

FINAL REPORT

Valeska Laisnez

The European Programme for Intervention Epidemiology Training (EPIET), Cohort 2021
SCIENSANO, Belgium

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 at acknowledged training sites across European Union (EU) and European Economic Area (EEA) Member States.

According to Article 9 (6), Article 5 (8) and Article 11a (1) of Regulation (EU) 2022/2370 of the European Parliament and of the Council of 23 November 2022 amending Regulation (EC) No 851/2004 establishing a European centre for disease prevention and control (the ECDC Founding Regulation):

Article 9 (6) 'The Centre shall, as appropriate, support and coordinate training programmes, in particular in relation to epidemiological surveillance, field investigations, preparedness and prevention, response to public health emergencies, public health research and risk communication. Those programmes shall take into consideration the need for training to be kept up-to-date, take into account the training needs of Member States and shall respect the principle of proportionality.'

Article 5 (8) 'By encouraging cooperation between experts and reference laboratories, the Centre shall foster the development of sufficient capacity within the Union for the diagnosis, detection, identification and characterisation of infectious agents that have the potential to pose a threat to public health. The Centre shall maintain and extend such cooperation and support the implementation of quality assurance schemes'.

Article 11a (1) 'The Centre shall establish a EU Health Task Force and ensure that there is a permanent capacity and an enhanced emergency capacity to mobilise and use it. The EU Health Task Force shall provide assistance with regard to requests for prevention, preparedness and response planning, local responses to outbreaks of communicable diseases and after-action reviews in Member States and in third countries, in cooperation with the WHO. The EU Health Task Force shall include the Centre's staff and experts from Member States, fellowship programmes and international and non-profit organisations'.

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.

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This final report describes the output of the fellow and the competencies they acquired by working on various projects, activities, theoretical fellowship training modules, other modules or trainings and international assignments or exchanges during the fellowship.

Pre-fellowship short biography

Valeska Laisnez graduated as a medical doctor at the University of Ghent, Belgium, in 2000, with an additional degree as a General Practitioner (GP) in 2002. She obtained a post-graduate certificate in tropical medicine at the Institute of Tropical Medicine in Antwerp in 2003 and a post-graduate diploma in Infectious Diseases at the London School of Hygiene and Tropical Medicine in 2018. After gaining work experience as a GP in different settings (drug use, travel medicine, consultations for young children, general GP practice) she worked for 10 years at [Departement Zorg](#), the regional health authority in Flanders, Belgium. Valeska led a team responsible for the management of mandatory notifiable infectious diseases in the province of West-Flanders. In 2020, Valeska was hired by [Sciensano](#), at the department Epidemiology of Infectious Diseases. She worked for one year in the COVID-19 team (mainly on risk assessments) before starting the EPIET fellowship in September 2021.

Results

The objectives of these core competency domains were achieved partly through project and activity work and partly by participating 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

1.1. Outbreak investigations

Shiga toxin-producing Escherichia coli O157 outbreak in Flanders

Supervisors: Naima Hammami, Dieter Van Cauteren.

Category: Food and waterborne diseases.

On 29 September 2021, the regional health authority of Flanders, [Departement Zorg](#), contacted Sciensano regarding an unusual elevation of Shiga toxin-producing *Escherichia coli* (STEC) O157 cases with a specific typing profile in Flanders, with 20 cases since mid-August, including one patient with haemolytic uraemic syndrome. A case-control study was initiated, controls were selected based on age group, gender and living place. Online questionnaires were developed in LimeSurvey for both cases and controls, and interviews were completed by phone. The questionnaires were completed by 17 cases and 15 controls. Results from comparison of cases and controls were inconclusive and the answers from cases did not point towards a suspected source such as a common food item consumed or a common shop or restaurant visited. No new cases were reported and the investigation was closed.

Role: Valeska was a co-investigator (collaboration with the regional health authority of Flanders) and developed the LimeSurvey questionnaire. She was also responsible for the data analysis and wrote the outbreak report (4).

Salmonella Typhimurium outbreak in Flanders

Supervisors: Naima Hammami, Dieter Van Cauteren.

Category: Food and waterborne diseases.

