FELLOWSHIP REPORT

Summary of work activities

Georgios Theocharopoulos
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.

The objectives of the ECDC Fellowship - EPIET path are:

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

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

Prior to EPIET, Georgios Theocharopoulos worked for 2 years as an evaluation manager for medical humanitarian programs of Mèdecins Sans Frontieres (MSF), and for the previous three years as an epidemiologist in the Zoonoses and Vector born infections office of the Hellenic Centre for Disease Control and Prevention (HCDCP) in Athens, Greece. He also worked with MSF in the field and the headquarters for 12 years. He trained as a nurse and has a Masters in Public Health from the London School of Hygiene and Tropical Medicine.

Fellowship assignment: Intervention Epidemiology path (EPIET)

On 15 September, Georgios Theocharopoulos started his EPIET fellowship at the former Institute de Veille Sanitaire (InVS), now called Santé Publique France (SPF), Paris, France, under the supervision of Dr. Henriette de Valk, head of the unit for Vector, Zoonotic and Foodborn infections. His EPIET frontline coordinators were Dr. Pawel Stefanof (for the first year) and Dr. Kostas Danis (for the second year). 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

Evaluation of the surveillance system for children identified with latent TB (LTBI), in France, 2003-2013.

Children with latent tuberculosis infection (LTBI) have increased risk of developing active TB, but treatment of LTBI can prevent progression to TB. In 2003, LTBI in children became mandatorily notifiable in France to enhance LTBI case detection and early treatment and trigger the investigation for active TB cases. We analysed 2010-2014 surveillance data to identify possible areas of improvement in surveillance.

Cases were children <15 years old, having a positive skin test (following injection of 5U tuberculin) and no evidence of active TB. We described LTBI cases and calculated the ratio of LTBIs to pulmonary active TB cases in children, to identify trends in TB transmission.

During 2010-2014, 3,862 LTBI cases were notified (634-867 cases per year compared with 440-485 cases during 2004-2006 and 600-633 during 2007-2009). Median age was 8 years (inter-quartile-rate: 3-11). Of LTBI cases, 67% (2478/3476) were foreign-born or of foreign-born parents; 87% (2920/3347) were detected through active case finding. The ratio of LTBI in children/pulmonary active TB was 21/100 and increased from 17/100 in 2010 to 25/100 in 2014.

Reported LTBI cases in children increased, possibly due to improved case investigation practices. The ratio of LTBI/pulmonary TB was consistent with literature data for France and its increase in 2010-2014 might be attributed to the decrease of reported pulmonary TB cases during that period. Reported LTBI cases were largely linked to active case finding, suggesting that only a fraction of LTBIs was detected through surveillance. The LTBI notification system alone may not be sufficient to detect all future TB cases and we recommend an evaluation of its public health usefulness.

Role and outputs: Principal investigator. Georgios was the principal investigator, he wrote the latent TB evaluation protocol (1), developed an analysis plan and analysed a 10-years national surveillance data for latent TB in France, and submitted a manuscript (2) to a national peer-reviewed journal. In addition, an abstract was accepted for poster presentation at ESCAIDE 2016 (3).

Supervisor: Delphine Antoine, Responsible for Tuberculosis, Public Health France.

Surveillance in Points of Care (POC) for the migrant/refugee population stranded in Greece.

In March 2016, the sealing of the Western Balkan migration route resulted in about 50,000 refugees/migrants being stranded in camps across Greece. Since mid-April Greek public health authorities with the support of two EPIET fellows implemented a syndromic surveillance system at points of care (POC) in centres hosting refugees/migrants to rapidly detect and respond to potential public health emergencies.

Health care providers in POC daily reported data on 14 syndromes/conditions to the Hellenic Center for Disease Control and Prevention. During the initial phase of the establishment of the system, we identified constraints through site visits and delivered training to health care providers. We analyzed data daily, determining whether observed morbidity exceeded significantly the expected proportional morbidity for each syndrome.

