



**Cohort 2
2015-2017**

MediPIET Report

Summary of work activities

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Training site: Observatoire National des Maladies Nouvelles et Émergentes (ONMNE), Tunisia

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Scientific Coordinator: Dr Adela Paez Jimenez

Pre-fellowship short biography

As a medical doctor, I passed the residency exam in 2013 and started working as a resident doctor in preventive and community medicine in February 2014. Actually I'm in my fourth and last year of residency. I started working at the department of Epidemiology and Statistics of the Abderrahmane Mami Hospital Ariana, for two years (2014-2016) where I have been involved in several research projects including:

- IDRC research project: "Community control of leishmaniasis emerging in the context of climate change in Tunisia"
- National Research Project: "Audit of the management of type 2 diabetes in several health centers in Tunisia"
- Study on the impact of air pollution on the exacerbation of respiratory diseases (asthma and chronic obstructive pulmonary disease) in the Greater Tunis
- Study of the satisfaction of hospitalized patients at A. Mami hospital in Ariana
- Smoking among the visitors of A. Mami Hospital of Ariana
- Hospital-based Cancer Registry for Lung Cancer

I joined the epidemiological Department of the Tunisian National Observatory of new and emerging diseases (ONMNE) in 2017, where I am in charge of the viral hepatitis registry established thanks to the national plan for the elimination of viral hepatitis c and also responsible for the investigation of viral hepatitis A outbreaks. I realize all the tasks related to the work starting from the protocol design from data collection to the scientific writing and optimization of results. Along with my responsibilities, I was following the steps of validation of the manual of the implementation of a "*Plan for the preparedness, response and resilience of diseases with epidemic potential in Tunisia 2P2R*" which describes in a detailed way, taking into account the Tunisian context, the practices recommended to detect early all public health event requiring investigation and rapid response (epidemic-prone disease and other public health

emergencies) and effective control of such an event, as part of the process known as « early warning and response system (EWARS)». During my work at the ONMNE, I had the opportunity to participate to the Epidemiological Telephone Conference Platform (EpiTech)

Fellowship projects

Surveillance project

Comparison between active and passive case detection of zoonotic cutaneous leishmaniasis in Central Tunisia, 2009 – 2016

Background: Zoonotic cutaneous leishmaniasis (ZCL) is endemo-epidemic in many rural areas of Central and Southern Tunisia. Epidemiologic data are mainly based on passive surveillance. Active surveillance which is a part of a whole research project entitled “*Community control of leishmaniasis emerging in the context of climate change in Tunisia*” was implemented since July 2009 in Sidi bouzid, the most affected area, to improve ZCL incidence estimation in this area.

Objectives:

- To describe the pattern of the disease among new cases,
- To estimate ZCL incidence in order to assess completeness of passive surveillance.

Methods: The active surveillance was implemented in three rural districts in Sidi Bouzid, Central Tunisia. We have collected every person with active lesion or scar of ZCL that occurred from July 2009 to June 2016, living in the study area. We documented characteristics of new cases in primary health care facilities, among pupils in all schools, and even within the community. The mandatory notifiable reports for the same area were obtained from the national surveillance system.

Results: From July 2009 to June 2016, a total of 1635 new cases were reported (53.3% male, 46.7% female). Thus, overall ZCL incidence rate was 50.8 per 1000 inhabitants. The median age was 11 years (inter quartile range: 7-28) and 63.8% were younger than 15 years. ZCL incidence peaked in November and December; there were two epidemic seasons 2013-2014 and 2015-2016. The mean incidence rate estimated according to the passive surveillance was 18.2 per 1000 inhabitants, also for the same period 2009-2016 and the same area. This represent a 2.8 fold under-reporting of the passive notification, similar to the 2.8-4.6 fold estimated for the EU region.

Conclusion: Sidi Bouzid remains a highly endemic area for ZCL contrary to what could suggest the national surveillance system which suffers from severe under reporting and incompleteness. General public and health professional awareness of the disease, both leading to early diagnosis, should be warranted. Systematic feedback to health practitioners and frequent reminders of notification as mandatory may help reduce the under-reporting of passive notifications.

