



Summary of work activities

Sidsel Skou Voss

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 Sidsel Skou Voss, cohort 2019 of the Intervention Epidemiology path (EPIET) at the Statens Serum Institute (SSI), Copenhagen, Denmark.

Pre-fellowship short biography

Since her graduation as a medical doctor, Sidsel Skou Voss committed to become a general practitioner, and developed a strong clinical background working for several years as a clinician in a broad areas of specialties. However, throughout these years, the field of Public Health caught her interest, and in June 2019 she concluded the five-year specialisation in Public Health of Medicine.

Up until the beginning of the fellowship, Sidsel had been working two years at the Department of Infectious Disease Epidemiology and Preventions, SSI, and two years at the National Board of Health. She is familiar with the Danish surveillance system, the organisational approach to communicable diseases, the Danish childhood vaccination programme and decision-making processes related to this. She has been working primarily with vaccine-preventable diseases, but has also been regularly involved in technical meetings about food- and waterborne outbreaks in Denmark.

Methods

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

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

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

Results

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

1. Epidemiological investigations

Outbreak investigations

1.1 An outbreak of gastroenteritis after eating in a buffet at a restaurant in Esbjerg, 8 and 9 November 2019

Supervisors: Luise Müller, Laura Espenhain, Guido Benedetti, Steen Ethelberg.

Over a period of two days, a restaurant in the city of Esbjerg, received feedback from six independent groups of customers about illness after eating from a buffet in the restaurant on either 8 or 9 November 2019. The local food authority sent out questionnaires to 99 persons concerning symptoms and exposure, of whom 36 responded. The local food authority asked Infectious Disease Epidemiology and Prevention, SSI, to help identify the source of infection by analysing data. We used estimated measures of association using logistic regression. The study population consisted of 36 persons from six different companies, of whom 20 were cases. Most cases (85%) had onset of symptoms from 10pm on 8 November till 11 am on 9 November. The majority of cases had diarrhoea, nausea and abdominal pain. Only a few cases vomited, and all cases had diarrhoea. The symptoms combined with a short incubation period may indicate either *Bacillus cereus* (incubation time 8-16 hours) or *Clostridium perfringens* (incubation time 6-24 hours). Persons who ate basmati rice (RR = 2,75; 95% CI 1.58–4,78) and butter curry with pork (stew) (RR = 2,56; 95% CI 1.54–4,25) were more likely to become ill. No other food items were significantly associated with illness. Our epidemiological investigation suggested that the consumption of rice or butter curry with pork caused the outbreak. No microbiological analyses identified the agent. Basmati rice can cause infection with *Bacillus cereus* if it is stored in the buffet at too low temperature, and butter curry with pork (stew) can cause infection with *Clostridium perfringens*, for the same reason or due to slow cooling, if the dish has been served over several days. It was therefore recommended that cooling, reheating and keeping warm procedures are thoroughly reviewed for the mentioned foods/dishes to prevent future outbreaks.

Role: Principal investigator. Sidsel cleaned and analysed the data. She wrote a report and reported back the results to the local food authorities.

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

1.2 An outbreak of shigellosis in Denmark, August 2020

Supervisors: Luise Müller, Steen Ethelberg

SSI in collaboration with the Danish Veterinary and Food Administration (DVFA) and the National Food Institute (DTU Food) investigated a shigellosis disease outbreak in Denmark that occurred in August 2020. Forty-four persons were linked to this outbreak. The investigation showed that the source of infection was probably from imported fresh mint sold in greengrocers/bazaars. Trace-back investigation was challenged due to a lack of invoices for purchases of mint among the involved greengrocers/bazaars. Fresh mint is a rare vehicle for *Shigella* bacteria, but is relevant to be aware of in future *Shigella* outbreaks investigations. No analytical study was conducted.

Role: Principal investigator. Sidsel conducted the interviews, cleaned and analysed the data. She wrote a report and drafted a manuscript which has been submitted to *Epidemiology and Infection* (not yet published).

