Summary of work activities
Anna Luczynska
Intervention 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 Anna Luczynska, cohort 2020 of the Intervention Epidemiology path (EPIET) at the Public Health Agency of Lower Saxony (Niedersächsisches Landesgesundheitsamt, NLGA) in Germany.

Pre-fellowship short biography

Anna Luczynska completed her Master's degree in Biology in 2008 at the University of Silesia in Poland. From 2009 to 2014 she was affiliated with the University of Heidelberg as a doctoral student in epidemiology, where she graduated in 2014. From there, Anna went on to engage in field-epidemiology as an employee of Doctors without Borders (MSF). Between 2015 and 2019 she was working as an MSF field epidemiologist in different roles and settings. Anna gained further experience in the field of public health working as an epidemiologist and International Health Regulations (IHR) specialist at the National IHR point at the National Institute of Public Health - National Institute of Hygiene in Warsaw, Poland.

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 epidemiological focus.

The outcomes include publications, presentations, posters, reports and teaching materials prepared by the fellows. 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 Manual[1].

1. Epidemiological investigations

Outbreak investigations

1.1   Investigation of a Multi-Country Salmonella Braenderup outbreak

Supervisors: Dr Elke Mertens, Dr Bettina Rosner

Between 15 March and 6 July 2021, 348 laboratory-confirmed *S*. Braenderup cases were reported in 12 different EU/EEA countries and the United Kingdom (UK). The epidemiological evidence from the UK suggested melons as a possible source of infection. More than 80 outbreak cases were identified in Germany.

We characterised the outbreak in Germany by time, place and person. In order to test the hypothesis that melon consumption increased the risk of getting infected, a case-control study (CCS) was conducted.
We used the resources of an NLGA online panel as a source of controls. The questionnaire focused on the consumption of 27 fruit items within the seven-day period before disease onset (cases) and seven-days before the interview (controls). The control group was additionally queried about fruit consumption in April, when the outbreak occurred. Logistic regression was applied for single and multi-variable analyses to determine adjusted odds ratios (aOR) and 95% confidence intervals (CI) for the association with disease.

The study population consisted of 32 cases and 81 controls. The majority of cases (59%) and controls (57%) were female. The median age was 34.5 years for cases, and 40 years for controls. In the multivariable model, cases were 11 times more likely to have eaten melons than controls (aOR 11; CI 3.6-40), and six times more likely (aOR 6.2, CI 1.4-31) to have eaten Galia melons. Associations respectively for any melon,, and Galia melon in particular (aOR 19, CI: 6-71; aOR 12, CI: 3-66), were two times stronger in April than July.

The case-control investigation identified melons, specifically Galia melons, as the outbreak vehicle. The evidence for Galia melons was further confirmed by microbiological and trace-back investigations and resulted in retraction of the contaminated item from the market and tightening of the import rules for Galia melons from Honduras to Europe.

Role: Anna was co-investigator in this outbreak. She participated in the international meetings as well as in the meetings with the German investigation team. She participated in the design and methodology of the German case-control study; developed an online questionnaire, conducted the study using an online panel as a control group, analysed, interpret the data and discussed the results. She wrote an outbreak report.

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[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

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course – The module offered basic understanding of the principles of outbreak investigations. This included the 10 steps of outbreak investigation, analytical study designs and the formulation of public health recommendations. Fellows practiced outbreak investigations and analysis of data from real outbreaks in various case studies.

Outbreak Investigation Module – The module built on the introductory course and allowed the application of skills and knowledge previously introduced. A core component of the course was a case study on a gastroenteritis outbreak which involved practicing questionnaire design to conduct a survey, carry out basic statistical analysis, writing and critically reviewing outbreak reports.

Multivariable Analysis Module –The module enabled practice and strengthening analytical skills that can be applied to conduct analytical studies in the framework of outbreak investigations. Fellows were trained in selecting the appropriate regression models for the analysis.