Status: Completed. Role: Principal investigator. Outputs: Oral presentation accepted at the 2nd Annual MediPIET Scientific Conference 6-8 December 2016, Marrakech, Morocco [1] and second author of a paper which has been published in the Asian Pacific Journal of Tropical Disease in 2015 [2].

Outbreak Investigations

Typhoid outbreak investigation in district of Gabes, Tunisia 2016

Background: Typhoid fever (TF) is a systemic infection caused by a Gram negative bacterium, *Salmonella typhi*. In Tunisia, TF is a notifiable disease with a low incidence (0.32 / 100,000 inhabitants) and an average of 35 sporadic cases notified per year. In July 2016 several cases of confirmed TF were reported by the health authorities of the city of Ghannouche, Gabes. Following this alert, a national crisis unit piloted by ONMNE was created and a rapid response team was mobilized to ensure field investigation.

Objectives:

- To describe the outbreak by time, place and person characteristics;
- To identify epidemiological and environmental risk factors in order to assess possible source of transmission;
- To implement appropriate control and prevention measures.

Methods: A retrospective cohort study was carried out during August 2016 in Ghannouche city, Gabes. The information on outbreak was collected and described in time, place and person characteristics. A suspected case was defined as a person who presented clinical signs suggestive of typhoid fever, *i.e.* prolonged fever with abatement or torpor, diarrhea or constipation, vomiting and abdominal pain. A confirmed case was a suspected case with laboratory-confirmed *S. typhi* organisms. A probable case was a suspected case with an epidemiological link to a confirmed case. Food and water samples were also collected for microbiological analysis. Data were entered by EpiData and analyzing using SPSS 20.0 software.

Results: On the date of 6 September 2016, among 628 subjects surveyed, 68 were confirmed, 28 were probable, 91 were suspected and the rest were healthy subjects. The attack rate calculated was 162.42 cases per 1000 inhabitants. The outbreak occurred during the week 24 of the year 2016 with a peak at the 30th week and it ended at week 36. The age group most affected by typhoid fever was less than 10 years old in 40.2% of cases with a median age was 11 years (range 1 to 60 years). We noted a clear male predominance with a sex ratio of 1.3 (over 56% were male). The main clinical signs were fever (95%) and diarrhea (56.4%). Univariate analysis has shown that the notion of exposure to softened water is significantly associated with the occurrence of the disease; drink with softened water RR = 3.41 [1.9- 6.2] and cooking with softened water RR = 2.3 [1.5 – 3.5]. Through the environmental survey, we took 110 samples of drinking water. Of the 38 samples of softened water, 27 were non-compliant and 5 were positive for Salmonella.

Conclusion: Softened water was the probable source of the outbreak. The closure of the clandestine sales units of the softened waters of the locality of Ghannouche, the improvement of the drinking water supply and sanitary control, as well as the sanitary and hygienic education of the local community seem imperative in order to prevent other epidemics.

Status: Completed. Role: Under the supervision of the ONMNE Director, lead of the outbreak investigation team. Outputs: Oral presentation accepted at the 3th Annual MediPIET Scientific Conference 28-30 November 2017, Brussels [3] and Paper to be finalised and submitted early 2018.

Preparation of a guide for the "investigation, prevention and management of the outbreak of acute viral hepatitis A"

With an estimated incidence of 150 hepatitis A cases / 100 000 inhabitants per year, Tunisia was a country of high endemicity and the hepatitis A vaccine was not included in the national vaccination program. Since September 2016, an increase in the number of outbreaks of viral hepatitis A affecting several governorates has been detected, including an increase in the number of fulminant forms affecting children and adolescents.

