FELLOWSHIP REPORT

# Summary of work activities

Emilie Peron
Intervention Epidemiology path (EPIET)
Cohort 2014

## Background

The ECDC Fellowship Training Programme includes two distinct curricular pathways: Intervention Epidemiology Training (EPIET) and Public Health Microbiology Training (EUPHEM). After the two-year training EPIET and EUPHEM graduates are considered experts in applying epidemiological or microbiological methods to provide evidence to guide public health interventions for communicable disease prevention and control.

Both curriculum paths are part of the ECDC fellowship programme that provides competency based training and practical experience using the 'learning by doing' approach in acknowledged training sites across the European Union (EU) and European Economic Area (EEA) Member States.

### Intervention Epidemiology path (EPIET)

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

The European Programme for Intervention Epidemiology Training (EPIET) was created in 1995. Its purpose is to create a network of highly trained field epidemiologists in the European Union, thereby strengthening the public health epidemiology workforce at Member State and EU/EEA level. Current EPIET alumni are providing expertise in response activities and strengthening capacity for communicable disease surveillance and control inside and beyond the EU. In 2006 EPIET was integrated into the core activities of ECDC.

---



*This portfolio does not represent a diploma. Fellows receive a certificate acknowledging the 2-year training and listing the theoretical modules attended. Additionally, if all training objectives have been met, they receive a diploma.*

Stockholm, September 2016

The objectives of the ECDC Fellowship - EPIET path are:

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

Fellows develop core competencies in field epidemiology mainly through project or activity work, but also partly through participation in training modules. Outputs are presented in accordance with the EPIET competency domains, as set out in the EPIET scientific guide[1].

### Pre-fellowship short biography

Emilie Peron is a Pharmacist Doctor. She has also a MSc level 2 in Modelling in Epidemiology.

Prior to EPIET, during 3 years she worked as pharmaco-epidemiologist in the University hospital of Nantes. She developed a biostatistics tool to assess the addictive potential of drugs. She also compared the effectiveness of five main antidepressants.

### Fellowship assignment: Intervention Epidemiology path (EPIET)

On September 16th 2014, Emilie Peron started her EPIET fellowship at the Robert Koch Institute (RKI), Berlin, Germany, under the supervision of Dr Wiebke Hellenbrand. This report summarizes the work performed during the fellowship.

# Fellowship portfolio

This portfolio presents a summary of all work activities (unless restricted due to confidentiality regulations) conducted by the fellow during the ECDC Fellowship, EPIET path. These activities include various projects, 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.

This portfolio also includes a reflection from the fellow on the field epidemiology competencies developed during the 2-year training, a reflection from the supervisor on the added value of engaging in the training of the fellow, as well as a reflection by the programme coordinator on the development of the fellow's competencies.

[1] European Centre for Disease Prevention and Control. European public health training programme. Stockholm: ECDC; 2013. Available from: http://ecdc.europa.eu/en/epiet/Documents/Scientific%20guides/EPIET%20Scientific%20Guide_C2016.pdf

# Fellowship projects

## 1. Surveillance

### Comparison of sporadic cases of invasive meningococcal disease (IMD) with cases in clusters, Germany, 2005-2014

Background
Although pharyngeal carriage of *Neisseria meningitidis* is common, ensuing invasive meningococcal disease (IMD) is rare and mostly sporadic, but clusters may occur. We compared sporadic cases and cases in clusters identified by two different approaches to gain insight into transmission patterns.
Methods
Cases of IMD notified in Germany from 2005-2013 were matched to reference laboratory typing data. Epidemiological clusters (EC) were defined as two or more cases with documented known direct or indirect contact. Spatiotemporal clusters (STC) included cases without known direct or indirect contact, but with identical finetype (based on serogroup and antigen sequence typing of variable regions of outer membrane proteins PorA and FetA) and significantly clustered in space and time, shown using SaTScanTM. We compared age, sex, serogroup, and seasonality of sporadic cases (SC) and cases in clusters using Kolmogorov-Smirnov and Chi-square tests.
Results
Of 4,184 IMD cases, 3,816 (91.2%) were sporadic, 304 (7.3%) in 111 STC and 64 (1.5%) in 29 EC. In EC, 84% of cases were 1-24 years old versus 57% in SC and 64% in STC ($p \leq 0.04$). There were more males in EC (64%) than STC and SC (53%, $p=0.2$). The proportion of serogroups B and C was similar in SC, STC and EC (70% and 23% overall). Cases within EC had identical finetypes (when available).The proportion of cases in the first annual quarter was 45.1% in STC, 43.7% in EC and 35.3% among SC ($p=0.001$).
Conclusion
Clusters occurred rarely, and mainly as STC, reflecting predominantly asymptomatic community transmission chains. Results suggest a higher risk of transmission to close contacts in childhood and young adulthood. More clusters occurred in winter months, when IMD incidence, and thus force of infection, is highest.

