



## FELLOWSHIP REPORT

### Summary of work activities

Ana Hoxha

Intervention Epidemiology path (EPIET)

Cohort 2018

## 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:

- 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;

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*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.*

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- 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 ECDC Fellowship Programme Manual.

## Pre-fellowship short biography

Ana Hoxha graduated in Pharmacy at the University of Padua, Italy, and has a master in Epidemiology and Biostatistics by the Catholic University of the Sacred Heart of Rome, Italy.

Prior to EPIET she worked at the European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden focusing on antimicrobial consumption and antibiotic resistance, and for Médecins sans frontières (MSF), in South Africa, focusing on HIV and TB projects.

## Fellowship assignment: Intervention Epidemiology path (EPIET)

On September 11 2018, Ana Hoxha started her EPIET fellowship at Sciensano in Brussels, Belgium, under the supervision of Els Duysburgh and co-supervision of Javiera Rebolledo Gonzalez and Amber Litzroth. She was based in the Directorate of Epidemiology and Public Health, within the team of Healthcare associated infection and antimicrobial resistance. This report summarizes the work performed during her 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.

## Fellowship projects

### 1. Surveillance

#### *1.1. Title: Comparison of Influenza surveillance systems in Flanders*

Intensity and seasonality of influenza epidemics in Belgium are weekly monitored with actively reported data from a sentinel general practitioners (SGP) network. In the Flanders region exists another independent sentinel GP-based network, called Intego, which can provide information extracted from electronic medical records.

The working group analysed data on influenza like illness (ILI) and acute respiratory infections (ARI) from both networks in order to evaluate the inclusion of Intego to complement the surveillance of ILI and ARI.

A retrospective data analysis of ILI and ARI episodes for 2015-2017 period was conducted. Weekly and annual incidence rates were compared between the two networks, overall and by age group, and the annual number of ILI and ARI episodes in Flanders was estimated. Cross correlation factors were calculated up to lag-5, with each lag of one week.

Trends of weekly incidence rates were similar between both networks, showing the same patterns in increase and decrease over the entire study period. The ILI epidemic peaks were reported on same weeks, but their intensity was on average 30% lower for Intego. ARI data were on average 3 times lower in Intego for all the study period. The cross correlation was highest at lag 0, for overall ILI and ARI incidence rates, as well as the age groups.

The study indicated a high concordance between the SGP and the Intego networks in monitoring the ILI and ARI epidemics. This demonstrates that there is potential to use Intego data to complement influenza surveillance in Flanders.

**Role and outputs:** Ana, together with the study supervisor, wrote the study protocol, analysed the data and drafted the manuscript to submit to peer review journal. The project was also presented as a poster at ESCAIDE 2019 and the TSA module.

**Supervisor:** Dieter Van Cauteren

**Competencies developed:**

Overview of national and regional surveillance systems. Understanding of sentinel surveillance and electronic medical records. National and regional weekly estimates of Influenza incidence based on sentinel surveillance data.

**1.2. Title: STI and Hepatitis C co-infection in the Belgian HIV cohort**

Belgium has a broad surveillance system for HIV which surveys both newly diagnosed cases and those in treatment. It allows as well the recording of other co-infections such as other sexually transmitted infections (STIs) and Hepatitis C, although these information are not always captured. This project had the objective to explore co-infection in HIV patients treated in three different AIDS centres; 1. Institute of Tropical Medicine in Antwerp (ITM), 2. Hospital Sint Jan (STJ) in Bruges; and 3. Hospital Saint-Pierre (HSB) in Brussels for the period 2015-17.

The working group used data from the HIV surveillance system, available in the institute, and performed general descriptive analysis, calculated two by two tables and comparison through t-test and chi square test as appropriate. They determined the proportion of HIV patients that had been diagnosed either with Chlamydia, Gonorrhoea or Hepatitis C (HCV) in the study period. Positivity rate overall and by gender, age group, risk group and nationality was estimated.

This analysis showed that the reporting of STI co-infection is still a challenge in Belgium.