1.3 COVID-19 outbreak investigations

Supervisors: Luise Müller

Denmark has built a COVID-19 surveillance system which makes it possible to define and describe outbreaks in schools, elderly homes etc. As the transmission of COVID-19 in different settings is still not fully understood, investigation of these outbreaks is a good opportunity to improve the understanding of the transmission and to evaluate the effect of control measures. The aim is to improve counselling and management to prevent future outbreaks of COVID-19 as well as other outbreaks in the future. Sidsel performed three such COVID-19 outbreak investigations.

COVID-19 outbreak at a four-day course with accommodation in Denmark, September 2020

September 2020, 34 participants of whom 29 (85%) were infected.

Learning outcomes:

- Even though the course management complied with all health professional guidelines, massive infection took place during this course. It is not possible to determine exactly how the infection spread, but transmission from an asymptomatic super-spreader probably played a crucial role during coffee breaks and mingling.
- The primary case was apparently infected after meeting with an asymptomatic colleague for 10 minutes, which is below the limit set by the health authorities (minimum 15 minutes).
- A large proportion of those infected had a negative result on the first test taken immediately after the course/exposure and got a positive result on the second test - this underlines the importance of follow-up testing and isolation.
- The app 'Smittestop' did not work as intended in the situation (they could not register as infected, and contacts were not been notified that they had been close to an infected person)
- Cases and close contacts experienced that The Patient Safety Authority (who does the contact tracing) were not able to link cases together before the course leader sent a list of participants, even though cases tried to report themselves individually.

COVID-19 outbreak at a boarding school in Denmark, October 2020

October 2020, 138 students of whom 138 (56%) were infected.

Learning outcomes:

- Dividing boarding school students into smaller groups in order to limit the spread of infection was not effective.
- It is not considered realistic or appropriate for the boarding school staff to check whether the students comply with the hygiene precautions in a place where many young adults are gathered for the purpose of being close and to get to know each other.
- The students complied well with the testing rules before arrival at the school after staying outside the boarding school. The outbreak started due to too short quarantine period. Strict rules: test before arriving at the school, good quarantine facilities and sufficiently long quarantine period is considered to be the most effective (and only realistic) method of preventing outbreaks at boarding schools.
- Being in the sauna at the school at a specific date was associated with a six-fold higher risk of being infected with COVID-19. Use of a sauna may be contraindicated in an epidemic situation.
- Registration of international students in the mobile test sites caused problems. Persons without social security numbers should be given a replacement civil registration number and then be included in the test system in the same way as Danish persons.

COVID-19 outbreak in an elderly home in Denmark, November-December 2020

November-December 2020, 55 residents (48%) and 57 employees (30%) were infected.

Learning outcomes:

- In institutions where people live (nursing homes, boarding school, treatment homes, etc.), it is important to have a contingency plan that contains a description of how and where to initiate cohort isolation of infected people, early in an outbreak.
- It requires great effort to isolate infected residents/citizens with dementia. Facilities that enable isolation elsewhere (possibly cohort isolation if several are infected) are crucial to the success of the isolation.
- Lack of staff should be remedied quickly and preferably with contributions from the municipality, so that the management of the nursing home/institution is not alone with the problem, enabling the infection to spread further.
- Frequent routine testing of employees and residents is considered appropriate, as many only develop symptoms several days after a positive test. Frequent testing of staff who have several places of employment is particularly important.
- Testing of patients prior to discharge from hospitals to the elderly homes is important to prevent infection spread in elderly homes.
- An action plan is needed when residents do not want/cannot comply with the infection hygiene measures, including distance and isolation. Employees have no sanction options that can be used to initiate forced isolation of residents with dementia.
- In the event of major outbreaks, the elderly home is 'transformed' into a hospital, as many patients have to be treated at once. Assistance from health professionals, e.g. from experts in infection hygiene and general outbreak management early in the process will be beneficial

Role: Principal investigator in four of the outbreaks, co-investigator in one outbreak. Sidsel investigated two food- and waterborne outbreaks, using the 10 classic steps of outbreak investigations, conducted interviews, sent out questionnaires, analysed data, and produced final outbreak reports. Sidsel performed the COVID-19 outbreak investigations using a specific template/guide. She performed interviews with key persons, wrote final outbreak reports and presented the results for the institutions that had the outbreaks. In one of the investigations, Sidsel and her co-investigator performed a case-control study.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course - introduced fellow to the main concepts of outbreak investigations, study designs and analysis. They got familiar with the 10 steps of outbreak investigations and with how to practice them and analysis of data from outbreaks in case studies.

