EUPHEM

EUPHEM REPORT

Summary of work activities

Nina Stock

European Public Health Microbiology Training Programme (EUPHEM), cohort 2012

Background

According to the European Centre for Disease Prevention and Control (ECDC) Advisory Group on Public Health Microbiology ('national microbiology focal points'), public health microbiology is a cross-cutting area that spans the fields of human, animal, food, water, and environmental microbiology, with a focus on human population health and disease. Its primary function is to use microbiology to improve health in collaboration with other public health disciplines, in particular epidemiology. Public health microbiology laboratories play a central role in the detection, monitoring, outbreak response and the provision of scientific evidence to prevent and control infectious diseases.

European preparedness for responding to new infectious disease threats requires a sustainable infrastructure capable of detecting, diagnosing, and controlling infectious disease problems, including the design of control strategies for the prevention and treatment of infections. A broad range of expertise, particularly in the fields of epidemiology and public health microbiology, is necessary to fulfil these requirements. Public health microbiology is required to provide access to experts in all relevant communicable diseases at the regional, national and international level in order to mount rapid responses to emerging health threats; plan appropriate prevention strategies; assess existing prevention disciplines; develop microbiological guidelines; evaluate/produce new diagnostic tools; arbitrate on risks from microbes or their products and provide pertinent information to policy makers from a microbiological perspective.

According to Articles 5 and 9 of ECDC's Founding Regulation (EC No 851/2004) 'the Centre shall, encourage cooperation between expert and reference laboratories, foster the development of sufficient capacity within the community for the diagnosis, detection, identification and characterisation of infectious agents which may threaten public health' and 'as appropriate, support and coordinate training programmes in order to assist Member States and the Commission to have sufficient numbers of trained specialists, in particular in epidemiological surveillance and field investigations, and to have a capability to define health measures to control disease outbreaks'.

Moreover, Article 47 of the Lisbon Treaty states that 'Member States shall, within the framework of a joint programme, encourage the exchange of young workers.' Therefore, ECDC initiated the two-year EUPHEM training programme in 2008. EUPHEM is closely linked to the European Programme for Intervention Epidemiology Training (EPIET). Both EUPHEM and EPIET are considered 'specialist pathways' of the two-year ECDC fellowship programme for applied disease prevention and control.

This report summarises the work activities undertaken by Nina Stock (cohort 2012) of the European Public Health Microbiology Training Programme (EUPHEM) at the National Institute of Public Health, Prague, Czech Republic.

Stockholm, September 2014

All EUPHEM activities aim to address different aspects of public health microbiology and underline the various roles of public health laboratory scientists within public health systems.

Material and methods

This report accompanies a portfolio of the outcome of different activities conducted during the EUPHEM fellowship. The activities comprised specific projects, activities and theoretical training modules.

These included epidemiological investigations (outbreak and surveillance); applied public health research; applied public health microbiology and laboratory investigation; biorisk management; quality management; teaching and public health microbiology management; summarising and communicating scientific evidence and activities with a specific microbiological focus.

The outcomes include publications, presentations, posters, reports and teaching materials prepared by the fellow. The portfolio presents a summary of all work activities conducted by the fellow, unless prohibited due to confidentiality regulations.

Results

Objectives of the core competency domains were achieved partly through project/activity work and partly through participation in the modules. Results are presented according to the EUPHEM core competencies, as per the EUPHEM scientific guide[1].

1. Epidemiological investigations

1.1. Outbreak investigations

A. Multidisciplinary investigation of an outbreak caused by methicillin-resistant Staphylococcus aureus (MRSA) in a medical ICU, Prague, Czech Republic

Project supervisor: Dr. Vlastimil Jindrak

At the end of January 2014, two epidemiologically-linked MRSA cases were registered on an eight-bed medical ICU at a tertiary hospital in Prague, Czech Republic. Enhanced screening procedures identified five additional cases among ICU patients, three nasal carriers among ICU staff and high environmental contamination with MRSA. Immediate control measures were initiated, the ward was closed to new admissions and the responsible health authorities were informed. A multidisciplinary, retrospective investigation of MRSA cases from 1 January 2012 to 18 February 2014 was initiated to identify the cause and prevent future outbreaks. The investigation comprised descriptive epidemiological analyses, comprehensive molecular analyses of MRSA isolates and an analysis of nursing procedures and working conditions through staff interviews and internal audits.

