



FELLOWSHIP REPORT

Summary of work activities

Diogo Filipe Pereira Marques

Intervention Epidemiology path (EPIET)

Cohort 2015

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 views expressed in this publication do not necessarily reflect the views of the European Centre for Disease Prevention and Control (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

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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 guide¹.

Pre-fellowship short biography

Diogo Marques graduated from the University of Lisbon as a Master in Veterinary Medicine in 2009 and moved to Scotland for a Veterinary Epidemiology research post, which was split between Scotland's Rural College (SRUC) and the School of Veterinary Medicine at the University of Glasgow. In 2013, Diogo joined Health Protection Scotland (HPS) where he worked for two years as an Epidemiologist in the Respiratory Team.

Fellowship assignment: Intervention Epidemiology path (EPIET)

On 14th September 2015, Diogo started his EPIET fellowship at Health Protection Scotland (HPS), Glasgow, United Kingdom under the supervision of Jim McMenamin and Eleanor Anderson. His EPIET frontline coordinator was Christian Winter. 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

Title: Implementation of an enhanced surveillance system for carbapenemase producing organisms in Scotland through innovative and efficient data integration

Background

In 2016, the global spread of carbapenemase producing organisms (CPO) was alarming and represented an increasing threat to healthcare delivery, patient safety and public health. The establishment of a national surveillance system was vital for effective CPO prevention and control. Our aim was to develop a surveillance system that would allow us to monitor and describe changes in the epidemiology of CPO cases in relation to known risk factors, and would inform policy and guidelines to prevent and better manage patients infected or colonised by CPO.

Methods

We undertook a novel approach to data integration through the NHS Scotland Infection Intelligence Platform (IIP). This platform provides a secure data linkage between laboratory results from confirmed CPO isolates and existing national datasets on hospital admissions, medicines use and patient outcomes.

Results

Upon suspicion of resistance caused by the expression of an acquired carbapenemase, Scottish diagnostic laboratories submit isolates to the PHE reference laboratory for further characterisation. Results are shared with both Scottish diagnostic laboratories and Health Protection Scotland (HPS). These data are then linked to hospital, prescribing and mortality data available in IIP to identify main risk factors for CPO infection. Such data linkage is complemented by an enhanced surveillance questionnaire on information not available in the IIP datasets, e.g. travel history.

Conclusion

This surveillance system was developed as a proof-of-concept that the IIP can be used to respond to public health threats through innovative and efficient data integration. Our approach is more resource efficient than the administration of long detailed questionnaires and can be easily modified to adapt to the constant evolution of this challenging area. Further evaluations are required to assess the system's acceptability, sensitivity, representativeness and timeliness.

Role and outputs: As the principal investigator, Diogo wrote the surveillance protocol, liaised with IIP team to set up the data linkage processes, produced an enhanced surveillance questionnaire for extra data collection and completed all documents necessary for information governance approval. One abstract was accepted for poster presentation at ESCAIDE 2016 (1). He was also co-author of an abstract submitted to ECCMID 2017 (2) and for an IIP internal poster (3), and wrote a project report (4).

Supervisor(s): Julie Wilson and Michael Lockhart

Title: The hidden burden of Mycoplasma pneumoniae (MPN) infections in Scotland from season 2009/10 to season 2015/16

Background

Mycoplasma pneumoniae (MPN) causes upper and lower respiratory tract infections. Seasonal peaks of infection are detected yearly during the winter with larger epidemic peaks described at 4-yearly intervals. The latest increases in the incidence of MPN were seen in Scotland in season 2011/12 and 2015/16. We aim to describe demographic, general practice, morbidity and mortality trends in Scotland for laboratory confirmed MPN cases from season 2009/10 to season 2015/16 (until week 11 2016).

Methods

MPN laboratory reports were linked with hospitalisation and mortality records using community health index and described by age, hospital admission, length of stay, Charlson Co-morbidity Index (CCI) and 30-day all-cause mortality.

Results

During the study period, 84% (n=2,334) of MPN positive cases were successfully linked and a large proportion of reports were from children under 15 years of age (47.5%, n=1,109). In 2015/16 sentinel general practitioner data swabbing identified MPN in 3% of respiratory samples (n=60). The highest number of reports were found in seasons 2011/2012 and 2015/2016 (n=503 and n=497, respectively). Seventy-two percent (n=1,674) were admitted to hospital, the average length of stay was 6 days, 15% had a CCI ≥ 1 , and the most commonly reported co-morbidities were chronic lung disease (11%), neoplasm (7%) and asthma (4%). The 30-day all cause mortality was 1.3% (n=30) and those above 64 years of age were more affected (63%). No evidence of macrolide antibiotic resistance has been demonstrated in our series.

