Summary of work activities
Trude Marie Lyngstad
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 Trude Marie Lyngstad, cohort 2019 of the Intervention Epidemiology path (EPIET) at the Norwegian Institute of Public Health.

Pre-fellowship short biography

Trude Marie Lyngstad lives in Oslo, Norway. Her work experience includes epidemiology, surveillance and preparedness in the field of both animal and public health. Trude graduated as a veterinarian from the Norwegian School of Veterinary Science in 1996. She completed her Master of Veterinary Public Health (MVPH) at the Veterinary and Agricultural University in Denmark in 2006, and her PhD project at the Norwegian School of Veterinary Science in Norway, in 2012. Trude has been working at the Norwegian Institute of Public Health (NIPH), Department of Zoonotic- Food and Waterborne diseases since mid-February 2018. Here, she participates in preparedness, response, surveillance and advisory activities, primarily regarding communicable/zoonotic-diseases and waterworks/drinking water. She is also engaged in facilitating One Health collaboration activities.

Trude's work experience until 2018 included general epidemiology, surveillance and preparedness in the field of animal health (both terrestrial and aquatic animals) at the Norwegian Veterinary Institute (2004-2018) and at the central unit of the Norwegian Animal Health Authorities (1996-2004).

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 Manual[1].

1. Epidemiological investigations

Outbreak investigations
1.1 Outbreak of Yersinia enterocolitica in Norway, 2020

Supervisor: Heidi Lange

In June 2020, the Norwegian National Reference Laboratory (NRL) informed the food- and waterborne diseases team at the Norwegian Institute of Public Health (NIPH) of a possible outbreak of *Yersinia enterocolitica* O3. A multidisciplinary investigation team was established to find the source and prevent further transmission. In collaboration with the Norwegian Food Safety Authority (NFSA) and municipality doctors, 24 of 25 cases were interviewed to assess information on food consumption one week before symptom onset. Cash receipts were obtained from 16 cases, and traceback investigations were carried out. Leftover food samples were tested by the Norwegian Veterinary Institute (NVI). Human isolates were sequenced by whole genome sequencing (WGS). Twenty-five cases with nearly identical genotype were identified. Seventeen (68 %) of the cases were female and the median age was 28 years (range 2-58). The cases were geographically widespread in Norway and had become ill during mid to late May 2020. Twenty-three cases (92 %) had eaten pre-washed baby spinach or spinach product. Traceback investigations indicated imported spinach as a possible source. No other product could be linked to the outbreak. Two tested leftover samples (frozen spinach) were negative for *Y. enterocolitica*. It was concluded that pre-washed baby spinach or spinach was probably the source of infection, although this conclusion was not supported by microbiological investigation of the only available leftover samples. These results were communicated to the public through websites and by press releases, and the NFSA carried out inspections at the production facilities in Norway, aiming to check routines and increase awareness on the possible risk for contamination of pre-washed spinach products.

Trude participated in the outbreak investigation as the principal investigator, developed the questionnaire, performed data entry, analysis and wrote the outbreak report. Trude also wrote an abstract that was accepted for ESCAIDE 2020 as a pre-recorded online presentation.

1.2 Training modules related to assignment/projects
EPIET/EUPHEM Introductory Course – We were introduced to the principles of outbreak investigation, the 10 steps, questionnaire design, creating data entry forms based on questionnaires and entering data, and understanding the importance of formulating public health recommendations, all of which were applied during the outbreak investigation *Yersinia enterocolitica* O3 in Norway 2020.

Outbreak Investigation Module – The practical aspects of data management and analysis were practised during the outbreak investigation case studies, in addition to interpretation and communication of the results and writing the outbreak report. Although the results from the outbreak investigation of *Yersinia enterocolitica* O3 were based on descriptive statistics, these cases studies, including group work with fellows during the course on how to write an outbreak report, provided useful training.