During 11/4/2016-31/7/2016, 50 of the 55 centres (covering 99% of the refugee/migrant population hosted in centres) were gradually included. Respiratory tract infections with fever were most frequently reported (n=5831; 55%), followed by gastroenteritis (n=3071; 29%), scabies (n=868; 8.3%) and rash with fever (n=668; 6.4%). Of the reported rash with fever cases, 88% (n=586) were chickenpox, from which 84% were among children <15 years old. Eighteen clusters of gastroenteritis without blood from 12 different centres were reported, all of small size (median: 14 cases, range: 7-34), and low severity. All nine reported cases of jaundice of acute onset were hepatitis A, for which appropriate measures, including vaccination of close contacts, were implemented. No cases of serious communicable conditions were reported.

Syndromic surveillance in POC for refugees/migrants allowed monitoring the morbidity of the refugees/migrants, enabling health authorities to detect and respond to events of public health importance. We recommend the maintenance of the system for the duration of POC operation.

Role and outputs: Principal investigator.

The project was part of the ECDC support to the Greek authorities during the refugee crisis. Georgios worked with a surveillance team, but also independently, with frequent travel to 20 different locations. He contributed to the development of the case definitions, the data collection forms and the surveillance procedures. He negotiated with all different stakeholders and conducted onsite trainings for the medical teams on the use of the surveillance form and the case definitions, developed a refugee camp data collection form and the related database. He presented the project outcomes in the EAN migrants health workshop in Brussels(4). He produced weekly situation reports for ECDC and a final surveillance implementation report (5) and submitted an abstract as a late breaker at ESCAIDE 2016 that was accepted as an oral presentation (6).

Supervisors: Takis Panagiotopoulos, Dennis Coulombier

Competencies developed: During the surveillance projects, I applied skills related to i) systematic literature search, ii) time series analysis, iii) developing the evaluation protocol of a surveillance system and iv) setting up a new (syndromic/case-based) surveillance system in an emergency situation. Developing and implementing an enhanced surveillance for syndromes and diseases of public health concern in more than 50 points of care was a challenging and exciting project to work on, in particular as migrants and refugee health is an evolving topic in Europe. Through the collaboration with the involved stakeholders (national and international NGOs, state, civil and military institutions), I developed negotiation skills to promote and defend the importance of including infectious disease surveillance priorities in daily work plans and in organizational policies.

2. Outbreak investigations

Outbreak of febrile gastroenteritis in two long term care facilities, associated with Listeria monocytogenes contaminated cheese in Loire department, France, June 2016.

Non-invasive Listeria monocytogenes (Lm)-associated febrile gastroenteritis is underdiagnosed and underreported in France where approximately 400 invasive listeriosis cases have been reported annually since 2009. In July 2016, two Lm-meningitis cases were reported among residents of two distinct assisted-living facilities (ALF) in central France, who attended a festive meal. We investigated to identify the source of the outbreak and recommend control measures.

We defined a presumptive case as fever, headache or asthenia and gastrointestinal symptoms in a resident or staff meal attendee, within 2 weeks after the meal, and a confirmed case as laboratory-

confirmed Lm infection in a meal attendee. We conducted a retrospective cohort-study at both ALF and calculated adjusted risk ratios (aRR). Participants' stool samples were collected and tested for Lm. Suspected food items were tested for enteric pathogens and were traced back. Lm isolates were typed by pulsed-field gel electrophoresis (PFGE) and core-genome multilocus sequence typing (cgMLST).

We identified 19 cases (four confirmed, 15 presumptive); four were hospitalized, one died. Twelve cases including 2 (17%) meningitis occurred among residents (median age 88 years, range 52–101) and seven among staff (median age 37 years, range 15–76). Two stool samples cultured positive for Lm. Raw-milk cheese consumption was associated with illness (aRR =33; 95% CI 3.8–297). Trace back investigation implicated a local cheese producer; hygiene violations were identified and implicated cheeses were recalled. All human and food isolates were indistinguishable by both PFGE and cgMLST.

Raw-milk cheese was the likely vehicle of this outbreak. Lm-gastroenteritis developed in both residents and staff, whereas invasive listeriosis solely developed among residents. Serving at-risk food to at-risk population in ALF should be avoided.

Role and outputs: Principal investigator.
Georgios conducted the field visit and worked together with the local hospital field investigation team. He collected outbreak data using a structured questionnaire, developed the data entry mask using excel and EpiData software, performed data entry and data analysis. He also prepared an abstract (7) that was submitted as late breaker to ESCAIDE 2016 and prepared a manuscript (8) to be submitted to a peer-reviewed journal.