In this context, we have strengthened the national response to the VHA outbreak by establishment of an "*Investigation, prevention and management guide of acute viral hepatitis A*" aimed at early detection of cases grouped at the local and regional level in order to take rapidly appropriate control measures. This guide includes the rationale, an overview of the characteristics of hepatitis A virus and its physicochemical properties, a brief reminder on clinical manifestations, diagnosis and treatment of acute viral hepatitis A, a reminder on the surveillance system for viral hepatitis A in Tunisia and the different structures involved in this surveillance and last, the elements of the national riposte to the viral hepatitis A outbreak. The national riposte is based on: Early notification (fax, telephone, email) of any probable or confirmed case of VHA (from regional to national level), the immediate investigation around the case and the active search for other cases (school or community-based survey) using a single data collection booklet containing standardized questionnaires adapted to the situation, school eviction or work stoppage of any probable or confirmed case for a period of 14 days from the date of onset of symptoms, post-exposure emergency vaccination and the recommendations and control measures to be implemented in a family, community or school context: promotion of hand washing and adequate supply of drinking water.

Status: Completed. Role: Participation in the outbreak investigation team; in charge of development and writer of the guidelines. Outputs: Guidelines available online for local epidemiologists and clinicians [4].

Research projects

Effect of ambient air pollution on emergency department visits for asthma and chronic obstructive pulmonary disease in the district of Tunis, 2007 – 2014

Background: Ambient air pollution is a major risk factor for respiratory health. The excess risk is low at the individual level, but significant at population level, regarding respiratory health indicators like mortality, hospitalizations, asthma or chronic obstructive pulmonary disease (COPD). In fact, asthma and COPD represent the leading chronic respiratory disease in the world and both diseases are characterized by progressive evolution with episodes of exacerbations. These exacerbations represent a poor prognosis factor for survival, an alteration factor of lung function and quality of life and are an expensive element of care.

Objectives: To analyze the relation between air pollution levels and emergency department visits (EDV) for asthma and COPD exacerbation in the District of Tunis for eight- years period.

Methods: We conducted a retrospective ecological study. Daily morbidity data were collected from the emergency department register of the A Mami Hospital, reference respiratory hospital, from January 1st, 2007 to December 31th, 2014. Daily concentrations levels of NO₂, SO₂, O₃, and particulate matter (PM₁₀) were obtained from the National Air Quality Monitoring Network in Tunisia. Missing data was imputed using NIPALS method. The association between daily emergency department visits and daily concentrations levels of air

pollutants was investigated by a simple Pearson correlation and by a binomial negative regression using generalized linear models.

Results: We recorded 19127 EDVs for asthma (10771, 56.3%) and COPD exacerbation (8356, 43.7%) between 2007 and 2014. Positive correlation was observed between number of visits for respiratory symptoms and NO₂ ambient air concentration (Spearman correlation coefficient =0.204, $p < 10^{-3}$), and O₃ level (Spearman correlation coefficient=0.109, $p < 10^{-3}$). Multivariate analysis showed significant positive association between the daily numbers of emergency department visits for asthma and COPD (Adjusted OR=1.011, 95% CI: 1.006-1.015, $p < 10^{-3}$) and NO₂ concentration levels.

Conclusion: Exacerbation of asthma and COPD in the district of Tunis was correlated to the NO₂ outdoor air concentration level which can be related to its traffic density. This suggests that a reduction in this pollutant level could decrease morbidity and the associated direct health care costs of asthma and COPD.

Status: Completed. *Role:* Principal investigator (protocol development, data collection and cleaning, data analysis and interpretation). *Outputs:* oral communication at MediPIET ASC 2016 [5] and paper under development.

Early results of the Tunisian Plan for the Elimination of Viral Hepatitis C, 2016-2023

Background: According to the national 2014-15 Hepatitis C virus (HCV) seroprevalence study the national prevalence was 0.89%, the expected number of persons infected was 100 000 people among them only 5000 are known HCV positive. The new treatment can both prevent hepatitis C deaths and interrupt transmission. Thus, the Ministry of Health has developed a national plan to eliminate viral hepatitis C by 2023, through treatment of chronic hepatitis C patients with direct-acting antiviral drugs and therapeutic monitoring of tolerance and effectiveness of treatment, among other actions. Preliminary results after the first year of implementation are summarized here.