Conclusion

This study provides insight into the epidemiology of MPN in Scotland over the recent years. Although perceived as a mild disease, the majority of MPN detections in Scotland were in hospitalised patients. Awareness should be raised especially in years with high MPN incidence.

Role and outputs: As the principal investigator, Diogo obtained the laboratory data and liaised with the statistical team regarding linkage of laboratory data with hospitalisation and death records. This work was submitted to ESCAIDE 2016 but abstract was not accepted. Diogo also completed all information governance documents necessary to share the Scottish data with the study group as part of a European study on MPN.

Supervisor(s): Arlene Reynolds and Jim McMenamin

Competencies developed:

- The implementation of the enhanced surveillance system for CPO allowed me to improve my knowledge of antimicrobial resistance and on the processes of setting up a new surveillance system. I reviewed the related scientific literature and studied similar surveillance systems to identify the key information to be included both in the data linkages and in the enhanced questionnaire. I had regular meetings with the HPS AMR team and information governance team to produce the relevant documents and get the approvals for the data sharing, data linkage and implementation of the surveillance system. I also learned how to coordinate work between different teams regarding the logistics and technical issues of the surveillance system. This work provided me with experience in abstract writing and giving a poster presentation at the ESCAIDE 2016.

- The MPN work consolidated my existing knowledge in analysing surveillance data and allowed me to work together with the HPS statistical team to link surveillance data with hospitalisation and mortality records. As part of this work I also shared aggregated Scottish data on MPN with PHE colleagues as part of a European study. I liaised with both laboratory and information governance colleagues to allow the data sharing, involving exposure to the issues of data protection, confidentiality, protection of individuals and conflict of interest.

2. Outbreak investigations

Title: Large cyclosporiasis outbreak in the UK linked with travel to Mexico, 2016: a case of "déjà vu"

Background

Beginning in June 2016, the United Kingdom (UK) experienced a large outbreak of cyclosporiasis. A previous outbreak with 79 cases in 2015 occurred in UK travellers to Mexico. The aim of this investigation was to characterise the outbreak in order to support local investigations in Mexico, provide travel advice and raise awareness to support timely case detection and treatment.

Methods

UK laboratories and public health teams were alert for *Cyclospora* due to the 2015 outbreak and detected cyclosporiasis cases despite it not being a notifiable disease. Demographics, clinical presentation, travel history and food/water exposures were collected for laboratory-diagnosed cases using a questionnaire. Descriptive analyses were undertaken.

Results

430 UK cases were reported from 1 June to 23 September 2016 (median age 46 years, 54% female), of whom 322 (75%) were known to have travelled to Mexico (mainly to Riviera Maya), staying in 33 different hotels. Food and water exposure analysis was ongoing to identify potential sources of infection. Other countries were notified via the European Early Warning and Response System and WHO's Event Information Site. Information was shared with the Mexican authorities and the travel industry to assist local investigations.

Conclusion

This is the second year that a large cyclosporiasis outbreak has occurred in UK travellers returning from Mexico. Investigations were ongoing and the UK will continue to work with Mexico to identify potential sources of infection. The travel industry, health professionals and travellers were informed to minimise the risks of future outbreaks. Healthcare providers should ask patients with gastrointestinal symptoms about recent travel history and consider testing for *Cyclospora*. Increased awareness and laboratory testing capacity is necessary to support timely case detection and treatment.

Role and outputs: As the principal investigator for this outbreak in Scotland, Diogo was responsible for updating the outbreak database with information from collected questionnaires, laboratory data and HPzone records. He was also in charge of data cleaning, de-duplication between data sources, data analysis and producing epidemiological reports for weekly Outbreak Control Team (OCT) meetings. He compiled the data from all affected UK countries and combined it into a UK-wide anonymised dataset. He led the writing of a late-breaker abstract that was accepted for poster presentation at the ESCAIDE 2016 (5), and was first author of a manuscript accepted as a rapid communication to Eurosurveillance (6). Additionally, Diogo was co-author of an abstract that was accepted for poster presentation at the "PHE

Research and Applied Epidemiology Scientific Conference 2017" (7) and collaborated in the writing of the OCT report (8).