Of the three pre-selected centres, only two had good quality (completeness) data for the study period. Of the selected co-infection, Chlamydia showed better quality data in terms of consistency of reporting. The reporting of Gonorrhoea data was not consistent through time and comparison between different sites was not possible.

Given the limitations in the reporting, no particular discussion are to be made on the positivity rate and their reliability. The projects main outcome is to be considered the assessment of the information currently available through the HIV surveillance system and its limitations.

The results were presented at a meeting with the different stakeholders and the AIDS centres, and emphasis was put on the advice to improve the reporting and quality of data on co-infection of HIV patients. Better data would allow more extended analysis, comparison between different centres and nationwide estimates of positivity rates for each co-infection.

**Role and outputs:** Ana, together with the study supervisor, wrote the study protocol, analysed the data and prepared the output of the analysis.

**Supervisor:** Dominique Van Beckhoven

**Competencies developed:**

Overview and understanding of the Belgian HIV surveillance system.

**1.3. Title: Pertussis surveillance in infants**

PediSurv is the Belgian surveillance system of rare and/or severe diseases in children through sentinel paediatricians and general practitioners. Following a decision from the Steering Committee of PediSurv, Sciensano decided to add a component to this surveillance system regarding infants who are diagnosed with pertussis and hospitalized. Pertussis is already a notifiable disease in Belgium, but the information collected about the diagnosed patients is very limited.

The objective of the project was to set up a surveillance system that would allow to describe the characteristics of children less than 3 years of age, hospitalized with pertussis or pertussis-like disease in Belgium.

The working group started with a literature review in order to find examples of similar surveillance systems in other countries, and from there drafted the indicators they wanted to collect in Belgium. Consultative meetings were conducted with five hospital paediatricians who contributed in better defining the needed indicators.

Information was decided to be collected about: demographics, risk factors, vaccination status, clinical complications, treatment and infection source. A special attention was given to the vaccination status of the mother and partner, which were included in the required information to report.

The surveillance will have the national coverage of PediSurv and all Belgian hospitals will be invited to participate and the send their data. Currently PediSurv covers approximately 60% of the paediatric beds in the country but recruitment to increase participation is planned .

After finalizing the data form, the project was submitted to the informal Security Committee and implementation from Healthdata, the Belgian surveillance data infrastructure.

The result of this project was the finalized form for the surveillance indicators. An evaluation should follow after the first year of the implementation.

**Role and outputs:** Ana did the initial literature research and together with the project supervisors drafted the first version on the data collection form. She attended internal and external meetings with field paediatricians and contributed in defining the final data form. This project was presented during the EPIET module of vaccinology.

**Supervisors:** Chloé Wyndham Thomas, Amber Litzroth

**Competencies developed:**

Understanding of Pertussis disease, pertussis vaccination and setup of surveillance system.

## 2. Outbreak investigations

### 2.1. *Title: Measles Outbreak in Brussels*

In February 2019 there was an increase, compared to 2018, of the number of Measles cases reported to Sciensano from the region of Brussels Capital. The working group actively followed the data coming from the regional authorities, analysed it and provided weekly feedback regarding the situation and gave advice on the best management approach.

The outbreak started on week 3 of 2019 and peaked on week 7. A total of 94 cases were reported, of which only 55 were confirmed as measles. Adults of more than 20 years old were the most affected followed by the age group 1-4 years old. More than half of the cases, for whom vaccination status was known, were not or incompletely vaccinated. Genotyping, performed for half of the confirmed cases, showed D8 strain, currently circulating in Europe. Although this outbreak was contained, the importance of increased number of measles cases, both at a national and international level, highlighted the need for better knowledge of risk groups in order to provide and implement timely and effective prevention and control measures.

Therefore, the working group recommended an enhanced data collection that should include the following:

- vaccination status, including to assess if the vaccination status is unknown because not inquired or because it is not known by the patient
- socio-demographic data such as the nationality to identify groups at risk of not being vaccinated and the imported linked cases
- information on transmission dynamics.

This could be done by a specific questionnaire with the lacking variable sent to all patients or by adding new variables to the measles questionnaire of MATRA from now on if the outbreak persists or for an eventual next one.