Supervisors: Mathieu Tourdjman, Henriette deValk

Measles epidemic in Kinkondja, Haute Lomami, Democratic Republic of Congo (DRC), March - July 2015

In March 2015, an increased number of measles cases and deaths were reported to the central public health office in Kinkondja, a health district of Haute Lomami Province. In four weeks the epidemic expanded to all health zones. In April 2015, MSF organized a measles vaccination campaign in Kitembo and in June, in collaboration with the MoH, launched a measles mass vaccination campaign (MVC), targeting more than 100,000 children between 6 months and 15 years of age in an area of highly migrating population.
We trained the local staff in case management and supported the local health authorities to implement a measles surveillance system. In order to estimate attack rates and the population in the district, we conducted a census in selected villages.
Overall, 57,075 children were vaccinated in Kinkondja HZ by the end of August 2015. Of those, 39% were < 5 years old. Measles surveillance presented structural problems in many communities and did not contribute to early identification and response in the recurrent measles epidemics.
The MVC, implemented by the same teams responding to a malaria epidemic with delays, aimed to prevent future outbreaks rather than control the current epidemic. Strengthening the surveillance system is imperative and a condition before any complementary activity to contain an epidemic of measles in Kinkondja health zone. Health authorities in the region should consider reinforcing measles vaccination through routine vaccination (EPI) in particular in areas with low vaccination coverage and facilitate a survey to estimate the measles vaccination coverage.

Role and outputs: Principal investigator
Georgios was the field team epidemiologist. He reviewed context documents and situation reports related to the previous and current outbreaks in the region, described the measles epidemic in

Kinkondja, conducted field visits to meet with the health staff in several health centres, supervised the data collection and analysed the outbreak data. He produced an outbreak report (9). He advised local health authorities on how to improve measles surveillance in the area.

Supervisor: Annick Lenglet

Ebola Outbreak, Tonkolili district, Sierra Leone, January 2015

In Tonkolili district the first Ebola Virus Disease (EVD) cases appeared late in July 2014. The transmission was fast and many communities in all chiefdoms in the district were affected. Patients and EVD cases from the district were often held in short stay health facilities (holding centres and community care centres) until they were diagnosed. Confirmed Ebola cases were then referred to distant Ebola Management Centres (EMCs) in Kailahun and Bo (distant EMCs). In December 2014, a new EMC opened in Tonkolili district 2 km far from the town of Magburaka, the administrative capital of the district, to improve the provided care to EVD patients.

We described the cases admitted to the new EMC in January 2015 and estimated the mean delay from symptom onset to admission.

Cases in the district peaked between end of October and November 2014. During January 2015, we identified and investigated three chains of transmission in three communities of Tonkolili district. The recently constructed district EMC triaged more than 110 patients. Of those, 43 were confirmed and admitted; 50% of them recovered. In the same period, the mean delay from symptom onset to admission ranged from 7 days (SD=4.6) in distant EMCs to 3.7 days (SD= 2.8) in the district EMC ($p<0.001$).

The opening of a district EMC resulted in earlier isolation of cases. Nevertheless. more appropriate use of resources and tidier coordinated efforts for earlier isolation of new cases is required.

Role and outputs:

Georgios supervised the data entry and data management team and was responsible for epidemiological data analysis and communication in the district EMC in Magburaka EMC. He conducted also field investigations in three communities in the district to explore the chain of transmission. He analysed and reported outbreak data on a daily basis to national and international health authorities and MSF headquarters, and produced a weekly epidemiological bulletin. He has also prepared an outbreak report for the MSF HQs (10).

In addition, he was involved in the “mapping project” of villages in Tonkolili district using mobile phones and supervised 24 local workers. An abstract (11) has been presented on this topic and an article (12) was submitted to a scientific journal. A presentation (13) was given in the MSF scientific days. In all the communication outcomes related to the “mapping” project he was involved as a co-author.