The investigation revealed unsatisfactory nursing and hygiene practices in the department, combined with increased stress levels in the three months prior to the detection of the outbreak. Microbiological analyses identified one patient as the index case, nasal carriage in a new employee and a high level of environmental contamination with the outbreak strain. Reinforced and continuous communication and education as well as enhanced hygiene practices were recommended as part of routine infection control practices.

The fellow was part of the investigation team, coordinated and participated in the different branches of the investigation, summarised the results and wrote a manuscript for publication.

B. Modules

The EPIET/EUPHEM introductory course familiarised participants with the methods and logistical aspects of outbreak investigations.

The module ‘Computer tools in outbreak investigations’ taught essential data management skills (entering, validating, cleansing data), dataset management and how to perform descriptive, cohort and case-control studies, including stratified analyses.

The module ‘Workshop on outbreaks in healthcare settings’ presented examples of outbreak investigations with the focus on healthcare settings and the special needs, challenges and limitations involved.

[1] http://ecdc.europa.eu/en/publications/Publications/microbiology-public-health-training-programme.pdf

Educational outcome: Participation in a multidisciplinary outbreak team (physicians, epidemiologists, microbiologists, nurses) and involvement in investigations (case definitions, active case finding, data collection, data analysis, laboratory typing methods); coordination of collaboration; familiarisation with different molecular typing methods and interpretation of typing results; summary of results; writing of a report and scientific article; theoretical knowledge about the activities and authorities involved in national and international outbreak investigations.

1.2. Surveillance

A. Sensitivity estimation of the surveillance system for Invasive Pneumococcal Disease (IPD), Czech Republic

Project supervisor: Dr. Pavla Krizova, CSc.

Before the introduction of pneumococcal conjugate vaccines (PCV) in the Czech Republic in 2010, a national surveillance system for Invasive Pneumococcal Disease (IPD) was implemented in 2007 and further improved in 2011. The objective of this improved system is to increase the sensitivity and completeness of data in order to improve its validity for the future assessment of vaccine impact and effectiveness.

The objectives of this study were to describe the new Czech IPD surveillance system and to estimate the sensitivity of reporting from 2010 to 2012 in total and by region, age group, sex and outcome using the capture-recapture method.

The analyses demonstrated an overall increase in the estimated sensitivity from 81% to 98% between 2010 and 2012. Variation in reporting sensitivity was shown according to region and age group. The IPD surveillance improved during the study period, particularly influenced by the introduction of report reminders in 2011. Sensitivity estimations are of great importance for monitoring disease incidence over time and more precise vaccine impact analyses.

The fellow was the main investigator, performed the analyses together with the project team and wrote a manuscript for publication.

B. Modules

The EPIET/EUPHEM introductory course familiarised participants with the basic knowledge for developing, evaluating and analysing surveillance systems.

Educational outcome: Working in a multidisciplinary team (epidemiologists, biostatistician, microbiologists); coordination of the team; familiarity with authorities and responsibilities involved in surveillance; understanding of strengths and weaknesses of a surveillance system; understanding of challenges and limitations when evaluating surveillance systems; participation in disease-specific networks at the national and European level; writing a scientific article; scientific presentation of results; formulation of recommendations.

2. Applied public health microbiology research

A. Pilot study on microbiological surveillance of multi-drug resistant (MDR) Enterobacteriaceae in a hospital setting, with focus on Klebsiella pneumoniae and Escherichia coli resistant to late generation cephalosporins

Project supervisor: Dr. Vlastimil Jindrak

The objectives of this project were to investigate the prevalence and burden of MDR *Klebsiella pneumoniae* and *Escherichia coli* in a hospital in order to improve the current surveillance of MDR Enterobacteriaceae by implementing a screening system for active surveillance. The new system was to help evaluate the effectiveness of prevention and control measures and to control the introduction and spread of MDR Enterobacteriaceae in the hospital in the future.