Educational outcome

Trude was the principal investigator of this outbreak in collaboration with her experienced colleagues at the NIPH. She was involved in all parts of the outbreak investigation; communication with the Norwegian Food Safety Authority, municipal doctors and cases, data collection and analysis, writing the outbreak report and communicating the results and public health recommendations at an international conference (ESCAIDE 2020), as well as contributing to information for the general public on the NIPH webpage. Trude learned how to apply the 10 steps of outbreak investigation, compiling information from trawling and follow-up interviews, as well as managing data on cash receipts to do traceback investigations, ensuring that data is managed in a way to ensure privacy. Trude learned about communication routines with the involved stakeholders throughout the entire outbreak investigation, both internal and external, from first signal until presentation of results and writing the outbreak report. She presented the conclusions from the outbreak investigation, both to the public (NIPH webpage), for fellows at the project review module 2020 and as pre-recorded online presentation at ESCAICE 2020.

2. Surveillance

2.1 COVID-19 in Norway by time, place and person (2020-2021)

Supervisors: Hilde Kløvstad, Pawel Stefanoff, Lamprini Veneti and Richard White.

Trude joined the NIPH epi-analysis team for COVID-19 in mid-March 2020. By then most of the routines were manual. The aim of the surveillance project was to define, design and implement surveillance indicators for COVID-19 in Norway and to automate compilation of data to improve data quality and reduce use of manual routines. A systematic process of defining, designing and implementing indicators for COVID-19 surveillance were carried out. R code for automated reports were set up to extract and compile data from the NIPH databases and registers to generate updated statistics, automated reports in Word (Rmarkdown) and data for visualisation on the NIPH website (on a daily basis) for Norway. Since Mid-March 2020, surveillance reports as well as publication of key indicators on NIPH websites have been published and updated regularly (daily/weekly).

Trude took part in the systematic process of defining, designing and implementing indicators for COVID-19 surveillance under supervision and in collaboration of experienced colleagues in the NIPH epi-analysis team. It was a dynamic and instructive process, important for improving the content of the automated reports.

Under the supervision of a senior colleague from the NIPH Infectious Diseases Epidemiology and Modelling department, Trude set up automated analytical routines using R software that processes data extracted from diverse databases and registers and generates daily/weekly updated descriptive statistics, automated reports in Word (Rmarkdown) and data for visualisation on our websites.

2.2 A compilation of data for water supply systems in Norway 2019 – Annual Report

Supervisors: Richard White, Carl Fredrik Nordheim and Susanne Hyllestad.

The Norwegian Food Safety Authority (NFSA) asked the NIPH to compile data for water supply systems in Norway in order to present numbers of water supply systems nationally and by region, descriptive data on tubes and volume, microbiological and chemical quality etc. In the annual report for year 2019, NIPH published data on the status, key numbers and selected trends from water supply systems in Norway.

Trude set up R code for automated reports to extract and compile data from the water supply systems database at the NIPH, she did the data analyses (descriptive) and wrote the report in collaboration with her co-authors.

2.3 Zoonotic, Food, Water and Vector-borne Infectious Diseases in Norway. Annual report 2019

Supervisors: Heidi Lange, Beatriz Valcarcel and Emily Macdonald.

Zoonotic, food and water and vector borne diseases are still a cause of major health problems. Ongoing surveillance is therefore important to monitor trends. In its annual report, the NIPH publishes key numbers and descriptive statistics by time-place-person on selected zoonotic, food and water and vector borne diseases notifiable to the Norwegian Surveillance System for Communicable Diseases (MSIS).

Trude set up R code for automated reports to extract and compile data from the MSIS. She performed the data analyses and wrote the report in collaboration with her co-authors.

2.4 Outbreaks of infectious diseases notified through the web-based outbreak reporting system (VESUV) in Norway. Annual Report 2019

Supervisors: Heidi Lange and Emily Macdonald.

In Norway, outbreaks of infectious diseases are reported to a national web-based outbreak reporting system (VESUV) operated by the NIPH. The NIPH annual report gives an overview of outbreaks in healthcare facilities, food-borne outbreaks, and other outbreaks. The annual report includes a short summary of selected outbreaks that have been investigated by the NIPH.

Trude set up R code for automated reports to extract and compile data from the VESUV database. She performed the data analyses and wrote the report in collaboration with her co-authors.