In November 2021, the [National Reference Centre for Salmonella](#), warned about a national outbreak of *Salmonella* Typhimurium 3-6-11-NA-0211. In total, 90 cases were registered, with the highest number of cases in the province of Antwerp. An extensive questionnaire was sent to cases via LimeSurvey (no phone number available, only addresses). Cases were also asked to provide the link to the questionnaire to two to three controls (acquaintances outside the household, from same age group and gender). Unfortunately, the response rate was only 20% among cases and only one control completed the questionnaire. Consequently, a case control study was not possible and the responses of the cases did not point towards a suspected source like a common food item consumed or shop or restaurant visited.

Role: Valeska was a co-investigator (collaboration with the Regional Health Authority of Flanders) and developed the LimeSurvey questionnaire. She was responsible for the data analysis and wrote the outbreak report (5).

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>

Improving the strategy for foodborne outbreak investigations in Belgium: development of tools

Supervisor: Dieter Van Cauteren.

Category: Food and waterborne diseases.

The experiences from the foodborne outbreaks described above revealed some obstacles in the management of (national) foodborne outbreaks in Belgium. There are difficulties in contacting cases (e.g. no contact details available at National Reference Center), and there is a need for an effective way of selecting controls for case-control studies. Valuable time is lost during the first days of outbreaks, by making a questionnaire that is agreed upon by all involved stakeholders in a tool such as LimeSurvey. There are no prepared generic analysis tools such as an R-script that is easily adaptable. The difference between a trawling questionnaire and more adapted questionnaires used for case-control studies is not clear for all involved stakeholders. These findings led to the plan to improve the strategy for (national) foodborne outbreaks. In a first step, adaptable trawling questionnaires for the most frequent foodborne pathogens were developed in collaboration with all stakeholders and translated into the different languages used in Belgium. The questionnaires were put into LimeSurvey (in a way they can easily be adapted to the situation) and R-scripts for analysis were prepared and tested.

Role: Valeska was the lead investigator in this first phase of the project. She collected examples of trawling questionnaires online, via ECDC and through other international colleagues. She led in constructing the questionnaires for *Salmonella*, STEC and specific cohort settings, and organised meetings with the Regional Health Authorities. She was responsible for the development of the questionnaires in LimeSurvey, and for preparing the code books and R scripts for analysis of data.

International outbreak of Salmonella Typhimurium, linked to a Belgian chocolate factory

Supervisor: Dieter Van Cauteren.

Category: Food and waterborne diseases.

In mid-February 2022, the United Kingdom reported a cluster of monophasic *Salmonella* Typhimurium infections. Epidemiological and traceability investigations revealed a multi-country outbreak linked to chocolate products from a Belgian factory of an international brand. We set up an outbreak management team in Belgium to assess the extent of the outbreak, take measures to limit further spread and perform microbiological and traceability investigations. Cases were identified using ECDC case definitions. Case-interviews were aligned with other involved European countries and focused on exposure to products of the concerned brand. Under the guidance of the [Food Safety Authorities](#), raw materials and finished food products collected at the factory and in shops were analysed for *Salmonella* spp.. Whole genome sequence (WGS) analysis of isolates of cases and positive food samples was performed by the [National Reference Center](#). We identified 66 confirmed cases in Belgium, with illness onset from early January until April and a peak in cases mid-February 2022. The majority of cases were aged 1-9 years. From interviews with 44 of the Belgian cases, we learned that 39 of them had consumed at least one product of the involved brand during the incubation period. Seven of 229 samples taken at the plant or collected in shops tested positive for *Salmonella* Typhimurium; WGS analysis indicated matches with the outbreak strains. In December 2021, *Salmonella* Typhimurium was found in samples during a self-check in the factory, these isolates also matched with the later identified outbreak strains. All products from the involved brand produced at the Belgian plant were recalled worldwide and the Food Safety Authorities temporarily closed the plant until implementation of thorough control measures. The anhydrous milk fat circuit was identified as the probable source of infection, traceability investigations did not indicate contamination at supplier level. No new cases were registered after re-opening of the plant.

Role: Valeska was a co-investigator and responsible for the description of the information on the Belgian cases. She developed the questionnaire and performed data cleaning and analysis. She participated to national and international meetings, validated Belgian data for Rapid Outbreak Assessments and was co-author of a publication in the early phase of the outbreak (6,7,1). When the outbreak was over, she gathered all the available information from the different involved stakeholders and presented this in an oral presentation during ESCAIDE 2023 (13).