**Role and outputs:**

Emilie was the principal investigator on this investigation. She performed the analysis and presented the findings orally at a European conference (1), with a further abstract accepted for a poster presentation at an international conference (2).

**Supervisor:** Dr Wiebke Hellenbrand (RKI)

### Reduction in attendance of health care centres, during Ebola outbreak in N'zérékoré prefecture, Guinea, November 2013 – March 2015.

Background
The epidemic of Ebola Virus Disease (EVD) in Guinea has had an unmeasured impact on healthcare access, through changes in healthcare-seeking behaviour and staffing of health centres, which could adversely affect health outcomes in diseases such as childhood malaria. To assess this impact in primary care, we compared healthcare attendances before, during and after the epidemic in the area of N'zérékoré.
Methods
We obtained aggregate figures for healthcare attendances in the 16 primary healthcare centres, stratified by age group and reason for attendance, from the routine surveillance system. We compared monthly consultations in three periods: pre-epidemic (November 2013-August 2014), epidemic (September 2014-February 2015) and post-epidemic (March 2015) according to the

occurrence of EVD in the area. We searched the EVD surveillance records for cases among healthcare staff in the area, and identified any interruptions to centre function.

Results

During the epidemic, the monthly number of consultations for all causes dropped by 44% (from 6675 to 3746), by 52% among the under-fives (from 1989 to 962) and by 18% for antenatal care visits (from 1636 to 1344). Post-epidemic, attendances increased to 5392 for all causes, 1591 for the under-fives and 1744 for antenatal care visits. Two healthcare staff were reported as EVD cases, and only two one-month clinic closures were identified.

Conclusion

Healthcare attendances decreased by around half during the epidemic, increasing afterward but not fully returning to pre-epidemic levels. The effect was greatest among the under-fives, the highest risk group for fatal malaria. This change, occurring despite evidence of health service continuity, suggests a change in health-seeking behaviour during the epidemic. During epidemics, interventions to maintain access to routine healthcare should be implemented to avoid adverse health outcomes.

**Role and outputs**:

Emilie was junior field coordinator and was the lead on this project. She defined the question research, negotiated access to the data, helped in the data entry and performed analysis. She wrote a mission report (3) to be shared with GOARN and ECDC, she also presented the findings during an oral presentation at an international conference (4).

**Supervisor**: Dr Bertand Sudre (ECDC), Dr Thomas Mollet (ECDC)

### Yellow fever outbreak in Republic Democratic of the Congo (DRC), 8 June - 5 July 2016

In DRC, the first yellow fever case was notified in April 2016. On 8 June, we had total number of 909 cases, distributed by district as follow: 400 in Kinshasa, 198 in Kongo central, 78 in Kahemba and 51 in Tshuapa. The situation in Kahemba district was unclear, Kahemba is isolated from the capital Kinshasa and has 3600 km borders with Angola, where the yellow fever outbreak started in December 2015.
I was deployed in Kahemba for a joint exploratory mission made up of WHO, ministry of health and Médecin sans frontières staffs. Our objectives were to assess logistical capacities of existent expended programmes for immunization for the incoming vaccination campaign, assess capacity of existent health care structures, collect local entomological data, strengthen social mobilisation, strengthen local surveillance system.

**Role and outputs**:
Emilie was the chief of mission with the local surveillance team she developed an action plan to implement a surveillance system based on community surveillance and active case finding in the health structures. On her returned, she debriefed with the outbreak team manager in Kinshasa and wrote a mission report to be shared with the GOARN team and ECDC (5).

**Supervisor**: Philippe Barboza (WHO)

**Competencies developed:**

I learned about surveillance systems organization in a European country and in two low income countries. During the project on IMD, I understood the major added value of spatio-temporal analysis in *Neisseria meningitidis* surveillance and developed good commands in STATA, software that I never used before. During the EVD mission, I learned about the indirect consequences of an outbreak that to keep the trust of the population in the health system is key to mitigate these consequences. Set up a local surveillance system in DRC was a very great experience. I experienced how to deal with local authorities and to prioritize actions to be implemented in a very low resource context.

