Summary of work activities
Monika Liptáková
Intervention Epidemiology path (EPIET), 2019 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 Monika Liptáková, cohort 2019 of the Intervention Epidemiology path (EPIET) at the National Institute of Public Health (NIPH) in Prague, Czechia.

Pre-fellowship short biography

Monika Liptáková is a medical doctor specialised in the epidemiology of communicable diseases. She completed her M.D. degree at the 3rd Faculty of Medicine at the Charles University in Prague. After graduation she worked for seven years as a field epidemiologist at local and regional levels at the Regional Public Health Authority (RPHA) in Prague. Her responsibilities included surveillance of communicable diseases and outbreak investigation. She has also worked in an international environment in the regulatory (and pharmacovigilance) department of a pharma company. Before joining and during the EPIET programme she worked at the Department of Infectious Diseases

Epidemiology (EPI SZÚ) at the National Institute of Public Health (NIPH) in Czechia, responsible for surveillance of measles, mumps and rubella in Czechia and for other activities.

Methods

This report accompanies a portfolio that demonstrates the competencies acquired during the EPIET fellowship by working on various projects, activities, theoretical fellowship training modules, other modules or trainings and from international assignments or exchanges.

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 Manual[1].

1. Epidemiological investigations

1.1 Outbreak investigations

Questionnaire-based epidemiological analysis of acute gastroenteritis outbreak among employees of two neighbouring institutions sharing a canteen, Prague, 2019

Supervisors: Michaela Špačková, M.D.; Dr. Sooria Balasegaram, MSc.; Hana Orlíková, M.D.; Jan Kynčl, M.D., Ph.D.

On 17 December 2019, a gastroenteritis outbreak occurred among employees of NIPH and the State Institute for Drug Control (SIDC). Monika, as a member of the outbreak control team (OCT), participated in describing the outbreak, source/pathogen identification, and implementation of control measures. She also communicated the results, including via publications. Within a retrospective cohort study among 960 employees, cases were defined as employees with acute onset of diarrhoea, abdominal pain, vomiting or nausea from 17 to 19 December 2019. Data were collected via online questionnaire (demographics, clinical symptoms and eaten food items from the canteen menu) and were analysed using descriptive, univariable and stratified analysis in STATA software. Ten canteen employees were interviewed during the on-site inspection. Stool samples from two cases and two asymptomatic canteen staff were tested by electron microscopy. Of 276 (187 NIPH, 15 SIDC and 74 unknown) employees who responded (response rate: 29%) to the investigation, 39 cases (attack rate (AR): 14%) were identified (22 NIPH, 3 SIDC and 14 unknown), 75% were female, and the median age was 49 years old. One case tested positive for norovirus. No canteen staff reported illness. No food item or environmental sample was tested. Sichuan pork served on 17 December was the most likely vehicle of the outbreak (odds ratio (OR): 5.02; 95% confidence interval (CI): 1.98-12.64). Another potential vehicle was Chinese soup (OR: 2.40; 95% CI: 0.97-5.85). Eating both Sichuan pork and Chinese soup showed an odds ratio of 31.5 (95% CI: 5.0-320.7), compared to people who ate neither. Twenty-two (56%) cases can be explained by consumption of these items. We recommend microbiological testing of cases and all kitchen staff. Analytical epidemiology was important to determine the potential vehicle, as food samples were unavailable and no pathogen was detected in any environmental sample.

The principal investigator was the RPHA (due to national legislation). Monika was a co-investigator of the outbreak, developed the questionnaire (together with colleagues), and translated food menus and data from questionnaires into English for performing analyses in Stata. She communicated with regional epidemiologists and other members of the OCT (food hygiene specialists) about the results of the laboratory tests, questionnaire, analysis of data, and line list. She performed a literature review, and wrote the report and manuscript.

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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 assignments/projects

During the EPIET training programme Monika attended the **Introductory course**, which provides participants with the basic concepts of logistical and analytical approaches to outbreak investigations, including the ten steps of outbreak investigation. She had the opportunity to meet EPIET/EUPHEM/PAE colleagues from abroad and share gained experiences. The module **Outbreak investigations** taught her how to perform analytical epidemiological studies within outbreak investigations using various software packages. During the module, participants were trained in performing hypothesis-generating questionnaires, data entry using EpiData or Microsoft Excel, and stratified analysis of data in Stata. Basic overview on molecular typing methods was delivered. During the module Monika also did practical training in when and how to perform analytical studies for an outbreak investigation, including descriptive, cohort and case-control studies. Within the **Multivariable analysis** module she was provided with a more comprehensive understanding of the principles of how to build an optimal model using linear, logistic, Poisson and Cox regression in Stata. In the **Project Review Module 2020**, Monika presented the project results to other fellows and got feedback from them.