International outbreak of mpox: a mixed-methods study on the first Belgian cases

Supervisors: Wim Vanden Berghe, Jef Vanhamel, Bea Vuylsteke.

Category: Emerging and re-emerging diseases including vector-borne diseases.

In May 2022, the United Kingdom reported several cases of mpox virus infection. Soon after, other countries in Europe, including Portugal, Italy and Belgium, reported similar cases, raising the alarm for potential widespread transmission. We conducted a rapid cross-sectional, observational, mixed-methods study to describe the initial phase of the outbreak in Belgium and to provide a more in-depth description of the sexual behaviour of cases and specific transmission contexts. Cases of mpox are mandatory notifiable to the regional health authorities in Belgium. All cases were interviewed to collect information on the most probable source of infection and to initiate contact tracing. Sciensano was responsible for epidemiological follow-up, risk assessment and development of guidelines for healthcare workers during the outbreak. For our study, we included mpox cases with date of symptom onset until 19 June and performed an epidemiological description.

To gain an understanding of the perspectives and behaviour of those affected, we additionally conducted in-depth interviews with a sub-sample of the initial cases. All cases (N=139) were men, with a median age of 38 (youngest 20, oldest 62 years old). The majority self-identified as gay or bisexual men (95 %) (gbMSM). The results from the in-depth interviews confirmed the role of sexual contact and sexual networks in the transmission of mpox during the early phase of the outbreak in Belgium. We recommended that risk communication should consistently and transparently state the predominant sexual transmission potential of mpox in the current outbreak. Furthermore, prevention and control measures should be adapted to address both interpersonal and community level factors impacting mpox transmission and appeal to communities of gbMSM.

Role: Valeska was a co-investigator (collaboration with the Institute of Tropical Medicine, Antwerp). The role of the fellow was to analyse and describe the epidemiological information on the initial cases collected via the mandatory notification. The fellow was shared first author of the publication on the study, together with the social science researcher who performed and analysed the in-depth interviews (2).

Consultation on other outbreaks

Supervisor: Dieter Van Cauteren.

Category: Food and waterborne diseases.

In the beginning of 2022, the [National Reference Centre for *Salmonella*](#) informed about a national outbreak of *Salmonella* Newport, with 24 cases distributed over Belgium with date of isolation in January and February 2022 (compared to approximately two cases per month as a baseline). Whole genome sequencing revealed an identical strain in these cases. More females than males were affected. An alert via EpiPulse was issued, but other countries did not report further cases. Trawling questionnaire interviews were started but due to a very low participation rate and no new cases, the investigation was not continued.

Role: Valeska was a co-investigator. Valeska's role in this outbreak was to advise on the type of study and advise on and review the questionnaire, and to instruct nurses without experience in the investigation of foodborne outbreaks on how to conduct the interviews by phone.

Educational outcome

Valeska had experience in the management of outbreak investigations prior to the fellowship. She developed more skills during the fellowship, particularly in using LimeSurvey, Stata and R. She got the opportunity to apply her knowledge and experience in different settings that were new to her, such as when working with international teams and ECDC or with more academic partners in the field of public health. As she didn't have experience in being (shared) first author of a publication in a peer-reviewed journal, this was a very important educational outcome.

1.2. Surveillance

COVID-19 weekly risk assessment

Supervisor: Tinne Lernout.

The COVID-19 pandemic still had a big impact on the society at the start of the fellowship in September 2021. Public health measures were still implemented but had to be proportional and consider other needs within society. To support the management of the COVID-19 crisis in Belgium, a weekly assessment of the COVID-19 epidemiological situation was done via a desk review of data collected through different surveillance systems monitoring the COVID-19 situation in Belgium. Selected indicators (on COVID-19 cases, hospitalisations and capacity of intensive care units, number and place of clusters, genomic sequencing data, wastewater surveillance) were described and interpreted. The risk assessment was done at different levels: national, regional, provincial and communities when and where needed. A draft report was prepared by the team on a weekly basis within Sciensano and then discussed with members of the [Risk Assessment Group \(RAG\)](#) and with specific experts, including biostatisticians, regional health authorities, infectiologists and general practitioners. Recommendations for action were formulated (e.g. communication to the population on certain topics, increased testing in travellers), depending on the trends and specific identified issues. Following the RAG meeting, the report was presented every week at the Risk Management Group (RMG) for validation. The validated report was used by policy makers to decide on implementation or relaxation of COVID-19 measures.

