



MediPIET Report

Summary of work activities



Cohort 2
2015-2017

Majd Saleh
Lebanon

Training site: Epidemiological Surveillance Unit (ESU) - Lebanese Ministry of Public Health (MOPH)

National Supervisors: Dr Nada Ghosn

Scientific Coordinator: Dr Adela Paez Jimenez

Pre-fellowship short biography

Prior to being a MediPIET fellow, Majd acquired her Master of Public Health (MPH) concentrated in Epidemiology and Biostatistics in the year 2008. Afterwards she joined the Epidemiological Surveillance Unit at the Ministry of Public Health, where she has worked in surveillance of both non-communicable and communicable diseases.

In particular, Majd worked at the National Cancer Registry where data on cancer was gathered, managed, analysed, and presented. Further on, she shifted to infectious diseases and worked on Foodborne disease surveillance, where she was tasked with outbreak verification and investigation, conducting analytical studies, as well as data management and analysis. At a later stage, and in collaboration with the WHO, she helped establish a new sentinel surveillance for Severe Acute Respiratory Infections (SARI) in Lebanon.

In addition to the above, she took part in the international response to health needs of communities affected by the Typhoon Haiyan in the Philippines in 2014 and in the ebola response in Sierra Leone in 2015 in both cases as epidemiologist deployed by the Global Outbreak Response and Alert Network (GOARN).

Fellowship projects

Surveillance projects

Severe Acute Respiratory Infections (SARI) Sentinel Surveillance System in Lebanon, 2016-2017

Background: In the context of the epidemic and pandemic preparedness for influenza in the Eastern Mediterranean Region, Lebanon's Epidemiological Surveillance Unit (ESU) at the Ministry of Public Health established a sentinel surveillance for Severe Acute Respiratory Infections (SARI).

Objectives: The objectives of the surveillance are to understand the epidemiology of influenza, detect outbreaks, identify seasonality and circulating respiratory virus strains, and contribute to the regional and international influenza networks.

Methods: Cases are identified using WHO's standardized case definition. Data are collected by the site's focal point passively and actively, entered in a SARI database, and emailed weekly to ESU. Oropharyngeal or nasopharyngeal swabs are sent to the National Influenza Laboratory (NIC) to be tested using RT-PCR for Influenza A and B types and subtypes. Results are fed into WHO's FluNet system.

Results: During the influenza season 2016-2017, 11 sentinel sites have been active and total of 1129 SARI cases were reported with an influenza yield of 10%. Two Influenza waves were observed, a first Influenza A(H3N2) wave with a peak at week 2016W52, and a second Influenza B wave with a peak at week 2017W6. More than half of the cases were under 5 years old. The reported fatality rate was 1%.

Conclusion: With the progress of SARI surveillance activities, seasonality and changes in circulating viruses is becoming evident. Future steps are to further identify patterns and trends, characterize population in the catchment area to estimate the burden of influenza in Lebanon, and help decision makers to improve on prevention programs.

Status: Completed. Responsible for the implementation and running of the system, including data analysis.

Influenza-Like Illness (ILI) Sentinel Surveillance System in Lebanon, 2017

Background: The World Health Organization (WHO) recommends coexistence of both SARI and Influenza-Like Illness (ILI) surveillance, to allow monitoring of patients seeking care in ambulatory facilities. Therefore, the Ministry of Public Health (MOPH) will be initiating ILI sentinel surveillance.

Objectives: The objectives of this surveillance are to complement SARI surveillance in identifying circulating influenza strains, describe influenza cases by time, place, person, and contribute to the global influenza surveillance.

Methods: Potential medical centers from the eight Lebanese provinces will be visited and assessed based on feasibility, sustainability, and representativeness of the population. Once eight sentinel sites are selected a focal point will be assigned and trained for initiation. Cases will be identified based on WHO's ILI standardized case definition. Nasopharyngeal swabs will be collected for influenza testing at the National Influenza Center. Epidemiological and virological data will be reported through the online District Health Information Software (DHIS2). Potential time for initiating surveillance is winter 2017.