Educational outcome

Involvement in this outbreak investigation allowed Anna to conduct the ten steps of an outbreak investigation, including descriptive data analyses, conducting an analytical study and communicating the findings. She developed competencies in the development of questionnaires, analytical skills and formulating recommendations based on available evidence.

2. Surveillance

Supervisors: Dr Elke Mertens, Dr Sophie Rettenbacher-Riefler

2.1 Evaluation of the Meningitis and Encephalitis surveillance system in Lower Saxony (MERIN) with a focus on acceptability

Implemented in 2003, MERIN provides information on circulating enterovirus (EV) serotypes, supports management of patients with suspected aseptic meningitis, encephalitis or acute flaccid paralysis and contributes to the national surveillance in documenting polio free status. MERIN is based on voluntary contributions of participating hospitals. Therefore, our evaluation focuses on acceptability among participants and aims at identifying improvement and expansion possibilities.

An online-based survey (11/2021 to 01/2022) among 32 contributing hospitals (35 wards) investigated the relevance of MERIN objectives for the involved clinicians, satisfaction with the diagnostic offer, timeliness, communication and distribution of results, as well as the required workload. Ideas for improvement were collected in open fields. Aside from the survey, we also assessed data completeness, reporting rates of follow-up forms and timeliness from sample collection to different laboratory results.

We received 30 questionnaires from 21 hospitals and 22 departments, which corresponds to a 66% (21/32) response rate. Satisfaction with the scope of the diagnostic offer (93%), timeliness (84%), communication (99%) and distribution (86%) of the results was high, and 97% of participants assessed their required workload as adequate. Providing digital medical reports as well as regular updates about circulating EV serotypes online were identified as areas for improvement.

Data completeness of selected variables ranged from 78.3 to 99.9%. Reporting rate of follow-up forms was 58%. Median time between sample collection and arrival at the laboratory was two days [IQR 1-3], 11 days [IQR 10-13] for EV diagnostics via cell culture and one day [IQR 0-6] for EV diagnostics via PCR.

MERIN was evaluated as a highly acceptable surveillance system. Enhancing the program with regular reports on circulating EV serotypes and facilitating online access to the laboratory results were identified as areas of improvement. To increase the surveillance coverage, we are currently identifying and recruiting additional hospitals in Lower Saxony.

Role: Anna was principal investigator. Anna wrote the study outline and protocol. Subsequently, she prepared a report of active and no longer active hospitals, as well as identifying potentially relevant hospitals in Lower Saxony and the neighbouring city of Bremen that are currently approached for recruitment for the surveillance system. She developed and constructed an online questionnaire and conducted a survey. After data analyses, she presented the results to the working group. Participating hospitals were each provided with a written report, summarising the overall survey results and implemented improvement measures. The results of the surveillance and surveys data analyses will also be presented at ESCAIDE 2022.

2.2 COVID-19 surveillance activities at NLGA with a focus on new SARS-CoV-2 variants

Supervisors: Dr Elke Mertens, Nicola Jahn

A robust surveillance system is essential for estimating the disease burden of COVID-19 and containing of the pandemic. In the federal state of Lower Saxony, laboratory-confirmed COVID-19 cases are notified to the local public health departments according to the Protection Against Infection Act (Infektionsschutzgesetz; IfSG). They are then electronically recorded and transmitted to the federal and to the national health authorities. The complex and dynamic epidemiology of SARS-CoV-2 required constant adaptation of the system to changing information. Since the end of 2020, the continuous evolution of SARS-CoV-2 has resulted in the emergence of novel SARS-CoV-2 variants. If clear evidence was available of their significant impact on transmissibility, severity and/or immunity, they were considered variants of concern (VOC) and required close monitoring.

The aim of COVID-19 surveillance is to monitor the pandemic situation, evaluate available evidence, estimate the risk for the population in Lower Saxony, and provide health professionals and the public with guidance and recommendations.

We started our monitoring of SARS-CoV-2 variants by combining data from various data sources in an excel line list. The line list was subsequently migrated into an SQL-based internal database system (LabInfo) in order to adapt the system to increasing data volume, reduce computing time and ease the analyses. The VOC situation reports were prepared and distributed weekly to the Ministry of Health and local health authorities.

