Summary of work activities
Monika Roberta Korcinska
Intervention Epidemiology path (EPIET)
Cohort 2017

Background

The ECDC Fellowship Training Programme includes two distinct curricular pathways: Intervention Epidemiology Training (EPIET) and Public Health Microbiology Training (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 are part of the ECDC fellowship programme that provides competency based 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.

Intervention Epidemiology path (EPIET)

Field epidemiology aims to apply epidemiologic methods in day to day public health field conditions in order to generate new knowledge and scientific evidence for public health decision making. The context is often complex and difficult to control, which challenges study design and interpretation of study results. However, often in Public Health we lack the opportunity to perform controlled trials and we are faced with the need to design observational studies as best as we can. Field epidemiologists use epidemiology as a tool to design, evaluate or improve interventions to protect the health of a population.

The European Programme for Intervention Epidemiology Training (EPIET) was created in 1995. Its purpose is to create a network of highly trained field epidemiologists in the European Union, thereby strengthening the public health epidemiology workforce at Member State and EU/EEA level. Current EPIET alumni are providing expertise in

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response activities and strengthening capacity for communicable disease surveillance and control inside and beyond the EU. In 2006 EPIET was integrated into the core activities of ECDC.

The objectives of the ECDC Fellowship - EPIET path are:

- To strengthen the surveillance of infectious diseases and other public health issues in Member States and at EU level;
- To develop response capacity for effective field investigation and control at national and community level to meet public health threats;
- To develop a European network of public health epidemiologists who use standard methods and share common objectives;
- To contribute to the development of the community network for the surveillance and control of communicable diseases.

Pre-fellowship short biography

Monika Roberta Korcinska has a Bachelor degree from the Vilnius University and Master degree from the Warsaw Medical University, both in Public Health. After education she worked for 2 years in the National Institute of Public Health in Warsaw, in section of vaccine preventable diseases.

Fellowship assignment: Intervention Epidemiology path (EPIET)

In 11.09.2017 Monika Roberta Korcinska started her EPIET fellowship at the Statens Serum institut, Copenhagen, Denmark, under the supervision of Steen Ethelberg and EPIET frontline coordinator – Alicia Barrasa. This report summarizes the work performed during the fellowship.

Methods

This portfolio demonstrates the competencies acquired during the ECDC Fellowship, EPIET path, 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

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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 EPIET scientific guide[1].

Fellowship projects

1. Surveillance

Title: "Description of laboratory - based reporting of norovirus to inform a new surveillance system in Denmark"

Norovirus infections occur very frequently yet are rarely diagnosed. We aimed to collect and describe existing norovirus patient analysis data in Denmark to assess their usefulness for surveillance purposes. National norovirus laboratory data were collected for 2011-2018, including information on age, sex and identity of the patient, requesting physician, date and analysis results. Patient-episodes were defined using a 30-day time window and analysed descriptively and by time series analysis. Laboratories were inquired concerning methods. We identified 15756 patient-episodes (11%) out of 142822 test-episodes with an increasing trend, 9373 in 2011 vs 32304 in 2018. This corresponded with increased use of PCR analysis in laboratories. The highest positivity rate was in patients aged less than 5 years (15%) or more than 85 years (17%). Tests were geographically skewed with most done in the Capital Region (63% overall) and the least in the Central Region (2%). There was a marked seasonal variation starting from December to February. This is the first attempt to collect a national analysis of norovirus laboratory data. The result of this study revealed the need and benefit of having a passive norovirus surveillance system in Denmark. This study shows that further investigations are still needed, like for example support of outbreak detection, monitoring of seasonal activity or virus genetic diversity.

Role : As a principal investigator Monika covered the following tasks: wrote a protocol, analysed the data, developed a short questionnaire to the representatives of regional laboratories, interpreted the results from the questionnaire, wrote a draft to the ESCAIDE2018, presented a poster on the ESCAIDE 2018, wrote the manuscript and submitted to a peer-reviewed journal.