A three-month pilot study was conducted in one department and comprised:

- extended screening procedures for the detection of MDR Enterobacteriaceae during the hospital stay of every patient ;
- identification of risk factors for the acquisition of MDR Enterobacteriaceae before and during the hospital stay;
- the microbiological characterisation of K. pneumoniae and E. coli isolates.

Data were analysed concerning the differentiation between hospital-acquired and imported cases as a quality indicator for infection control measures and the identification of relevant risk groups. The expected results of this

on-going project will be used to develop a new routine screening strategy for the active surveillance of MDR Enterobacteriaceae in the hospital.

The fellow was the main investigator for this project and participated in all stages of the study.

B. Modules

During the EPIET/EUPHEM introductory course the development of study protocols was taught by active participation in an ongoing applied research project.

Educational outcome: Preparation of a study protocol; questionnaire design; organisation of a multidisciplinary study; data management, analysis and interpretation; writing a scientific article; understanding the responsibilities of the different parties involved in prevention and control of healthcare associated infections in a hospital; understanding the role and challenges of clinical microbiology in a hospital setting; understanding and describing the risks related to MDR-bacteria; familiarisation with the work of infection control units; communication with people from different backgrounds; identifying the use and limitation of diagnostic and screening methods in patient diagnosis and surveillance; designing a sampling and screening strategy for active surveillance of MDR Enterobacteriaceae; analysing laboratory surveillance data; team coordination; adherence to ethical principles; scientific presentation of results and scientific writing.

3. Applied public health microbiology and laboratory investigations

A. Real-time-PCR detection and PCR-based serotyping of Streptococcus pneumoniae in culture negative specimens, Czech Republic

Project supervisor: Dr. Jana Kozakova

To improve Invasive Pneumococcal Disease (IPD) diagnostics and surveillance in the Czech Republic, this project aimed to implement new molecular assays for the detection and serotyping of *S. pneumoniae* in culture negative specimens at the National Reference Laboratory for Streptococcal Infections (NRL).

In order to detect *S. pneumoniae* DNA in clinical specimens, a real-time (RT) PCR assay targeting the lytA-gene had recently been implemented for primary diagnostics at the NRL. In addition, PCR-based serotyping of *S. pneumoniae* in culture-negative specimens was developed to extend the current typing activities performed by the Quellung method on *S. pneumoniae* isolates. Five different multiplex PCR assays were implemented, targeting the 24 most frequent serotypes in the Czech Republic which caused over 90% of IPD infections in 2011 and 2012.

The fellow participated in the design, development and assessment of both methods. The new methodologies were announced to be available as a diagnostic service for hospitals and laboratories in the whole country and have been included in the routine diagnostic procedures for evaluation since June 2014.

B. Evaluation of a serological hemagglutination-inhibition test (HIT) for the detection of avian influenza A (H7N9) antibodies, based on Tween-ether-split antigens

Project supervisor: Dr. Martina Havlickova, CSc.

The aim of this project was to evaluate a hemagglutination-inhibition test (HIT) based on Tween-ether-split antigens for the detection of specific antibodies against the new Chinese avian influenza strain A(H7N9) which emerged in early 2013. This test allows the performance of diagnostic procedures under BSL-2 conditions and is expected to have a similar sensitivity and specificity to virus neutralisation, which contributes to the improvement of influenza diagnostics.

The evaluation included the comparison of an HIT assay based on inactivated whole antigen with the HIT assay based on Tween-ether-split antigens and a virus neutralisation assay. Antigens were prepared from the target virus strain and a low-pathogenic influenza H7 strain. Specificity was determined by testing Czech sentinel surveillance sera from 1998 to 2013.

The fellow participated in the test performances and analyses of this ongoing project.

C. Training activity in the NRL for pertussis and diphtheria, Prague, Czech Republic

Supervisor: Jana Zavadilova

This one-week training activity gave insights into the examination and identification of *Bordetella pertussis*, *B. parapertussis* and *Corynebacterium sp.* The course focused on specialised toxigenicity tests for *C. diphtheriae* and *C. ulcerans* and serological tests for diphtheria immunity.