Methods: Chronic HCV patients are enrolled in the plan and followed-up using a single case report form. Depending on past treatment experience and the presence of severe liver damage, a course of 12 or 24 weeks of treatment: Ledivir© only or combined with Riberyn®, Riberyn® combined with Ebuvir® was administered. Viral load was measured at initiation (W0), 4th week (W4) and at the end of treatment. Also, 12 or 24 weeks after completion of treatment to estimate the Sustained Virologic Response, defined as aviremia, i.e. absence of detectable HCV RNA in the serum.

Results: So far, 2009 patients are included with a median age of 60 years. 70% are females and the predominant genotype is 1B (86%). 31% of patients are cirrhotic. 1324 patients have completed their treatment: 1045 have benefited from the measurement of the viral load at 12 weeks and 279 at 24 weeks. The median initial viral load was $5.9 \log \pm 0.9$ and had decreased to $2.7 \log \pm 0.8$ at week 4. SVR at 12-weeks was 98.9%.

Conclusions: The early results of the elimination plan in Tunisia are very promising, they have shown the effectiveness of these new treatments. However, we have to increase the coverage of the treatment by including pre-treatment monitoring in the plan, treatment of hemodialysis and organizing awareness campaign to improve the adherence of chronically infected people to the plan.

Status: Completed. *Role:* Participation in the data collection, analysis and interpretation. *Outputs:* Poster accepted at the 3th MediPIET ASC, 28-30 November 2017, Brussels [6].

International Assignments

Study Mission at *Santé Publique France*, July 2017 – Paris, France

Background: Working in the National Observatory of New and Emerging Diseases, in the surveillance of Infectious Diseases and since the similarities of some activities with Santé Publique France (SPF), the National Institute of Public Health of France, we have carried out a study visit for ten days (from July 3rd to 13th, 2017). It was an opportunity to observe new approaches of surveillance and prevention of infectious diseases, (especially arboviruses, Viral Hepatitis, HIV/STDs), as well as warning and crisis, health prevention and promotion and to exchange our mutual experiences.

Objectives:

- Become familiar with the surveillance and prevention of infectious diseases (especially arboviruses, Viral Hepatitis, HIV/STDs) in the French system
- Be acquainted with the management of alerts and health events received by the regional level

Methods: The study visit was based on different meetings with directors, head of surveillance units and epidemiologists working in different departments (Department of Infectious Diseases Surveillance, Health Promotion and Prevention Department, Environmental Health Department, Alerts and Crises Department and a Regional Intervention Cell 'Ile de France'). During the meetings, power point presentations about the different units and activities were made and deliverables were given (reports, bulletins, articles...).

Results:

4 & 5th July: Visit and work at the Infectious Diseases Department:

- Through the meeting with the director of the Infectious Diseases Department, the main health problems raising lately are the Arboviruses, Viral Hepatitis A in MSM, STDs and Antibiotics Resistance.
- Meeting with the head of HIV surveillance: HIV surveillance in France is based on the mandatory notification, virologic surveillance (through a recent infection test and serotyping by the National HIV Reference Center) and many screening activities (especially by a network of HIV Labs and Centers of Screening and Diagnosis (CEGIDD)).
- Meeting with the head of Viral Hepatitis Surveillance: The surveillance of viral hepatitis B and C is also based on the mandatory reporting (only acute symptomatic infections of viral hepatitis B) and screening mainly by CEGIDD.
- Meeting with the coordinator of the STDs Surveillance: The mandatory reporting of STDs stopped since 2000 and epidemiological surveillance is currently based on several voluntary sentinel networks of clinicians and laboratories (ResIST, Rénago, Rénachla...)
- Meeting with the Arboviruses program coordinator: Presentation of the National anti-disseminating plan of arboviruses: chikungunya, dengue and Zika. This plan combines a system of human and entomological surveillance with preventive and control measures

6 & 7th July: Visit and work with the Regional Intervention Cell; Ile de France: on signal detection and investigation.

Presentation of the staff and fields activities: alert, epidemiological surveillance, different studies, etc. Meeting with the responsible for Syndromic Surveillance, called SurSaUD® (Health Surveillance of Emergencies and Deaths) created in 2004 based on networks of hospital emergencies, SOS doctors, death certificates, etc.

