surveillance of communicable diseases and reporting. 10 November 2021, online.
11. Investigation of a Legionnaires' disease cluster in the Heilbronn district, July 2021. PAE (German FETP) Jour Fixe. 30 June 2022, RKI, Berlin, Germany.
12. Vaccination rates and vaccination barriers in Baden-Wuerttemberg. Fourth meeting of the State Working Group on Vaccination Baden-Wuerttemberg. 25 October 2021, online.
13. Current status of implementation of the measles vaccination mandate according to the Measles Protection Act. Fifth meeting of the State Working Group on Vaccination Baden-Wuerttemberg. 4 October 2022, online.

6. Other activities

As a MS-track EPIET fellow, Yulia continued her regular work duties during her fellowship. These included routine surveillance activities, ensuring the reporting quality in the notification system on a weekly basis, and sharing duty phone responsibilities. As part of the vaccine-preventable diseases team, one of her regular tasks was to contribute to a vaccination campaign for children and young adults, involving content review and collaboration with external partners. She also provided technical input on amendments to German vaccination recommendations. Furthermore, she engaged in communication about various vaccination-related topics with stakeholders and the public (6,11,12). As part of her ministerial work, tasks included creating ministerial memos and speeches, as well as handling state parliament inquiries.

Yulia routinely attended weekly virtual infectious disease meetings (hosted by RKI). In this forum she shared information on the presumed Legionnaires' disease outbreak (see 1.1). She participated in a multi-country Salmonella Braenderup ST22 outbreak investigation by interviewing six cases from Baden-Wuerttemberg in June 2021 (ECDC, EFSA, 2021. Multi-country outbreak of Salmonella Braenderup ST22, presumed to be linked to imported melons – 20 July 2021. Stockholm: ECDC/EFSA; 2021).

7. EPIET/EUPHEM modules attended

1. Introductory Course part 1, 28 September to 16 October 2020, online
2. Introductory Course part 2 – Operational Research, 9–10 November 2020, online
3. Outbreak Investigation, 7–11 December 2020, online
4. Multivariable Analysis, 15–19 February 2021, online
5. Multivariable Analysis – Cox Regression, 18 March 2021, online
6. Introductory Course part 3, 26 April to 7 May 2021, online
7. Rapid Assessment and Survey Methods, 5–6 May 2021, online
8. Project Review 2021, 23–27 August 2021, online
9. Biorisk and Quality management, 17–18 January 2022, online
10. Time Series Analysis, 4–8 April 2022, ISS, Rome, Italy
11. Management, Leadership and Communication in Public Health, 13–17 June 2022, ECDC, Stockholm, Sweden
12. Project Review 2022, 29 August to 2 September 2022, CIDNUR, Lisbon, Portugal
13. Vaccinology, 13–17 February 2023, fellow and facilitator, online

8. Other training

1. PAE (German FETP) Introductory week, 11–18 September 2020, Robert Koch Institute, online
2. Introduction to the Behavioural Science of Public Health Emergency Response, 5 February 2021 and Introduction to Communications in Public Health/Epidemiology, 24 February 2021, Masterclasses EPIET/ UK FETP, online
3. Basic principles of data protection, 18 May 2021, organised by Robert Koch Institute, online
4. Laboratory module for epidemiologists, 7–8 June 2021, organised by Robert Koch Institute, online
5. Causal Inference with DAGs, 13 October to 23 November 2021, organised by Robert Koch Institute, online
6. Introduction to R for Applied Epidemiology, 27 September to 27 October 2022, Applied Epi in collaboration with EAN, online

Discussion

Coordinator's conclusions

One of the main goals of the EPIET programme is for fellows to develop core competencies in field epidemiology mainly through project or activity work, but also partly through participation in training modules and apply epidemiological methods to provide evidence to guide public health interventions for communicable disease prevention and control. This report summarises all activities and projects conducted by Yulia Zimnitskaya during her EPIET fellowship (cohort 2020) as a MS-track fellow at the Baden-Wuerttemberg State Health Office (LGA), Stuttgart, Germany.