Supervisor(s): Steen Ethelberg

Title: "Setting up a new laboratory confirmed norovirus surveillance system in Denmark"

In Denmark, around 60-100 foodborne outbreaks are registered annually, and norovirus is found to be the etiological agent in between 35%-50%, thus making it the most frequent cause of foodborne outbreaks, however, norovirus infections are not covered by surveillance. Establishing a surveillance system could help us to explore and understand better the epidemiology of norovirus. Foodborne disease surveillance is essential for estimating the burden of disease, monitoring trends and detecting outbreaks. The Danish health system network has been building capacity in

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1 European Centre for Disease Prevention and Control. European public health training programme. Stockholm: ECDC; 2013. Available from: http://ecdc.europa.eu/en/publications/Publications/.pdf

implementing laboratory-based infectious diseases surveillance systems. The development of the uniform database provides access for healthcare professionals to microbiological test results from all patients and to provide the fundament for a flexible, timely and complete national surveillance of infectious diseases. The automated data collection is likely to provide timely and efficient information for public health actions, if combined with other databases that could assist in identifying outbreaks e.g. Healthcare systems. This protocol describes an aims and procedures in order to establish new laboratory-based norovirus surveillance system in Denmark.

Role: As a principal investigator Monika covered the following tasks wrote a protocol and participated in the meeting with a key-persons to set up the passive surveillance system. Interpreted the existing norovirus laboratory data. Furthermore, participated in the discussion would it be feasible to connect laboratory database with Danish hospital database in terms of outbreak in the healthcare setting detection.

Supervisor(s): *Steen Ethelberg*

2. Outbreak investigations

Title: "Salmonella Typhimurium"

On October 10th of 2017, the National Laboratory at the Statens Serum Institut found an accumulation of six patients with the same date of receipt with *Salmonella* Typhimurium. The Unit of food and waterborne disease at Statens Serum Institut initiated the outbreak investigation. The case-control study was conducted, and electronic questionnaire was sent to the cases. A total of 12 cases and 37 controls were included in the study. Based on the results of the case-control study, disease onset dates as well as product supply and distribution outbreak investigation team concluded that the outbreak infection vehicle was specific sliced salami from uncooked pork meat, produced in Spain.

Role: As a co-investigator Monika covered ᵃthe following tasks: performed descriptive and univariate analysis in Stata and participated in the tele-conference with investigators from other EU countries.

Supervisor(s): *Luise Müller*

Title: "Gastroenteritis following a wedding reception"

In January 2018, the Danish Veterinary and Food Administration (DVFA) was informed about multiple cases of diarrhea and vomiting among around 625 attendees of a wedding reception held in January 2018 at a banquet facility. The Food and Veterinary Inspection authorities immediately initiate investigation and contact the Outbreak Investigation team at Statens Serum institut (SSI). The electronic questionnaire was prepared by the local food authority. A retrospective cohort study was conducted among the wedding attendees to investigate the causes of disease and establishing links between eating different food items and the outcome. Because of the limited number of responses, particularly among non-cases, it was not possible to perform an enlightening statistical analysis. Illness was not statistically associated with any of food items consumed during the event. The etiology of the outbreak remained unknown.

Role: As a co-investigator Monika covered the following tasks: Collaborated and coordinated with the food authorities, visit the Food and Veterinary Administration to discuss the further steps in outbreak investigation. Cleaned and analysed the data. Wrote the outbreak investigation report.

Supervisor(s): *Steen Ethelberg*

Title: "Gastroenteritis following a seafood festival"

On March 14th 2018, the Danish Veterinary and Food Administration (DVFA) was informed about multiple cases of gastrointestinal illness among guests attending a seafood festival in the evening in March 2018 at the conference centre. Approximately 344 guests had visited the restaurant. A retrospective cohort study was conducted among the wedding attendees to investigate the causes of disease and establishing links between eating different food items and the outcome. An electronic questionnaire was prepared using the web tool "Enalyzer".

A total of 65 people fulfilled the case definition of having either diarrhoea and/or vomiting and symptoms started in a median of 48 hours after consumption of food. The shape of the epidemic curve suggested a point source outbreak with possible person-person transmission for three cases. The analytical epidemiological investigation pointed to raw oysters as the most likely vehicle of transmission and was associated with an unadjusted RR of 2.5. As a conclusion, the epidemiological and laboratory investigations ,both support the suspicion of a norovirus outbreak with raw oysters as the source.

Role: As a co-investigator Monika covered the following tasks: Collaboration and coordination with the food authorities and EPIET fellow. Developed the questionnaire in "Enalyzer". Cleaned and described the data. Performed the univariate and multivariable analysis in Stata. Participated in outbreak investigation report writing.