D. Training activity at the NRL for Streptococcal infections, Prague, Czech Republic

Supervisor: Dr. Jana Kozakova

To gain some background knowledge for the projects on surveillance and diagnostics of *Streptococcus pneumoniae*, this training course provided practical insights into the identification and serotyping of *S. pneumoniae* using a variety of microbiological methods such as optochin testing, bile solubility testing, Quellung reaction and PCR assays.

E. Training activity in a hospital laboratory, Prague, Czech Republic

Supervisor: Dr. Vlastimil Jindrak

In preparation for the pilot study on microbiological surveillance in healthcare settings and to understand the role of different types of laboratories, this two-week internship in the hospital laboratory provided an overview of diagnostic procedures, clinical microbiology and infection control practices.

Educational topics comprised sample admission and processing, interpretation of laboratory results, role of a clinical infection control team and hygiene procedures, visits to ICU wards, screening and isolation procedures and a visit to the quality management department.

F. Training activity at the NRL for syphilis diagnostics, Prague, Czech Republic

Supervisor: Dr. Hana Zakoucka

This training activity provided background information for the project 'External Quality Assessment (EQA) for Syphilis Serology' by giving a theoretical and practical introduction to different syphilis diagnostic tests.

G. Training activity at the NRL for E.coli and Shigella, Prague, Czech Republic

Supervisor: Monika Marejkova, PhD

The internship at the NRL for *E.coli* and *Shigella* provided a general overview of work in the reference laboratory, including methods for the detection and typing of *E.coli* and *Shigella* for diagnostic and surveillance purposes.

Educational outcome: Development and assessment of laboratory methods to improve diagnostic and surveillance procedures; understanding the limitations of various laboratory methods; analysing and interpreting laboratory test results; making a scientific presentation of results; writing a protocol and report; understanding risks when responding to a potential health threat under various biosafety conditions; understanding the interpretation of laboratory results in patient diagnosis, surveillance and epidemiological studies; application of national and international rules and regulations regarding biosafety and biosecurity and understanding how these may influence response to public health threats; recognising the need for biosafety and -security management at a public health microbiological laboratory; understanding the role of different types of microbiological laboratories for diverse pathogens.

4. Biorisk management

A. Modules

The module 'Biorisk and quality management' provided techniques for biorisk/biosafety assessment and mitigation, including WHO recommendations on biosafety management in laboratories and a visit to a BSL4 facility. One day focused on international regulations for the transport of dangerous goods, as set up by ICAO (International Civil Aviation Organization) and was completed with a certification on transportation of dangerous goods.

Educational outcome: Understanding processes associated with BSL3/BSL4 laboratories; familiarisation with various types of personal protective equipment; understand the principles and practices of biorisk management, assessment and mitigation.

5. Quality management

A. External Quality Assessment (EQA) for syphilis Serology, 2013, Czech Republic

Project supervisor: Dr. Hana Zakoucka

External quality assessments (EQA) are of major importance to evaluate and assure the diagnostic quality of microbiological laboratories. Accredited Czech laboratories participated in an EQA for serological syphilis diagnostics in order to evaluate their diagnostic procedures and test performance. The EQA was designed as a double-blinded trial and 174 Czech laboratories were assessed.

Overall, 95% of laboratories were successful in the 2013 EQA by obtaining at least nine out of ten possible points. The quality of serological syphilis diagnostics was shown to have been stable in Czech laboratories during recent years.

Laboratories with inadequate results were recommended to repeat the assessment and were provided with additional training if required. The possibility was discussed of including an evaluation of the test interpretation and the addition of samples reflecting different stages of the disease and it is intended that this can be added to future EQAs.

The fellow analysed and evaluated the test results and wrote a summary report.