Supervisor(s): Alison Smith-Palmer and Gillian Hawkins

Title: Estimation of the size of a norovirus outbreak in restaurant customers using capture-recapture methodology – Edinburgh, 2016

Background

A large-scale UK-wide norovirus outbreak associated with a chain of Mexican restaurants occurred in October 2016. An Edinburgh restaurant customer cohort study (CS) based on table booking records found 41 cases among 92 respondents (attack rate (AR) 45%). Although additional cases were reported through customer complaints, we suspected that not all had been identified. We aimed to estimate the size of this outbreak in Edinburgh using a capture-recapture approach.

Methods

Cases were customers who ate at the Edinburgh restaurant between 26/10-28/10 and developed gastrointestinal symptoms within 12-72 hours. As part of the CS, customers completed and forwarded an online survey to co-diners. Customers could also separately self-report illness to Environmental Health Officers (EHO). The total number of customers over these dates was calculated using the number of dishes prepared by the restaurant. We estimated the number of cases using the Lincoln-Petersen method and calculated the AR among customers.

Results

Of approximately 1,472 customers, 66 reported illness (CS=36; EHO=25; both=5). The estimated number of cases was 246 (95%-CI 127-366) and the estimated AR was 17% (95%-CI 9-25%). The sensitivities of case-finding through CS and EHO reports were 17% (95%-CI 11-32%) and 12% (95%-CI 8-24%), respectively.

Conclusions

The estimated number of cases was considerably higher than that reported to public health authorities and the CS overestimated the overall AR. Though the individual probabilities of self-reporting to EHO and participating on CS may be different, the outbreak size was likely underestimated. In the context of wide-spread outbreaks, we recommend the identification of additional information sources and the application of capture-recapture methodology to estimate AR and outbreak size.

Role and outputs: As the principal investigator of this project in Scotland, Diogo wrote the analysis protocol, liaised with Lothian Health Board to obtain required data and analysed the data. He presented this work at Lothian CPD day (9) and HPS Scientific Seminars (10). Diogo led the writing of an abstract accepted for poster presentation at the ESCAIDE 2017 (11). A manuscript is in process to be published in a peer-reviewed journal (22).

Supervisor(s): Alison Smith-Palmer and Gillian Hawkins

Competencies developed:

- The cyclosporiasis outbreak allowed me to participate in a travel-associated international outbreak investigation. He was responsible for the weekly analysis of surveillance data, production of epidemiological reports and participation in Incident Management Team (IMT) meetings. He participated in discussions to develop the outbreak case definition and described the outbreak in

terms of time/place/person. I reviewed the cyclospora questionnaire, maintained the outbreak database in Scotland and combined a UK-wide anonymised dataset to facilitate analysis for the final report and manuscript. This work provided me with the experience of submitting and presenting a late-breaker poster at the ESCAIDE 2016.

- The norovirus capture-recapture study provided me with the practical knowledge of doing capture-recapture analysis, the different methods available and the challenges found in such analysis. This study allowed me to collaborate with a local health protection team and participate in a national outbreak investigation. I wrote the study protocol, presented the results at two local scientific seminars and will share the results at the ESCAIDE 2017 in a poster presentation.

3. Applied epidemiology research

Title: HIV infections among people who inject drugs in Glasgow are strongly associated with cocaine injection and homelessness, 2011 – 2016

Background

An outbreak of HIV infection among people who inject drugs (PWID) was detected in Glasgow in 2015. We aimed to describe demographic and behavioural characteristics of PWID in Glasgow, and identify risk factors for HIV infection to prevent further transmission.

Methods

The Needle Exchange Surveillance Initiative (NESI) is a national, anonymous, repeat cross-sectional survey that collects data on injecting risk behaviours and blood-borne viruses (BBV) among PWID in Scotland. Trained interviewers administer a face-to-face questionnaire to individuals recruited from services that provide sterile injecting equipment. Participants also provide a blood spot sample for BBV testing, which is linked to the questionnaire via a unique identifier. Using data from NESI surveys undertaken in Glasgow in 2011-2016, we conducted multiple logistic regression analysis to measure the association between exposures and HIV infection. Variables with p-value <0.25 in univariable analysis were included in the multivariable analysis using a forward stepwise approach.