It has been a real pleasure working with Yulia during her fellowship. She is a dedicated and accurate public health professional with a clear professional interest in vaccine-preventable diseases. Being a MS-track fellow working at the state level, Yulia was fully involved in the COVID-19 surveillance and pandemic response activities, covering all the domains of applied epidemiology competencies. During her fellowship, she had to balance conflicting demands and tasks in an often challenging work environment during the COVID-19 pandemic and aftermath. In the end, she managed to be productive by securing dedicated time for her own learning experience. During her fellowship, she clearly improved and expanded her analytical and technical skills. This was especially visible in her applied research proving the rapid containment of a Delta-variant clone outbreak in a small community by meticulously merging and enriching datasets with routinely available surveillance and sequence data. Also, her evaluation of an ad-hoc surveillance system to monitor vaccine coverage in staff and residents of residential care facilities was insightful, as she highlighted the challenges of timeliness and completeness of reporting. Besides COVID-19 projects, Yulia was involved in several outbreak investigations, including an interesting nosocomial outbreak, and performed a descriptive analysis of hantavirus (*Puumala*) cases after a strong increase was observed. Besides her analytical skills and good knowledge of R, Yulia is a modest professional who gives strong support to the team using a systematic approach in her projects. She demonstrated good facilitation skills and she is able to convincingly share her professional knowledge and experience with others. More importantly, Yulia foresees a public health career, which will involve continuous learning on infectious disease epidemiology, application of newly acquired technical skills in her daily work, and become a confident communicator in the public health arena. (Barbara Schimmer)

Supervisor's conclusions

Working with Yulia was a very rewarding experience because she never stops to ask herself and her supervisors new questions to old problems. This is followed up by methodological and thorough work on solving these problems in a team. She entered the EPIET MS-track in September 2020 and had thus previous work experience at the LGA which was tremendously helpful in the hyper stressed first year of the pandemic. Yulia has very strong IT skills and supported as one of three core developers the establishment of a completely new data-analysis pipeline at LGA with R during 2020. In addition to her EPIET teaching requirements, Yulia was always among the first to create or amend the ever-changing instructions for daily surveillance tasks and thus helped the (COVID-19) surveillance team to maintain the highest data quality possible in a politically very difficult and stressful environment.

Her systematic and resourceful approach to outbreak investigations and surveillance tasks made supervising her easy. Working with Yulia on the research project and subsequent publication was rather like solving a puzzle together than giving instructions. During her fellowship she had to allocate considerable time to non MS-track duties at work, sometimes to the detriment of the former. The midterm EPIET-interview reaffirmed Yulia to focus on her open EPIET tasks, most of which were then completed by the end of month 18.

Although SARS-CoV-2 dominated all things infectious during Yulia's EPIET, she found her way navigating through 'the remaining' infectious diseases quickly where she continues to support us with her analytical skills and practical implementations. She is a lifelong learner and a gifted instructor and will contribute a lot to Baden-Wuerttemberg's Public Health, also thanks to EPIET. (Florian Burckhardt)

Personal conclusions of fellow

Looking back on my EPIET fellowship, it has been an incredibly valuable experience. Despite the challenging times caused by the COVID-19 pandemic, it was a unique opportunity to see policy in action while gaining immediate practical knowledge in epidemiology.

During my time in the programme, I enjoyed participating actively in significant outbreak investigations and in surveillance activities. In my research project it was especially challenging, but rewarding, to use genomic data to evaluate the success of a control strategy of a COVID-19 outbreak. These experiences not only sharpened my data analysis skills but also improved my capabilities in designing and conducting epidemiological studies. Additionally, I

truly enjoyed teaching as it improved my communication skills and my ability to communicate effectively with different experts in infectious disease control.

As I finish this programme, I have become confident and well-prepared for a fulfilling career in epidemiology and infectious disease control, with a wider network and a stronger skill set. Despite limited face-to-face interactions, our cohort formed close bonds, and I will always remember and cherish the last two years.

Acknowledgements of fellow

My gratitude goes to my site supervisor, Florian Burckhardt, my project supervisors, Maylin Meincke and Christiane Wagner-Wiening and my frontline coordinators, Alastair Donachie and Barbara Schimmer, for their expertise, vision and constant guidance that allowed me to get the best out of every project. I am deeply grateful to my department head, Stefan Brockmann, for having trust in me as a MS-track EPIET fellow and for providing valuable feedback. I am also thankful for my incredible team at LGA who readily took over tasks during the demanding period of the COVID-19 pandemic, allowing me to participate in EPIET modules. A special thank you is reserved for the former EPIET fellows, Maylin Meincke and Iris Finci, for their insights and availability. My thanks also extend to the local health authorities for granting us access to additional on-site data. The EPIET/ EUPHEM coordination team and the faculty office deserve recognition for their contributions to the logistical aspects, module execution, and adaptation to a virtual format. Lastly, I express my gratitude to my cohort, whose support, virtual laughs and exchange of ideas have made me proud to be a C2020 fellow.