Supervisor(s): Steen Ethelberg

Title: "Gastroenteritis in a canteen"

In April 2018, the Danish Veterinary and Food administration (DVFA) was informed about multiple cases of diarrhoea and vomiting during week 15 among approximately 100 persons working at an office community in Arhus and sharing a canteen. The canteen is providing meals for the office community and serves daily buffet-like lunch meals consisting of two warm dishes, a cold food buffet with cold cuts and a buffet with a selection of mix salads. On the 4th of May 2018 DVFA contacted the Outbreak Investigation team at Statens Serum Institut (SSI) for assistance in the outbreak investigation. A retrospective cohort study was conducted among the wedding attendees to investigate the causes of disease and establishing links between eating different food items and the outcome. An electronic questionnaire was prepared and sent to the representatives of the eight companies served by catering company.

The descriptive analysis presented that 57% of the people who ate in the canteen at least one day during Week 15 fulfilled the case definition and of those 79% had diarrhoea and 60% had vomiting as one or more of their symptoms. A total of 107 participants fulfilled the case definition. The shape of the epidemic curve suggested a point source outbreak with possible person-person transmission for three cases. The analytical study pointed at warm dishes consumed on Monday and/or Tuesday might be a source of illness (RR=1.51 and 1.63, respectively). No food or stool samples were available for analysis. From the results of analysis, we could not identify which of the four warm dishes served on Monday and/or Tuesday could be the vehicle of the outbreak.

Role: As a principal investigator Monika covered the following tasks: Performed descriptive and univariate analysis in Stata. Wrote the outbreak investigation report.

Supervisor(s): Charlotte Kjelsø

Title: "Gastroenteritis in a canteen"

On 18th August the Danish Veterinary and Food Administration (DVFA) was informed about multiple cases of gastrointestinal illness among people eating lunch on August 15th 2018 delivered by Company located in Copenhagen. All cases ate the lunch from one "route" of approx. 400 lunch boxes delivered to five different workplaces. Investigation revealed that the Company had used previously withdrawn white beans with elevated lectin for a bean salad. Therefore the DVFA suspected that white-beans salad as a possible source of the outbreak. On a joint DVFA and SSI visit to catering company on Friday 17th August. The objectives of the outbreak investigation was to support the hypothesis that the cause of the outbreak is lectin poisoning and the vehicle is white-beans salad. A retrospective cohort study was conducted among employees of the five companies.

The descriptive epidemiology showed 44 people from 194 registered having symptoms. 35 cases have been eating the lunch served by the catering company. The univariate analysis showed that persons who have eaten white bean salad have had almost four times higher risk of being ill, compared to people who had not eaten white bean salad (RR 3.56, p <0.05). This study supports the hypothesis that white-beans salad eaten in the canteen on 15th August is the cause of the outbreak. No stool samples were available for analysis, but the coincidence of the beans used, the symptoms of the sufferers and the time and duration of the outbreak indicate lectin poisoning.

Role: As a co-investigator Monika covered the following tasks: Cleaned the data and performed the descriptive and univariate analysis.

Supervisor(s): Charlotte Kjelsø

Title: "Gastroenteritis after a conference dinner "

On 4th of October 2018, the Danish Veterinary and Food Administration (DVFA) was informed about multiple cases of gastrointestinal illness among guests attending a dinner September 28th, 2018 in the Conference venue located in Copenhagen. The dinner had a set menu including four different courses. On 5th of October DFVA contacted the Outbreak Investigation team at the Statens Serum Institut (SSI) to ask for the assistance in outbreak investigation. A retrospective cohort study was conducted among the wedding attendees to investigate the causes of disease and establishing links between eating different food items and the outcome. An electronic questionnaire was prepared using the web tool "Enalyzer". The food was divided into 5 groups (snacks, starter, first meal, second meal, dessert and wine) and every group included a list of food items to choose from.

The descriptive epidemiology showed that 30 people from 54 who attended the dinner reported gastrointestinal illness. A total of 29 cases met the case definition. Specimens from three cases were positive for norovirus. The symptoms of the cases (vomiting in >60% of cases), the maximum median incubation period of 48 hours, the median duration of illness of 2-3 days and no bacterial agents found in the two specimens match the Kaplan criteria and support that the causative agent of this outbreak was norovirus. The shape of the epidemic curve suggests a point source outbreak on Friday. As a conclusion, the epidemiological and microbiological investigations support the suspicion of a point source outbreak on Friday caused by norovirus GI.P1-GI.1.

Role: As a co-investigator Monika covered the following tasks: Visited the canteen and collaborated with food-authorities and epidemiologist. Developed the questionnaire in "Enalyzer" and described the data in Stata. In addition, performed univariate analysis, formulated the conclusions and wrote the outbreak investigation report.