Results: Once surveillance activities commence, generated outputs will include the following: Distribution of ILI cases and influenza positive cases by time, place, and person, tabulation of types of influenza circulating, mapping of cases and influenza types. This data will be shared in the form of bulletins posted on the MOPH website.

Conclusion: Having two complementary national surveillance systems identifying influenza circulation is crucial for preventive programs especially among high risk groups. Initiation of ILI sentinel surveillance in Lebanon will be beneficial for understanding better the epidemiology and burden of influenza in the country

Status: implementation in progress. In charge of the development of the protocol for sentinel surveillance with all key actors.

Outbreak Investigations

A foodborne outbreak after the ingestion of raw meat at an at-home wedding – Baalbek, August 2017

Background: Towards the end of August 2017, a social media platform circulated rumours of foodborne cases who had attended an at-home wedding in a village in Baalbek, Lebanon. The event took place on 25 August 2017. According to customs in Baalbek, people visit the bride's parents' house and are served a famous raw meat plate called "Kibbe Naye". Since the visitors were not formally invited to the event, no

invitation list was available. The ESU team undertook to investigate the potential outbreak and inspect the sources of infection.

Methods: Case finding was initiated and the case definition used was: any person attending the wedding in Baalbek on the 25 August, ate raw meat, and developed at least two of the following symptoms: fever, diarrhea, vomiting, and/or abdominal pain from 25 to 28 August 2017. A line list of all cases was prepared and was entered into the Foodborne disease surveillance database at the ESU central office. Descriptive analysis on time, place, and person was conducted using STATA 13 and Microsoft excel. Two suspected butchers were visited for inspection using MOPH standardized inspection forms. Samples were collected and taken to the Ministry of Agriculture Microbiology Laboratory for testing. Cases hospitalized were also sampled for microbiological testing. Isolates for both cases and food samples were sent for further PFGE subtyping at the PulseNet laboratory in Lebanon.

Results: The attack rate was 36%. The prominent symptoms were fever, abdominal pain, and diarrhea. Most of the cases were admitted to the hospital (59%). The mean incubation period was 15 hours (median: 13 hours) and the majority of cases developed symptoms on the 26th August (87%). Hospitalized cases had positive laboratory results: five for *Entamoeba histolytica*, 3 for *Salmonella species*, and one *Salmonella enteritidis*. The two butchers inspected had expired licenses and health certifications, but both had minor flaws at the butchery and both do not rely on slaughterhouses for cutting cows/goats. Butcher's meat and leftovers were positive for salmonella species and *Escherichia coli*. The *Salmonella* and *Escherichia coli* isolates for both the cases and food samples were sent to the PulseNet Laboratory pending results.

Conclusion: A foodborne outbreak in Baalbek in August after visiting an at-home wedding led to 125 people seeking healthcare. Investigating this outbreak was challenging given the fact that the visitors were dispersed and no invitation list was present. The only food item served was a traditional raw meat plate. The common microbiological agent in cases and food sampled was *Salmonella species*. The link will be further investigated by PFGE typing. Close collaboration with the MoA is recommended to be able to control such outbreak in the future. Under the One Health umbrella, both ministries can set working plans for surveillance and investigation to find the link between human and animal health.

Status: Completed, although PFGE typing results are still pending. Role: acted as lead of the outbreak investigation.

Note: Between the years 2010-2014, Majd was the lead in foodborne outbreak surveillance where cluster and outbreaks were investigated and analytical studies were conducted. A major outbreak investigation where a retrospective cohort was conducted had been accepted and presented as a poster at the ESCAIDE 2011 in Stockholm, Sweden.

Research project

Identifying Seasonal Influenza-associated Severe Acute Respiratory Infections in Five Sentinel Sites in Lebanon, 2015-2016

Background: Given the sparse information on the trends and burden of influenza in the Eastern Mediterranean Region, the Lebanese Ministry of Public Health (MOPH) established a sentinel surveillance for Severe Acute Respiratory Infections (SARI) under the Pandemic Influenza Preparedness Framework. After two years of surveillance activities in 11 sentinel sites, a study is proposed to identify the attribution of influenza to reported SARI cases and its attribution to the total sentinel site admissions in five selected sites.