Outbreak Investigation Module - was the main module for outbreak investigations. It built on the Introductory Course and deepened the understanding of outbreak investigations. A core component of the course was a multi-day case study on a cohort study for an outbreak of gastroenteritis.

Multivariable Analysis Module - built on the Introductory Course and deepened statistical skills. The module also provided added benefits for outbreak investigations, as it allowed for a more in-depth analysis of any analytical studies done during outbreak investigations.

Rapid Assessment and Survey Methods (RAS) Module - covered aspects of (survey) sampling including spatial sampling, surveillance and response in (complex) emergencies risk assessment and risk communications. As such, the module provided fellows valuable skills and knowledge for outbreak investigations, particularly for outbreak investigations in emergency settings.

Educational outcome

The combination of the training Sidsel received at the modules, and her role as principal investigator in five outbreaks, have provided her a solid foundation to work independently with all the steps of an outbreak investigation, including defining a clear case definition, conducting hypothesis generating interviews and questionnaires, choosing the study design that best suits the situation, and writing outbreak reports. Sidsel also learned how difficult it can be to trace food products.

2. Surveillance

2.1 Risk of sequelae after invasive meningococcal disease in Denmark

Supervisors: Palle Valentiner-Branth and Steen Ethelberg

Invasive meningococcal disease (IMD) is a rare but severe bacterial infection of which a high proportion of survivors are affected by sequelae. In Denmark, IMD is a notifiable disease and data collection on sequelae information has been automated and which enables studies of sequelae due to IMD, diagnosed after discharge. The aim of the study was to examine possible determinants for sequelae after IMD, and to describe the clinical presentation and distribution of sequelae, by age group and serogroup, for all cases in Denmark during 2005-2020. Data was extracted from The National Database for Notifiable Infectious Diseases and linked to data from The Danish National Patient Register and the Civil Registration System. Logistic regression models were used to study whether age, serogroup and clinical presentation were associated with sequelae. Descriptive analysis of proportions of different types of sequelae across age group, serogroup and clinical presentation was performed. In total, 24% of IMD survivors experienced one or more sequelae. The only factor significantly associated with increased risk of sequelae after IMD, was the age group 26-65 years. The five most common sequelae in decreasing order of incidence were hearing loss, epilepsy, learning disabilities, headache, and visual defects/loss of vision, with rates between 8.2% and 2.8% of IMD survivors. The proportion of survivors with hearing loss and visual defects/loss of vision was not significantly different between clinical presentations. Based in the results, we suggest updating the IMD treatment guidelines, to include routine referral to hearing and vision tests, irrespective of clinical presentation. Furthermore, it is important to increase the awareness among parents of children who have had IMD, of possible future learning disabilities, to make sure that necessary measures are taken in time.

Role: Sidsel wrote the study protocol, analysed the surveillance data, and wrote an article.

2.2 Implementation of an electronic notification system in Denmark, 2021

Supervisor: Susan Cowan

A new electronic notification system is under development and will soon be complete and ready for pilot testing and implementation in Denmark. The implementation involves both implementation in the Department of Infectious Disease Epidemiology and Preparedness, and in clinical life. The aim is to make implementation smoother in the technical and communication parts, including a pilot test and evaluation three to six months after implementation. The new system has been launched.

Role: Sidsel is the project manager. She manages the process using an activity plan and stakeholder analysis. She is responsible for the content of the electronic notification form and for all communication with The Danish Health Data Authority (owner of the electronic system used), the company that develops the electronic forms, the future users, and management persons from 'Danske Regioner', Hospital departments, Medical scientific societies, the Danish National Health Authorities, The Ministry of Health etc. Furthermore, Sidsel leads the process of entering into cooperation agreements, to communicate the change in the way physicians notify in the future, and to make sure that the GDPR and other legal regulations have been complied with.