Educational outcome

Monika is able to conduct full outbreak investigations according to the 10 steps concept, be a member of the OCT or its leader, and she is competent at communicating effectively with stakeholders at different levels. She learned how to conduct data analysis (including univariable analysis) using Stata software. For performing multivariable regression modelling there were not enough data available. Monika also gained skills to produce an outbreak report and a scientific publication. The outbreak report was delivered and published in the Bulletin of the NIPH (*Zprávy CEM*). The manuscript was accepted in a peer-reviewed journal (*Epid Microb Immun*).

1.2 Surveillance

First evaluation of completeness and sensitivity of the measles surveillance system, Czechia, January 2018–June 2019

Supervisors: Radomíra Limberková, M.D.; Vladimír Príkazský, M.D., Ph.D.; Hana Orlíková, M.D.; Jitka Částková, M.D., Ph.D.; Dr. Sooria Balasegaram, MSc.

The completeness and estimated sensitivity of measles surveillance was evaluated by using the new electronic version of the national notification system of infectious diseases (ISIN) in order to assess the ISIN performance. The internal completeness of measles reporting in the ISIN for demographic characteristics (week and region of reporting, age and sex), date of onset, complications, hospitalisations, vaccination status, used laboratory methods and country of import from January 2018 to June 2019 was assessed. The capture-recapture method (CRM) comparing datasets from the National Reference Laboratory (NRL) and the ISIN were used. The unique personal identifier was used to match the cases. The total number of measles cases in the population was assessed using the Chapman's formula. The sensitivity of reporting was assessed by dividing the number of reported cases by the CRM estimated true number of cases. In the ISIN we found 100% completeness of many variables. Most missing data were on vaccination status (20%), serology results (55%) and laboratory methods (8%). The ISIN had 765 measles cases registered. The NRL confirmed 653 patient samples. In both systems 612 cases were matched. The CRM estimated that the total number of cases was 816 (95% CI: 809-823) compared to 806 reported cases. The estimated surveillance system sensitivity was 98.8%. 5% (n = 41) of cases that tested positive in the NRL were not reported to the ISIN. Sources of data are not fully independent. A high level of data completeness for many variables was found. Technical changes to ISIN (more mandatory fields and more logical syntax to check data) were recommended to improve data completeness. Data providers will be reminded to report all measles cases in ISIN and to send samples to the NRL.

Monika was the principal investigator of the project. She performed a literature review, wrote the project proposal, analysed the data using CRM and wrote the report. She prepared a manuscript for publication in a peer-reviewed journal (to be finalised) in order to present the results to a broader scientific community and stakeholders. The project results were presented at ESCAIDE in 2021.

Evaluation of the completeness and timeliness of the infant (aged <1 year) pertussis surveillance system, Czechia, 2015, 2017 and 2019

Supervisors: Michaela Špačková, M.D.; Marek Malý, MSc., Ph.D.; Jan Kynčl, M.D., Ph.D.; Dr. Sooria Balasegaram, MSc.; Kateřina Fabiánová, M.D., Ph.D.

The completeness and timeliness of the questionnaire-based enhanced pertussis surveillance system (ESS) for infants aged <1 year and reported pertussis data within the Czech national electronic notification system of infectious diseases (NIDS) were evaluated. Both systems work separately. Data reported within both systems in 2015, 2017 and 2019 were analysed. The internal completeness for demographic characteristics of the confirmed infant pertussis cases, date of symptom onset, hospitalisation and vaccination were assessed. The timeliness of reporting in the NIDS was analysed as a delay between symptom onset and the date of first specimen collection (a