Supervisors: Grazia Caleo

Competencies developed:

Being involved in three outbreak investigations, I had the opportunity to conduct literature searches (on the subjects of haemorrhagic fevers, vaccine preventable diseases and food-borne infections), describe the epidemics in terms of time, place, person, generate hypotheses, and conduct an analytical epidemiological study to identify the outbreak source (listeriosis outbreak). Working in the Ebola outbreak environment inside the EMC, in the communities and living with the affected population was a challenging, but fruitful experience. Through the mapping Ebola project, I could experience innovative approaches and application of new technology in epidemiology. I improved my communication skills i) attending and actively participating in international stakeholder meetings, ii) by oral and written reporting of epidemiological information on a daily and weekly basis, iii) communicating the outbreak situation in the existing alert systems, iv) reporting the data analysis results to stakeholders and helping

them take informed decisions based on evidence (measles outbreak). I have also further developed my teaching skills by conducting in-site training for the medical teams on epidemiological aspects.

3. Applied epidemiology research

The opening of a district Ebola Management Centre reduced delays of healthcare and the number of dead on arrival, Tonkolili district, Sierra Leone, 2014-15

During August-December 2014, Ebola patients from Tonkolili district were referred to distant Ebola Management Centers (EMCs) in Bo and Kailahun districts. In December 2014, Médecins Sans Frontières (MSF) opened an EMC in Tonkolili district (district EMC). We aimed to determine whether the opening of the district EMC reduced delays of care and identify factors associated with fatality.

Cases were residents of Tonkolili district with Ebola positive PCR tests, referred to the MSF EMCs, during 12/09/2014-23/2/2015. We calculated case-fatality and adjusted Risk Ratios (aRR) using Poisson regression.

Of the 251 Ebola cases, 211 (84 %) were admitted to the distant EMCs and 40 (16%) in the district EMC. Of those, 114 (45%) died; 10 during transportation to the distant EMCs. The mean delay from symptom onset to admission ranged from 7 days (SD=4.6) in distant EMCs to 3.7 days (SD= 2.8) in the district EMC ($p<0.001$). Cases with delayed admission (>3 days after symptom onset) were 2.3 (95%CI 1.5-3.5) times more likely to be hospitalized in the distant compared with the district EMCs, but were less likely (aRR=0.78; 95%CI 0.62-0.98) to have a high viral load. Case fatality decreased with increasing viral load at admission (aRR 0.88; 95%CI 0.85-0.91) and was higher among cases presenting with vomiting (aRR 1.5; 95%CI 1.0-2.1).

The opening of a district EMC resulted in earlier isolation of cases and in reduction of the number of dead on arrival. Viral load and vomiting at admission predicted fatality. Community deaths were not included, leading to an underestimate of case-fatality. Health authorities should consider early referral of patients to EMCs as an important component of future response to Ebola outbreaks.

Role and outputs: Principal investigator

Georgios wrote the study concept paper, and the study protocol, he performed data entry, analysed epidemiological data from three datasets, did a poster presentation to ESCAIDE 2015 (14) and submitted a manuscript to a peer-reviewed journal (15).

Supervisors: Grazia Caleo, Henriette de Valk, Kostas Danis

Vaccination coverage survey following a measles vaccination in Kinkondja health zone, Haute Lomami region, Democratic Rebuplic of Congo, July-August 2015.

In response to a measles outbreak in Haute Lomami region, Democratic Republic of Congo (DRC) (3,022 clinical cases and 154 deaths from March to August 2015), Médecins Sans Frontières (MSF) conducted a measles vaccination campaign (MVC) in a highly mobile population in Kinkondja prefecture and a household survey to estimate the measles vaccination coverage and understand reasons for non-vaccination.

We used two-stage cluster sampling to randomly select households. We collected data on measles vaccination status for children 6 months to 15 years and reasons for non-vaccination during the MVC in July-August 2015. We estimated the coverage in the MVC by age and gender. To identify factors associated with low coverage, we calculated adjusted prevalence ratios (aPR) using Poisson regression.

We included 2,980 children from 709 households in 40 clusters. Of them, 50% were female. Measles coverage was 64% (95%CI: 63-66) and 85% (95%CI: 84-86) documented by vaccination card and by card

and oral vaccination history, respectively. Coverage was higher when children's guardians were over 25 years (aPR: 1.2; 95%CI: 1.0 –1.4), communities were accessible by car or boat (aPR: 1.2; 95%CI: 1.0–1.4) and social mobilisers promoted the MVC (aPR: 1.3; 95%CI; 1.1–1.5). For the 441 unvaccinated children, displacement (49%; 95%CI: 36-61) and inadequate information about the MVC (12%; 95%CI: 3.0-20), were the most frequent reasons for non-vaccination.