Supervisor(s): Laura Espenhain

Title: "Gastroenteritis linked to one catering company"

On 5th April 2019 early morning, the Danish Veterinary and Food administration (DVFA) was informed by a catering company about multiple cases of diarrhea occurring during week 14 among approximately 30 persons. The catering company serves lunch meals to around 53 different companies in the Copenhagen area. DFVA contacted the Outbreak Investigation Team at the Statens Serum Institut (SSI) to ask for the assistance in outbreak investigation. A retrospective cohort study was conducted among the wedding attendees to investigate the causes of disease and establishing links between eating different food items and the outcome. An electronic questionnaire was prepared using the web tool "Enalyzer". The shape of the epidemic curve suggested a point source outbreak.

The univariable analysis pointed at several dishes consumed over the exposure period. The multivariable analysis pointed to the consumption of the free-range chicken and oyster mushroom salad with curry and Danish winter apples served on Wednesday 3rd April 2019 as the likely vehicle of this outbreak. Persons who consumed the chicken had 9.18 times higher risk to be ill than someone who did not consume chicken during the exposure period. As a conclusion, the analysis pointed to consumption of the free-range chicken and oyster mushroom salad with curry and Danish winter apples served on Wednesday 3rd April 2019 as the most likely source of the outbreak.

Role: As a co-investigator Monika covered the following tasks: Collaborated with food-authorities, EPIET, SSI colleagues and travelled to the canteen. Developed the questionnaire in "Enalyzer". Participated in data cleaning and analysis. Performed univariate and multivariable analysis. Discussed on different data management scenarios and formulation of the hypotheses; Participated in outbreak investigation report writing.

Supervisor(s): Steen Ethelberg and Charlotte Kjelsø

Title: "Outbreak during an annual ladies circle meeting"

On 22th May 2019, the Danish Veterinary and Food administration (DVFA) informed Statens Serum Institut (SSI) about multiple cases with gastrointestinal symptoms occurring during the event held on 17-20th May. The program of the Event was difficult to follow due to the consumption of the food on different occasions in separate 14 guest houses. The electronic questionnaire was conducted by DFA and sent by email to the participants of the Event. A retrospective cohort study was conducted among the persons eating food provided by the organizers of the Event to investigate the cause of the disease. In total there were 359 respondents, 205 (57 %) reported being ill. Among the people who reported being ill, 130 (65%) experienced diarrhoea, 125 (61%) experienced vomiting and 193 (95%) experienced nausea. We grouped information about exposures and created variables (Friday_dinner, Saturday_breakfast, Saturday_lunch and Saturday_dinner) which contained responses for all dishes consumed during different occasions.

The univariable analysis pointed out that persons who consumed the meals on Friday dinner had 8.36 times higher risk to be ill. Based on the descriptive and univariate analysis we assumed that most likely people become ill after

consuming food on 17th May. For this reason, we defined a cohort with people who had a possibility to be exposed and ate at least one dish during Friday dinner. The multivariable analysis included exposures (dishes) with significant associations with cases from the univariable analysis. The best fitting model included following dish, "Torskemousse med hasselnødder, solbær, syltet rødløg, friske ærteskud og citronskal" (RR: 2.3 CI [1.32-4.09]), which was served during the dinner on Friday 17th May. Specimens from a few cases were positive for norovirus genome group I. In conclusion, the epidemiological and microbiological investigation pointed that Norovirus was the cause of the outbreak. Furthermore, the exposure has occurred with the food consumption on Friday (17th May) night and there may have been virus contamination on more than one of the dishes.

Role: As a co-investigator Monika covered the following tasks: Performed descriptive, univariate and multivariable analysis in Stata.

Supervisor(s): Steen Ethelberg

3. Applied epidemiology research

Title: *"Age and sex-specific trends of Campylobacter cases in Denmark"*

Background. *Campylobacter* infection (CI) is the most common bacterial cause of foodborne illness in Denmark. This study investigates age- and gender-specific incidences of CI over a 24-year period in Denmark and discusses a range of possible explanations for the observed trends.

Methods. Notifications of CI from 1993-2017 were extracted from the Danish Register on Enteric Pathogens. Each notification included information about the patient's age, sex and geographical location. A subset of notification data from 2008-2014 was used to assess travel information. Quarterly updated demographic statistics were obtained from Denmark Statistik. Age- and sex-specific CI incidence ratios were computed. The proportion of CI by travel history was measured. Overall proportion of users of proton-pump inhibitors (PPI) by age was counted to explore a possible correlation with incidence. Finally, we reviewed the literature and described other possible explanations, including demographic factors.