diagnostic delay) and the date when the local public health authority received a notification (a notification delay). Within the NIDS, a total of 121 cases with confirmed pertussis (27, 22, and 72, in 2015, 2017 and 2019, respectively) were notified. A total of 104 cases (27, 13, and 64, respectively) were reported in the ESS. In both the NIDS and the ESS, most cases were one month old (20% and 23%, respectively), 55% of cases were male (in both systems), and a large majority of the cases were hospitalised (81% and 85%) and unvaccinated (77% and 78%). Within the NIDS, one dose of the vaccine was reported in 27 cases, two doses in 14 cases and three doses in 3 cases. Within the NIDS, 100% completeness of variables was found for: date of symptom onset, week and region of reporting, age, sex and place of isolation. The median diagnostic delay was nine days and the median notification delay was 18 days. The data completeness was generally high in the NIDS, except for lack of vaccination in those eligible by age. The completeness was lower in the ESS. Integrating the ESS directly into the NIDS to simplify data flow and avoid duplication of work was suggested.

Monika was the principal investigator of the project. She wrote the project proposal and protocol, cleaned the data, did the data analysis in Stata and wrote the report. The manuscript is planned for field epidemiologists and other stakeholders.

Occurrence of selected zoonoses, Czechia, 1993–2019

Supervisors: Zdenka Manďáková, M.D.; Helena Šebestová, MSc.; Michaela Špačková, M.D.; Jan Kynčl, M.D., Ph.D.

The report provided an overview of cases of selected zoonoses in Czechia from 1993 to 2019, with a focus on those that were not, or were only marginally, addressed in previous articles dedicated to waterborne, food-borne, and vector-borne diseases. The data on the above-mentioned diseases were derived from the notification system EpiDat (1993-2017) and ISIN (2018-2019), a country-wide programme for reporting, recording, and analysis of data on communicable diseases in Czechia. The basic outputs from both infectious disease reporting information systems are regularly published in the Bulletin of the NIPH and on the NIPH (SZÚ) website. Since 2011, the EPI SZÚ has regularly published summary reports in the Bulletin of the NIPH on various groups of infectious diseases. The current report complements and expands the overview of selected zoonoses, which was published in 2015. In this report, case-based data of notified diseases were analysed: leptospirosis, listeriosis, tularemia, Q fever, erysipeloid, brucellosis, psittacosis (ornitosis), hantavirosis, echinococcosis, taeniasis, cysticercosis, trichinosis, Hookworm diseases, toxocariasis, toxoplasmosis and injuries caused by a dog or other animal, using the International Classification of Diseases (ICD-10). The report served as a practical guide for field epidemiologists and for a quick orientation to the topic, including history of notification systems. Basic information about the aforementioned reported diseases with the ICD-10 code, laboratory diagnosis and an overview of the incidence of each disease in Czechia were included. Each disease was accompanied by a table with the numbers of reported cases of the diseases reported to EpiDat/ISIN in the period 1993 to 2019. For some diseases, type of pathogen, clinical manifestation of the disease, mode of transmission and suspected source of infection were also analysed.

Monika was the principal investigator. She wrote the project proposal, did the data analysis and wrote the report. The report in Czech was published in the Bulletin of the NIPH.

Involvement in COVID-19 activities in Czechia

Supervisors: Jan Kynčl, M.D., Ph.D.; Kateřina Fabiánová, M.D., Ph.D.

The COVID-19 outbreak started in Czechia on 1 March 2020, when the first case in the country was laboratory diagnosed. All cases (individual case-based data) are reported by RPHAs in the ISIN. The NIPH reports data from the ISIN to the European Surveillance System (TESSy). Although Monika did not have a separate EPIET project focused on COVID-19, she has been involved in many activities related to COVID-19. In cooperation with colleagues from the EPI SZÚ of the NIPH, she was involved in a validation of COVID-19 data in the ISIN from March 2020 to June 2021. Together with colleagues, she was responsible for communication with regional epidemiologists in case of incorrect information in the ISIN was found during the validation of COVID-19 cases.

Monika participated in the validation of national COVID-19 data together with the colleagues from the NIPH. She was involved as a co-author in the revision of the manuscript for COVID-19 reinfections. This manuscript was published in a peer-reviewed journal (Epidemiol Mikrobiol Imunol).

Training modules related to assignments/projects

During the **Introductory course**, the basics of the different types of surveillance systems were delivered, including all methods and analytical tools used to develop, validate and evaluate the attributes of a surveillance system and identify key indicators. During the **Outbreak investigation module** and **Rapid Assessment and Survey module**, training in the use of mapping tools was delivered. In the **Project Review Module 2021**, Monika presented the measles project results to other fellows and got feedback from them.