B. Participation in the external audit for syphilis, hepatitis and general identification of bacteria

Supervisor: Dr. Barbora Mackova

The National Reference Laboratories for Diagnostics of Syphilis, Viral Hepatitis and the Czech National Collection of Type Cultures at the Czech National Institute of Public Health are currently accredited under EN ISO 17025 or EN ISO 15189 standards. The fellow participated in a one-day external accreditation audit.

C. Other training activities

Supervisor: Dr. Barbora Mackova

- Introduction to the quality management system of the National Institute of Public Health, Prague, Czech Republic
- Visit to the department for EQA coding and de-coding

D. Modules

The module 'Biorisk and Quality Management' gave an overview of quality management concepts in diagnostic laboratories in accordance with the ISO 15189 standard. Topics discussed were factors influencing quality in laboratories, internal and external quality control, norms and accreditation, assessments and audits, documentation and record keeping, sample management, stock purchase and inventory management, management of equipment and temperature-controlled devices, process improvement, customer service and international health regulations.

Educational outcome: Understand the principles and practices of quality assurance; analyse and summarise results of an external quality assessment; create a data entry file; observe an external accreditation audit; understand accreditation procedures; learn about the use and limitation of syphilis diagnostic methods and their interpretation; understand and learn about the design and performance of the EQA; make a scientific presentation of results.

6. Teaching and pedagogy

A. Workshop 'Vaccine Immunology', ECDC Summer School, Stockholm, Sweden

The fellow participated as a lecturer and facilitator at the ECDC summer school 2014 in Stockholm, Sweden. Tasks related to the planning, development and facilitation of a two-day workshop on 'Basic vaccine immunology' for health professionals with diverse professional backgrounds. Workshop preparation included the development and delivery of teaching material such as lectures and exercises, which are also to be used as an online e-learning tool in a modified version.

Educational outcome: Plan and organise a workshop for public health professionals; define learning objectives; prepare lecture material and exercises; deliver and teach the defined learning objectives by giving interactive lectures and facilitating group exercises; work in a team with other fellows (face-to-face, teleconferences and during facilitation); undertake a course evaluation.

7. Public health microbiology management

A. General public health microbiology management

Managerial components of public health microbiology management were part of all projects and activities during the fellowship and contributed to the educational outcome. This included:

- Communication with people from different backgrounds and with different nationalities (internal, external, face-to-face, teleconferences)
- Working in a multidisciplinary team (microbiologists, physicians, study nurses, laboratory technicians, epidemiologists, statisticians)
- Scientific presentations (poster, oral) (Section 8 D-F and Section 6)
- Scientific writing (Section 8 A and B)
- Quality management knowledge (Section 5)
- Laboratory management (Section 3)
- Project management
- Time management
- Working in a new cultural and international context
- Coordination and sustainment of collaboration
- Teambuilding and management
- Organisation of and participation in meetings
- Ethical considerations
- Giving and accepting feedback.

B. Case and contact investigation of invasive meningococcal disease, Prague, Czech Republic

Supervisor: Dr. Pavla Krizova, CSc.

On 25 April 2013 a case of suspected invasive meningitis was notified in a three-month-old girl. *Neisseria meningitidis* group B was isolated from cerebrospinal fluid and blood; molecular analyses described the bacterial strain as a new multilocus sequence type (MLST) in the Czech Republic. The same strain was isolated from the grandmother of the child and contact investigations identified the potential source of infection to a religious event, involving 35 relatives of the family from Russia and Ukraine from which the strain had probably been imported into the Czech Republic.

The fellow was informed retrospectively about the case and was not actively involved in this investigation. For training purposes she visited the regional authorities to learn about the relevant procedures related to the case and about the reporting of notifiable diseases.

C. Training activity: Early warning and response system (EWRS)

Supervisor: Dr. Pavla Krizova, CSc.

A case of bird smuggling from Asia to Europe by a Czech citizen was discovered by the Austrian customs. Some of the birds tested positive for avian influenza A(H5N1). These findings were followed up with a contact investigation by Czech health authorities and an alert to the EWRS.

The fellow was retrospectively informed about the alert and received training on the use of EWRS and the role of other authorities and tools related to health alerts (EPIS, RASFF, EFSA, INFOSAN).