## 2. Outbreak investigations

### Investigation of a Shiga toxin-producing Escherichia coli infection outbreak associated with haemolytic uraemic syndrome, Romania, Italy January – April 2016.

Background
Shiga-toxin producing Escherichia coli (STEC) infections are increasingly reported in the European Union (EU). STEC O26 is the second most frequently reported serogroup. We investigated a STEC outbreak in Romania and Italy to identify the source and prevent further cases.
Methods
In our investigation we included EU residents with an epidemiological link to Romania. Confirmed cases were individuals with laboratory-confirmed STEC O26 infection. Probable cases were individuals either with haemolytic uraemic syndromes (HUS) diagnosis or positive test for stx1 and/or stx2 and eae or other STEC serogroups after 15/01/2016. We queried cases' food consumption during 10 days before disease onset. We tested suspected food items for STEC using the ISO/TS 13136:2012. We characterised isolates by Pulsed-Field Gel Electrophoresis (PFGE).
Results
From 25/01/2016 to 08/04/2016, we identified 13 confirmed cases (11 in Romania, two in Italy) and 14 probable cases (all in Romania): 21 were <2 year-old, 19 had HUS with three fatalities. Italian cases consumed cow soft-cheese from one Romanian dairy that exported to EU countries, and which has been mentioned twice during interviews in Romania. Human and cheese isolates were obtained from both countries and PFGE was performed on seven human and three cheese isolates: both Italian STEC O26 isolates from human and cheese showed >98% similarity. Alert was given through Epidemic Intelligence Information System for food- and waterborne diseases (EPIS-FWD) and Rapid Alert System for Food and Feed (RASFF). The Romanian dairy suspended activities on 28/02/2016; its products were withdrawn from the EU market.
Conclusion
Results implicated contaminated cheese as a persistent common source of infection and emphasized that dairy production can be a source for STEC O26 infection. Communication at European level was crucial to prevent further cases.

**Role and outputs:**

Emilie was co-investigator in a team of three experts. They collected national data and performed a descriptive time series analysis to confirm the outbreak. As a case in Italy related to the outbreak was detected, Emilie drafted the European case definition. Emilie was in charge of the creation and management of the linelist. The team developed a specific questionnaire and entered the data. Emilie performed a descriptive analysis to generate hypothesis on the food vehicle of the outbreak. The team reported the findings during debriefing with the Minister of health and representatives of the national food agency. A rapid risk assessment was released by ECDC, Emilie was an external expert who reviewed it (6) Emilie wrote the mission report (7). Emilie published the early findings in a peer-review journal (8) with a further abstract accepted for an oral presentation at an international conference (9).

**Supervisor:** Ettore Severi (ECDC)

### A large outbreak of cryptosporidiosis among school children in Thuringia, Germany, November 2014

Background
In November 2014, four schools in one Thuringian county, all supplied by the same caterer, notified outbreaks of cryptosporidiosis. We investigated to identify the source and implement control measures.
Methods
We defined suspect cases as persons living in or visiting Saale-Holzland County with gastroenteritis of <3 days duration between 01/10/2014 and 31/12/2014, probable cases had diarrhoea for at least 3 days

and confirmed cases a laboratory-diagnosed Cryptosporidium infection. We contacted physicians in the district and laboratories to search for additional cases. Stool samples of cases, the caterer's staff and water of the district's public swimming-pool were tested for Cryptosporidium. One isolate was sequenced. We cohorted students from three affected schools; they completed a self-administered questionnaire with their parents. We queried consumption of food at the school canteen, swimming-pool visits and contact to animals prior to symptom onset.

Results

We identified 108 suspect, 59 probable and 18 confirmed cases among students and three confirmed cases among relatives. Median age of cases was 10 years (range 3- 57), 93 (48%) were female. Confirmed cases' symptoms started on 10/11/2014 and peaked on 12/11/2015. The last case was among a relative, with symptom onset on 28/11/2014. DNA sequencing identified Cryptosporidium parvum (genotype: IIaA17G1R1). Staff's samples and the swimming-pool water tested negative for Cryptosporidium. All confirmed student cases had eaten at the school canteen in the week prior to symptom onset. We found no associations between any analysed exposure and illness.

Conclusion

This large point-source outbreak of cryptosporidiosis was possibly foodborne. Genotype analysis suggests a zoonotic origin. Although large outbreaks of cryptosporidiosis are rarely notified in Germany, medical practitioners and public health authorities should consider testing for Cryptosporidium in gastroenteritis outbreaks.