Training modules related to assignment/projects

EPIET/EUPHEM introductory course – we were introduced to the different components of surveillance systems, and the analysis and interpretation of surveillance data, which was helpful in defining and designing indicators for COVID-19 surveillance. The lectures on interpretation of surveillance data and on visualisation (tables, graphs and maps) were useful while working on the annual report for water supply systems as well as the annual report on outbreaks of infectious diseases and the annual report on Zoonotic, Food, Water and Vector-borne Infectious Diseases.

Educational outcome

Trude was involved in the process of defining, designing and implementing surveillance indicators for COVID-19. Being part of this process in the NIPH epi-analysis team during this time was a rewarding experience for her. She used R software to set up automated analytical routines that process data extracted from diverse databases and registers and generate daily/weekly updated descriptive statistics and automated reports in Word. These tasks allowed her to develop her coding skills. Trude also gained experience by training colleagues in the team on how to manage and run the reporting routines that were set up in R.

By using R software to process data and generate descriptive statistics for the annual reports, Trude increased her knowledge on the epidemiology of zoonotic, food, water and vector-borne diseases in Norway as well as in data and databases.

3. Applied public health research

3.1 Estimation of the non-invasive pneumococcal pneumonia incidence in the Norwegian population aged 50 years and older

Supervisors: Brita Askeland Winje, Anja Bråthen Kristoffersen and Anneke Steens.

Pneumococcal pneumonia (PnPn) is a significant cause of morbidity and mortality in humans. It may present as invasive or non-invasive disease. In comparison to invasive PnPn, non-invasive PnPn is more common. A nationwide surveillance system collects information on invasive PnPn in Norway. However, the burden of disease (BoD) attributable to non-invasive PnPn is not known. The aim of the study was to estimate simple measures of BoD caused by non-invasive PnPn in the over 50 population in Norway (2015-2016), and to predict the incidence for non-invasive PnPn in this population in Norway (2015-2019). The study was designed as a retrospective register-based study. The study population is the Norwegian population aged 50 years and older (50+). We used data from the Norwegian patient register (NPR, 2015-2016), population data from Statistics Norway (2015-2019) and notifications of Invasive pneumococcal disease (IPD) cases to Norwegian Surveillance System for Communicable Diseases (MSIS, 2015-2019). We identified episodes of non-invasive PnPn (2015-2016) from the hospital discharge data according to ICD-10 codes. We use a regression model to predict incidence of non-invasive PnPn 2015-2019. We identified 46 and 45 episodes per 100,000 of non-invasive PnPn in 2015 and 2016, each episode taking six to eight days of hospitalisation. Among episodes of PnPn, we identified three episodes of non-invasive PnPn for each episode of invasive PnPn. We predict monthly numbers of non-invasive PnPn episodes for 2015-2019 including a peak during winter (well known for the pneumococcus). This study indicates that non-invasive PnPn has a substantial impact on the health of the 50+ population in Norway, thus it will be important to have advice on vaccination for this age group.

Descriptive and analytical analyses were carried out using R software.

Trude wrote the study protocol, compiled and cleaned data from NPR, Statistics Norway and MSIS, carried out the data analyses and wrote and submitted a manuscript to a peer-reviewed journal.

Training modules related to assignment/projects

Multivariable Analysis Module - we were introduced to basic definitions and concepts for the different types of regression models. Trude found the lectures on linear and logistic regression helpful with regard to interpretation of output from such analyses; meaning of parameters and the corresponding inferences

Time Series Analysis module - we were introduced to how to carry out time series analysis (TSA). In particular, Trude found the lectures on smoothing and trends, periodicity, residual patterns in surveillance data and forecasting very helpful. She re-used this material to increase her understanding while applying TSA methods on her own project data. Also, the course material including examples with R codes was very helpful to gain important insights into TSA methods.

Vaccinology module- we were introduced to the relevant indicators to estimate burden of disease (BoD), as well as simple (epidemiological) and composite (e.g. DALY) BoD measures. The lecture as well as the exercise using the ECDC BCoDE toolkit gave a good basis for better understanding how BoD measures can be estimated.