D. Other activities

- Collaboration with an EUPHEM alumnus at another host site. The fellow followed, advised and reviewed ongoing work activities and provided assistance with background experience. (output: joint publication, Section 8 A 2).
- Participation in team meetings to discuss ideas on how to improve the hospital data management for the development and improvement of microbiological surveillance and patient management.

E. Modules

The module 'Initial management in public health microbiology' gave an introduction to management styles, team roles and team building, how to give and perceive feedback, time management, project management, communication styles, communication to special audiences and stress management.

The EPIET/EUPHEM introductory course familiarised participants with the basic aspects of team building as well as communication and presentation styles.

The module 'Rapid health assessment in complex emergency situations and at mass gatherings' familiarised fellows with the work in difficult field situations. This included special laboratory needs and challenges in remote settings, risk assessment methodologies, surveillance in emergency situations and how to conduct a survey in emergency situations. Furthermore, this module included a field visit to a project in a malaria affected area and an exercise in mapping and sampling. To complete the module, it was mandatory to complete the two UN certificates in basic and advanced security in the field using online learning tools.

8. Communication

A. Publications

1. Stock NK, Maly M, Sebestova H, Orlikova H, Kozakova J, Krizova P. Sensitivity estimation of the surveillance system for Invasive Pneumococcal Disease (IPD), Czech Republic, 2010–2012. (Submitted to Eurosurveillance)
2. Stock NK, Escadafal C, Achazi K, Cisse M, Niedrig M. Development and characterization of polyclonal peptide antibodies for the detection of yellow fever virus proteins. (Submitted to Journal of Virological Methods)
3. Stock NK, Petras P, Melter O, Tkadlec J, Bukackova E, Machova I, et al. Multidisciplinary investigation of an outbreak caused by methicillin resistant *Staphylococcus aureus* (MRSA) in a medical ICU – 2013/2014, Prague, Czech Republic. (In preparation)
4. Stock NK, Vanis V, Kapounova G, Vopalkova P, Zemanova Z, Kubele J, et al. Burden estimation of *Klebsiella pneumoniae* and *Escherichia coli* resistant to late generation cephalosporin in a hospital to improve microbiological surveillance and preventive screening procedures, Prague, Czech Republic. (In preparation)

B. Reports and Protocols

1. Real-time PCR detection and PCR-based serotyping of *Streptococcus pneumoniae* in culture negative specimens. Internal report and protocol, National Institute of Public Health, Czech Republic
2. MRSA outbreak report. Internal summary report, National Institute of Public Health, Czech Republic.

C. Teaching materials

1. Lectures, exercises and other material for a two-day workshop on basic vaccine immunology for health professionals, held at the ECDC summer school in Stockholm, Sweden, 2014.

D. Conference presentations

1. Stock NK, Maly M, Orlikova H, Kozakova J, Krizova P. Evaluation of the Czech surveillance system for invasive pneumococcal disease (IPD). KMINE, October 2013, Olomouc, Czech Republic.
2. Stock NK, Maly M, Orlikova H, Kozakova J, Krizova P. Evaluation of the Czech surveillance system for invasive pneumococcal disease (IPD). ESCAIDE 2013, November 2013, Stockholm, Sweden.
3. Stock NK, Mackova B, Krizova P, Zakoucka H. External Quality Assessment (EQA) for syphilis serology in the Czech Republic 2013. ESCAIDE 2013, November 2013, Stockholm, Sweden.

E. Submitted abstracts

1. Stock NK, Kozakova J, Maly M, Sebestova H, Orlikova H, Krizova P. Evaluation of the Czech surveillance system for invasive pneumococcal disease (IPD). Lancefield 2014, Buenos Aires, Argentina. (Accepted)
2. Lzicarova D, Stock N, Kozakova J. *Streptococcus pneumoniae* multiplex PCR serotyping directly from clinical samples. 26th Pecenka´s Epidemiological Days 2014, Luhacovice, Czech Republic.
3. Lzicarova D, Stock N, Kozakova J. *Streptococcus pneumoniae* multiplex PCR serotyping directly from clinical samples. Hradec Vaccinology Days 2014, Hradec Kralove, Czech Republic.