As the other European countries, Belgium has committed to elimination of Measles, but with the the increasing number of cases reported the country is far from achieving the WHO target of less than one case per million inhabitants.

**Role and outputs:** Ana was co-investigator in this outbreak. Together with the project supervisor she analysed the reported surveillance data, provided weekly feedback to the regional authorities and prepared the final investigation report which was shared with the region and the WHO.

**Supervisor:** Vinciane Sizaire

#### **Competencies developed:**

This was Ana's first outbreak investigation and she could analyse the data, graph the epidemic curve, perform descriptive analysis of the cases and draft recommendations.

### 2.2. *Title: Norovirus Outbreak in Flanders*

From the 12th to the 15th of March 2019 an outbreak of Norovirus took place in a visiting farm in West Flanders, Belgium. Most of the cases reported gastrointestinal symptoms and were school children together and their accompanying teachers, who resided in the farm in two consecutive periods of 3 days each. An outbreak was declared and an investigation was started.

The working group conducted a retrospective cohort study with the objective to identify the source of the outbreak and to control the further spread of the infection.

Out of 142 visitors, 95 (64%) of them participated in the study survey. A total of 75 cases from four different schools were reported. The vast majority (66) were school children aged 6-10 years old, and nine accompanying teachers. The most common gastrointestinal symptoms were abdominal pain (88%), nausea (73%), vomiting (69%) and diarrhoea (49%). The exposure to none of the consumed food items showed an increased risk of being a case. Microbiological analyses showed the presence of norovirus in stool samples, but its absence in the food or environmental samples.

The outbreak is suspected to have been caused from the exposure to an unidentified source of norovirus, most probably outside the farm, and have spread between the students from person to person and through the shared facilities.

After the second wave of students visit, an extensive disinfection of all common facilities in the farm was undertaken and the outbreak was contained, with no further cases reported.

**Role and outputs:** Ana was co-investigator in this outbreak. She captured the data from the questionnaire, analysed them and presented the results to the regional authorities. An Outbreak report was completed.

**Supervisor:** Dr. Naïma Hammami (Infectious disease control East Flanders)

#### **Competencies developed:**

This was Ana's first field outbreak investigation and she could collect the data from the questionnaire, conducted a retrospective cohort study, analysed it, graphed the epidemic curve, and performed univariate analysis of the data to identify the source of the outbreak and write the outbreak report.

### 2.3. *Title: Salmonella Outbreak in Flanders*

Over the first weekend of September (6-8) 2020, several students from a partially boarding Hotel and Tourism School in Bruges became ill with gastrointestinal symptoms. Most of the students would have eaten their meals in the school's restaurant and/or cafeteria.

The working group conducted a retrospective cohort study with the objective to identify the source of the outbreak and to control the further spread of the infection. An anonymous online survey was prepared and sent via email to all the students and staff of the school.

A total of 366 among students and teachers, 154 (42%) cases and 212 (58%) controls, responded to the questionnaire. The most common symptoms were abdominal pain (95%), diarrhoea (90%), chills (86%), headache (84%), nausea (81%) and muscular pain (61%). 110 (71%) of cases had a medical consultation and samples were collected from 13 of the 25 patient who had a hospital consultation. 18 secondary cases among the family members of students and teachers were reported. Stool samples of the students showed the presence of Salmonella. Multivariate binomial regression showed an increased RR in the group of people who ate the tartar sauce. Laboratory analysis of food residuals found the presence of salmonella in the tartar.

The school was ordered to clean and disinfect the kitchen of the canteen, toilets, and items like doorknobs, which was completed and no further cases were reported.

**Role and outputs:** Ana was co-investigator in this outbreak. She developed the questionnaire, prepared the online survey, analysed and communicated the data. The analysis showed a clear risk factor which allowed to identify the source of the infection and control the outbreak.

**Supervisor:** Dr. Naïma Hammami (Infectious disease control East Flanders)

#### **Competencies developed:**

This was Ana's second field outbreak investigation and she could be more active, by developing the questionnaire, putting it in the online Lime survey, conducted a retrospective cohort study and finally analysing the data collected.