Simultaneously, timely and frequent provision of routine and ad-hoc COVID-19 surveillance data analyses and reporting was provided to guide and adapt interventions for effective pandemic management.

Role: Anna was co-principal investigator of the VOC surveillance in Lower Saxony project. She was involved in designing the surveillance, developing collection tools, data migration from excel to sql based database and development and preparation of the weekly reports. Anna also developed daily automated reports on COVID-19 by age groups, created a website containing COVID-19 surveillance data as well as performed ad-hoc analyses including analysis of the COVID-19 surveillance data on various infection settings (e.g. hospital, school, long-term care facility) in Lower Saxony.

Training modules related to assignment/projects

EPIET/EUPHEM introductory course - The module introduced basic concepts of surveillance and its key components. Fellows were trained in analysis and interpretation of surveillance data as well as evaluation of an existing system is fit for purpose.

Rapid Assessment and Survey Methods module - The RAS module provided insights in how to set up an alert and response system, how to interpret surveillance data and to monitor interventions.

Multivariable Analysis Module - The module strengthened statistical skills that can be applied for the surveillance data analyses.

Time Series Analysis module – The module built on previous modules allowing better understanding, interpretation and analysis of time-series surveillance data trends for outbreak detection, predicting and forecasting or assessing the impact of interventions.

Educational outcome

Anna supported the surveillance activities of the COVID-19 pandemic in Lower Saxony, which also included setting up a SARS-COV-2 variants surveillance. Preparation of regular reports and ad hoc COVID-19 surveillance analyses not only allowed her to expand data analyses skills in different software environments but also strengthen her reasoning about the relevance, interpretation and the use of surveillance data. Evaluation of the existing surveillance system according to its core attributes provided her with the opportunity to learn how to translate the obtained results to indicate areas of improvement and to formulate recommendations for taking actions.

3. Applied public health research

3.1 COVID-19: Knowledge, attitudes, and practice (KAP): a longitudinal survey in Lower Saxony, Germany, 2020

Supervisors: Dr Delphine Perriat, Dr Elke Mertens, Dr Johannes Dreesman

A comprehensive understanding of the population's knowledge, attitudes and practice (KAP) towards COVID-19 and their relationships is essential for effective pandemic management. This study aimed to investigate KAP regarding COVID-19 over time in Lower Saxony, Germany.

We conducted an online-based longitudinal survey among participants of a non-probabilistic panel in May (period 1) and December (period 2) 2020 to investigate acceptance of preventive measures, risk perception, concerns, trust, and attitude towards COVID-19 vaccination.

Differences between the two periods and association of COVID-19 vaccine confidence with potential predictors were investigated using paired Wilcoxon signed-rank tests and multivariable logistic regression, respectively.

Of 271 participants, 162 (60%) participated in both periods. Among those, the median age was 56 [IQR 46-64]; 100 (62%) were women.

The majority deemed the implemented measures relevant for containing the pandemic (80-98% for different measures in period 1 vs 73-99% period 2) but stated feeling emotionally affected by them. Trust in public health, political and scientific institutions was generally high (ranging 77-94% for different institutions in period 1), but decreased significantly over time (67-92% period 2, p<0.01).

Participants willing to get vaccinated against COVID-19 (79%) reported higher confidence in institutions (OR: 4.17; 95%CI: 1.87-9.68) and were more likely to have been vaccinated against influenza before (OR: 5.24; 95%CI: 2.39-11.8). Concerns about possible side effects were given as the main reason for vaccine hesitancy.

The study showed a general endorsement of the preventive measures and high vaccination acceptance, particularly among those with higher trust in institutions. Political stakeholders were provided with the study results. Monitoring of KAP regarding COVID-19 allows better understanding of the public perspective over time, which is crucial to guide and adapt interventions and communication to build and maintain trust among the population.