Role: From September 2021 till February 2022, the role of Valeska was to analyse different indicators and present the information in an extensive but readable weekly report/risk assessment, as member of a small team (four to five colleagues) (8). Together with these colleagues, Valeska selected the best available visualisations or formulated proposals to develop new ones, and discussed with members from other teams at Sciensano about outputs (graphs, tables) and timely delivery of those. After review of all available information, she made proposals for conclusions on the epidemiological situation (alarm level) and for adapted public health measures. When the team leader was not available, Valeska organised and chaired the online meetings with the experts, presented the output at the RMG and answered questions related to the report. She was co-author of a poster abstract presented by a colleague at ESCAIDE 2022 and of a publication on the use of wastewater surveillance (16, 3).

Burden of disease of pertussis in young hospitalised children: analysis of risk factors, clinical outcome and interventions based on data collected via sentinel surveillance system.

Supervisors: Amber Litzroth, Laura Cornelissen.

Pertussis, or whooping cough, is an acute infectious disease caused by the bacterium *Bordetella pertussis*. Pertussis remains a major health problem among children worldwide. In Belgium, as in other countries, [children](#) younger than one year old are most affected. Pertussis is a mandatory notifiable disease in Belgium. Depending on the region, all cases or only cases in children younger than three years old are notifiable. *Bordetella pertussis* is also one of the pathogens included in the surveillance via the [sentinel laboratories](#). And, since 2012, a [National Reference Center](#) for *B. pertussis* has been appointed. However, these surveillance systems do not provide information on risk factors for severe disease, on clinical progression and on clinical outcome of young children hospitalised for pertussis. Stakeholders have requested more insight (descriptive) on this important public health topic. It is also a recommendation by the [World Health Organization](#) to have hospital-based surveillance with a focus on morbidity and mortality in young children. The aim of this project was to describe risk factors for severe disease and clinical outcome of children younger than three years old, hospitalised for pertussis in Belgium. In June 2022, the surveillance was integrated in an already existing sentinel network of Belgian paediatricians ([PediSurv](#), 62% of Belgian hospitals with paediatric ward are participating). Data are collected on demographic characteristics, hospitalisation (duration, transfer, ICU admission), risk factors (including underlying morbidity, dysmaturity or prematurity), laboratory results, clinical information and complications, antibiotic treatment and interventions, possible source of infection and vaccination status in child and parents. The collected information on the risk factors, treatment and outcome in these young children can be used to advice about public health actions to prevent severe pertussis in young children and/or to improve their outcome.

Role: The role of the fellow was to complete the last steps of the implementation of this surveillance together with colleagues of the team Vaccine Preventable Diseases, as this project was already initiated at the start of the fellowship. The most important task was the follow-up on the approval by the [Information Security Committee](#), by preparing the request form, through answering questions of members of the committee after discussion with the Data Protection Officers of the institute, and through presentation of the project in a meeting of the committee. Another important part was the communication with the team of [healthdata.be](#) (the platform for collection and registration of health related data), and final testing of the data collection and analysis environments of this platform. Finally, the fellow gave input on the communication to participating paediatricians at the launching of the surveillance. Due to a low number of cases notified (in line with an overall low incidence of pertussis in Belgium currently), it was not yet possible to analyse the data during the fellowship.

Passive monitoring of exotic mosquitoes in Belgium via citizen science

Supervisor: Javiera Rebollo.