### **2.4. Title: COVID-19 Outbreak in Belgium**

Since mid-April 2020, Ana was supporting the Crisis-corona team put in place to coordinate the national health emergency due to COVID-19 in Belgium.

She was focusing on:

1. **Mass testing campaign in long-term care facilities:** this campaign was conducted upon request of the ministry of health in all Belgian long term-care facilities. The data was sent to Sciensano and included in the weekly COVID-19 reports. Ana worked on a more detailed analysis of this data with the objective to share it with the broader audience through a peer reviewed publication.
2. **Timeline on the measures and restrictions put in place in Belgium during the pandemic.** This work has been conducted with the data of the cases available in the institute and all the official measure taken by the federal government, available in official websites and media. The final product was included in the COVID-19 weekly report of Sciensano for three times (twice report on website, three times report only for authorities).
3. **Working group on international comparison,** in collaboration with the healthcare knowledge centre KCE and the federal crisis cell. This groups was constituted to answer to a request from the Risk management group responsible to deal with the COVID-19 emergency in Belgium, and had the objective to compare the strategies of testing and contact tracing among different countries, and advice on the best practices to put in place in Belgium. The output of the project was a report.

**Role and outputs:** 1. Data analysis, short communication published on peer reviewed journal; 2. Data analysis and information research to include in the weekly report; 3. Responsible for the chapters regarding Italy and Germany, and general contribution to the final project report.

**Supervisor:** 1. Laura Cornelissen, 2. Javiera Rebolledo Gonzalez, 3. Vicky Jespers (KCE)

#### **Competencies developed:**

Expanded the knowledge regarding; COVID-19 infection, IPC measures, social measure and restrictions in place due to the COVID-19 pandemic, testing and contact tracing.

## **3. Applied epidemiology research**

### **3.1. Title: Healthcare associated infection in home healthcare**

The number of patients and clinical conditions treated in home healthcare (HHC) is increasing. Care in home setting presents many challenges, including healthcare associated infections (HAI). Currently, in Belgium, data and guidelines on the topic are lacking.

Our objective was to investigate a definition of HAI in HHC, their associated risk factors and recommendations for infection prevention and control (IPC).

The study included three components: i) a scoping literature review; ii) in-depth interviews with individuals involved in the field of HHC; and iii) a two-rounds Delphi survey to reach consensus among key informants on the previous steps' results.

The literature review included 47 publications, in-depth interviews 21 participants and Delphi survey including 21 and 23 responders each round. No standard definition was broadly accepted or known. Evidence on risk factors identified was limited by methodological flaws and recommendations were therefore inconsistent. Agreement was reached on followings;

- Definition: Any infection specifically linked with providing care, that develops in a patient receiving HHC from a professional healthcare worker, and occurs  $\geq 48$  hours after starting HHC,
- Risk factors: hand hygiene; untrained patients and caregivers; patient's hygiene; presence and management of invasive devices,
- Recommendations: adapt and standardise existing IPC guidelines to HHC; perform a national point prevalence study to measure the burden of HAI in HHC in Belgium.

This study offers an overview of the evidence available and the field knowledge of HAI in HHC. It provides a framework to set-up a prevalence study, and drive future monitoring policies and guidelines on IPC in Belgium.

**Role and outputs:** Ana was co-investigator in the study. She conducted the literature review prepared the online survey, analysed the data, contributed in writing the study report and drafted the manuscript for the peer review publication. The manuscript had been accepted in Eurosurveillance.

**Supervisor:** Els Duysburgh

#### **Competencies developed:**

Ana participated for the first time in a study conducted requested from an external partner and got familiar with the procedure of tendering for a call. She conducted for the first time a scoping review and prepared an online survey. She also familiarised with some techniques of qualitative research, although she did not apply them personally.

### **3.2. Title: Hepatitis A seroprevalence in Belgium in 2013-15**

The incidence of hepatitis A virus (HAV) infection in Belgium has decreased over time due to improved living and hygienic conditions. Since 1992 a vaccine is available and is recommended for high risk groups such as men who have sex with men, patients with liver problems and people travelling to endemic countries. There is limited and outdated knowledge on the current immunization status in the country. The working group estimated the seroprevalence of HAV immunoglobulin G (IgG) antibodies in the general Belgian population.