Role: Anna was the co-principal investigator of the research project. She participated in the project design, wrote the study protocol and designed the data collection tools. She conducted the survey and analysed the data, prepared the study report for the Ministry of Health and Social Affairs in Lower Saxony and for the study participants. She gave an oral presentation of the results at the national public health institute (Robert Koch Institute, RKI) and exhibited posters at a national (German Society for Epidemiology; DGEpi) and international conference in 2021 (ESCAIDE).

3.2. Evaluation of the use of an online panel as a control group in case-control studies to investigate foodborne outbreaks: Salmonella *Braenderup outbreak in Germany, 2021*

Supervisors: Dr Elke Mertens, Dr Johannes Dreesman, Dr Delphine Perriat, Dr Bettina Rosner

We evaluated the use of controls recruited via an online panel in a case-control study (CCS) investigating a *Salmonella* Braenderup outbreak in Germany (March-May 2021) with melons presumed as vehicle of infection.

For the CCS, one control group was recruited among members of a non-probabilistic online panel ("panel controls") and, for comparison, another control group was recruited via random digit dialling ("classical controls"). We emailed questionnaires to the panel controls and conducted telephone interviews with classical controls. Frequency matching (age, sex, federal state) was performed, before interviews for classical and after questionnaire completion for panel controls. Both control groups were queried about fruit consumption in two study periods: in April (when the outbreak occurred) and in July (when controls were interviewed). We calculated adjusted odds ratios (aOR) and 95% confidence intervals (CI) via single and multivariable logistic regression.

The study included 32 cases, 110 classical and 81 panel controls. No substantial differences in frequency of consumption of melons and other explored fruit items, except cherries and mangos, were observed between the two control groups. Associations respectively for any melon and Galia melon with panel controls (aOR 19, CI: 6-71; aOR 12, CI: 3-66) as well as classical controls (aOR 32, CI: 11-121; aOR 55, CI: 8-1100) were two to three times stronger in April than in July. Recruitment of classical controls took 111h vs 8h for panel controls. Total recruitment costs were five times higher for classical controls.

The deployment of an online panel to recruit controls in a CCS proved successful in the identification of melons, particularly Galia melons, as the outbreak infection vehicle in substantially less time and at considerably lower costs compared to using classical controls. We recommend considering this timely and reliable control recruitment method when investigating diffuse foodborne outbreaks.

Role: Anna was the co-principal investigator of this research project. She participated in the project design, wrote the study protocol and designed the data collection tools. She conducted the study and analysed the data. She presented the results at the national public health institute (Robert Koch Institute, RKI) (oral presentation), and international ESCAIDE conference 2022 (poster presentation). She submitted a peer-reviewed manuscript.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course - The module covered underlying concepts of operational and applied research. It provided insights into the development of study protocols, formulating research questions, aims and objectives of the research. Constructing an analysis plan and creating a questionnaire was also practised.

Outbreak Investigation Module - expanded fellow's knowledge on study design, hypothesis formulation and relevant aims and study objectives. It improved analytical skills, the interpretation of results and formulating appropriate public health recommendations. It allowed practicing scientific report writing.

Multivariable Analysis Module - This module strengthened the fellow's statistical and R statistical software skills.

Rapid Assessment and Survey methods module – familiarised fellows with survey methods, rapid risk assessment and risk communication during fast-evolving situation in an emergency setting.

Time Series Analysis module – provided an opportunity to deepen statistical analysis skills and explore various analytical topics in time-series data.

Project Review Module - The module allowed practicing communication and presenting skills to the multidisciplinary audience. It gave the opportunity to give and receive feedback on both scientific content and the way the project results are communicated.

Educational outcome:

The two research projects allowed Anna to develop competencies in formulating research questions and develop methodology based on identified public health needs. Her involvement in these projects improved her knowledge on how to conduct surveys and analytical studies, improved her analytical skills and interpretation of scientific evidence to assess public health interventions and formulate recommendations. Communicating the results of the projects to different audiences (study participants, team group meetings, institute meeting, scientific conferences, public health authorities including Ministry of Health) allowed her to improve communication skills by reflecting on the communication goals and tailoring the key messages to the target audience.