Educational outcome:
Trude has been involved in writing the research protocol, data management, statistical analysis and writing a manuscript. She has increased her competencies regarding TSA as well as estimating simple measures of BoD. Additionally, she has gained insight into the field of pneumococcal pneumonia.

4. Teaching and pedagogy

Basic R, data selection, if statements and loops

Trude gave a course on 'Basic R, Data selection, if statements and loops'. The target audience were colleagues at the NIPH with little or no previous experience using R and R-studio, in total 25 registered participants, of whom 20 attended the course. Trude's course included lecturing (45 min) and practical exercises (45 min) during which participants worked on their own computers. Trude developed the course material including R-scripts, presentations and exercises.

Covid-19 daily and weekly reporting routines

Trude has been training colleagues in her epi-analysis team on how to manage, update and run reporting routines that were set up in R for daily as well as weekly situations reports of Covid-19 in Norway.

Training modules related to assignment/projects

EPIET/EUPHEM Introductory Course – We were taught the principles of adult education, and the selection of appropriate facilitation methods based on goals and audience, which were both inspiring and useful while planning the R course material.

Educational outcome:
The R course teaching assignment was Trude's first teaching experience, and she found the teaching itself a rewarding experience. Trude learned a lot by compiling the course material and from discussions and input from her supervisor during the preparation of the course. Additionally, Trude learned better ways of coding in R while preparing the course material.

Trude has been training colleagues in her team to run the routine COVID-19 reporting routines that were set up in R. This work was important both to share workload, competencies and make the group robust, but also for Trude to understand how to improve the R codes.

5. Communication

Publications related to the EPIET fellowship

1. Kraft KB, Elgersma I, Lyngstad, TM, Elstrøm P. Telle K. COVID-19 vaccination rates among health care workers by immigrant background (submitted to European Journal of Public Health 10 September 2021).

2. Lyngstad TM, Kristoffersen AB, Winje, B and Steens, A. Estimation of the non-invasive pneumococcal pneumonia incidence in the Norwegian population aged 50 years and older (submitted to Epidemiology and Infection 8 September 2021).

3. Angeloff L, Lund V and Lyngstad TM. Undersøkelse av kommunenes oppfølging av badevannskvalitet ved friluftsbad. Vann nr 4-2020. Municipalities' follow-up actions on bathing water quality in recreational waters in Norway: a survey. https://vannforeningen.no/wp-content/uploads/2021/02/Angeloff.pdf

4. Hyllestad S, Iversen A, MacDonald E, Amato E, Sørby Borge BÅ, Bøe A, Sandvin A, Brandal, LT, Lyngstad, TM, Naseer U, Nygård K, Veneti L and Vold L. 2020. Large waterborne Campylobacter outbreak: use of multiple approaches to investigate contamination of the drinking water supply system, Norway, June 2019. https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.35.2000011

5. Hyllestad S, Iversen A, Sandvin A, Amato E, Brandal L, Lyngstad T, MacDonald E, Nygård K, Naseer U, Vold L. Large outbreak of *Campylobacter jejuni* infections following contamination of municipal water supply, June 2019, Norway. European Scientific Conference on Applied Infectious Disease Epidemiology, Stockholm. Sweden, 27-29 November 2019, oral presentation.

6. Lyngstad TM, Eide H, Jore S, Blystad H and Kapperud G. Toksoplasmose – bør gravide være bekymret? Published in Utposten, no 2, 2019. English title: Toxoplasmosis - Should pregnant women be concerned?