The study was conducted using residual samples collected in 42/43 national districts, in the three Belgian regions, in 2013-2015. Anti-HAV IgG levels were measured to determine whether the patient had protective antibodies against the virus or not. The data was adjusted for cluster sampling and standardized for age, sex and district population according to the Belgian population structure in 2013. Prevalence and 95% confidence intervals (CI) were calculated.

Twenty-eight laboratories with specimens from 3,164 patients were included in the study. The adjusted and standardized seroprevalence of HAV in Belgium in 2013-2015 was estimated to be 49.5%, (CI 45.3 - 53.7%) slightly but not significantly higher in women than men (52.0% vs. 46.9 %), and significantly higher in Brussels region when compared with Flanders and Wallonia (64.5% vs 46.7% vs. 49.7% respectively,  $p=0.02$ ). An increasing, age dependent, trend with 2 patterns that change in the age group 40-50 years, was detected.

This study presents the most updated estimates of HAV seroprevalence, overall and age specific, for Belgium nationwide. Findings differ from previous studies that had been performed only in Flanders due to differences in methodology. These results should contribute in providing better evidence for national vaccination policies.

**Role and outputs:** Ana was co-investigator in the study. She conducted data analysis and drafted the manuscript of the results. She also presented the study in an oral presentation at ESCAIDE 2019.

**Supervisor:** Amber Litzroth

#### **Competencies developed:**

Understanding of Hepatitis A epidemiology and knowledge of the publish seroprevalence literature. This was the first time Ana analysed survey data and calculated weighted estimates of the seroprevalence.

## **4. Communication**

### **Publications in peer reviewed journals**

1. **Hoxha A**, Wyndham-thomas C, Klamer S, Dubourg D, Vermeulen M, Hammami N, et al. Asymptomatic Belgian long-term care. *Lancet Infect Dis* [Internet]. 2020;3099(20):30560. Available from: [http://dx.doi.org/10.1016/S1473-3099\(20\)30560-0](http://dx.doi.org/10.1016/S1473-3099(20)30560-0)
2. **Hoxha A**, Duysburgh E, Mortgat L. Healthcare associated infections in home healthcare: an extensive assessment. Accepted by Eurosurveillance, May 2020 (queued for editing)

### **Manuscripts submitted to peer reviewed journals (in review process)**

3. **Hoxha A**, Bossuyt N, Mamouris P, Vaes B, Van Cauteren D. Combining sentinel general practitioners networks improves the surveillance of influenza in Flanders, Belgium (to be resubmitted)
4. **Hoxha A**, Klamer S, Litzroth A, Suin V. Hepatitis A seroprevalence estimates in Belgium in 2013-15 (to be submitted)

### Conference presentations

5. **Hoxha A**, Duysburgh E, Mortgat L. Healthcare associated infection in home healthcare. What, why and how? Oral presentation. ESCAIDE 2019, November 2019, Stockholm, Sweden
6. **Hoxha A**, Klamer S, Litzroth A, Suin V. Hepatitis A seroprevalence estimates in Belgium in 2013-15. Oral presentation. ESCAIDE 2019, November 2019, Stockholm, Sweden
7. **Hoxha A**, Bossuyt N, Mamouris P, Vaes B, Van Cauteren D. Combining sentinel general practitioners networks improves the surveillance of influenza in Flanders, Belgium. Poster presentation. ESCAIDE 2019, November 2019, Stockholm, Sweden

### Other presentations

8. **Hoxha A**, Duysburgh E, Mortgat L. Healthcare associated infection in home healthcare. What, why and how? Poster presentation. ICPIIC 2019, September 2019, Geneva, Switzerland
9. **Hoxha A**, Duysburgh E, Mortgat L. Healthcare associated infection in home healthcare. What, why and how? Oral Presentation. NSIH Symposium 2019, October 2019, Brussels, Belgium
10. **Hoxha A**. Time series analysis with Influenza data. Oral presentation. Time Series Analysis Module, Netherlands November 2019
11. **Hoxha A**. Set-up of surveillance for hospitalized children with Pertussis. Oral Presentation. Vaccinology Module, Online course, June 2020

### Reports

12. Duysburgh E, **Hoxha A**, Mortgat L. Healthcare associated infections in home care. A publication of the King Baudouin Foundation, 2019. Available at <https://www.kbs-frb.be/en/Activities/Publications/2019/20190627avc>
13. Jaspers V, Hoxha A, Cornelis J, De Raedt L, De Laet Ch, Roberfroid D, Gerkens S. International comparison of COVID-19 testing and contact tracing strategies. KCE publications, 2020.