Results

2,453 participants were eligible for inclusion in the study. HIV prevalence among PWID in Glasgow increased from 0.11% (1/923) in 2011-12 to 2.5% (23/915) in 2015-16. For the 6 months preceding survey, 23% (557/2,447) reported homelessness; 76% (1,871/2,450) injected heroin, 16% injected cocaine, and 12% injected both. After adjusting for confounders, cocaine injection (adjusted odds ratio [AOR] 9.9, 95% CI 3.7-26.0) and homelessness (AOR 4.2, 95% CI 1.9-8.9) were independently associated with HIV infection among PWID in Glasgow.

Conclusions

HIV infection among PWID has increased substantially in Glasgow in recent years. Recent homelessness and cocaine injection are key risk factors. Enhanced harm reduction provision (e.g. greater evening availability of injecting equipment) and expanded HIV testing and treatment among PWID are recommended to reduce HIV transmission amongst this vulnerable population.

Role and outputs: As the principal investigator for this project, Diogo wrote the analysis protocol, analysed the data and produced the first draft of the manuscript. He led the writing of an abstract accepted for oral presentation at TEPHINET 2017 (12), an abstract accepted for oral presentation at

ESCAIDE 2017 (13) and wrote a project report (14). He is currently working on a manuscript to be published in a peer-reviewed journal (21).

Supervisor(s): Andrew McAuley

Competencies developed:

- The HIV among PWID work gave me the opportunity to work in the field of HIV and injecting drug use. It allowed me to be involved in the main steps of an operational research project. It provided the experience of writing a research project protocol, conduct descriptive and multivariable analysis, identify key recommendations based on the results and share results in the form of an oral presentation, a summary report and a peer-reviewed manuscript. This project also improved my knowledge of conducting a cross-sectional study and analysing a large cross-sectional survey dataset. Additionally, this project allowed me to improve his presentation skills by presenting at the TEPHINET 2017 conference.

4. Communication

Publications in peer reviewed journals

- One manuscript (6)

Pending manuscripts (work in progress)

- Two manuscripts (21,22)

Conference presentations

- Three poster presentations at ESCAIDE 2016, 2 as first author (1,5) and 1 as co-author (14)
- One oral presentation at TEPHINET 2017 as first author (12)
- One poster presentation at ESCAIDE 2017 as first author (11)
- One poster presentation at ECCMID 2017 as co-author – presented by other author (2)
- One poster presentation at PHE Research and Applied Epidemiology Scientific Conference 2017 as co-author – presented by other author (7)
- One poster presentation at ESCAIDE 2016 as co-author – presented by other author (18)

Other presentations

- One oral presentation at the Lothian CPD day (9)
- Two oral presentations at the HPS Scientific Seminars (10, 16)

Reports

- One outbreak report (8)
- One research project report (14)
- One surveillance report (4)
- One teaching report (20)
- Two mission reports (17,19)

5. Teaching activities

1. Lectures on “Respiratory infection: Influenza” for students of the Masters in Public Health of the University of Glasgow

These lectures were 50 minutes long and took place in one of the lecture rooms of the department of Public Health from the University of Glasgow (UoG) on 26/01/2016 and 24/01/2017. Approximately 20 students from the communicable disease module of Masters of Public Health attended these sessions.

Instructional Design: This teaching activity was part of a module that is run every year by HPS in collaboration with the UoG as part of the Masters of Public Health curriculum. I developed a power point presentation and included details about basic influenza epidemiology, surveillance in Scotland, immunization programme and information about emerging viruses.

Learning objectives: At the end of these lectures, participants should be familiar with the basics of influenza epidemiology, influenza surveillance in Scotland including immunization programme and information about emerging viruses.

Supervisor(s): Jim McMenamin

Educational outcome: By preparing these presentations the fellow consolidated and updated my knowledge on influenza. He learned how to adapt a scientific presentation to a diverse audience of public health professionals.

2. Case study on “Vaccine preventable disease outbreak” for students of the Masters in Public Health of the University of Glasgow

This session was 2 hours long and took place in one of the lecture rooms of the department of Public Health from the University of Glasgow (UoG) on 23/02/2016. Approximately 20 students from the communicable disease module of Masters of Public Health attended it.

Instructional Design: This teaching activity was part of a module that is run every year by HPS in collaboration with the UoG as part of the Masters of Public Health curriculum. The case study was already developed and I help the facilitation with Jim McMenamin.