As a result of globalisation, changes in land use and climate change, exotic mosquitoes and the viruses they can transmit are spreading to regions where they have not previously been present. Dengue, chikungunya and zikavirus infection could become a threat for Belgium in the coming years. Punctual introductions of the tiger mosquito (*Aedes albopictus*) in Belgium have repeatedly been reported during previous years, and this mosquito species could become established in the (near) future. The increasing number of travelers returning from disease-endemic countries further enhance the risk for introduction of mosquito-borne diseases into the country. Some European countries have introduced passive surveillance by citizen involvement alongside active entomological monitoring, and this has shown to provide valuable information. In Belgium, active entomological monitoring for *Aedes albopictus* is performed by the [Institute of Tropical Medicine \(ITM\)](#) at risk sites across Belgium, where exotic species are most likely to enter the country (companies trading in second-hand tires, lucky bamboo importers, ports, airports and parking areas along the border). To further enhance the knowledge on the presence and geographical spread of *Aedes albopictus* in Belgium, Sciensano put in place a passive surveillance by developing a citizen science platform which is complementary to the active monitoring already in place. After passing three filtering questions focusing on the morphological aspects of the tiger mosquito, citizens can upload pictures of potential tiger mosquitoes on the notification website [muggensurveillance](#). Researchers at Sciensano and ITM validate the uploaded pictures. If a possible *Aedes albopictus* is confirmed based on the pictures, ITM and Sciensano researchers perform field investigations. If *Aedes albopictus* is also confirmed in the field, the advice to implement control measures is given to the responsible regional authorities. In addition to the notification process, the website also informs citizens about different mosquitoes (with focus on *Aedes albopictus*), on mosquito-borne diseases and on preventive measures to reduce mosquito populations and prevent mosquito bites.

Role: The fellow was responsible for the development of the website content on the different mosquito-borne diseases, adapted to the general public. Together with colleagues, the fellow also reviewed the content on mosquitoes (which was developed with the support of scientists from ITM), the translations (website is available in Dutch and French) and the general structure of the website. She was co-author of one oral presentation and one poster presentation (15, 17).

Surveillance of influenza-like illness in Belgian nursing homes, winter season 2021-2022.

Supervisor: Nathalie Bossuyt.

Influenza and other respiratory infections are among the most common infections in nursing homes. Due to age-related immunological dysfunctions and physiological changes, respiratory infections produce more severe illness, more hospitalisations and greater mortality in this group than in younger adults. Moreover, close contacts between residents and between residents and their caregivers can lead to major outbreaks. The most common causes of outbreaks of acute respiratory illness in nursing homes are both influenza viruses and non-flu viruses such as SARS-CoV-2, respiratory syncytial virus, rhinovirus and parainfluenza. Based only on clinical picture, it is not always possible to distinguish between these viruses. The aim of our surveillance project was to follow-up the circulation of the different respiratory pathogens in nursing homes during the 2021-2022 winter season, when COVID-19 was still widely circulating. This was done via a multicenter prospective observational cohort study. All Belgian nursing homes were invited to participate, but the participation rate was very low, probably due to the workload linked to COVID-19 at that time. Participating nursing homes were asked to send a nasopharyngeal sample and a short questionnaire (age, sex, symptoms, vaccination status) to Sciensano for every nursing home resident presenting with an influenza-like illness (according to set case definition) during the 2021-2022 winter season. Samples were tested for influenza (plus typing A/B), SARS-CoV2, rhinovirus, adenovirus, para-influenza 1-2-3-4, respiratory syncytial virus and human metapneumovirus. The results were added in the weekly Bulletin on Acute Respiratory Infections and used in the weekly COVID-19 risk assessments. The lessons learned from this surveillance were integrated in a similar surveillance project that started in the winter 2022-2023.

Role: The role of the fellow was to perform the descriptive analysis of the data via R on a weekly basis, including graphs. This information was then added in the Weekly Bulletin on Acute Respiratory Infections (9). At the end of the season, the fellow compiled a final report for the participating nursing homes and the authorities (French and Dutch, 10).

Educational outcome

Different skills were developed thanks to the variety of surveillance projects. The fellow learned to integrate data from different sources and come to a general evaluation of the situation. The involvement in the pertussis surveillance, added to the knowledge on data collection in a GDPR-proof way. The fellow greatly liked the innovative way of surveillance via the mosquito website, with development of information suited for citizens. Finally, the project on ILI in NH was the first experience of the fellow with writing an R script that could be used for (semi-)automated output on a regular base, including graphs.

2. Applied public health research

Knowledge, attitudes and practices on mosquitoes and mosquito-borne viruses, survey in the Belgian adult population, 2022

Supervisors: Ruben Brondeel, Marie Hermy, Tinne Lernout, Javiera Rebolledo.