The MVC did not achieve the global standard of 95% coverage in Kinkondja in 2015. Better access to vaccination sites and knowledge about the MVC were predictive factors, suggesting that extensive social mobilization is required to achieve adequate measles coverage in these communities.

Role and outputs: Principal investigator.

Georgios wrote the protocol (16), trained and coached a team of interviewers, developed the structured questionnaire for the data collection and the data entry mask, developed the informed consent form, performed daily the data verification, data entry, cleaning and analysis, prepared and submitted to MSF medical department a vaccination coverage survey report (17), submitted an abstract that was accepted as an oral presentation at ESCAIDE 2016 (18), and drafted a manuscript to be submitted to a peer-reviewed journal (19).

Supervisor: Annick Lenglet

Prevalence of Nosocomial Infections in Long Term Healthcare Facilities in France: Literature review.

Healthcare –associated infections (HAIs) pose threats for the aged population living in Long Term Healthcare Facilities (LTCFs). In 2008, a study (HALT study) was launched in several European region countries to monitor the prevalence of HAIs in Europe and inform the public health, infection control programs and policies at European level. France is a country with increasingly aging population; about 10,000 LTCFs housing elderlies were registered in 2013.

We conducted a literature search to identify worldwide evidence concerning the infections and the prescription of antibiotics in health care facilities for the elderly, in order to inform the research protocol of a HAIs prevalence study in France. The study's objectives were to describe the population, estimate the prevalence of infections and the prescription of antibiotics in the LTCFs.

We used PubMed interface, but also thesaurus BIUS, BDSP and SCOPUS sources to access more articles in French. In PubMed, we searched using both, free text terms and Mesh terminology. We also went through the references in the identified articles. We launched six searches resulting in 49 articles. In total, 8 articles and 2 abstracts were selected and further studied.

Role and outputs: Principal investigator.

Georgios conducted the literature search aiming at the writing of the study protocol; he produced a literature analysis table and presented the results of his research in a stakeholder meeting aiming to finalise the study design (20).

Supervisors: Kathleen Chami

Competencies developed:

All three research projects provided opportunities to work and gain experience on different infectious disease and topics of public health interest (Ebola and measles viruses, and infections in LTCF). I had the

opportunity to conduct both descriptive and analytic studies which was one of my personal goals when I started EPIET.

Working on the project for the cross sectional study on the prevalence of infections in the LTCFs, I had the opportunity to participate in a stakeholders meeting, discuss the study design and the methodology and help decision makers to conclude in the formulation of the study protocol. The decision of the MoH to postpone the study for a year later did not allow me to be further involved in this project.

The measles and Ebola studies provided me with the opportunity to go through all the research steps (from the concept paper to the communication of scientific evidence). Both projects provided evidence that helped the involved organizations adapt their operational public health approaches. The preparation and implementation of the vaccination coverage survey helped me develop further my skills to work with field teams and gain more experience in the use of questionnaires for data collection, management, and reporting.

4. Communication

Publications in peer reviewed journals

None yet.

Manuscripts submitted to peer reviewed journals (in review process)

Three manuscripts submitted (2, 8, 15), one as a co-author (12), and one under preparation (19)

Conference presentations

Two oral presentations at ESCAIDE 2016 (18, 6), two poster presentations at ESCAIDE 2015 and 2016 (14, 3), two late breaker abstracts submitted (6, 7), two oral presentations as co-author (11, 13)

Other presentations

One oral presentation at the EAN Migrants health workshop, 18-19 June 2016, Brussels, Belgium (4).

Reports

Two outbreak reports (9, 10) , one survey report (17), one surveillance report (5), one surveillance protocol (1)

Other

One survey protocol (16), one rapid assessment report as co-author (21)

5. Teaching activities

International course of applied epidemiology (IDEA) 2016, Rennes, France, 14 March – 1 April 2016.