Training modules related to assignment/projects

EPIET/EUPHEM introductory course - familiarised fellows with the core concepts in surveillance. It covered the development and evaluation of a surveillance system as well as key aspects of the analysis of surveillance data

Project Review Module - fellows had many projects presented, and carried out interesting discussions afterwards. It made fellows more comfortable using all the theory they had learned during the other modules in real life.

Vaccinology module - introduced fellows to vaccine types and effect in individuals (immunology). The module covered vaccination programmes and their impact on populations, evaluation of vaccination interventions in routine work, and methods to measure and improve vaccination coverage. Deepened the fellow's knowledge about barriers to vaccination uptake, and made fellows familiar with the steps and principles of decision-making for the introduction of new vaccines.

Multivariable Analysis Module - built on the Introductory Course and deepened fellow's statistical skills. The module introduced a variety of regression methods that can be applied for surveillance data analysis.

Educational outcome

Sidsel's experience with the surveillance system have increased a lot, both in regard to understanding the structure, the importance of the content and the complexity of implementing new systems/updating systems linked to workflows, information, communication etc. Sidsel is now confident in accessing and working with several databases and systems (fx setup validation rules), and in finding and communicating with the right person needed in the specific situation. Furthermore, she is confident in performing logistic regression models, and to interpret the results.

3. Applied public health research

3.1 Identification of subgroups in the Danish population for targeted human papillomavirus vaccination efforts, 2019

Supervisors: Palle Valentiner-Branth, Steen Ethelberg

In the Danish childhood vaccination program, the human papillomavirus (HPV) vaccination coverage is lower than for other vaccines. To tailor a targeted HPV vaccination effort, we aimed to identify girls in Denmark with lower first dose HPV vaccination coverage than girls in general. A population-based retrospective cohort study was performed of girls born between 2001-2004, residing in Denmark in September 2019 (N= 128,351). Data from the Danish Vaccination Register was linked to sociodemographic data from the Danish Civil Registration System and Statistics Denmark. Cox's proportional hazard regression models were used to compare vaccination uptake rates between subgroups of girls. HPV vaccination coverage at 14 years of age varied widely by municipality (53.4-80.6%). Girls living with neither of their parents had a lower chance of being vaccinated compared with girls living with both their parents (aHR 0.51; 95% CI 0.48-0.54), likewise for girls attending special needs education compared with public schools (aHR 0.62; 95% CI 0.53-0.74). The vaccination uptake among immigrants was lower compared with Danish born girls (aHR 0.88; 95% CI 0.83-0.92), especially among immigrant girls whose parents had not passed any Danish exams. Finally, girls who had received the Tdap-IPV booster had a 50% greater chance of being HPV vaccinated compared with girls who had not received it (aHR 1.50; 95% CI 1.47-1.53). To increase HPV vaccination uptake, we recommend vaccination efforts targeting girls living without any of their parents, girls attending special need education, immigrants, and girls who have not been vaccinated with the Tdap-IPV booster. When targeting immigrants, the effort should focus on disseminating sufficient and understandable information about the Danish childhood vaccination program to the parents.

The study was 'repeated' for the DTaP and MMR vaccines, and one big report including all childhood vaccinations was written and sent to The Danish Ministry of Health. Afterwards, the Department of Infectious Disease Epidemiology & Prevention, SSI, did send elaborated suggestions for targeted tailored vaccination efforts on request from The Danish Ministry of Health.

Role: The idea and design of the study was executed by Sidsel and Palle Valentiner-Branth. Sidsel and Manon Chaine did data collection and cleaning, and Sidsel performed analyses with help from statistician Sarah Kristine Nørgaard. Sidsel has produced the first draft of the manuscript.

3.2 Risk of sequelae after invasive meningococcal disease

The study included both surveillance and research. The study is described in section '1.2. Surveillance'.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course- made fellows familiar with the core concepts of operational and applied research. It covered the development of study protocols and the drafting of aims and objectives relevant to a national public health institute as well as data analysis and presentation for the other modules to build on.