As already described for the surveillance project on the passive monitoring of exotic mosquitoes in Belgium via citizen science, the tiger mosquito could become established in Belgium in the near future, with dengue, chikungunya and zikavirus infection becoming a possible threat for the Belgian population. An understanding of the knowledge, attitude, and practices (KAP) of the Belgian adult population on mosquitoes and mosquito-borne viruses (MBVs) will enable the formulation, design and development of recommendations and activities at national and regional public health level to prepare for these newly emerging MBVs in Belgium. Therefore, we conducted an online KAP survey among Belgian adults who were invited through social media (convenience sampling).

Demographic and other variables were collected, and questions were asked about knowledge on mosquitoes and MBVs, on different perceptions and on preventive measures taken. We performed a descriptive analysis and investigated which factors influence knowledge, perceptions and preventive practices. The results of our study can be used by authorities to tailor communication efforts and make recommendations on prevention measures. An increased awareness of the Belgian population of mosquitoes in general and the tiger mosquito in particular, will also improve the results of the newly set up citizen science passive surveillance of *Aedes albopictus* (see surveillance project on the passive monitoring of exotic mosquitoes).

Role: Valeska was the principal investigator, responsible for the management of the entire project, starting with the project protocol. She prepared the questionnaire and contacted colleagues from the Netherlands to harmonise between countries. Valeska involved colleagues from the legal department at Sciensano to prepare collaboration and data sharing agreements with the Netherlands. She took care of ethical clearance and decided on sampling method. With support and supervision of colleagues, she prepared the LimeSurvey questionnaire, the communication at launching and during the period the survey was running. She was also responsible for the analyses and for writing the report for authorities (ongoing). The results of our study will be presented in an online poster at ESCAIDE in November 2023 (14).

Scabies in Belgium: investigation of epidemiological evolution and reasons for increase

Supervisors: Isabel Brosius, Soledad Colombe, Wim Van Bortel.

Several European countries observe an increase in scabies infestations, and there are various hypotheses as to the cause of this (e.g. resistance of the mite, difficulties in compliance, failure to treat contacts and/or environment, higher influx via increased travel and migration). A partnership has been launched between some European countries (the Netherlands, Germany, Belgium, Norway), to investigate this increase. Indeed, also in Belgium, alerts from general practitioners, regional health authorities and the Institute of Tropical Medicine point towards an increase in scabies infestations. However, no structured epidemiological description is available and data are scarce as scabies is not mandatory notifiable. With this current scabies project, we wanted to first describe the epidemiological situation of scabies in Belgium and, depending on the results, identify possible risk groups. We integrated information from several data sources such as the number of diagnoses over time in a network of general practitioners and the number of prescriptions of permethrin. Data and personal communications from specific sources such as occupational health, medical services for students and non-governmental organisations were also used. The results confirm a clear increase in scabies infestations. Some hypotheses concerning the reasons for this increase were also generated by our exploration of the current situation, and those can be further tested via case-control studies in a next step.

Role: Valeska was the principal investigator. As a first step of the project, Valeska investigated all possible sources for scabies data in Belgium and contacted different stakeholders. She extracted data from different registers, cleaned and analysed them using R software. Based on this, she wrote the manuscript on the epidemiological situation (ongoing). She was the contact person between different involved national (Sciensano, Regional Health Authorities, Institute of Tropical Medicine) and international partners. During the work on the project she became the contact point for scabies at Sciensano, answering questions from stakeholders and giving advice on guidelines.

Educational outcome

Valeska hadn't been deeply involved in research before the fellowship, so these assignments had a high educational value. She learned how to write a study protocol, decide on different aspects such as study design and sampling, apply for ethical clearance etc. Also, the aspect of time management and working together with different people, both within and outside the own institute in the context of long-term projects was an important educational outcome. Finally, the research projects were of great value to dive into analysis of datasets and the use of R, and learning techniques such as weighting and multivariable analysis.