## 5. Teaching activities

### 5.1. Title: Internal Epidemiology course

Ana was involved in delivering the internal Epidemiology course which takes place every year in Sciensano. This course has the objective of providing an introduction to epidemiology to the new colleagues joining the department and without a background in epidemiology. Most of the material and the programme of this course did exist from the previous years. Ana delivered four lectures (Introduction to Epidemiology, Frequency Measures, Causality, and Validity) for which she adapted the pre-existing teaching material, and co-facilitated three cases studies.

The duration of the whole course was five full days and the 12 people participated. An online evaluation survey was conducted at the end of each teaching day.

**Supervisor:** Amber Litzroth

#### Educational outcome:

This teaching experience was very nice and interesting. The participants appreciated the course and found the content interesting. Given their heterogeneous background they had different opinions about the content. Some found it easy and would have liked to go faster, while others found the course to be very dense with information and fast. Almost everyone would have liked more exercises. This will be taken into account for the next year's course.

### 5.2. Title: Systematic Literature Review

Ana did also conduct an internal course to the department on Systematic literature review. This course was requested by a couple of colleagues, and based on their experience in the field, and the current MS EPIET fellow Laure Mortgat decided to give the course together.

All the material for the course was prepared by the participants and consisted in frontal lectures and interactive exercises with the participants. A maximum of 20 participants registered for two courses, each of half a day. Ana coordinated the first lecture, while Laure supported with the exercises, while in the second round the roles were inverted.

**Supervisor:** Els Duysburgh

### **Educational outcome:**

This course was very interesting. Preparing the whole material for the lecture and the exercise was long and tiring, but at the end it was rewarding to see that the effort was useful and appreciated by the participants.

During the first round, it was noticed that the time was a little bit short and the exercise was considered as too difficult, so during the second round Laure tried to edit the material and prepare an easier exercise. The overall evaluation of the course was very positive. A third round of the course was forecasted, but given the COVID-19 emergency, these plans changed.

## **6. Other activities**

### **6.1. GOARN deployment – Ebola Outbreak response – 01-29 February 2020, WHO HQ Geneva, Switzerland**

In February 2020 Ana deployed for four weeks to WHO headquarter in Geneva to support in the response of the Ebola outbreak in North Kivu, DRC.

Here she joined the Incident Manager Support Team (IMST) and was involved in the daily update of the surveillance data analysis. This was used to prepare daily presentation briefings for senior management at WHO and for broader dissemination.

Additional to the routine work, she conducted also a detailed analysis regarding pregnant women who did test positive for Ebola, allowing to identify potential risk factor for their outcome when compared to the general female population.

This deployment was the first approach Ana had with the WHO environment and it was very informative and formative. She got the better understand how the organization, and in particular the Health Emergency department, work and how big international outbreak investigation and response are set up.

### **6.2. GOARN deployment – COVID-19 Outbreak response – 01 March – 15 April 2020, WHO Western Pacific Regional Office Manila, Philippines**

In March-April Ana deployed to the WHO Western Pacific Regional Office (WPRO) for six weeks where she supported the COVID-19 Incident Manager Support Team (IMST) in the Information and Planning pillar.

Within this team, she worked: on a daily basis on the COVID-19 surveillance for all the regional countries affected by the epidemic. They performed indicator and event based surveillance using the different data sources available in the context. With this multisource information, regular daily presentation to brief senior management and the whole IMST were prepared. They also assessed and updated regularly the transmission stage for all the affected countries. Ana supported in the update and development of the surveillance tools in order to improve the quality of the information collected.