F. Other presentations

1. Stock NK. EUPHEM programme – Half-time evaluation. Presentation of general EUPHEM objectives as well as past, present and future activities of the fellow as part of the half-time evaluation and site visit for the fellowship. July 2013 – National Institute for Public Health, Prague, Czech Republic.
2. Stock NK. Pilot study on microbiology surveillance of MDR Enterobacteriaceae in the hospital NNH. Presentation at a hospital intern meeting for the planning and preparation of the research study. March 2013 – NNH, Prague, Czech Republic.
3. Stock NK. Real-time PCR detection & PCR-based serotyping of *Streptococcus pneumoniae* in culture negative specimens. September 2013 – ECDC, Stockholm, Sweden.
4. Savulescu C, Hanquet G, SpIDnet-group [Eds]. Impact of higher-valency conjugate vaccines on invasive pneumococcal disease: preliminary results of a European multicentre project. Thirty-second Annual Meeting of

the European Society for Pediatric Infectious Diseases (ESPID); 2014; Dublin, Ireland. (as part of the SpIDnet-group)

5. Savulescu C, Hanquet G, SpIDnet-group. Effectiveness of higher valency conjugate vaccines on invasive pneumococcal disease in Europe: preliminary results of SpIDnet multicentre project. Pneumonia. Special Issue, Ninth International Symposium on Pneumococci and Pneumococcal Diseases; 2014 (3) Mar 9–13; Hyderabad, India (as part of the SpIDnet-group)

9. EPIET/EUPHEM modules attended

1. EPIET/EUPHEM introductory course, Menorca, Spain (three weeks)
2. Computer tools in outbreak investigations, Robert Koch Institute, Berlin, Germany (one week)
3. Biorisk and quality management module, Institut Pasteur, Paris, France (one week)
4. Initial management in public health microbiology, ECDC, Stockholm, Sweden (one week)
5. Rapid health assessment in complex emergency situations & mass gatherings, National School of Public Health, Athens, Greece (one week)
6. Vaccinology, Public Health England, London, United Kingdom (one week)
7. Project review module, ECDC, Stockholm, Sweden (2x one weeks)
8. ECDC-stay module for EUPHEM fellows, ECDC, Stockholm, Sweden (three days)
9. Workshop on outbreaks in healthcare settings (HAI), Warsaw, Poland (optional, three days)
10. Mini project review module, Public Health England, London, United Kingdom (optional, three days)

10. Further training, activities and conferences attended

1. Visit to all departments and reference laboratories at the centre for microbiology and epidemiology, National Institute of Public Health, Prague, Czech Republic (one week)
2. TAIEX meeting 'Study visit on communicable diseases to the Ministry of Health, Bosnia and Herzegovina', National Institute of Public Health. Prague, Czech Republic (one week)
3. Seventh Scientific Symposium on the occasion of World Tuberculosis Day 2013: 'Public-private partnerships in tuberculosis research and development, Koch-Metchnikov-Forum, Berlin, Germany (two days)
4. Second ESCMID Conference- 'The Impact of Vaccines on Public Health', Prague, Czech Republic (three days)
5. 'Assessing the impact of vaccination with conjugate vaccines on the epidemiology of invasive pneumococcal disease in Europe', annual meeting of the SpIDnet working group, Prague, Czech Republic (three days)

Discussion

A. Coordinator's conclusions

One of the main goals of the EUPHEM programme is to expose the fellows to different public health experiences and activities, thus enabling them to work across various disciplines.

This report summarises all activities and projects conducted by Nina Stock during her two-year EUPHEM fellowship (cohort 2012) at the National Institute of Public Health, Prague, Czech Republic.