Results. The distribution of cases shifted towards older (31+) age groups over the last two decades. The proportion of travel-related cases and species-specific cases remained stable in all age groups. Overall age-specific PPI use increased over time, but was not significantly associated with CI incidence (ρ:0.63). Significantly higher CI incidence rates were observed overall for men, except for women aged 20-29 years (p-value:<0.001).

Conclusions. From 1993-2017, there was an increased risk of CI among 31 years or older in Denmark. It was not possible to identify a specific reason for this trend. However, the reason could be multifactorial and PPI use could play a role. The shift of burden of CI may continue to increase towards people in age group 31 years and older in the future, further investigations of possible explanations are essential to understand and prevent the infection.

Role: As a principal investigator Monika covered the following tasks: Developed the protocol, participated in the meeting with experts. Performed data analysis in R. Communicated results during the EPIET-forum meetings and Mini-Module. Wrote an abstract to ESCAIDE 2019.

Supervisor(s): Steen Ethelberg and Katrin Gaardbo Kuhn

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4. Communication

Publications

Manuscripts submitted to peer reviewed journals (in review process)

Korcinska MR et al., Detection of norovirus infections in Denmark, 2011-2018 [submitted to the journal *Epidemiology and Infections*]

Reports

Korcinska MR, Outbreak Investigation Report FUD1630, Denmark February 2018

Helmuth Glode I, Korcinska MR, Outbreak Investigation Report FUD1655, Denmark March 2018

Korcinska MR, Outbreak Investigation Report FUD1669, Denmark May 2018

Kjelsø C, Korcinska MR, Outbreak Investigation Report FUD1688, Denmark August 2018

Espenhain L, Korcinska MR, Outbreak Investigation Report FUD1705, Denmark October 2018

Korcinska MR, Chaine M, Outbreak Investigation Report FUD1770, Denmark May 2019

Rust Graversen S et al., Outbreak investigation conclusion FUD1781, Denmark May 2019

Conference presentations

Korcinska MR, Dalsgaard Bjerre K, Dam Rasmussen L, Tvenstrup Jensen E, Kølsen Fischer T, Barrasa A, Ethelberg S, Description of the norovirus laboratory data to inform a surveillance system in Denmark, ESCAIDE 2018. Poster presentation

Other presentations

1. Outbreak investigation Module in Berlin, National measles outbreak among asylum seekers in Poland in 2016, 4th December 2017, fellow-to-fellows presentation
2. Nordic Mini-Module in Oslo, Description of the norovirus laboratory data to inform a surveillance system in Denmark protocol presentation, March 2018
3. EPIET/EUPHEM2 forum meeting, Description of the norovirus laboratory data to inform a surveillance system in Denmark, 28th August 2018, poster presentation
4. Statens Serum Institut, PHD Epidemiology course, Introduction to public health surveillance of infectious disease, 22nd October 2018, oral presentation
5. Time Series Analysis Module in Brussels, Moving epidemic method with norovirus seasonality data, October 2018, fellow-to-fellows presentation
6. EPIET/EUPHEM forum meeting, ESCAIDE highlights, 28th October 2018

2 A weekly meeting at the Department of Infectious Diseases Epidemiology & Prevention. EUPHEM, EPIET, and PhD fellows take turn on presenting current projects and challenges.

7. EPIET/EUPHEM forum meeting, Draft for the Norovirus project manuscript, 30th January 2019

8. EPIET/EUPHEM forum meeting, Age and sex-specific trends of Campylobacter cases in Denmark, 27th February 2019

9. Nordic Mini-Module in Copenhagen, Denmark, Age and sex-specific trends of Campylobacter cases in Denmark, 11th March 2019

5. Teaching and pedagogy

Title "*PhD course in infectious Disease Epidemiology*"

It was a three days course placed at the Statens Serum Institut in October 2018. The target groups were PhD students from different universities in Denmark. The aim was to familiarize students with the most important areas in Epidemiology (Surveillance, Outbreaks, Vaccinology etc.). The day was starting with lectures and ending with practical exercises for work in small groups. Every exercise had a short summary. In addition, first two days participants were participating in the case studies.