10th July: Visit and work at the Alerts and Crises Department:

We participated to the round table which is held every Monday afternoon to classify the health events received during the week and to update them by contacting the regional directions if necessary. The report of the main alerts will be presented by the General Director Wednesday at the ministry of Health.

11th & 12th July: Visit and work at the Health Promotion and Prevention Department as related with Infectious Diseases and Environmental risks.

Presentation of different aspects of this unit, and the prevention methods available to fight against the different climatic, environmental and infectious risks. Among these methods, vaccination has been an important concern lately. In fact, this department is seeking to increase the use of vaccination by sensitizing professionals and the public and by vaccination websites with simple information, vaccination schedule and other practical advice.

Participation to the ESCAIDE 2017, the side event "Introduction to Evidence Based methods and tools" and to Epidemic Intelligence at the ECDC, November 2017 – Stockholm, Sweden

Part 1: About ESCAIDE 2017

Given the great interest of infectious disease epidemiology, an international assignment was taken part in ESCAIDE 2017, 06-08 November 2017, Stockholm, Sweden. ESCAIDE aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Applied Infectious Disease Epidemiology. It was the opportunity to meet and discuss with European reference experts, to share scientific knowledge and experience, to discuss and debate scientific advances and current public health challenges in order to strengthen and expand our network in worldwide. It also provides the premier interdisciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted in the field of Applied Infectious Disease Epidemiology.

- HIV, sexually transmitted infections and viral hepatitis: Men who have sex with men (MSM), injection drug users (IDUs), and certain subgroups of heterosexuals are mostly affected by the syndemics of HIV, other sexually transmitted infections, and viral hepatitis. This vulnerable population merit a focused approach to screening and prevention programs. Concerning the fight against viral hepatitis several European countries committed to ending viral hepatitis C by 2030 through guidelines for screening, care and treatment of people infected with hepatitis C.
- Food- and waterborne diseases and zoonoses: The burden of diseases caused by food-borne pathogens remains largely unknown. Food is an excellent vehicle by which many pathogens (bacteria, viruses/prions and parasites) can reach an appropriate colonization site in a new host. Although food production practices change, the well-recognized food-borne pathogens, such as Salmonella spp. and Escherichia coli, seem

able to evolve to exploit novel opportunities, for example fresh produce, and even generate new public health challenges, for example antimicrobial resistance. Awareness and surveillance of viral food-borne pathogens is generally poor but emphasis is placed on Norovirus, Hepatitis A, rotaviruses and newly emerging viruses such as SARS. It is clear that one overall challenge is the generation and maintenance of constructive dialogue and collaboration between public health, veterinary and food safety experts, bringing together multidisciplinary skills and multi-pathogen expertise. Such collaboration is essential to monitor changing trends in the well-recognized diseases and detect emerging pathogens. It will also be necessary understand the multiple interactions these pathogens have with their environments during transmission along the food chain in order to develop effective prevention and control strategies.

- Vaccine preventable diseases: Vaccination to prevent disease is commonplace in Europe today. Certain diseases have already been eradicated by rigorous vaccination campaigns, while others are hoped to be eliminated soon, such as measles and congenital rubella. New vaccines that are being developed against existing diseases such as infections with HPV and may be developed against newly emerging diseases in the future, need to be monitored and evaluated.
- "One Health" concept: is a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. However, the "One Health Approach" remains little known outside of special sectors and institutions concerned with infectious diseases and especially zoonoses.

Part 2: ESCAIDE Side event "Introduction to evidence based methods and tools"

As part of my research and scientific writing activities I actively participated in the side event about evidence based methods and tools. The objectives of this training were to:

- To know the concept of Evidence Based Practice, different kinds of evidence and role of evidence in decision making
- To know what are systematic reviews and meta-analyses
- To identify the parts of a well-built clinical question (different steps in the EBP process) following PICO system
- To identify searching strategies that could improve PubMed searching
- To identify key critical appraisal issues that help determine the validity of a study

This training gave me an overview of the Evidence-Based Practice process as well as gave me an opportunity to practice with practical exercises and a critical reading of an article revealing the different existing bias.