**Role and outputs:**

Emilie was the second line investigator on this investigation. She entered data, co-conceived the study design and helped during the analysis. The findings were accepted for poster presentation in an international conference (10).

**Supervisor:** Bettina Rosner

**Competencies developed:**

The cryptosporidium outbreak was my first outbreak investigation and it was in German which added to difficulties. It was the first time I had to enter data from manually written answers on the questionnaire and to choose a study design. During this experience, I gained knowledge in the German surveillance and public health system.

During the outbreak in Romania, we had a huge media, political and time pressure. It was the first time I was chasing by journalists. I understood how important the communication during an outbreak was. I learned how to develop a questionnaire taking into account social and cultural specificities regarding food consumption. I acquired ability to work with diverse institutions (ECDC, WHO EURO, Romanian Public health institution, Italian Reference National Laboratory) and in multi-cultural and interdisciplinary settings (MDs, lab, politicians). It was time I was asked to present the early findings to politicians, I adapted my speech to the audience.

# 3. Applied epidemiology research

## Competencies, experience and employers' support would encourage application for an Ebola assignment: A cross sectional survey among epidemiologists and microbiologists - European Union, December 2014

Background
Response to the Ebola outbreak in West Africa requires deployment of epidemiologists and microbiologists.
We aimed at identifying factors associated with European experts' applications for such assignments.
Methods
In December 2014, we surveyed epidemiologists and microbiologists from the European Union by email-distribution of an open, online likert-scale questionnaire into the European Field Epidemiology Training Programme (FETP) Alumni Network (EAN) and further professional networks.
We collected information on personal and professional background, past application for an Ebola assignment and opinion on key statements.
We compared the proportion of applicants in terms of these characteristics using prevalence ratios (PR) and 95% confidence intervals (95%CI).
Results
49 (15%) of the 368 respondents had applied for an Ebola assignment. Applicants did not differ from non-applicants in age, sex, professional background and years of experience.
However, the proportion of applicants was higher among those who were current or past FETP fellows [20% of 182 versus 9% of 135; PR= 2.3; 95%CI=1.2-4.2], experienced in international outbreaks response [32% of 91 versus 9% of 231; PR=3.7; 95%CI=2.2-6.2], confident in their knowledge about Ebola [20% of 212 versus 5% of 82; PR= 4.1; 95%CI=1.5-10.9], released from their tasks by employers [21% of 145 versus 11% of 104; PR=1,9; 95%CI=1.0-3.7] and asked to join an assignment [27% of 80 versus 8% of 208; PR=3.6; 95%CI=1.9-6.4].
Conclusions
FETP training, past experience in international outbreak response, self-confident in knowledge, employers' support and direct requests to identified experts may facilitate applications for Ebola assignments.
Strong responses to Ebola outbreak and future similar crises require supporting FETPs, building the specific competencies, securing employers support and identifying a contingent of experts.

**Role and outputs**:

The project was in two part, the first part focused on a descriptive analysis on the motivation to apply for an EVD mission, Emilie was co-investigator, she participated in the questionnaire development and in its diffusion. An article has been published in a peer review journal (11).

The second part of the project aimed to perform an analytical study by comparing applicants and non-applicants and a qualitative analysis to respondent's answers. Emilie was the principal investigator on this part. She wrote the protocol, performed a logistical regression, analysed qualitative data and drafted the final report (12).

**Supervisor**: Dr Ute Rexroth & Dr Michaela Dierke

**Competencies developed:**

It was the first time, I participated in a full questionnaire development and that I had to recruit respondents through the network. The research question was not a typical epidemiological question but had to deal with social behaviour and family context of the respondent. Why did you or why didn't you apply for an Ebola mission? It was the first time, I analysed qualitative data, I think this an important skill when analysing trawling questionnaires during outbreak investigation.

# 4. Communication

## Publications in peer reviewed journals

- two publications in peer reviewed journals (8, 11)

## Conference presentations

- three oral presentations in international congress (1, 4, 9)
- two poster presentation in an international congress (2, 10)

## Other presentations

- four presentations during internal meetings (Men, List, EVD outbreak, YF)
- three debriefing presentations after outbreak investigation (2 for yellow fever, one for HUS)

## Reports

- Four mission and study reports (3, 5, 7, 12)

## Other

- one rapid risk assessment (6)
- one book chapter (13)

# 5. Teaching activities

## Anthropology and epidemiology during the EPIET outbreak management module, Berlin, December 2015

In collaboration with an anthropologist from the London school of tropical medicine and hygiene, I developed a mini case study to make the audience understand the importance of cultural and social components of an outbreak response, specifically when giving recommendations.