Multivariable Analysis Module - build on the Introductory Course and deepened fellows statistical skills. The module introduced a variety of regression methods that can be applied for data analysis and it also provided the basis on which the Time Series Analysis module could build.

Time Series Analysis module – built on the Introductory course and the Multivariable Analysis Module. It was a cornerstone in preparing the fellows for more in-depth data analysis.

Educational outcome:

Having had the opportunity to work closely with a statistician for several months strengthened the skills Sidsel achieved during the modules, and taught her even more, including performing analyses in R. She is now more confident in performing Chi-squared tests and Cox's proportional hazard regression models. She has learnt the importance of cleaning the data thoroughly, and how to do it properly.

4. Teaching and pedagogy

4.1 Teaching in Basal infection epidemiology at the University of Gothenburg in January 2020

Sidsel taught *Basal infection epidemiology* as part of the new Nordic educational program 'Prevention and Control of Communicable Diseases and Health Care-Associated Infections' at the University of Gothenburg in January 2020. Her contribution was three exercises (Disease transmission, Descriptive epidemiology and Case control and cohort studies). She produced new learning material. The audience was Nordic healthcare professionals, e.g., doctors, nurses, dentists or biomedical laboratory technicians.

4.2 Teaching disease surveillance in Denmark

SidseL taught 'Surveillance and reporting of notifiable diseases in Denmark' at the 'Course in infection hygiene, sepsis, urinary tract infections', part of the specialist medical training - Internal Medicine, 8 to 9 June 2021. Her contribution was a one-hour PowerPoint presentation and discussion.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course - course made fellows familiar with basal infection epidemiology and surveillance. It covered the basal principles and terms, pros and cons for the different study designs, surveillance methods etc. Very important for other modules to build on.

Outbreak Investigation Module - built on the Introductory Course and deepened fellows understanding of outbreak investigations. Case-studies were very useful for understanding the content of the module.

Educational outcome:

During these activities, SidseL was well-trained in all aspects of preparing, executing and evaluating a training activity, including formulating objectives, preparing and facilitating exercises and preparing a presentation while keeping the target audience in mind. Furthermore, preparing the activity gave SidseL a better overview and more confidence in skills she trained during the modules.

5. Communication

Publications related to the EPIET fellowship

No manuscript resulting from projects undertaken during the Fellowship was published or accepted for publication, so far.

Manuscripts submitted to peer-reviewed journals:

- Voss SS, et al. Mikkelsen S, Torpdahl M, Schjørring S, Pedersen AF, Munck N, Korsgaard H, Müller L. A foodborne Shigella sonnei outbreak in Denmark linked to fresh mint (Epidemiology and Infection).
- Voss SS, Nielsen J, Valentiner-Branth P. Risk of sequelae after invasive meningococcal disease (BMC Infectious Diseases).

Reports

- Voss SS, Nørgaard SK, Chaine M, Valentiner-Branth P. Hvilke grupper af børn har behov for en målrettet vaccinationsindsats [report for the Ministry of health, 2021]
- FUD1829 Bowl'n'Fun Esbjerg den 8. og 9. november 2019 [outbreak report]
- FUD1893 Shigella udbrud i Danmark ultimo august og primo september 2020 [outbreak report]
- COVID-19 udbrudsudredning ved kursus september 2020 [outbreak report]
- COVID-19 udbrudsefterforskning på højskole, oktober 2020 [outbreak report]
- COVID-19 udbrudsefterforskning på et plejehjem, november-december 2020 [outbreak report]

Conference presentations

- 'Identification of subgroups in the Danish population for targeted human papillomavirus vaccination efforts' is accepted for oral presentation at ESCAIDE 2021.