4. Teaching and pedagogy

4.1 Creating and providing training sessions to the newly established 'R group'.

Supervisor: Dr Johannes Dreesman

The R group was created in October 2021 and initially consisted of five members of the Department for Infectious Disease Epidemiology at NLGA . The group members had no or little experience in using R software. The aim of setting up the group was to implement the analyses and reporting system using R software at NLGA. After six initial training sessions of one hour each, the group was encouraged to perform self-study, share knowledge and issues encountered during weekly meetings. Currently, the groups consist of nine active participants working towards creating an R based website presenting the COVID-19 and Enterovirus surveillance data. Tasks are assigned once a week during regular meetings.

Teaching outcome:

- Creation of the COVID-19 website
- Poster presentation at the German Society of Epidemiology conference and German Society of Geography conference.

Anna also facilitated mapping/spatial analysis part of the Rapid Assessment and Survey Methods (RAS) module. She performed many individual teaching sessions on questionnaire design, utilizing survey software (Lama Poll) and conduction of the surveys at NLGA.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course - This module familiarised fellows with the core concepts of teaching, how to prepare teaching materials, lecture preparation and evaluate the teaching event

Multivariable Analysis Module – This module strengthen the fellow's statistical skills in the R software.

Educational outcome:
The creation of the R group and facilitation of the initial training sessions not only helped Anna to improve and organise her statistical and R capacities but also allowed her to expand on collaborations and team-building skills, to listen and learn from others. The creation of the R-group resulted in the implementation of an analyses and reporting system and increased work-efficiency. Further, it fostered cross-departmental collaboration and allowed capacity building not only in statistical methodology but also towards team-building across disciplines.

5. Communication

Publications related to the EPIET fellowship

- Luczynska A., Dreesman J., Mertens E., Wollenweber M., Perriat D*., Rosner B* 'Timely and reliable outbreak investigation using a non-probabilistic online panel as a source of controls - two parallel case-control studies investigating a *Salmonella* Braenderup outbreak in Germany.' *contributed equally [submission to *Epidemiology and Infection*].

Reports

- "Monitoring knowledge, risk perceptions, preventive behaviours, and public trust in management of the current coronavirus pandemic using an online access panel, Lower Saxony, Germany – round two" – project proposal and study protocol, 2020.
- "Evaluation of the enterovirus (EV) surveillance - the Meningitis and Encephalitis Register (MERIN) in Lower Saxony – project proposal and study protocol, 2021.
- "Evaluation of the use of a non-probabilistic online panel as a control group in a case-control study to investigate a Salmonella Braenderup outbreak" – project proposal and protocol, 2021.
- „COVID-19: Wissen, Einstellungen und Praxis: eine Längsschnittstudie in Niedersachsen, Deutschland, 2020 – report for study participants.
- „COVID-19: Wissen, Einstellungen und Praxis: eine Längsschnittstudie in Niedersachsen, Deutschland, 2020 - report for Ministry of Health and Social Affairs of Lower Saxony.
- „Results of an online survey among hospitals actively participating in MERIN program 2021/2022" – report for study participants and NLGA members.