Part 3: Visit to ECDC and participation at the round table with the Epidemic Intelligence team

During my visit to the ECDC, I followed the online tutorial on the process of Epidemic Intelligence then I participated at the round table of EI. By this participation I got the chance to understand how to organize a regular round table meetings and how to validate the reported events. After observing the progress of the round table I am convinced that that EI processes cannot be conducted by one person, but rather it is the work of a group of epidemiologists of multi-disciplinary background.

Scientific communication

- Poster presentation entitled "Characteristics of hypertension in type II diabetic patients" 9th Family Medicine Day of Sousse 12 - 13 February 2016 in Sousse.
- Poster presentation entitled "The level of air pollution indicators: A regional approach", First International Symposium of the Association of Tunisian Geographers, 03-06 November 2016, Hammamet, Tunisia.
- Poster presentation entitled "Knowledge, Attitudes and Practice of Respiratory Hospital Visitors to Tobacco: A Survey at the Abderrahman Mami Hospital, Ariana" XXth National Hygiene Days, 21 and 22 December 2016 in Hammamet, Tunisia.
- Oral Communication at a conference entitled "The state of progress of the national plan for the elimination of viral hepatitis C", XVIth Medical Day of Ariana, Tunisia, May 11th 2017.
- Oral Communication at a conference entitled "Impact of the environment on health: Place of the ONMNE in the environmental and epidemiological investigation of emerging diseases", 24th medical days of Gabès, September 29th 30th 2017, Gabès, Tunisia
- Oral Communication at a conference entitled "Assessment of the national response to acute viral hepatitis A in Tunisia, 2016-2017", 1st ONMNE Congress, Gammarth, from 16 to 18 November 2017 [7].
- Co-author in four articles written in French of which two are published and two are accepted in the Tunisian journal of public health 2017 [8-11].
- Co-author in one article written in English submitted in the Pan African Med Journal [12].

Teaching experience

- Facilitator during training sessions for public health doctors on the use of Epi Info7 in the context of a survey carried out in July 2016 on the reasons for seeking care in primary health centers in the district of Ariana.
- Presentation of a college course for preventive medicine interns entitled "Prevention and treatment of viral hepatitis C" at the Faculty of medicine of Sousse, 25 January 2017.
- Facilitators for the practical part of the University Diploma "Statistical Methodology Epidemiology and Clinical Research" Using the SPSS software organized at the National Observatory of new and emerging diseases for the university year 2016-2017.
- Facilitator in the training and information seminar organized in several regions of Tunisia to present the guide for the investigation of the outbreak of acute viral hepatitis A and to make people aware of the rapid notification of all cases in order to take in a timely the appropriate measures, February 2017.
- Presentation of a course entitled "Typhoid fever: clinical aspects and methods of diagnosis", 8th Postgraduate Course in Tropical and Travel Medicine under the Tunisian-German Cooperation, from 23 to 24 October 2017.

Other trainings offered:

- Training Workshop Seminar writing theses held in the Faculty of Medicine of Tunis, 27 and 28 March 2016.
- Participation to the simulation exercise (health watch) organized at the National Observatory of new and emerging diseases with the collaboration of Robert Koch Institute, 12-14 April, 2016.
- On-line course offered by the Free University of Bruxelles (ULB) "Sampling and survey methods" broadcast on the FUN platform on May 2016.
- Workshop Lab-Epi « Joint Integrated Laboratory and Epidemiology Training » Robert Koch Institute (RKI) 28th-30th September 2016 In The Ramada Plaza Hotel, Gammarth.
- Tunisia Workshop on "Introduction to the use of R software" organized by the Francophone Digital Campus of Tunis from 22 to 24 March 2017
- Participation in the 1st Annual Biorisk Management Symposium, MENA Regional Network, Arena Congress Center - Tunis, Tunisia From April 6th- 8th, 2017.
- Workshop: *Bioethics and Biosecurity education tools: They are trained, but are they competent?* Instructor: Dr Cook ERIC NEIL (Sandia, USA), April 5th 2017.
- Workshop: Preventive and protective measure against chemical and biological hazards Instructors: Mr Mohamed Slim Bibari: 3M Afrique francophone Mr Mondher Rezgui & Mr Sami Brinsi :Tunisian Occupational Health and Safety Institute, April 4th 2017.
- Seminar on the reviewing and finalization of the "Plan for the preparedness, response and resilience of diseases with epidemic potential in Tunisia 2P2R", established under the German partnership program for excellence in biological and health security, Hammamet, Tunisia, May 15th ,16th 2017.
- University diploma "Statistical methods of regression in epidemiology", Institute of Public Health and Development Bordeaux 2 University, France, 2016-2017.
- Master of Public Health at the Faculty of Medicine of Tunis, 2016-2017.
- Participation on the First Summer School on scientific paper writing from 28 August to 9 September, 2017.
- University Diploma of Vaccinology at the Faculty of Medicine of Sfax, 2016-2017.

Additional activities

Implementation of Epidemic Telephone Conference –EpiTec-, Tunisia, 2015-2016

Background: The 2013 WHO Evaluation of IHR capacities and health hazards implementation advised the implementation of Early Warning function and Event Based Surveillance (EBS) in

Tunisia. In 2015, the Observatory of New and Emerging Diseases (ONMNE) partnered with the Robert Koch Institute (RKI) to improve surveillance with the establishment of Epidemic Intelligence fed by both Indicator-based surveillance and EBS and based on rapid reporting of events using regular epidemiological conferences – EpiTec –. This platform for regular exchange between epidemiologists at regional and central level and healthcare professionals was launched in 2016.

Methods: Numerous workshops in 2015 and 2016 involving surveillance experts from ONMNE, SHOCROOM, the Primary Healthcare Direction, the Institute Pasteur of Tunis and focal points in different governorates allowed for the development of standardized protocols, SOPs and guides to launch EpiTec. In addition, a training curriculum targeted at local, regional and national-level was developed to reinforce EpiTec's implementation. Last, a field simulation exercise took place in April 2016 in order to refine the procedures and for all actors to share a real operational experience.

Conclusions: The design and implementation phase of EpiTec has already allowed for a convergence of different epidemiological surveillance networks in Tunisia. Currently, the IT tool for systematic monitoring of health risks and real-time electronic transmission of information collected to all participating actors is under development. Once completed, additional simulation exercises and training should inform EpiTEC use and proper management.

Next steps

After 4 years of specialisation in preventive medicine, I will take the specialisation exam in March 2017. Afterwards, I would like to combine an academic career with work as epidemiologist. Thus, I plan to pass the exam to become hospital teaching assistant in July 2017. I will continue to work with the same enthusiasm at the national level and provide assistance when needed for the regional level by organizing training courses to improve their skills in the field epidemiology and the prevention of new and emerging diseases. Last, I hope to be able further develop my knowledge of the epidemiology of infectious diseases and the monitoring of health events.

Supervisors' and Scientific Coordinator's conclusion

During the two-year MediPIET fellowship, Aicha Lachaichi has led a very impressive variety of public health projects. Among the results of her work deserve special mention, the national guidelines for investigation and control of Hepatitis A outbreaks. Also, the implementation of the registry of chronic hepatitis C as part of the Elimination of hepatitis C initiative in Tunisia, with more than 2000 patients accessing treatment in 2017. Very committed and concerned with scientific rigor, detailed-oriented, efficient and proactive, Aicha is also humble and an excellent team player. She is very good at sharing her knowledge and is always available to skilfully mentor those less experienced.

MediPIET Scientific Coordination concludes Aicha Lachaichi has succeeded in conducting all her assignments to the highest standard and with a professional attitude. Her performance

during the fellowship was outstanding; Aicha has become a highly-experienced field epidemiologist and also an admirable scientist. It has been our pleasure to work with Aicha.

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