My tasks were:

• to speak about the Public Health surveillance system and provide examples based on the Danish surveillance system. (Presentation)

• to facilitate two case studies: "Paralytic Illness in Ababo" and "An outbreak of gastroenteritis in Kalundborg in Denmark". (Case studies facilitation)

Reflection

I learnt a lot from the very beginning by contributing in development of the programme, preparation of the evaluation form to preparation of the individual presentation. Preparing and delivering a presentation on my own has developed my communication and independency skills. Facilitating case studies helped me to improve my skill in capacity of explaining epidemiological aspects and encourage participants to the discussion.

Generally, students were active during the presentations and practical exercises which led to many interesting discussions. The course was evaluated positively by all the participants.

6. Other activities

• I was involved in preparation of the evaluation for the PHD Epidemiology course at the Statens Serum institut

• Administration of the EPIET/EUPHEM Wednesday forum meetings at Statens Serum Institut

• Organization and administration of Nordic Mini Module in Copenhagen, 11-12th March 2018

7. EPIET/EUPHEM modules attended

1. Introductory Course Module, 25th September-13th October 2017, Spetses, Greece
2. Outbreak Investigation Module, 04-08th December 2017, Berlin, Germany
3. Multivariable Analysis Module, 16-21th April 2018, Nicosia, Cyprus
4. Rapid Risk Assessment Module, 14-20th May 2018, Athens, Greece

5.   Project Review Module, 27-31th August, Lisbon, Portugal

6.   Time Series Analysis, 5-9th November 2018, Brussels, Belgium

7.   Vaccinology Module, 24-28th June 2019, Rome, Italy

8.   Project Review Module, 26-30th August, Prague, Czech Republic

8. Other training

1.   Nordic Mini Module in Oslo, Norway 2018

2.   Nordic Mini Module in Copenhagen, Denmark 2019

3.   PhD epidemiology course at Statens Serum institut, Copenhagen, Denmark 2018

Discussion

Supervisor's conclusions

During the two-year fellowship at the SSI in Copenhagen, Monika Roberta Korcinska has been part of the staff at the Department of Infectious Disease Epidemiology & Prevention, where she was placed in the Unit of Zoonotic and Food- and Waterborne Diseases. As such, Monika has taken part in the day-to-day work at the department and in the unit. Additionally, Monika has conducted several public health projects as described above and taken part in the investigation of a large number of outbreaks. The departmental projects have been of different types, involving different diseases and methods. Monika has worked carefully and dutifully on all projects, being keen to get a thorough understanding of the subjects and also being particular about getting the technical details right. She has worked very well with her colleagues and the group of other EPIET fellows based at the SSI. Monika has clearly developed a lot during her fellowship, both scientifically and on a personal level, thriving with the Danish work culture and learning the quite difficult Danish language. It's been a pleasure to have an enthusiastic and always glad and helpful fellow around for two years. Monika will be missed as a charming person and a very good colleague.

Coordinator's conclusions

Monika entered this fellowship with great enthusiasm, willing to expand her skills in applied epidemiology and I believe she has achieved her objective. Monika is an independent worker that knows when to seek for support and during her fellowship she has successfully expanded her epidemiological skills and has greatly increased her capacity to identify key points to investigate further within surveillance data as she has demonstrated on her project describing the pattern on norovirus infection in Denmark and the analysis of the laboratory practices in the country, or her project identifying changes on the age and sex-specific epidemiology of campylobacteriosis.

It's been a pleasure to accompany Monika in these two year, I will be very happy to recommend her for any kind of public health related position.

Personal conclusions of fellow

Completing the EPIET Programme has been a big step forward for me towards a career in epidemiology and public health. I feel more confident by working independently on the research projects, carrying out analyses and investigating outbreaks. I strengthened and developed analytical skills which I hope to implement in my future career. This program expanded my personal and professional network and I met wonderful people. I feel very privileged being part of the EPIET Programme and be surrounded by such professional people like facilitators, supervisors and co-fellows.

Acknowledgements of fellow

First of all thanks to Department of Infectious Disease Epidemiology & Prevention at Statens Serum Institut and for every college personally for welcoming me so warmly and making me feel like home. Many thanks to all the people with who I have been working on my projects: Luise, Laura, Katrin, Steen, Charlotte, Karsten, Elsebeth, Lasse, Thea and many others who contribute in my project development by giving a fruitful feedback. Special thank you to Katrin for guidance and support from the very beginning. Many thanks to my excellent supervisor Steen, for professional supervision and all the shared knowledge. As well many thanks for my EPIET coordinator-Alicia for enthusiasm, feedbacks and availability at any time.

Finally, I would also like to thank the EPIET and EUPHEM fellows (Ida, Guido, Manon and Daniel) for constructive interactions and support through all two years fellowship.