3. Teaching and pedagogy

Epicourse at host site Sciensano

The Epicourse is a five-day, face to face, basic epidemiology training for new or interested employees at the Epidemiology and Public Health department of Sciensano. The fellow actively contributed to two course editions (March 2022 and December 2022). In each edition, two lectures were given by the fellow ('Introduction to Epidemiology' and 'Introduction to Foodborne Outbreaks') and the case-study 'Gastroenteritis outbreak, Sweden' was facilitated together with a colleague. For the lectures, presentations given in the past by colleagues were used as a starting point, and adapted with more recent examples or own field-experiences from the fellow. For the case study, the fellow used the document that was used during the EPEIT/EUPHEM Introductory Course September for cohort 2021. Evaluation was done by the fellow via a google form, sent after each course day and focusing on usefulness and difficulty of each topic.

Teaching on Legionella outbreak investigation

For the master's programme of Public Health at the University College London, Valeska was asked as a field epidemiologist to record a talk of 5 to 10 minutes on a real-life example of the use of descriptive epidemiology in solving an outbreak. For this talk, she used the outbreak of legionellosis in Ghent in 2019 where she was member of the outbreak investigation team. She focused on the concepts of time, place and person, and explained the importance of a case definition. She talked about how the mapping of the detailed whereabouts of the cases during their incubation period in combination with meteorological information in a Geographical Information System, led to the identification of the source.

Educational outcome

Valeska was able to develop teaching skills, and increase her confidence, by applying some of the information and techniques learned in the EPIET/EUPHEM modules. Valeska was responsible for the practical organisation of one of the editions of the Epicourse at Sciensano, so also organisational skills for this kind of events were further developed. She learned to adapt training materials and techniques to the target group (professionals versus students) and media (on-site versus recorded). Finally, and maybe most importantly, Valeska experienced that teaching is an excellent way of consolidating own knowledge on the topic.

4. Communication

4.1 Publications related to the EPIET fellowship

4.1.1 Manuscripts published in peer-reviewed journals

1. Larkin L, Pardos de la Gandara M, Hoban A, Pulford Caisey, Jourdan-Da Silva N, de Valk H, et al. Investigation of an international outbreak of multidrug-resistant monophasic *Salmonella* Typhimurium associated with chocolate products, EU/EEA and United Kingdom, February to April 2022. *Euro Surveill.* 2022;27(15):pii=2200314. Available [online](#).
2. Vanhamel J, Laisnez V, Liesenborghs L, Brosius I, Berens-Riha N, Vanbaelen T, et al. Understanding sexual transmission dynamics and transmission contexts of monkeypox virus: a mixed-methods study of the early outbreak in Belgium (May–June 2022). *Sexually Transmitted Infections.* 2023;99:330-336. Available [online](#). Vanhamel J and Laisnez V contributed equally and share the first authorship.
3. Janssens R, Hanoteaux S, Maloux H, Klamer S, Laisnez V, Verhaegen B, et al. SARS-CoV-2 Surveillance in Belgian Wastewaters. *Viruses* 2022;14:1950. Available [online](#).

4.1.2 Other reports

4. Laisnez V. Outbreak report STEC O157 in Flanders. Internal report.
5. Laisnez V. Outbreak report *Salmonella* Typhimurium Flanders. Internal report.
6. European Centre for Disease Prevention and Control, European Food Safety Authority, 2022. Multi-country outbreak of monophasic *Salmonella* Typhimurium sequence type (ST) 34 infections linked to chocolate products – 12 April 2022. Available [online](#).
7. European Centre for Disease Prevention and Control, European Food Safety Authority, 2022. Multi-country outbreak of monophasic *Salmonella* Typhimurium sequence type 34 infections linked to chocolate products, first update - 18 May 2022. Available [online](#).
8. Weekly COVID-19 risk assessments, September 2021 – February 2022. Available online : <https://covid-19.sciensano.be/nl/covid-19-wetenschappelijke-informatie-rag> („Epidemiologische situatie : voorgaande adviezen“).
9. Weekly bulletin respiratory infections (winter season 2021-2022): Topic „Episodes of flu-like syndrome among people in nursing homes“.
10. Surveillance van griepale aandoeningen in Belgische woonzorgcentra seizoen 2021-2022. Available in French and Dutch.
11. Increasing number of invasive infections with Group A Streptococci (iGAS). Advice of the Risk Assessment Group, 17 Jan 2023. Available [online](#).
12. Monthly Newsflashes on Infectious Diseases, available [online](#).