**Supervisor(s):** Christian Winter

## Development of an e-learning on outbreak investigation with ECDC

I developed the core of the e-learning by break-downing the 10 steps of an outbreak investigation. I defined the learning objectives and looked for the material needed to developed presentations accordingly. I also created two presentations that were missing in the EPIET curricular (create and management of the linelist, hypothesis generation strategy). I wrote a reflective note on this project.

**Supervisor(s):** Vladimir Prikazsky

**Educational outcome:**

To develop and deliver teaching helped me to strengthen my own knowledge as you need to be very precise and to deeply think and take into account students level and way of thinking/understand. Develop the e-learning was a great experience, it will be piloted by the end of 2016. In the future, I wish to have more opportunities to give lectures and to supervise students.

# 6. International assignments

1. Yellow fever outbreak in Republic Democratic of the Congo WHO/GOARN 8 June - 5 July 2016

**Role**: field coordinator

2. Investigation of a Shiga toxin-producing Escherichia coli infection outbreak associated with haemolytic uraemic syndrome, Romania, Italy January – April 2016.

**Role**: expert in a team of three

3. Ebola outbreak in Guinea WHO/GOARN, N'zérékoré 2 Mars – 5 April 2015

**Role**: junior field coordinator

## 7. Others

*Additional surveillance project*

1. Estimation of the specificity, sensitivity and the timeliness of the current algorithm used to detect outbreaks in Germany in a context of listeriosis outbreak, Emilie wrote the protocol.
2. Shigellosis national indicator based surveillance, Emilie wrote the annual book chapter on shigellosis epidemiology in Germany (13).

*Additional training*

1. Completed the on-line LSHTM course 'Ebola in Context: Understanding Transmission, Response and Control' 19th-30th January 2015 http://www.lshtm.ac.uk/study/freeonlinecourses/ebola/
2. Completed UNDSS online courses on Basic and Advance Security in the field
3. Completed ECDC on-line pilot course on Abstract writing

## 8. EPIET/EUPHEM modules attended

1. Project review module, 22 – 26 August 2016, Lisbon, Portugal
2. Vaccinology module, 16 – 20 May, Paris, France
3. Multivariate analysis, 14 – 18 March 2016, Vienna, Autria
4. Laboratory module, 15 – 17 February 2016, Berlin, Germany
5. Time series analysis, 23- 27 November 2015, Utrecht, Netherlands
6. Project review module, 24 – 28 August 2015, Lisbon, Portugal
7. Outbreak Investigation, 15 – 20 December 2014, Berlin, Germany
8. Introduction course 29 September – 17 October 2014

## Supervisor's conclusions

In fully achieving the EPIET objectives, Emilie Peron showed a high level of motivation and initiative and demonstrated the ability to work independently. She is to be commended for this especially in view of the added challenges of being an EPIET-fellow, which entail learning a new language and adjusting to a new culture. As briefly outlined below, her work was a significant contribution to the department of Infectious Diseases at RKI.

In her surveillance project on meningococcal clusters, she contributed to a better understanding of the dynamics of meningococcal disease transmission and provides insight on the need for heightened awareness for possible secondary cases among children and adults as well as during winter months.

Emilie was involved in two outbreak investigations; in addition to the above HUS outbreak in Romania she assisted in investigating a cryptosporidiosis outbreak in Thuringia. In both, she experienced the challenges of communicating and cooperating with the political level in addition to the public health and veterinary health authorities. In both cases, the insights gained will be helpful for investigating similar outbreaks in the future and a valuable contribution to knowledge on possible sources for outbreaks with these pathogens in the future. Her work on factors associated with willingness for deployment to the Ebola outbreak in West Africa will be helpful for identifying experts for future international missions with RKI involvement. Emilie's interest in the need to consider anthropological aspects in international epidemiological missions grew out of her Ebola mission in Guinea and thus she gave valuable input into the EPIET outbreak management module in this regard.

Emilie's strong interest in international missions was opportune at a time when RKI was strengthening international cooperation. The problems she encountered and ensuing exchange with ECDC after her

second mission (Strengthening Surveillance in DRC) underlined the importance of closer involvement of supervisors at RKI in such situations.

It was an a pleasure to work with Emilie and we wish her success in achieving her dream of participating in international epidemiological missions with the goal of improving public health conditions worldwide.