Other activities

- Voss SS, Nørgaard SK, Valentiner-Branth P. Who needs a targeted HPV vaccination effort in Denmark? [manuscript in draft]
- Purulent meningitis 2018 [annual report/epidemiological bulletin]
- Trend and focus: Hospitalisering og død [COVID-19 weekly report]
- Trend and focus: Graviditet [COVID-19 weekly report]

6. Other activities

SidseL was heavily involved in the first six months of the COVID-19 pandemic. She was a member of the outbreak group for COVID-19 (four persons), where she was given responsibility to coordinate internally at the Statens Serum Institut, and externally by participation in 'Crisis staff meetings' at the Danish Health Authorities on shift every day. She was involved in developing the surveillance system for COVID-19, in setting up the daily COVID-19 epidemiological reports and publishing it in turn with five other colleagues, in making weekly reports with the trends of the epidemic and a focus on a certain theme, e.g., transmission among healthcare workers, and she was the driving force in setting up the first version of SSI's COVID-19 webpage.

For five months, Sidsel participated in enhanced surveillance for *Campylobacter*. The Danish Veterinary and Food Administration and Statens Serum Institut ran a project in North Jutland, where *Campylobacter* bacteria from patients were compared to bacteria found in food using whole genome sequencing. The aim of the project was to find the source responsible for infecting consumers with *Campylobacter*. The work included sending out questionnaires every week, and writing reports every other week containing epidemiological data on human cases and combine it with food match mostly from poultry.

Sidsel has been the project manager in revising the blood donor screening surveillance (blood donors are screened for HIV, hepatitis B and hepatitis C in Denmark) and shifting it to the web-based electronic system which soon will be used for individually notifiable diseases. The work included making mock-ups of the notification form, setting up validation rules to ensure good data quality and communicating with users and administrators to make the shift smooth. Sidsel manages the same process for the Sentinel Flu surveillance system.

Sidsel routinely participated in the activities of the Section for Zoonotic, Food and Waterborne Infections of the Department of Infectious Disease Epidemiology & Prevention (Statens Serum Institut).

7. EPIET/EUPHEM modules attended

- Introductory Course, 23 September- 11 October 2019, Spetses, Greece
- Outbreak Investigation, 9-13 December 2019, Nicosia, Cyprus
- Multivariable Analysis, 15-19 June 2020, virtual
- Project Review 2018, 24-28 August 2020, virtual
- Time Series Analysis, 25-29 January 2021, virtual
- Rapid Assessment and Survey Methods, 4-6 May 2021, virtual
- Vaccinology, 14-18 June 2021, virtual
- Project Review 2021, 23-27 2021, virtual
- ESCAIDE 2019, 27-29 November, Stockholm, Sweden
- ESCAIDE 2020, 25-27 November, virtual
- ESCAIDE 2021, 16-19 November, virtual

8. Other training

- Introduction to epidemiological analysis using R course, 25-26 November, ECDC Stockholm, Sweden.
- General and Statistical Programming with R (by Luís Alves de Sousa), one hour a week for 20 weeks, online.

Discussion

Supervisor's conclusions

I've been the national EPIET supervisor of Dr. Sidsel Skou Voss in her two years as a Member State fellow at the Department of Infectious Disease Epidemiology & Prevention where she was placed in the section of vaccine preventable diseases. Thinking back, I can say that it's been a true pleasure working with Sidsel, who during her fellowship has been involved in a variety of epidemiological projects and always done a thorough and precise job, while at the same time never losing focus of the public health value of the work. Sidsel belongs to a cohort where the fellowships were heavily affected by the COVID-19 pandemic in both negative and positive ways. Most modules had to be held online and the interaction among fellows was of course limited. On the other hand, the pandemic presented a rare opportunity to do exactly the kind of work EPIET is all about. In the first half year of the epidemic period in Denmark, Sidsel was heavily involved in the COVID-19 response and worked full time on this. It was a time where we knew little of this new disease and many different types of work was done fast and in parallel, and sometimes also slightly chaotically, to build up knowledge and a number of different types of surveillance systems. Sidsel threw herself into this work with enthusiasm and lots of energy and made good use of her many skills in this difficult time. After this period, she returned to the planned EPIET activities and still managed to finish all projects successfully and on time. Sidsel's main project concerned identification of population segments with a reduced participation in the childhood vaccination programme. This work was done through large register-based cohort studies and allowed Sidsel to develop her data management and statistical skills while at the same time addressing issues of inequalities in medical care and work towards conclusions that carry a clear public health intervention message. And, not to be forgotten, as a Member State fellow also at the same time fulfilling her staff duties at the department – which have consisted of leading the transformation of the clinical surveillance system from paper-based to electronic, a very important task for the SSI.