Objectives: The objective of this study is to highlight the proportion of influenza-associated SARI from September 1st 2015 to August 31st 2016 in five sentinel sites of Lebanon.

Methods: The study was conducted in five sentinel sites based on representativeness of the Lebanese provinces. Cases had been reported based on WHO's standardized SARI case definition. Data from 1 September 2015 to 31 August 2016 was reviewed and total numbers of all-cause hospital admissions were obtained. Nasopharyngeal swabs had been collected and tested using influenza virus RT-PCR panel

at the National Influenza Center. Descriptive and bivariate analysis was conducted using STATA 13. A further study to compare severity between two seasons will be conducted after 31 August 2017.

Results: The total number of reported cases was 1044, of which 98% were sampled and 14% were influenza positive. Influenza B accounted for the majority of positive cases (47%). The overall proportional contribution of influenza-associated SARI to all-cause hospital admissions for the five sentinel sites was 0.16% [95%CI: 0.13-0.19]. Stratified by sentinel site, highest proportion was shown in a southern province sentinel site specifically in children less two years of age (4.5% [95%CI: 3.1-6.5]).

Conclusion: Despite the lack of catchment population estimation, this study is the first step in understanding the burden of influenza in Lebanon. The findings can help prevention programs in Lebanon especially for the highest risk population, such as children less than two years of age.

Status: Completed. Role: principal investigator. Abstract accepted as oral presentation at MediPIET Annual Scientific Conference 2017. Manuscript with results for the two first sentinel sites accepted for publication.

International Assignments:

Assessment of the Pandemic Influenza Preparedness Framework Activities in Morocco - March, 2016

Background: The Pandemic Influenza Preparedness (PIP) Framework was agreed among Member States and became effective in 2011. Seven middle and low-income countries are receiving funds with the objective of improving epidemiological and laboratory surveillance capacities for influenza. These countries include Afghanistan, Djibouti, Egypt, Jordan, Lebanon, Yemen and Morocco. In this regards, the WHO-EMRO assembled a team of experts to revise the PIP implementation in Morocco. The mission was conducted from 28 to 30 March 2016 and visits constituted the epidemiologic, virological central levels as well as sentinel sites in selected districts. Below are the details of the mission.

Objectives:

- To review implementation of activities under the Pandemic Influenza Preparedness (PIP) Partnership Contribution (PC) Implementation Plan;
- To review influenza surveillance activities (SARI/ILI);
- To discuss sustainability of influenza surveillance and pandemic preparedness;
- Provide recommendations for improvement in PIP implementation.

Methods: Several methods were used for conducting the review mission. Briefings from the WHO country office of Morocco followed by briefings at the Ministry of Health - Directorate of epidemiology were done. Site visits to sentinel surveillance sites taking part in SARI and ILI surveillance were visited. In addition, the National influenza Center and a regional laboratory were visited. During the visits and briefings, documents related to SARI/ILI surveillance were reviewed and a data collection tool in excel format created by WHO was filled. By the end of the mission, a presentation and debriefing report were done.

Results: The output was a mission report shared with the WHO-EMRO to be shared with the WHO-CO in Morocco and finally to the Directorate of Epidemiology. This mission report was a tool for the country to either keep what is functioning well or try to find solutions for those that are not.

Conclusion: The Moroccan SARI/ILI has benefited from the PIP support, even though it had commenced its surveillance before the funds were provided, and its sustainability is relatively probable. As a MediPIET fellow it was an honor to be with the assigned assessment team and it has contributed to the development of the core competencies. The time duration for the review however was too short. Efforts will be made to ensure proper time planning for similar missions in the future.

Status: Completed.

Syrian Refugee Health in Lebanon: Evidence based public health policy and practice training at the London School of Hygiene and Tropical Medicine (LSHTM) – October 02-13, 2017

Background: The aim of this International Assignment was to help in analyzing the public health response to the refugee crisis in Lebanon. to better inform any changes or decisions for policies related to this crisis. It required two-weeks participation at a LSHTM training module for the application of the taught components such as assessing, synthesizing, and presenting policies using evidence-based information.