## Coordinator's conclusions

During these two years Emile has proven to be an independent professional, able to carry on investigations as difficult as the HUS outbreak in Romania and to face media and political pressure. All her international missions show how well Emilie can fit in multicultural teams. And the completion of all the projects she carried on in parallel shows her commitment to work. Emily entered the EPIET programme with the clear objective of tailoring her professional career towards infectious diseases epidemiology, and I believe that she greatly succeeded.

## Personal conclusions of fellow

The programme was an opportunity for me to change my field of work and to enter the infectious diseases world. I highly appreciated the alternative modules and the possibility to apply the new skills developed. I particularly appreciated the possibility to participate in international outbreak responses. After the programme, my two potential favourite areas of work would be vaccine preventable diseases and international outbreak responses.
But EPIET is not only scientific, it is also an international network that is united and that speaks the same epi-language. It helps to strengthen collaborations between countries with the aim to enhance international surveillance and response.
I am very glad to have had the chance to benefit from the programme. It changed my life.

## Acknowledgements

I would like to acknowledge:

- Yvan Hutin who "did not lean over me, but raised me."
- Wiebke Hellebrand who helped me to make my own way
- Christian Winter who had "always 2 minutes to talk with me"
- Thomas Mollet with whom I was in Guinea during the Ebola outbreak. We have one life opportunity for our first international assignment, I am glad to have it done with you!
- All the EPIET coordinators who make the fellowship possible
- All my cohort… I love you guys!

## References


1. Peron E. Comparison of sporadic cases of invasive meningococcal disease (IMD) with cases in clusters, Germany, 2005-2014. 13th Congress of the European Meningococcal and Haemophilus Disease Society; 2015 Sep; Amsterdam.
2. Peron E. Comparison of sporadic cases of invasive meningococcal disease (IMD) with cases in clusters, Germany, 2005-2013. European Scientific Conference on Applied Infectious Disease Epidemiology 2015; 2015 Nov; Stockholm.
3. Peron E. Ebola outbreak response. N'zérékoré, Guinea: GOARN/WHO; 2015 Apr.
4. Peron E. Reduction in attendance of health care centres, during Ebola outbreak in N'zérékoré prefecture, Guinea, November 2013 – March 2015. European Scientific Conference on Applied Infectious Disease Epidemiology 2015; 2015 Nov; Stockholm.
5. Peron E. Yellow Fever outbreak response. Democratic Republic of the Congo: GOARN/WHO; 2016 Jul.
6. European Centre for disease prevention and control (ECDC). Rapid risk assessment -Multi-country outbreak of Shiga toxin-producing Escherichia coli infection associated with haemolytic uraemic syndrome [Internet]. 2016. Available from: http://ecdc.europa.eu/en/publications/Publications/RRA-Escherichia-coli-O26-Romania-Italy-April2016.pdf
7. Peron E, Mardh O, Severi E. Multi-country outbreak of Shiga toxin-producing Escherichia coli infection associated with haemolytic uraemic syndrome. European Center for disease prevention and control (ECDC); 2016 Nov.
8. Peron E, Zaharia A, Zota LC, Severi E, Mårdh O, Usein C, et al. Early findings in outbreak of haemolytic uraemic syndrome among young children caused by Shiga toxin-producing *Escherichia coli* , Romania, January to February 2016. Eurosurveillance [Internet]. 2016 Mar 17 [cited 2016 Nov 19];21(11). Available from: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21417
9. Peron E. Investigation of a Shiga toxin-producing Escherichia coli infection outbreak associated with haemolytic uraemic syndrome, Romania, Italy, January – April 2016. European Scientific Conference on Applied Infectious Disease Epidemiology 2016; 2016 Nov; Stockholm.
10. Haussig J. A large outbreak of cryptosporidiosis among school children in Thuringia, Germany, November 2014. European Scientific Conference on Applied Infectious Disease Epidemiology 2015; 2015 Nov; Stockholm.
11. Rexroth U, Diercke M, Peron E, Winter C, an der Heiden M, Gilsdorf A. Ebola response missions: To go or not to go? Cross-sectional study on the motivation of European public health experts, December 2014. Eurosurveillance. 2015 Mar 26;20(12):21070.
12. Peron E. What factors could increase or influence the motivation to apply for an Ebola mission and what factors are associated with application to an Ebola mission. A cross sectional survey in Europe, December 2014. Robert Koch Institut; 2016 Sep.
13. Peron E, Rosner B. Shigellosis annual report, 2015. In: Infektionsepidemiologisches Jahrbuch meldepflichtiger Krankenheiten für 2015. Robert Koch Institut; 2016.