The projects described here show the breadth of public health microbiology. Outbreak and surveillance activities ranged from small local community and hospital outbreaks to the analysis of national databases. Laboratory and epidemiological projects covered bacterial and viral pathogens across a variety of disease programmes, such as vaccine-preventable diseases, sexually-transmitted infections, respiratory tract infections, food and waterborne diseases and healthcare-associated infections and antimicrobial resistance. Projects involved various professional groups, for example physicians, laboratory technicians, epidemiologists, statisticians, government officials and public health officers, strengthening the fellow's ability to work in a multidisciplinary team.

Activities were in line with the 'learning by doing' and 'on-the job training' approach of the EUPHEM programme and followed the core competency domains described for professionals in mid-career and above. Activities were complemented by eleven training modules providing theoretical knowledge. Projects had a clear educational outcome, with results communicated in scientific journals and at conferences.

The EUPHEM coordinator team concludes that the fellow has succeeded in performing all her tasks to a very high standard and with a professional attitude.

B. Supervisor's conclusions

Nina Stock was the first EUPHEM fellow to be appointed to the Centre for Epidemiology and Microbiology of the National Institute of Public Health, Prague, Czech Republic. Getting involved in the EUPHEM fellowship was a great challenge for both the supervisors and the fellow. During the two years of her fellowship, Nina has worked in a close and fruitful collaboration with all local supervisors. In addition to her excellent communication skills, she has shown a great adaptability to new conditions and gained new skills through her involvement in a large variety of public health activities in the field of microbiology and epidemiology. I believe the goal implied by the ECDC EUPHEM motto 'learning by doing' has been fully achieved. Nina has shown an excellent balance of cooperation and independence in her activities and was thorough in finishing whatever she started. Nina Stock with her scientific knowledge, technical and organisational skills and team spirit has been appreciated by supervisors as a nice, helpful, open-minded, diligent, goal-oriented and positive colleague. This perfect collaboration between Nina and the team of supervisors has resulted in Nina becoming part of the staff of the National Institute of Public Health in Prague since the end of her fellowship. As a highly skilled expert she will participate in many projects at the Centre for Epidemiology and Microbiology. Of course, in the future, Nina Stock will be able to continue her career in the field of microbiology and epidemiology at any public health institution.

C. Personal conclusions of the fellow

The two-year European Public Health Microbiology Training Programme (EUPHEM) provides an excellent possibility to expand one's mind and knowledge in a professional and personal perspective. By working in a multidisciplinary and international environment, passing through different disease groups and professional fields, fellows with specialised backgrounds have a unique opportunity to gain insight into new work areas and to qualify further through a 'learning-by-doing' approach.

In addition to the development of technical expertise, I personally felt the work experience in another European country with a different cultural and historical background as well as the work in an international context, with all its advantages, challenges and disadvantages, was very enriching. The personal advancement linked to these conditions has made the last two years a special experience which cannot be learned from books in this range.

The individual orientation of the programme, based on the background of the fellow and the possibilities of the host site, provides each participant with individual experiences and specialised knowledge, even when following the same objectives. This adds to the constitution of a unique network of specialists, which is able to speak the same language and to strengthen public health through its diversity.

Acknowledgements of the fellow

I would like to thank my EUPHEM supervisor Pavla Krizova from the National Institute of Public Health in Prague for her encouragement and excellent supervision, support, professional and pleasant manner of communication, for making me feel appreciated as a part of the institute and for simply being an enjoyable mentor!

I would like thank all other supervisors, colleagues and collaborators who gave me the possibility of participating in a variety of interesting projects, for their supervision, support, patience and confidence. I have appreciated their support as colleagues, many of whom have now become friends.

My thanks also go to Aftab Jasir and Androulla Efstratiou for their continuous efforts as EUPHEM coordinators, their supervision, mentoring, support and training, their open and constructive feedback, and for challenging me in my role.

I would like to thank the whole team of coordinators and facilitators building up the EPIET/EUPHEM network, including the ECDC training section, the EPIET Alumni network (EAN) and the fellowship programme office for the hard work in organising the modules and training activities and for an enjoyable atmosphere throughout.

I would also particularly like to thank the EUPHEM alumnae and my EPIET and EUPHEM co-fellows from cohorts 2011–2013 for the good company during the last two years, new friendships, support and great experiences during the joint training courses and beyond!