Objectives:

- Acquire and evaluate the quality of existing evidence related to public health policies and interventions in Lebanon in response to the current crisis in Syria;
- Undertake a systematic review of existing studies, draw out the policy implications, and assess the quality and relevance to policy of such reviews;
- Demonstrate a thorough understanding of the dynamics of the relationship between the worlds of research, and policy and practice in the field of public health.

Methods: The activities conducted included attending lectures and group meetings for working on a case-study analyzing policies of specific health problems. The group's case-study was "Setting the global health agenda: The influence of advocates and ideas on political priority for maternal and newborn survival". The group was composed of a wide range of professionals from different levels expertise. In addition, reading the pre-readings for classes and other articles relevant to the class had to be done. Finally students were expected to conduct a systematic review literature search for a topic given by the lecturer: "The effectiveness of point of care testing in antibiotic stewardship programmes in primary care and outside hospital".

Results: For the oral communication activities, the outputs involved discussions and participation in sessions and presenting group work finding in PowerPoint presentation. For the written communication activities, the outputs were writing a summary report on group work activities and outcomes, identifying the main question/hypothesis for the systematic review, and writing a draft search of literature intended to be used for the systematic review assignment.

Conclusion: This was an opportunity to understand policies, evidence-based research, and critical thinking. It paved the way for developing skills related to MediPIET activities, in particular surveillance activities. Attending this module, as part of a DrPH program at the LSHTM and as a MediPIET fellow, it was a privilege to learn so many concepts and develop competencies that can be translated in the field in Lebanon especially in assessing and presenting recommendations for Lebanese public health response to the Syrian refugees in Lebanon.

Status: Completed.

Scientific communication

Poster Presentations: "Establishing the Sentinel Surveillance System for Severe Acute Respiratory Infections in Lebanon, 2014: Better Understanding the Epidemiology of Influenza". ICEID 2015, Atlanta GA, USA, 2015 [1].

Oral Presentations: "Severe Acute Respiratory Infections sentinel surveillance system in Lebanon: Findings of two seasons, 2015-2016". MediPIET Annual Scientific Conference 2016: Protecting Public Health across Borders, Marrakesh, Morocco, 2016 [2].

Manuscript: Manuscript submitted and accepted for publication in the Journal of Influenza and Other Respiratory Viruses - Wiley Online Library: "Influenza-associated Severe Acute Respiratory Infections in Two Sentinel Sites in Lebanon – September 2015 to August 2016" [3].

Other MOPH website publications: Lebanese Severe Acute Respiratory Infections (SARI) Sentinel Surveillance Monthly Bulletins [4].

Teaching experience

Job related teaching experience

- *Yearly training for SARI focal points:* This involved training of the SARI sentinel site focal points on matters related to surveillance activities such as methods of data collection and analysis, virological sampling and transferring, and writing in-hospital SOPs. The work involved for the trainings was: writing concept notes, preparing training material, and implementing. This training is done once every year since 2014.
- *Facilitating with GOARN in Rapid Response Teams training:* This training involved senior trainers along with the help of facilitators to bring multidisciplinary teams together to respond to outbreaks. Task at the training was facilitating with the senior epidemiologist on methods of case finding, data management, analysis, investigation, and report writing. This training took place in Dead Sea, Jordan, October 2016.

Freelance lecturing

- At two different universities in Lebanon, one course on "Basic Epidemiology" to students in the nursing department, and "Healthcare systems in Lebanon" to students in the faculty of pharmacy.

Miscellaneous (additional activities)

Fellowship with GOARN Operational Support Team (OST)

A competitive fellowship was opened to GOARN partner institutions where the candidate would work along with GOARN OST. Majd was granted the fellowship in September 2016. The activities conducted were:

- Following up on activities related to Global Outbreak and Response Network's contribution to One Health;
- Providing regular information updates for GOARN knowledge platform, through coordination and communications with operational partners and GOARN Steering Committee (SCOM) members on support for international response activities related to zoonotic diseases;
- Providing assessments and reports of ongoing events including the health emergency Rift Valley Fever (RVF) outbreak in Niger;
- Assisting in training activities conducted by GOARN OST, as well as proposing and following up on training activities under the One Health umbrella;
- Following up a MERS-CoV rapid response training with GOARN OST and One Health partners.