Educational outcome

During the surveillance projects, Monika had the opportunity to apply different approaches and several tools to surveillance data to address specific public health questions. In the projects, different tools have been used, from

Microsoft Excel to Stata. She has used the CRM for the first time in her measles project. She also gained skills to produce a surveillance evaluation report. She prepared abstracts for measles and pertussis surveillance projects for the ESCAIDE conference. The measles project results were presented at ESCAIDE in 2021.

2. Applied public health research

Risk factors for hospitalisation in infant (aged <1 year) pertussis cases in Czechia, 2015, 2017 and 2019 enhanced surveillance data

Supervisors: Michaela Špačková, M.D.; Marek Malý, MSc., Ph.D.; Jan Kynčl, M.D., Ph.D.; Dr. Sooria Balasegaram, MSc.; Kateřina Fabiánová, M.D., Ph.D.

A questionnaire-based enhanced pertussis surveillance system (ESS) for infants aged <1 year was initiated in Czechia in 2015 separately from the Czech notification system of infectious diseases (NIDS). Risk factors for hospitalisation of infants with confirmed pertussis in 2015, 2017 and 2019 were estimated. A retrospective cohort study to assess potential risk factors for being hospitalised with pertussis was conducted. The ESS data was matched with the NIDS data. Descriptive, univariate (23 ESS variables) and multivariable analyses were performed using Firth logistic regression and presented as odds ratios (ORs). In 2015, 2017 and 2019, a total of 121 cases (27, 22, and 72, respectively) were notified in the NIDS, while 104 cases (27, 13, and 64, respectively) were reported in the ESS. The median age was two months old; 62 cases were aged zero to two months old and 55% of cases were male (in both). Fifteen cases were vaccinated with at least one dose >21 days before symptom onset. Forty-two cases should have had at least one dose according to their age. Eighty-eight (85%) cases were hospitalised; the median hospitalisation length was eight days. Thirty-one cases reported stay in the intensive care unit (ICU). Hospitalisation was strongly associated with the youngest infants (zero to three months old) (OR: 9.72; 95% CI: 2.97-31.81), after adjustment for smoking in household. The ICU stay was strongly associated with the zero to three months age group (OR: 5.1; 95% CI: 1.4-17.9) and havingcontact with a confirmed/probable pertussis case (OR: 7.1; 95% CI: 1.4-36.5). Our study confirmed some risk factors for pertussis hospitalisation in infants. Maternal pertussis vaccination during pregnancy can protect newborns through transfer of maternal antibodies until the primary immunisation starts. Integrating the ESS directly into the NIDS to improve data completeness was suggested.

Monika was the principal investigator for the data management and analysis. The questionnaire was created and data collection started in 2015, before she started the EPIET programme. She wrote the project proposal, research protocol, translated the questionnaire into English, performed data entry in cooperation with the main project supervisor (manual data transfer from the questionnaire in Excel, PDF, Word, and hard copy into one data source). She analysed the data in Stata, performed a literature review and prepared the report. The translated questionnaire and results of stratified analysis were included as annexes to the research report. The manuscript is planned for submission in 2021 to a peer-reviewed journal and also to the NIPH Bulletin for field epidemiologists and other stakeholders.

Training modules related to assignments/projects

During the **Introductory course** module, Monika was guided through research question identification, development of a study protocol and how to present and defend the protocol in a plenary session. Parts of the study protocol – such as the aim, objectives, methods and expected outcomes – were discussed in detail. Moreover, guidance on how to present the research outcome has been explored in the **Introductory course** and **Outbreak investigation**. The **Multivariable Analysis Module** builds on the **Introductory course** and deepened Monika's statistical skills. The module introduced a variety of regression methods that can be applied for surveillance or to research data analysis.

Educational outcome

Monika was a principal investigator of an operational research project. She has developed a protocol in which she has defined objectives of the study, framed the research question, and described the analysis plan. She performed data entry, cleaning and analysis. During the EPIET, she improved her STATA skills and used knowledge that she gained at the Multivariable Analysis Module to undertake a logistic regression model and a Firth logistic regression model. She formulated conclusions and proposed recommendations based on the collected information, wrote the report and prepared an abstract following guidelines provided by a conference organisation office for the ESCAIDE conference.