Conference presentations

- Luczynska A., Perriat D., Hille K., Dörre A., Mertens E., Dreesman J. "Trust in institutions is important for vaccine acceptance - results of the longitudinal survey on COVID-19 in Lower Saxony, Germany, 2020" – ESCAIDE 2021.
- Luczynska A., Beyrer K., Holle I., Baillot A., Monazahian M., Mertens E., Rettenbacher-Riefler S.,
- "Evaluation of 17 years of MERIN (Meningitis and Encephalitis register in Lower Saxony, Germany) surveillance program: acceptability survey and data quality assessment", ESCAIDE 2022.
- Luczynska A., Rosner B., Dreesman J., Mertens E., Wollenweber M., Perriat D 'Timely and reliable outbreak investigation using a non-probabilistic online panel as a source of controls - two parallel case-control studies investigating a *Salmonella* Braenderup outbreak in Germany.' ESCAIDE 2022.
- Luczynska A., Perriat D., Hille K., Dörre A., Mertens E., Dreesman J "COVID-19: Knowledge, attitudes, and practice (KAP): a longitudinal survey in Lower Saxony, Germany, 2020 " - German Society of Epidemiology (DGEpi) 2021.
- Luczynska A., Overesch I., Usipbekova K., Hille K. "Switching to R for data analyses and reporting in the wake of the COVID-19 pandemic – team-building, self-study and peer support in the Public Health Agency of Lower Saxony, Germany" - German Society of Epidemiology (DGEpi) 2022.
- Overesch I., Luczynska A., Usipbekova K., Hille K. "Schnelle Erstellung von frei gestaltbaren, interaktiven Karten in R im Zuge der COVID-19-Pandemie"- German Society for Geography (DGfG) 2022.

Other presentations

- Luczynska A., Perriat D., Hille K., Dörre A., Mertens E., Dreesman J. "Trust in institutions is important for vaccine acceptance - results of the longitudinal survey on COVID-19 in Lower Saxony, Germany, 2020" – Robert Koch Institute, NLGA, 2021.
- Luczynska A., Rosner B., Dreesman J., Mertens E., Wollenweber M., Perriat D 'Timely and reliable outbreak investigation using a non-probabilistic online panel as a source of controls - two parallel case-control studies investigating a *Salmonella* Braenderup outbreak in Germany.' - Robert Koch Institute, NLGA, 2021.

6. Other activities

- Routine surveillance activities of the Infectious Disease Epidemiology team, participation in the regular meetings of the data analysis team, COVID-19 team, Department and Institute meetings.
- Analysis of the 2017-2020 Carbapenem-resistant Enterobacterales reported cases in Lower Saxony.
- Facilitation of onsite data and sample collection of the SARS-CoV-2, anti-Hantavirus and anti-leptospirosis antibody seroprevalence in field workers in Lower Saxony.
- Preparation of the COVID-19 incidence and socio-economic status maps for the project 'Social inequality and COVID-19 in Lower Saxony.'
- Participation in working group consisting of members of different NLGA departments (infectious disease epidemiology, communication, health reporting) to recruit new participants for the NLGA Online Panel.
- Preparation of an interactive session about EPIET program for trainees who will be working in Public Health Agencies in Lower Saxony.

7. EPIET/EUPHEM modules attended

- Introductory Course part 1, 28/09/2020-16/10/2020, virtual
- Introductory Course part 2 - Operational research inject days, 9-10/11/2020, virtual
- Outbreak investigation, 7-11/12/2020, virtual
- Multivariable analysis, 15-19/12/2021, virtual
- Multivariable analysis – Cox regression and Multi-level analysis, 18/03/2021, virtual
- Introductory Course 2020 part 3, 26/04/2021-7/05/2021, virtual
- Rapid Assessment & Survey Methods (RAS), 5- 6/05/2021, virtual
- Biorisk and Quality management, 17-18/01/2022, virtual
- Project Review, 23-26/08/2021, virtual
- Vaccinology, 14/02/2022-18/02/2022, virtual
- Time Series Analyses, 4-8/04/2022, IMM, Rome, Italy
- Management, Leadership and Communication in Public Health, 13/06/2022-17/06/2022, ECDC, Stockholm, Sweden
- Project Review, 29/08/2022-02/09/2022, IMM, Lisbon, Portugal

8. Other training

- 1. Mastering R for Epidemiologic Research course, 22-26/08/2022, Charité, Berlin, Germany.
- 2. Laboratory module, 7-8/06/2021, RKI, Berlin, Germany.