Supervising a Master of Public Health Candidate

An MPH candidate was supervised during her practicum at the ESU MOPH to conduct a SARI case finding at one of the SARI sentinel sites to compare between the cases found in intensive active case search and those reported through the SARI system (audit). The objectives of the practicum were to:

- To identify gaps in the reporting of SARI surveillance system;
- To come up with recommendations to the MOPH and the hospital on how to ameliorate the implementation of the SARI surveillance system and how to tackle any identified challenges.

The practicum supervision took place from February - May 2016.

Next steps

After so much learning and applying during the two years with MediPIET, the experience will be taken and translated into actual field work in matters related to epidemiology, planning surveillance programs and understanding the global public health context.

In that regard, the next steps will be:

- Work in further developing knowledge and skills in epidemiology and global public health and development,
- Use information and practical tools for training activities at the ESU MOPH,
- Contribute to similar field epidemiology trainings that might take place in Lebanon,
- Maintain personal and professional connections with MediPIET fellows and supervisors, Continue work in freelance consultancies and lecturing with a better background from MediPIET.

Supervisor's conclusion

Majd Saleh started working at the Epidemiological Surveillance Program since almost 10 years. During these 10 years, she has demonstrated her competencies and professionalism to operate various national surveillance systems: national cancer registry, food poisoning surveillance and investigation and implementing influenza surveillance with the severe acute respiratory infection sentinel surveillance. Also, she contributed in building capacity of the MOPH teams and the healthcare facilities teams.

Moreover, she has completed successfully various international assignments: GOARN mission in Philippines (2014), GOARN mission Sierra Leone (2015), WHO fellowship (2016/2017)...

During the 2-year fellowship, she completed the needed assignments and proved to be valuable high level field epidemiological with national and international experience.

Scientific Coordinator's conclusion

During the two-year MediPIET fellowship, Majd Saleh has demonstrated an outstanding problem-solving capacity, ability to deliver timely with excellency and autonomy and exceptional oral and writing communication skills. She joined the MediPIET fellowship with solid previous experience, she has taken advantage of this hands-on training to get out of her comfort zone and further developed her skills as field epidemiologist. A fast-learner and of generous nature, she was very active during modules and proactive suggesting assignments. Majd has largely contribute to implement and develop influenza surveillance in Lebanon to high quality standards. With a strong commitment towards improving health outcomes in Lebanon as well as worldwide, she has joined several international missions with WHO and GOARN during her fellowship, promoting exchange of countries' experiences.

MediPIET Scientific Coordination concludes Majd has succeeded in performing all her assignments to the highest standard and with a professional attitude. She is a team player, extremely reliable, excels in handling difficult situations and has outstanding communication skills. It has been our pleasure to work with her.

References

1. Saleh M. et al. *Establishing the Sentinel Surveillance System for Severe Acute Respiratory Infections in Lebanon, 2014: Better Understanding the Epidemiology of Influenza*. ICEID 2015, Atlanta GA, USA, 2015
2. Saleh M. et al. *Severe Acute Respiratory Infections sentinel surveillance system in Lebanon: Findings of two seasons, 2015-2016*. MediPIET Annual Scientific Conference 2016: Protecting Public Health across Borders, Marrakesh, Morocco, 2016
3. Saleh M. et al. *Influenza-associated Severe Acute Respiratory Infections in Two Sentinel Sites in Lebanon – September 2015 to August 2016*. Influenza and Other Respiratory Viruses Wiley Online Library (to be published soon)
4. Saleh M. et al. *Lebanese Severe Acute Respiratory Infections (SARI) Sentinel Surveillance Monthly Bulletin*. <https://www.moph.gov.lb/en/Pages/0/11339/influenza-surveillance>