Georgios participated in the preparation of the course content (review of the case studies), and in the review of the whole training material related to the module (working session with the facilitators), attended the second week of the training and facilitated in three case studies. The target audience was public health professionals in France.

Supervisor: Delphine Antoine

Training of fieldworkers on methodology and data collection vaccination coverage survey, 28/29 July 2015

The two day training/workshop targeted the 19 persons who had been employed as field interviewers for the survey.

Prior to the training, a written test and a face to face interview were used for the selection of the

participants. An extensive workshop was organized on Monday 27 July with the supervisors from the local public health and surveillance office in Kinkondja health zone, where also all technical and logistic aspects of the study were explained aiming to prepare the field interviewers.

The training focused on the measles epidemiology, understanding the recurrence of epidemics, survey methodology, sampling, random selection of clusters and households and the use of the questionnaire. One day of the training was allocated to pilot the study questionnaire and the other data management procedures and tools.

The training included presentations, role plays and groups discussions and a preparation meeting was held to discuss communication, field procedures - including training on the practical use of random selection using GPS points in the second stage of the cluster sampling procedure, as well as security aspects of the vaccination coverage survey.

Supervisor: Annick Lenglet

Rapid health assessment in three migrant/refugee camps in Elliniko, Athens, Greece: training of translators

Georgios organised a three-hour training to train the translators of the survey on the questionnaire, the survey methodology, sampling procedures, the security and logistical aspects of the survey.

Supervisors: Kostas Danis

Educational outcome:

Preparing and implementing teaching assignments helped me learn in depth epidemiological concepts and methods. I used different training methods, including presentations, role plays, case studies and discussions. I consider teaching medical teams that provide clinical care an excellent experience and I had often the chance to promote public health concepts to clinicians, general practitioners and field health workers in an international environment (Ebola and migrants health projects). Cultural adaptation of data collection tools is also a very important aspect of intervention epidemiology, as projects are often implemented in diverse cultural environments.

6. International assignments

International mission for the Ebola outbreak in Tonkolili, Sierra Leone, 27 December 2014-2 January 2015

See “Outbreak investigations” and “Applied epidemiology research” sections on Ebola.

International mission for the Measles outbreak response, Kikondja, Haute Lomami, DRC, 4 July – 21 August 2015

See “Outbreak investigations” and “Applied epidemiology research” sections on Measles.

International mission for the implementation of a surveillance system in Points Of Care (POC) for the migrant/refugee population in Greece, 13 April-17 June 2016

See “Surveillance” section.

7. Other activities

1. Attended the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE), 05 - 07 November 2014, Stockholm, Sweden.

2. Attended the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE), 11 - 13 November 2015, Stockholm, Sweden.

3. Attended the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE), 28 - 30 November 2016, Stockholm, Sweden.

4. Attended the Epicentre scientific day in the Institut du Monde Arabe 4/06/2015, Paris France

5. Attended the EAN workshop 'Anthropology for Outbreak Investigations' in London, United Kingdom, 18th-19th May 2015

6. Attended the EAN workshop 'Migrants Health' in Brussels, Belgium, 18th-19th June 2016

7. Participated in the organisation and the field work of the rapid health assessment survey in three migrant/refugee camps in Elliniko, Athens, Greece, 24 June 2016

8. Attended the preparation to depart in an Ebola mission training in the MSF Ebola training site in Sloterdyke - Holland, 17-18 January 2015

9. Attended the training on literature search in web libraries.

(Pubmed, MeSH, Equator Network, Cohrane , BDSP, SCOPUS, Catalogue theses BIUS),and introduction to relevant tools for article writing (reference Manager etc). Internal, InVS. October – December 2014

10. Attended the training on statistical program R, 16 hours, Internal, InVS, February – March 2015

11. Attended the training on EndNote bibliographic reference management software. 4 hours, Internal, InVS, 11/03/2015

12. Attended the online EPIET pilot course "Writing an abstract". 6 weeks, 2-3 hours/week

13. Presented my Ebola experience during the monthly meeting of the Infectious Diseases Directorate, Paris, France 09/02/2015

14. Presented my Ebola experience to other EPIET fellows and coordinators during the MVA module, Vienna, Austria 25/03/201

15. Presented of the Measles DRC mission experience to other EPIET fellows and coordinators during an evening session in the TSA module, Bilthoven, the Netherlands, 25/11/2015