Discussion

Coordinator's conclusions

Anna started her fellowship as an experienced field epidemiologist with a research background. She was involved in four field assignments in the surveillance and research area, along with one outbreak investigation and many additional activities. Through her high commitment, she completed all of these, achieving EPIET objectives and producing high quality outputs. Particular highlights of her fellowship are the use of panel and classical controls in a case-control study as part of *Salmonella Braenderup* outbreak investigation, evaluation of meningitis and encephalitis surveillance system MERIN, and work and projects related to COVID-19 pandemics.

She is highly organised, able to work independently and effectively. Supported by excellent supervision and project availability at the site, her fellowship has been very successful. She improved her competencies and skills working with several important public health topics, together with improving her analytical skills using R.

Anna has considerable professional and technical skills needed for epidemiological and public health related work I wish her all the success in her further career.

Supervisor's conclusions

The contents of Anna's fellowship and her professional development are well described in her portfolio.

During her fellowship at the Public Health Agency of Lower Saxony (Niedersächsisches Landesgesundheitsamt, NLGA), I recognised Anna as a highly motivated and talented person. I firmly believe that she will be successful in her future endeavours.

She started her fellowship already highly qualified, with a sound scientific and methodological basis as well as profound practical work-experience. She familiarised herself quickly with new topics and used the opportunities at the NLGA, RKI and EPIET network to collaborate with and talk to experts, in order to broaden her knowledge and her skills. This is particularly noteworthy, as during almost all of her fellowship, pandemic measures such as travel restrictions and contact restrictions severely impeded working conditions.

Anna is a team player with excellent professional and organisational skills. It was a pleasure to have her in our institution. Our team greatly benefited from her valuable contributions, in particular setting up a self-supporting statistical group or e.g. facilitating automated COVID-19 data output. Anna worked independently and was a most reliable fellow.

Anna is eager to learn and has a genuine interest in interdisciplinary collaboration. Besides her extensive knowledge, expertise and accuracy, she has a humble attitude. Paired with her good communication skills, she is able to motivate her colleagues, to foster constructive teamwork and thereby ensuring high quality output.

Her personal and professional skills enable Anna to communicate complex concepts intelligible to various target groups.

Anna is highly respected by all leaders and colleagues at NLGA. We highly welcome her decision to expand her work at NLGA and greatly appreciate her ongoing support in the fields of infectious disease surveillance and COVID-19 pandemic response.

Personal conclusions of fellow

These two years have given me the opportunity to build on my previous professional experience. Thanks to a variety of training courses, I strengthened my skills and capacities required for the investigation and control of emerging and ongoing disease threats. Being involved in the response to COVID-19 pandemic has been a valuable opportunity that allowed me to expand on my analytical skills, particularly in R software but also enabled me to improve interpretation of surveillance data to support decision-making and formulation of public health recommendations. Participation in the investigation of an international outbreak deepened my understanding for the complexities of outbreak investigations, particularly its collaborative and multidisciplinary efforts.

Design, preparation and conducting an applied research gave me confidence and significantly improved my analytical skills. The teaching assignments were valuable lessons that allowed me to organise my knowledge, expand on my team-building skills, listen and learn from others.

I am grateful for the opportunity to receive constructive feedback and support from the EPIET/EUPHEM network, and last but not least exchanging knowledge and experiences with the network of highly trained and friendly professionals.

Acknowledgements of fellow

First and foremost I would like to thank my supervisors Elke Mertens and Johannes Dreesman for giving me the opportunity to work on these interesting projects and to pursue my EPIET Program at NLGA. Elke provided a great support, friendly working atmosphere, and ensured that my EPIET time was both challenging and rewarding. Johannes, I truly appreciate your guidance and readiness to help, particularly during busy times. I greatly appreciate an excellent supervision I received from my frontline coordinators Zaida Herrador Ortis and Frantiska Hruba. It was a great pleasure to work with you.

I am especially grateful to Delphine Perriat for her enthusiasm, commitment, contribution and endless patience with my R learning process. I am extending my thanks to Bettina Rosner for her expertise, support and ideas and to Sophie Rettenbacher-Riefler for great guidance I received from her.

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