Learning objectives: At the end of this session, participants should be able to understand the steps of investigating a vaccine preventable disease outbreak and suggest relevant control measures.

Supervisor(s): Jim McMenamin

Educational outcome: During this activity Diogo had the chance to help facilitating and discussing the challenges associated with a vaccine preventable disease outbreak. The facilitation of this interactive session required immediate adaptation to the questions of the group and direction of the discussions.

3. Piloting feasibility of a newly-developed dashboard tool to support real time analysis of surveillance data in Tonkolili District

Background:

As part of strengthening surveillance of infectious diseases following the 2014-15 Ebola outbreak, the District Health Management Team (DHMT) in Tonkolili District, Sierra Leone, weekly collated paper-based surveillance data from Peripheral Health Units (PHU). As this team lacked tools to analyse the data and produce reports, MSF developed an open source interactive dashboard software to allow real time data analysis by time (week, year), place (chiefdom, PHU) and person (<5, >5 years). We piloted the tool to assess feasibility, initial acceptability and usefulness.

Methods:

We delivered training to the DHMT and practical exercises covering three main areas: checking reporting completeness, weekly data analysis by time/place/person and export of figures and maps. The trained DHMT staff completed an anonymous questionnaire to collect information on their perceptions on ease of use of the tool and its appropriateness for surveillance needs.

Results:

All eight trained DHMT staff reported that the tool was appropriate for their needs, seven considered it easy to use and six felt confident using it by themselves. All participants stated that practical exercises allowed them to practice data analysis and discover other potential uses of the tool such as detection of outbreaks, planning interventions and quality checking following data entry.

Conclusion:

The pilot indicated that the dashboard tool was easy to use, acceptable and useful, suggesting that it could support the DHMT on core surveillance activities and planning public health responses. We recommend that the use of the tool be monitored over time to assess its usefulness under real field conditions.

Role and outputs: The fellow was responsible for the introduction part, the delivery of a training session and the evaluation of the acceptability and usefulness of the dashboard tool through training and monitoring of use. He was responsible for the development of all materials, delivered the training session and supported the post-implementation monitoring of the usage of the dashboard. Diogo was co-author of an abstract accepted as a poster presentation at ESCAIDE 2016 (18) and wrote a teaching report (20).

Supervisor(s): Grazia Caleo

Educational outcome: Being involved in this training session allowed the fellow to appreciate the need to adapt the communication messages to different audiences both when presenting orally and through training materials. It also helped him have a better understanding of the ISDR system, data collection and diseases trends in the Tonkolili district. Through the preparation for the training, he improved his knowledge on key disease case definitions and on common problems that occur when analysing surveillance data in resource-constrained countries.

6. International Assignments

International mission with MSF: Strengthening surveillance and response after the Ebola outbreak in Tonkolili district, Sierra Leone – 10/04/16 to 20/05/16

Main areas of work and tasks:

1. Strengthening surveillance by improving the quantity and quality of the Integrated Disease Surveillance and Response (IDSR) data from peripheral health units (PHU):
 - Assess the completeness and timeliness of reporting in the Yoni chiefdom
 - Plan the visits and provide on spot training to PHU staff to identify resource constraints and assess current knowledge on disease reporting processes and case definitions
2. Piloting feasibility of a newly-developed dashboard tool to support real time analysis of surveillance data in Tonkolili District
 - Development of training materials, planning and delivery of training session.
 - Post-implementation monitoring of usage of dashboard, epidemiological support and ongoing training of staff.
 - Provide data and co-author abstract and poster accepted at ESCAIDE 2016.
3. Planning and supervision of the MSF support to a measles vaccination campaign in the Yoni chiefdom as part of a national immunization campaign:
 - Provide epidemiological input at the district planning meetings.
 - Plan and organise MSF resources (staff, vehicles, cold chain equipment).
 - Supervision of vaccination campaign: monitor vaccination progress, verify accuracy of tally sheets and house-marking, record and report adverse events following immunization, coordinate vaccinator teams.
4. Teaching and line managing MSF national staff:
 - On the job training on epidemiological concepts (surveillance systems, outbreaks) and computer skills (Excel, Word, PowerPoint).
 - Line managing responsibilities such as sign off time-sheets, annual leave, manage work priorities, training and job evaluation.
5. Supporting the mapping of Tonkolili district
 - Validate location of main roads, villages, PHU and their catchments areas.