16. Presented the syndromic surveillance for refugees in Greece during the RAS EPIET module, Athens, 21 June 2016

7. EPIET/EUPHEM modules attended

1. Introductory course, Spetses, Greece, 29/09/2014 – 17/10/2014
2. Outbreak module 2014, Berlin, Germany, 08/12/2014 - 12/12/2014
3. MultiVariate Analysis (MVA) module, Vienna, Austria, 23/03/2015 – 27/03/2015
4. Project review module (PRM), Lisbon, Portugal, 24/08/2015 – 28/08/2015
5. Time-series analysis (TSA), Module 2015, Bilthoven, The Netherlands, 23/11/2015 – 27/11/2015
6. Rapid assessment (RAS), Module 2016, Athens, Greece, 20/06/2016 – 25/06/2016
7. Project review module (PRM), Lisbon, Portugal, 22/08/2015 – 28608/2015

Supervisor's conclusions (Henriette de Valk)

During his EU-track EPIET fellowship, Georgios has maintained a high level of enthusiasm for field epidemiology, both in international missions as well as in projects in France. He accomplished 3 international missions of long duration. These missions have been excellent learning opportunities but they also have put a heavy burden on his workload and created a real challenge for his integration in the French team and the pursuit of the projects in France. Thanks to his high level of enthusiasm and his capacity to work very long hours, Georgios has succeeded to combine these international assignments with a complete integration in the French team and several successful projects. Georgios is an excellent team member, and he has demonstrated his ability to adapt quickly to different settings. He has been able to take advantage of the fellowship to reinforce his knowledge and skills and to meet all the objectives of the programme. The EPIET fellowship not only improved Georgios's skills and knowledge, but also increased his confidence in his own abilities. Based on his personal and professional skills, I can highly recommend Georgios for any public health position at the national or international level that requires creativity, the ability to work in a team, excellent field epidemiology skills, and an understanding of public health.

Coordinator's conclusions (Kostas Danis)

Georgios was trained in a site with high level expertise in infectious disease epidemiology that could offer high quality supervision and projects. He also went in three international missions and got involved in the major global public health issues, including the Ebola outbreak in West Africa and the migrant health during the European refugee crisis. His work and interactions during those assignments were highly appreciated. During his fellowship, he worked hard on a diverse range of topics (Ebola, measles, Tb, Listeriosis, migrant health) and using a variety of methods (cohort and cross-sectional studies, setting up new surveillance systems etc). He was highly motivated and passionate with his work and managed to achieve all the EPIET objectives. Through his projects, he managed to develop his competencies in epidemiology and public health, and improved his epidemiological skills. I believe that Georgios is committed to field epidemiology and international work and has professional skills for any epidemiological and public health related work.

Personal conclusions of fellow

During the two-year EPIET fellowship, I was placed in an excellent training site which provided me with learning opportunities and support in undertaking national and international field assignments. Those helped me to broaden my knowledge of infectious disease epidemiology and to use recent developments to guide public health and epidemiological practice. During my international field assignments, I was lucky to get involved in the Ebola response and in migrants health, both public health priorities of international concern. Those field assignments allowed me to improve my management skills, to apply epidemiological methods in resource-poor environments and to master my ability to adapt in stressful situations. I gained valuable experience on how to use knowledge of sociological and cultural factors in the affected populations, conduct studies and recommend relevant public health actions. I also gained experience in measuring health outcomes and applying epidemiological findings to guide operational decision makers in prevention strategies.

Through the outbreaks and the applied research projects, I achieved one of my specific objectives, to carry out descriptive and analytical epidemiological studies implicating the laboratory. In many assignments, I was familiarised with different methods for diagnosis and typing of infectious agents and had been closely working and communicating with the laboratory teams.

During the fellowship, I acquired experience in teaching public health professionals and public health workers, adding to the teaching experience I had before joining the programme.

Besides all the learning-by-public health service delivery, I appreciated that I had the chance to further develop my network of public health professionals by attending the EPIET training modules, visiting several epidemiological centres in Europe, attending conferences and meetings. I would certainly recommend the two year EPIET fellowship to those public health epidemiologists willing to build up and develop competencies in communicable disease surveillance and response.

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