Reports

1. Hyllestad S, Lyngstad TM, Nordheim CF, Janak K (2019) Rapport om data for vannforsyningssystemer i Norge. Folkehelseinstituttet 2018 (https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2019/rapportering-av-data-for-vannforsyningssystemer-i-norge-for-2018.pdf

2. Utbrudd av smittsomme sykdommer i Norge i 2019. Vevbasert system for utbruddsvarsling (Vesuv). June 2020. https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2020/arsrapport-utbrudd-i-2019.pdf

3. 2019 Annual Surveillance Report for Zoonotic, Food, Water and Vector-borne Infectious Diseases. Rapport 2019. Oslo: Norwegian Institute of Public Health, 2020. https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2020/arsrapport-utbrudd-i-2019.pdf

4. Jørgensen HJ, Hauge K, Lange H, Lyngstad TM, Tafjord Heier B. The Norwegian Zoonoses Report 2019. Norwegian Veterinary Institute 2020 (ISSN 1890-3290). https://www.vetinst.no/rapporter-og-publikasjoner/rapporter/2020/the-norwegian-zoonoses-report-2019 4

5. Steinberg M, Nordheim CF, Lyngstad TM and Janak K (2020) Rapport om data for vannforsyningssystemer i Norge. Folkehelseinstituttet 2019. https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2020/rapport-om-vannforsyning-2019/vannverksrapport-for-2019.pdf

Conference presentations

1. Lyngstad, TM, Seppälä, EM, Lund, HM, Katsiouleri, P, Wester, AL, Naseer, U, Brandal, LT, Macdonald, EA, Johannessen, GS, Jensvoll, JL, Berglund, TM og Lange, H. Outbreak of Yersinia enterocolitica in Norway, 2020. The European Scientific Conference on Applied Infectious Disease Epidemiology, ESCAIDE 2020. Pre-recorded online presentation with a live Question & Answer session.

Other presentations

1. Lyngstad, TM, Seppälä, EM, Lund, HM, Katsiouleri, P, Wester, AL, Naseer, U, Brandal, LT, Macdonald, EA, Johannessen, GS, Jensvoll, JL, Berglund, TM og Lange, H. Outbreak of Yersinia enterocolitica in Norway 2020 probably caused by pre-washed spinach. Project Review Module, 24/8/2020 - 27/8/2020, online.

2. Lyngstad TM. How we deal with the Norwegian vaccine data in R in order to provide correct data input for statistics and further analysis. Presentation in internal meeting for NIPH colleagues 18 February 2021. Online.

3. Stålcrantz J and Lyngstad TM. Against COVID-19 in Norway: Current status and possibilities for future analysis on vaccination data Think thank presentation 19th April 2021.

Other training modules

1. ESCAIDE 2019 conference, 27/11/2019-29/11/2019, Stockholm, Sweden.

2. ESCAIDE 2020 conference, 24/11/2020 – 27/11/2020, online.

3. Inject day cox & multi levels, 18/3/2021, online.

4. EPIET Nordic Mini Module, 23/3/2021 - 24/3/2021, online.

6. Other activities

1. Trude participated in the roster for epidemic intelligence activities at the NIPH and drafted weekly reports presented at the weekly meetings within the institute during the first eight months of the fellowship.

2. To prevent secondary transmission of STEC infection, NIPH has implemented strict control measures and follow up for STEC cases belonging to risk groups for transmitting the disease. The NIPH contacts the municipality doctors to follow up and advise on each new suspected case. Trude participated in shifts approximately every fourth week during the first 1.5 years of the fellowship.

3. Since March 2020 (i.e. the onset of the COVID-19 pandemic), Trude has been participating in five min 'One-Health' Monday morning meetings (at Director level) between the NIPH, Norwegian Veterinarian Institute, Norwegian Food Safety Authority, Institute of Marine research, Norwegian Institute of Bio economy Research, Norwegian Scientific Committee for Food and Environment and Ministry of Agriculture and Food (chair of the meeting) on behalf of the NIPH in shifts with another senior colleague. The Ministry of Health and Care Services is also participating. Updates are prepared and presented on One-Health relevant issues that need communication and coordination between sectors (such as food and waterborne outbreaks, avian influenza etc). Trude wrote short summaries after each meeting.

4. Trude wrote the monthly outbreak report to the Norwegian Food Safety Authorities with summarised data from a national web-based outbreak reporting system VESUV in collaboration with colleagues at the NIPH.

5. Trude coordinated and set up the agenda for the annual meeting in the food emergency committee in Norway (Matsmittekomiteen). Trude also has been presenting results from the annual report on the previous year on food and waterborne outbreaks.