Role and outputs: As an MSF field epidemiologist the fellow's main objective was to support MSF and district's epidemiological surveillance and response activities after the Ebola outbreak. During this mission he provided epidemiological support and worked very closely with the rest of the MSF project, Tonkolili's district health management team (DHMT), the ministry of health and sanitation (MoHS), world health organisation (WHO) and other partners. He delivered an oral presentation at HPS Scientific Seminar (16), wrote the end-of-mission report (17), was co-author of an abstract and a poster presented at ESCAIDE 2016 (18), contributed to an internal MSF report (19) and wrote a teaching project report (20).

Supervisor(s): Grazia Caleo

Competencies developed: This mission was a great opportunity to strengthen my skills as a field epidemiologist. Being part of an MSF project allowed me to work within an international team, collaborate with different stakeholders and exposed me to a different reality, culture and health system. It provided me with working experience on strengths and caveats of ISDR surveillance system, having to plan and supervise a measles vaccination campaign, training and mentoring different healthcare professionals.

7. Other activities

HPS Scientific Seminars

The HPS Scientific Seminars are a platform for knowledge sharing where internal and external presenters share their work to an audience of epidemiologists, data managers and other public health professionals. These monthly lunchtime sessions started in May 2016 and covered a wide range of public health topics. These were very well received and stimulated scientific discussions and collaborations between internal and external participants.

Role and outputs: Diogo organised these seminars together with an EPIET alumnus (Alex Sanchez-Vivar). The main tasks included selection of presentation topics, invitation of speakers and booking rooms.

8. EPIET/EUPHEM modules attended

1. Introductory course, 28/09 – 16/10/2015, Spetses, Greece
2. ESCAIDE 2015, 10/11– 13/11/2015, Stockholm, Sweden
3. Outbreak investigation and management module, 07/12 – 11/12/2015, Berlin, Germany
4. Multivariable analysis module, 14/03 – 18/03/2016, Vienna, Austria
5. Rapid assessment and survey methods module, 20/06 – 25/06/2016, Athens, Greece
6. Project review module 2016, 22/08 – 26/08/2016, Lisbon, Portugal
7. Time series analysis and surveillance module, 07/11 – 11/11/2016, Bucharest, Romania
8. ESCAIDE 2016, 28/11 – 01/12/2016, Stockholm, Sweden
9. Vaccinology module, 12/06 – 16/06/2017, Stockholm, Sweden
10. TEPHINET 2017, 07/08 – 11/08/2017, Chiang Mai, Thailand
11. Project review module 2017, 28/08 – 01/09/2017, Lisbon, Portugal
12. ESCAIDE 2017, 06/11 – 08/11/2017, Stockholm, Sweden

9. Other courses attended

1. Principles of Health Protection course, 14/12 – 15/12/2015, Glasgow, UK
2. MSF Preparation for Primary Departure (PPD) course, 11/02 to 17/02/2016, Bonn, Germany
3. ECDC EVA Scientific Abstract Writing 1st Edition, 07/01 - 29/02/2016, Online
4. UK FETP Mini-project Review module 2016, 03/03 – 04/03/2016, Belfast, UK
5. UNDSS Basic Security in the Field course, 13/06/2016, Online
6. UNDSS Advanced Security in the Field course, 13/06/2016, Online
7. One Health Day conference, 28/06/2016, Glasgow, UK
8. Global Health training day, 26/01/2017, Edinburgh, UK
9. UK FETP Mini-project Review module 2017, 09/03 – 10/03/2017, Bristol, UK

Supervisor's conclusions

Diogo has thrived as an EPIET Fellow gaining knowledge, skills and experience together with enhanced communication and leadership abilities. In particular, he relished the opportunity to work internationally, an experience which enhanced his confidence. He also acquired invaluable organisational, time management and people skills as he negotiated his way around all collaborative projects with their competing deadlines.

Diogo has proven to be an enthusiastic, enterprising, hardworking EPIET fellow who has been a great ambassador both for his home country (Portugal) and for EPIET in promoting the programme. Over the course of his two year training programme he has overcome significant obstacles to achieving completion of his competencies with good grace and humour. He has transitioned from having unrealistic expectations of other meeting his deadlines to a more real world view that he needs to take people with him. This has involved the recognition that his priority may not be the same as others and of the need to negotiate compromises to achieve his goals. In our roles as supervisors it has been good to see Diogo applying skills acquired from modules and acquired learning to demonstrate his EPIET competencies.