3. Teaching and pedagogy

Measles in Czechia – analysis of surveillance data, 1 January 2018 to 30 June 2019 (completeness of data, sensitivity, capture-recapture method)

Monika prepared and gave an online lecture to 11 colleagues mainly from the EPI SZÚ of the NIPH. The aim was to describe basic principles of the capture-recapture method (including presumptions) and to show a practical example of using this method in field epidemiology. The oral presentation was followed by a Q&A session and a final evaluation form. The lecture was well evaluated by the majority of participants.

Surveillance in public health from EPIET/EUPHEM training perspective – ECDC Fellowship Programme EPIET/EUPHEM

Monika prepared and gave two face-to-face lectures to eight colleagues from the same department at the NIPH. The learning objectives were: to refresh principles of surveillance (components, case definitions, type of systems), to show practical examples and to describe basic principles of evaluation of a surveillance system. The oral presentation was followed by a Q&A session and a final evaluation form. She got positive feedback from all participants.

Training modules related to assignments/projects

Monika applied the knowledge presented during the **Introductory course** to both the preparation and delivery of the teaching presentation. In particular, she assessed the needs of the target group, planning, organising, preparing a new teaching material and delivering tailored lectures.

Educational outcome

All presentations were peer-reviewed by a supervisor and a frontline coordinator. Teaching activities helped Monika to be more confident during the presentations. Evaluation of the teaching activity was undertaken and a final reflective report helped to wrap up. This project and the **Introductory course** provided Monika with a solid foundation to work on this independently. The oral presentation provided a useful opportunity to practice communication skills, to synthesise information and to present to an audience.

4. Communication

Publications related to the EPIET fellowship

Publications in peer-reviewed journals (published or accepted)
1. **Liptáková M.**, Špačková M., Balasegaram S., Orlíková H., Kynčl J. Questionnaire-based epidemiological analysis of acute gastroenteritis outbreak among employees of two neighbouring institutions sharing canteen in Prague 2019. *Epidemiol Mikrobiol Imunol, 2021;70(2):91–97.*

2. Fabiánová K., Kynčl J., Vlčková I., Jiřincová H., Košťálová J., **Liptáková M**., et al. COVID-19 reinfections. *Epidemiol Mikrobiol Imunol, 2021;70(1):62-7.*

Publications in the bulletin of the NIPH (published)
3. **Liptáková M.**, Špačková M., Příkazský V., Kynčl J., Orlíková H. Závěrečná zpráva o epidemickém výskytu akutní gastroenteritidy u zaměstnanců dvou velkých institucí v Praze, prosinec 2019. Zprávy CEM (SZÚ, Praha). 2020;29(3):100-103.
http://www.szu.cz/publikace/zpravy-epidemiologie-a-mikrobiologie/zpravy-cem-03-brezen-2020

4. **Liptáková M.**, Manďáková Z., Šebestová H., Špačková M., Kynčl J. Výskyt vybraných zoonóz v České republice za období 1993-2019. Zprávy CEM (SZÚ, Praha) 2020;29(11):431-443.
http://www.szu.cz/publikace/zpravy-epidemiologie-a-mikrobiologie/zpravy-cem-11-listopad-2020

Publication in other bulletins
5. Liptáková M. Kryptosporidióza. Nebezpečí může číhat i ve vašem bazénu. Bazén & Sauna 5-6/2020.
http://bazen-sauna.cz/bazen-sauna-5-6-2020/

Documents published on the NIPH website
6. Overview of the links to websites of national institutions in individual EU/EEA countries, UK and Switzerland data on COVID-19 (section 4). http://www.szu.cz/tema/prevence/aktualni-data-2019ncov-novy-koronavirus

7. Document with the links to websites of professional societies of Czech Medical Association of J.E.Purkyně on COVID-19. http://www.szu.cz/tema/prevence/COVID-19-a-odborne-spolecnosti?lang=1

Translation of a summary or a complete ECDC document:

8. Rapid Risk Assessment: Coronavirus disease 2019 (COVID-19) in the EU/EEA and UK – eleventh update: resurgence of cases. http://www.szu.cz/tema/prevence/onemocneni-vyvolana-novym-koronavirem-COVID-19-v-eu-eea-a-1?lang=1

9. Rapid Risk Assessment: Coronavirus disease 2019 (COVID-19) in the EU/EEA and the UK – twelfth update: increased transmission. http://www.szu.cz/tema/prevence/onemocneni-vyvolana-novym-koronavirem-COVID-19-v-eu-eea-a-2