Even though Sidsel entered the fellowship already being highly skilled, with several years of experience from clinical practice and with a specialisation in public health medicine, Sidsel clearly gained a lot from the past two years of training. EPIET allowed her the possibility of working in an international environment and to develop skills that are not part of the medical specialisation in Denmark, such as outbreak investigations, learning R and diving deep into complex epidemiological models. The result is a fully competent all-round public health medical epidemiologist. And combined with her energetic but relaxed and ever positive attitude, her kind personality and willingness to always help her colleagues, Sidsel is an asset for the epidemiological community in Europe and someone whom we certainly hope to keep as a member of the SSI workforce for many years to come.

Coordinator's conclusions

I have had the great pleasure to supervise Sidsel Skou Voss, cohort 2019 of the two-year EPIET fellowship path (EPIET) at Statens Serum Institute (SSI), Copenhagen, Denmark. To follow her development and acquire the core competencies in field epidemiology, through project and activity work, and through participation in training modules.

Sidsel's fellowship coincided with the COVID-19 pandemic in Europe, where Sidsel was heavily involved. She was a member of the outbreak group for COVID-19, where she was given the responsibility to coordinate internally at SSI, and externally by participation in 'Crisis staff meetings' in the Danish Health Authorities on shift every day. Sidsel was also involved in developing the surveillance system for COVID-19, and she was the driving force in setting up the first version of SSI's COVID-19 webpage. Sidsel was an invaluable team player, supported by her excellent supervisors.

Throughout the fellowship, Sidsel's experience in working with and developing surveillance systems has increased a lot. She is now very confident in Access and working with several databases, registers and systems, and to find and communicate with the right person needed in the specific situation. This also highlights Sidsel's acquired statistical skills. Furthermore, Sidsel has become very skilled in scientific communication and she has developed her leadership and time management skills, e.g., as principal investigator in five outbreaks, and having been given the responsibility to lead and supervise. In conclusion Sidsel's fellowship was remarkably successful and I wish her all the best for the future in continuing her work with providing evidence to guide public health interventions for communicable disease prevention and control.

Personal conclusions of fellow

Through this fellowship, I have complemented my experience as a doctor specialised in Public Health, with epidemiological and statistical skills. This has made me more independent, confident and structured in my work in public health and epidemiology. I have improved my skills in Stata and R, I got the mind-set of outbreak investigations and I got in-depth knowledge about the Danish surveillance system. Furthermore, I have increased my English vocabulary and improved my scientific writing. I am deeply grateful for this opportunity, and I will continue to benefit from the experience and the huge network of like-minded public health professionals that I have gained during the fellowship.

Acknowledgements of fellow

First of all, I would like to thank the department of Infectious Disease epidemiology and Infection at Statens Serum Institut for being a welcoming, inspiring and supportive workplace. Thank you, Steen, for inviting me into the EPIET family, and for being my main supervisor. Thank you Palle, Sarah, Jens and all of the section of vaccine preventable diseases for excellent collaboration. Sarah your pedagogical peer training in statistics and use of R has been invaluable. Thank you, Susan, for an excellent working atmosphere and the trust you showed by giving me a lot of responsibility. Thank you to the section of Food- and Waterborne infections who welcomed me and was always willing to help. Luise and Laura, your experience and systematic approach to outbreak investigation has taught me a lot, it has been fun and inspiring to work with you. Thank you to my frontline coordinator Amelie for all your valuable insights in epidemiology and useful feedback on projects. Thank you to Luís for always being ready to help and share your impressive knowledge of epidemiology, R and statistic. It has been a pleasure getting to know you. Thank you to my fellow EPIETs and EUPHEMs at SSI, and the wonderful people of cohort 2019.