Diogo has shown his ability to be a valuable member of incident and outbreak teams and he has demonstrated a dogged determination to achieve communication of results in poster, oral and peer reviewed submission. His oral communication skills have been well received both in his contribution to the Masters in Public Health Communicable Disease module and by international colleagues during his field deployment to Sierra Leone.

Diogo was successful in achieving his surveillance development goal making a significant contribution during its formative stages. He has demonstrated skilled application of his analytical abilities during his project and has learned much about himself and how to deal with obstacles in the process.

We have enjoyed our joint role as supervisors and look forward to seeing Diogo's further development - Our host organisation is in an unusual position of being able to look forward to Diogo's forthcoming return to his epidemiologist post in September. We do so secure in the knowledge that as an EU-Track EPIET he will instantly apply his new-found skills to good effect. I am sure he has a bright future in Health Protection.

Coordinator's conclusions

Diogo has made great progress throughout his fellowship. He was an excellent networker and team player and took plenty of the opportunities to be involved in Public Health activities in Scotland. Diogo is a veterinarian and epidemiologist by training with previous work experience as researcher at the University of Glasgow and as epidemiologist at HPS. During his fellowship he was able to broaden his knowledge in Public Health and applied epidemiology.

Diogo was always very motivated to learn and apply new skills. He was involved in many outbreak investigations including a large cyclosporiasis outbreak in the UK linked with travel to Mexico and a norovirus outbreak in restaurant customers in Edinburgh, where he used a capture-recapture methodology to estimate the size of the outbreak. He also supported the implementation of an enhanced surveillance system for carbapenemase producing organisms in Scotland and analysed surveillance data to estimate the hidden burden of *Mycoplasma pneumoniae* infections in Scotland.

Additionally, he successfully investigated HIV risk factors among people who inject drugs in Glasgow. He was able to improve his teaching skills through preparing and delivering different communicable disease sessions for the Masters of Public Health (MPH) of the University of Glasgow. In 2016, Diogo supported surveillance and response activities of MSF during the Ebola outbreak in Sierra Leone during a 6-weeks assignment.

Diogo is a strong and productive communicator and was able to communicate the findings of his projects at many national and international scientific conferences and through scientific peer-reviewed journals. Diogo plans to continue working for HPS and I wish him great success in the future.

Personal conclusions of fellow

The ECDC fellowship training programme was a great opportunity for me to improve my epidemiology and public health experience at UK, European and International level. The fellowship provided access to good training modules, to a large network of experienced professionals and to several international conferences. Being part of this network allowed me also to enter the MSF pool of field epidemiologists, do the MSF pre-deployment course and gain field epidemiology experience during an international mission to Sierra Leone. Health Protection Scotland (HPS) was a very good training site which gave me access to experienced professionals and interesting projects. It fulfilled my aim of working among different teams and be exposed to a wide range of health protection areas. I highly recommend the ECDC fellowship for those who want to progress their career in field epidemiology, that want to work at European and International levels and those that want to belong to a solid network of highly-skilled epidemiologists.

Acknowledgements

I would like to express my gratitude to:

- My EPIET supervisors, Jim McMenamin and Eleanor Anderson, for their mentoring, interesting discussions and support throughout my fellowship. It was a true pleasure to work with you and to learn from your experience.
- Health Protection Scotland as a training site, the different teams and project supervisors I had the pleasure to work with and that gave me the opportunity to conduct exciting projects and to have access to a wide range of topics in order to fulfil my fellowship objectives.
- To Christian Winter, my frontline coordinator, and other EPIET coordinators for supporting my development as a field epidemiologist.
- To Kostas Danis, Grazia Caleo, Annick Lenglet, MSF team and Sierra Leoneans for giving me such a fantastic first international mission.
- To all my cohort fellows to their amazing support, friendship and dance moves. You will never be forgotten.
- To my Owl, two Castro Laboreiro Dogs and their 11 pups for their cuddles and constant happiness even during the most stressful times.
- To my Scottish family - Tom, the "dragon" and Voy family - for all their help during the fellowship, especially when I had to travel. You looked after me, our family and provided support when most needed. I wouldn't be able to accomplish the fellowship without your support.
- To my Portuguese family – for always being there when needed.

You all helped me making this fellowship possible and such a valuable and unforgettable time.

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