10. COVID-19 in children and the role of school settings in transmission - first update, 23 December 2020. http://www.szu.cz/tema/prevence/COVID-19-u-deti-a-role-skolskych-zarizeni-v-prenosu

11. Communicable disease threats report, 11-17 October 2020, week 42 (without COVID-19)

12. Communicable disease threats report, 6-12 December 2020, week 50 (without COVID-19)

13. Communicable disease threats report, 7-13 February, week 6 (without COVID-19)

14. Communicable disease threats report, 4-10 April 2021, week 14 (without COVID-19)

15. Communicable disease threats report, 30 May–5 June 2021, week 22 (without COVID-19)

16. Communicable disease threats report, 4–10 July 2021, week 27, (without COVID-19) http://www.szu.cz/tema/prevence/zpravy-ecdc-o-vyznamnych-prenosnych-infekcnich-nemocech?lang=1

Translation of ECDC document in cooperation with the NIPH colleague:

17. Rapid increase of a SARS-CoV-2 variant with multiple spike protein mutations observed in the United Kingdom, 20 December 2020. http://www.szu.cz/tema/prevence/ve-spojenem-kralovstvi-byl-pozorovan-rychly-narust-varianty

Reports

1. Outline for a mini-protocol to conduct analytical investigations during outbreaks (acute gastroenteritis)

2. Outbreak report (Investigation of acute gastroenteritis outbreak among employees of two big institutions in Prague in 2019)

3. Three surveillance project proposals (measles, pertussis, zoonoses)

4. Surveillance protocol (pertussis)

5. Three surveillance reports (measles, pertussis, zoonoses)

6. Project proposal (pertussis research)

7. Research protocol (pertussis)

8. Research report (pertussis)

9. Report on training public health professionals – reflection and evaluation: Measles in Czechia – analysis of surveillance data for 1 January 2018 to 30 June 2019 (completeness of data, sensitivity, capture-recapture method)

10. Reports on training public health professionals – reflection and evaluation: Surveillance in public health from EPIET/EUPHEM training perspective

11. Three oral presentations in training modules (measles, surveillance and informative EPIET/EUPHEM presentation)

Conference presentations

1. **Liptáková M**. Spalničky – výskyt v České republice v období 1.1.2018 – 30.6.2019. VII. Congress of clinical microbiology, infectious diseases and epidemiology KMINE 2019. Oral presentation. 14-16 November 2019, Olomouc, Czechia.
2. **Liptáková M.**, Špačková M., Balasegaram S., Orlíková H., Kynčl J. Questionnaire-based epidemiological analysis of acute gastroenteritis outbreak among employees of two neighbouring institutions sharing canteen in Prague 2019. Poster presentation. ESCAIDE; 16-19 November 2021, online.
3. **Liptáková M.**, Limberková R., Príkazský V., Orlíková H., Částková J., Balasegaram S. First evaluation of completeness and sensitivity of the measles surveillance system in Czechia from January 2018 to June 2019. Poster presentation. ESCAIDE; 16-19 November 2021, online.

Other presentations

1. **Liptáková M.**, Špačková M., Balasegaram S., Orlíková H., Kynčl J. Investigation of acute gastroenteritis outbreak among employees of two big institutions sharing canteen in Prague in 2019. Oral presentation (webex). EPIET Project Review Module 2020.
2. **Liptáková M.**, Limberková R., Príkazský V., Orlíková H., Částková J., Balasegaram S. First evaluation of completeness and sensitivity of the measles surveillance system in Czechia from January 2018 to June 2019. Oral presentation (webex). EPIET Project Review Module 2021.

5. Other activities

Involvement in COVID-19 activities in Czechia

Supervisors: Jan Kynčl, M.D., Ph.D.; Kateřina Fabiánová, M.D., Ph.D.

Although Monika did not have a separate EPIET project focused on COVID-19, she has been involved in many activities related to COVID-19. In cooperation with colleagues from the EPI SZÚ of the NIPH she was involved in: a local Epidemic Intelligence group, the translation of various ECDC and WHO documents and guidelines into Czech language, and participation in many COVID-19 webex conferences organised by ECDC, WHO and other stakeholders.