On request she did deep dives for specific countries such as Australia, New Zealand, Malaysia, Brunei, Lao PDR and Italy. Regarding the ad hoc analysis she worked on data regarding mortality, testing, healthcare workers as well as ILI/SARI surveillance.

As the epidemic and the deployment progressed the tasks within the team also evolved and adapted in order to better support the requests and needs.

## **7. EPIET/EUPHEM modules attended**

1. *Introductory Course, 24/09-12/10/2020, Spetses, Greece*
2. *Outbreak Investigation, 03-07/12/2020, Berlin, Germany*
3. *Multivariate Analysis, 25-29/03/2020, Madrid, Spain*
4. *Rapid Risk Assessment and Survey methods, 13-17/05/2020, Zagreb, Croatia*
5. *Project Review Module 2019, 26-30/08/2020, Prague, Czech Republic*
6. *Time Series Analysis, 4-8/11/2020, Rotterdam, The Netherlands*
7. *Vaccinology MOOC + Online course on 22-24/06/2020*



8. *Project Review Module 2020, 24-28/08/2020 , Online course*

## Supervisor's conclusions

During her two-year EPIET-EU track fellowship at Sciensano Ana Hoxha was involved in the daily activities of the unit of 'healthcare-associated infections and antimicrobial resistance' which is part of the 'epidemiology and public health' scientific direction. Ana integrated very fast and very well in this scientific direction and was considered very fast as a regular colleague. From the start Ana was also immediately involved in several research projects and other EPIET related activities resulting in the fact that she fulfilled the EPIET requirements already more than half a year before the end of the fellowship.

During the whole time of the fellowship Ana was eager to learn, try new things and take up challenges and opportunities. This resulted, among others, in initiating and coordinating a journal club at our unit. During the COVID-19 crisis Ana showed to be able to work very efficiently and to be capable of dealing with stressful situations, both abroad during her COVID-19 assignment at WPRO and at the epidemiology department at Sciensano. This work was rewarded with a publication in the Lancet Infectious Diseases with Ana as first author.

Ana is a very pleasant and trustworthy colleague ready to share her knowledge and help peers. I wish her all the best in the future and a nice, interesting career. I really hope of having the opportunity of working together with her here in the future.

## Coordinator's conclusions

Ana was already a skilled fellow at the start of the fellowship, able to work independently and effectively; however she was still eager to learn and improve both in her existing skills and in areas that she had less experience.

Supported by excellent supervision and project availability, her fellowship has been very successful. She improved her public health skills and competencies working with different aspects such as setting up a surveillance system for Pertussis in Infants, tendering for a research call and a scoping review in HAI in home care, publishing a paper on Covid-19 in care homes in the Lancet, leading on outbreaks and had experience of overseas missions.

As well as her technical excellence, she has shown herself to be a superb team colleague and EPIET fellow. I believe the EPIET fellowship has given her further professional and technical skills needed for epidemiological and public health related work. I wish her all the best in the future and have no doubt she will contribute immensely to field epidemiology in her career.

## Personal conclusions of fellow

I am very glad to have had the chance of doing the EPIET programme. It was a very nice experience that allowed me to expand my knowledge, experience and network.

It gave me the opportunity to work in the Belgian public health institute where I learned a lot about Epidemiology in public health and infectious diseases surveillance systems. I worked with friendly colleagues who always supported and helped me along the way, and got exposed to different topics within the broad range of infectious diseases. Moreover, I gained first experience in field epidemiology and outbreak investigation.

I had good and consistent supervision during my fellowship, which was professional and supportive towards the different activities I conducted in these two years.

I appreciated the Modules where I refreshed my epidemiology studies and could go more in depth with some aspects of communicable diseases.

The international deployments were as well great opportunities to expand my knowledge and contribute to public health more globally. Working in the WHO western pacific regional office during the start of the COVID-19 pandemic was a unique experience which taught me a lot and allowed me to better follow all the developments also afterwards.

Finally, I really appreciated becoming part of the EPIET network, both within the cohort and more broadly with the alumni. I met great people among the fellows, supervisors and coordinators who are good friends

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