7. EPIET/EUPHEM modules attended

1. Introductory course, 23/9/2019 - 12/10/2019, Spetses, Greece.

2. Outbreak Investigation Module 2019, 8/12/2019 - 13/12/2019, Nicosia, Cyprus.

3. Multivariable Analysis Module, 20/4/2020 - 24/4/2020, online.

4. Project Review Module, 24/8/2020 - 27/8/2020, online

5. Time-Series Analysis module 2021, 25/1 – 29/1 2021, online.

5. Rapid Assessment & Survey Methods module, 27/4/2021 and 5/5/2021 - 6/5/2021, online.

6. Vaccinology Module, 14/6/2021-18/6/2021, online.

8. Other training

1. Introduction to QGIS by EPIET fellow Elina Seppälä (c2019), 17/12/2020, online.

Discussion

Coordinator's conclusions

Trude has been working at the Norwegian Institute of Public Health (NIPH) since February 2018 with her main areas of work being preparedness, response and surveillance, primarily focused on communicable/zoonotic-diseases and waterworks/drinking water. During the fellowship, she managed to find projects at her training site that allowed her to further improve her competencies in these, as well as in other areas covered by the programme. Her project concerning an outbreak of *Yersinia enterocolitica* developed her outbreak investigation skills further and she gained experience in the different aspects of epidemiological studies by carrying out a register-based study on non-invasive pneumococcal pneumonia. Importantly, she contributed to the national COVID-19 response as part of the NIPH epi-analysis team for COVID-19 and with her surveillance project which was focused on surveillance indicators for COVID-19. For this project, Trude impressively set up automated analytical routines using R software, improving data quality and reducing the use of manual routines. Furthermore, her development was clearly notable in the areas of risk communication and teaching.

It was a true pleasure to work with Trude as her frontline coordinator. Her work was of high standard and I have found her to be very hard-working and well organised. I wish her all the best for her future career.

Supervisor's conclusions

During her fellowship, Trude has continued to be a hardworking, dedicated and helpful colleague at the Norwegian Institute of Public Health. She has a great ability to complete many tasks during a hectic period, which has been the case during the pandemic. Trude collaborated well with supervisors and co-workers from several departments of the institute during her fellowship. Although her knowledge of R and data analysis was already substantial prior to the fellowship period, she has developed these skills further during these two years.

Trude has taken on a wide variety of tasks and activities, resulting in outputs that have contributed to both national and international public health activities. These included participating in foodborne outbreak investigations and establishing the initial COVID-19 surveillance system in Norway. In addition, she had a critical role in automating the compilation of data, resulting in improved data quality and reduced use of manual routines. Trude has also been training her colleagues in the COVID-19 epi-analysis team on how to manage, update and run routine reports that were set up in R for daily and weekly situations reports for COVID-19 in Norway. Trude has also been responsible for monthly and annual reporting summarised outbreak data from the national web-based outbreak reporting system VESUV, in collaboration with colleagues at the NIPH.

Trude remains an asset to the department and we look forward to continuing working with her in the future.

Personal conclusions of fellow

It was very nice to get to know my c2019 fellows during the first two modules and ESCAIDE (2020) before the rest of the training modules had to go online due to the COVID-19 pandemic. Nevertheless, I found the online modules useful and inspiring for my future work.

Collaboration and exchange of competencies and experiences among professionals, irrespective of country borders, is necessary to address public health challenges in Europe. I acknowledge the importance and value of being part of the EPIET fellowship network for this purpose. However, building networks and relations is slow /difficult when communication is online, and I therefore hope there will be possibilities for some future meetings in person in order to further strengthen the network.

The surveillance project work with designing, definition and implementation of surveillance indicators for COVID-19, as well as setting up automated routines in R has been a particularly rewarding experience. It was crucial to be part of a team with access to supervisors with competence and experience on how to define, design and implement surveillance indicators, as well as high level R skills. I have never spent so many hours working in front of my computer as in the last year, yet I still feeling privileged that I was able to contribute.

Acknowledgements of fellow

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