Being involved in these activities has been useful in terms of strengthening my skills in these areas but also to stay informed on COVID-19 developments and to share information among colleagues and in the NIPH website in order to improve public health in Czechia. Monika is glad that she is a part of the team that publish information on COVID-19 from verified and reliable sources for medical professionals, other health-care workers and for lay on the Institute website.

6. EPIET/EUPHEM modules attended

1. Introductory course, 23/09/2019-11/10/2019, Spetses, Greece
2. Outbreak investigation, 09/12/2019-13/12/2019, Nicosia, Cyprus
3. Multivariable analysis, 20/04/2020-24/04/2020, online
4. Project review, 24/08/2020-27/08/2020, online
5. Time series analysis, 25/01/2021-29/01/2021, online
6. Rapid assessment and survey methods, 27/04/2021, 05/05/2021-06/05/2021, online
7. Vaccinology, 14/06/2021-18/06/2021, online
8. Project review, 23/08/2021-27/08/2021, online

7. Other training

1. Inject Day for multivariable analysis on Cox regression and multi-level analysis, 18/03/2021, online
2. UN BSAFE course, 30/03/2021, online

Discussion

Coordinator's conclusions

Barbara Schimmer, M.D., Ph.D.

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 the application of 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 Monika during her two-year EPIET Member State Track fellowship (cohort 2019) at the Czech NIPH. It has been a pleasure working with Monika during her fellowship. She has consistently demonstrated discipline and enthusiasm for her own learning, and it is gratifying to see that her contribution to the institute has been so highly valued. Monika has been able to expand her own knowledge of communicable disease epidemiology and her analytical and technical skills. She has had to balance the conflicting demands of working in a public health emergency with using the fellowship to improve her skills and 'learning by doing', and has worked collaboratively, based on her experience. Monika has worked extremely hard on developing her skills, as evidenced in her pertussis project protocol and epidemiological analysis, surveillance evaluation for measles and zoonosis report, and outbreak investigation. More importantly, Monika has recognised that the fellowship served as a springboard for her public health career, which will involve continuous learning as well as sharing her newly acquired skills, expertise and enthusiasm with others

at her institute. Monika's willingness to contribute to a team effort will ensure her future success and a continued benefit to public health capacity in Czechia.

Supervisor's conclusions

Michaela Špačková, M.D.

Monika Liptáková has had great work experience in addition to the work at the NIPH in Prague (SZÚ). She'd been working at the regional epidemiology level and also at a regulatory unit in a pharmaceutical company. However, the methods used in field epidemiology have changed a lot in recent years, particularly due to new statistical software and also molecular genetic methods. The EPIET training programme taught Monika a lot. During her fellowship Monika gained some new skills, participated in outbreak investigation and completed some surveillance and research projects. In addition to research qualities, she has also gained and improved her presentation and scientific writing skills. Teaching was one of the activities quite new for her and she did well.

During Monika's training programme her colleagues had a chance to learn some new skills as well, not only from her teaching but also from discussions at the department and small talks. This is a huge secondary impact of the EPIET programme: to mediate the knowledge of what is possible in the field of applied epidemiology. Monika has also set up a network of collaborating colleagues from abroad, which is very valuable for the future work in the field.

Based on Monika's projects and the limitations defined, we plan to undertake some more workshops regarding data entry possibilities, recent possibilities to fully use Excel analytics and broaden the use of STATA for routine data analysis at our department, and to implement regular training meetings (such as journal clubs) in order to learn from each other more. Monika's participation at the EPIET programme was highly valued and appreciated by the scientific community in Czechia. Her projects contributed to the breadth of knowledge in the field of public health and the skills she gained will be of great need in in her future professional activity in infectious disease epidemiology.

Personal conclusions of fellow

The fellowship gave me the opportunity to be exposed to a variety of public health topics, which I had not been exposed to in the past. The programme provided me with the unique opportunity to come upon new statistical methods and deepen my analytic skills, improve my scientific reporting and writing, and practice new software programs (Stata and Geographic Information System (QGIS)). The teaching approach by the lecturers and facilitators during the modules and case studies and the project supervisors allowed me to learn by experience and on scenarios from the real lives of public health experts. Case studies provided valuable insight into model situations.

I am very grateful that I could participate in the EPIET programme, including three ESCAIDE conferences, and I would like to share knowledge and skills from this programme in Czechia. During the two years of the fellowship I gained many skills and a great amount of knowledge in epidemiology through modules and different projects.

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