4.2 Conference presentations

13. ESCAIDE, 23-25 November 2022, Stockholm. International outbreak of *Salmonella* Typhimurium linked to a chocolate factory in 2022: Belgian findings. Oral presentation by fellow.
14. ESCAIDE, 22-24 November 2023, Barcelona. Knowledge, perceptions and practices related to mosquitoes and mosquito-borne viruses: survey in Belgium, 2022. Online only poster by fellow.
15. ESOVE 22nd Conference, 11-14 October 2022, Sofia. Monitoring of Exotic Mosquitoes (MEMO+) project in Belgium: The passive surveillance component. Fellow was co-author of the abstract, oral presentation by colleague.
16. ESCAIDE, 23-25 November 2022, Stockholm. Translating the COVID-19 epidemiological situation into policies and measures: the Belgian experience. Fellow was co-author of the abstract, poster presentation by colleague.
17. ESCAIDE, 22-24 November 2023, Barcelona. Citizen science as an effective tool to detect *Aedes albopictus* in Belgium. Fellow was co-author of the abstract, poster presentation by colleague.

4.3 Other presentations

18. Weekly COVID-19 updates to colleagues of Sciensano, in rotation with other colleagues (September 2021 - February 2022).

19. Presentation on outbreak investigation for legionellosis to the Regional Health Authorities of Wallonia, 21 November 2022.

20. Presentation of the epidemiological situation of scabies in Belgium to the Outbreak Research Team of the Institute of Tropical Medicine and the Regional Health Authorities of Flanders, 29 August 2023.

5. EPIET/EUPHEM modules attended

1. Introductory course, 20/09/2021– 8/10/2021, online
2. Inject Day Phylogeny, 20/10/2021, online
3. Inject Days Operational Research, 27-28/10/2021, online
4. Inject Days Data Collection and Management, 10-11/2021, online
5. Outbreak investigation, 6-10/12/2021, online
6. Multivariable analysis (module & Inject Day), 14-18/03/2022 & 30/03/2022
7. Mid-term project review, 20-22/04/2022, Spetses, Greece
8. Introductory course part 2, 25-29/04/2022, Spetses, Greece
9. Rapid Assessment and Survey methods, 6-10/06/2022, Stockholm, Sweden
10. Project Review Module, 29/08-2/09/2022, Lisbon, Portugal
11. Time Series Analysis, 7-11/11/2022, Bilthoven, Netherlands
12. Vaccinology, 13-17/02/2023, online
13. Management, Leadership and Communication in Public Health, 8-12/05/2023, Stockholm, Sweden

6. Other training

1. Scientific Seminar Infectious Diseases, Sciensano, 25/11/2021, online
2. Think tank Omicron, ECDC, 13/12/2021, online
3. Think tank COVID-19, ECDC, 7/02/2022, online
4. United Nations BSAFE, 01/06/2022, online
5. Introduction to Git and Github (organized by co-fellow), 23/06/2022, online
6. Introductory R-Course, Sciensano, 5 half days in October 2022, Brussels, Belgium
7. EAN Webinar Mosquitoes and surveillance of mosquito-borne diseases, 26/10/2023, online
8. Collaborative Github working session (organized by co-fellow), 28/10/2022, online
9. Seminar on invasive Group A Streptococcal infections, organized by Hôpital Universitaire des Enfants Reine Fabiola (*Infections invasives à GAS en Belgique : que se passe-t-il et quelle prise en charge optimale pour nos patients?*), 11/01/2023, online
10. MOOD webinar: KAP survey vector borne diseases Finland, 25/01/2023, online
11. ESCMID webinar 'Genomic surveillance of listeriosis in Germany: clusters, outbreaks and vehicles', 22/02/2023, online

7. Other activities

Belgian Risk Assessment Group

Valeska is a member of the coordination team of the Belgian [Risk Assessment Group](#). She participated to the duty system for detection and evaluation of signals. She prepared risk assessments together with the colleagues, e.g. for invasive Group A streptococcal infections (11).

Monthly newflash on Infectious Diseases

Valeska is a member of the team at Sciensano preparing the monthly newflashes on infectious diseases, that are available online and sent to stakeholders (medical doctors, laboratories) (12).

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