



**Cohort 2
2015-2017**

MediPIET Report Summary of work activities

**DUMITRU CAPMARI
Republic of Moldova**



Training site: National Centre for Public Health, Republic of Moldova

National Supervisors: Gheorghita Stela, Caterinciuc Natalia

Scientific Coordinator: Ahmed Zaghloul

Pre-fellowship short biography

Dumitru Capmari, MediPIET fellow, is a Medical Doctor with specialization in Epidemiology and Public Health, he graduated at "Nicolae Testemitanu" State University of Medicine and Pharmacy of the Republic of Moldova. In 2011 he had been recruited in the position of assistant of epidemiologist in the Department of Public Health Alert Monitoring, National Centre for Public Health, MoH of Republic of Moldova. After graduation of medical university in 2015 he was appointed as epidemiologist in department of Surveillance of influenza, ARI and SARI, in the same institution. He is responsible for weekly and monthly epidemiological surveillance on influenza, ARI and SARI in all districts of the country, including sentinel sites.

Fellowship projects

This portfolio presents a summary of all work activities (unless restricted due to confidentiality regulations) conducted by the fellow during the MediPIET Fellowship.

Projects included epidemiological contributions to public health event detection and investigation (surveillance and outbreak); applied epidemiology field research; teaching epidemiology; summarizing and communicating scientific evidence and activities with a specific epidemiology focus. 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 program coordinator on the development of the fellow's competencies.

Surveillance project

1- Influenza surveillance system, Acute Respiratory Infections (ARI) and Severe Acute Respiratory Infections (SARI) in the Republic of Moldova, 2010-2015

Background:

Influenza occurs globally with an estimated annual attack rate of 5–10% in adults and 20–30% in children. Recent studies show that vaccine can reduce the risk of influenza by about 60% among the overall population during influenza seasons. Influenza surveillance in the Republic of Moldova includes routine and sentinel surveillance systems. Epidemiological and virologic surveillance system is adjusted to the WHO, ECDC and CDC recommendations.

Objectives:

To analyse morbidity and mortality from influenza, ARI and SARI in the Republic of Moldova for and to describe the seasonality and evolution of influenza epidemics during the years 2010-2015.

Methods:

An epidemiological descriptive study was conducted to describe epidemiological peculiarities and evolution of influenza epidemics. Epidemiological data were collected through the national surveillance, including sentinel surveillance system. Virologic data were obtained based on molecular technique (rRT-PCR) and isolation of influenza viruses with following typing and subtyping.

Results:

In the Republic of Moldova influenza epidemics starts usually on January with seasonal increasing of influenza cases since the second week of the year, with the peak during the 5th – 9th weeks, and following decreasing up to 17th – 19th weeks. The highest incidence rate was reported in Ungheni district and mun.Chisinau, where incidence rate were 1225 and 626 by 100000 population respectively. Both territories are situated in the central part of the country with high density of population. Ungheni is the biggest ground crossing point of entry. Most cases of influenza are recorded among people between 5 and 14 years (37%). The most affected age group for ARI and SARI was children 0-4 years (34% and 66.7% respectively).

Fatal cases as consequences of influenza are recorded annually and differ every year. In 2014-2015 influenza season the biggest number (21 deaths cases) were registered while in other seasons number of death cases were lower (12 deaths were registered in 2012-2013; 6 deaths – in 2010-2011; 4 cases of death - in 2011-2012 & 2013-2014).

During 2010–2015, have been investigated 3236 samples, from which 1252 (32,7%) were positive for influenza virus [584(47%) A-H1N1, 294(23%) A-H3N2, 369(29%) influenza type B and 9(1%) AH1N1+B]. For 2010-2011, 2012-2013 and 2014-2015

seasons, the predominant virus was A(H1N1). In 2011-2012 and 2013-2014 seasons, the predominant virus was A(H3N2). From all 3236 investigated patients, only 186(6%) of them were vaccinated against influenza, and 775(24%) unknown vaccination status. 17 risk groups of population are eligible for influenza vaccination. Every year around 150-200 thousands of influenza vaccine doses are distributed but the burden of influenza remain rather high.

Conclusion:

Influenza in the Republic of Moldova similar to other country in the region has a seasonal manifestation. Predominantly affected age groups are 30-64 years for ILI and 0-4 years for ARI and SARI. Most cases of influenza have been registered to unvaccinated persons. To reduce the burden of influenza on the health system, vaccination is recommended to risk groups which include adults and children with comorbidities, older people (> 65 years), health care workers and pregnant women.

Status: Completed

2- Evaluation of sentinel surveillance system of influenza in Republic of Moldova, 2014-2017**Background:**

Influenza surveillance in the Republic of Moldova includes routine surveillance and sentinel surveillance systems. The routine surveillance system collects cumulative data about cases of influenza, acute respiratory infections (ARI) and severe acute respiratory infections (SARI). Sentinel sites collect specific and non-specific indicators. The objectives are to evaluate the system regarding collection of information for completing reporting forms, data sources for the system, surveillance network, population coverage, geographical coverage, type of reporting.

Objectives: To evaluate the qualitative and quantitative attributes of the sentinel surveillance system and development of recommendations to improve sentinel surveillance system in the Republic of Moldova.

Methods:

The analysis was done to determine the completeness of reporting forms as well as indicators as timeliness, representativeness, sustainability and utility of virological monitoring system as part of the sentinel surveillance. The determination of the system's simplicity, accessibility, flexibility and stability was made by using questionnaire.

Results:

Between October 2014 and May 2017, 1615 Swab Forms were analysed from which 24% had at least one missing variable. About 87% of SARI diagnosis and 92% of ILI diagnosis corresponded to national case definitions. The sensitivity of the case definition is 84% for SARI, 99% for ILI and 78% for ARI. The Positive Predictive Value

is 17% for SARI, 58% for ILI and 24% for ARI. Proportion of specimens that are analyzed and have final results in 72 hours is 91%. The simplicity of key surveillance activities is easy for 70% of sentinel surveillance users. Time to complete reporting forms by week is one hour (30%), 2-3 hours (38%), 3-4 hours (17%) and >4 hours (15%).

Conclusion:

Sentinel surveillance system in Moldova have a good performance (83.6% for quantitative indicators and 80.3% for qualitative indicators). It needs to improve completeness of swab form, number of transmitted samples, use of the case definition by physicians.

Outbreak Investigations:**Outbreak of Salmonella enteritidis in village Hîjdeni, Glodeni district, July 2017****Background:**

On 25 July 2017, Center for Public Health (CPH) in Glodeni was notified about 27 cases of gastroenteritis among participants to funeral ceremony in Hîjdieni village, Glodeni district. CPH notified National Center for Public Health about 27 cases with gastroenteritis (22 hospitalized cases other 5 people received ambulatory treatment) and outbreak investigation started with development of standard case definition.

Objectives:

To investigate the outbreak based on standard approach (10-steps) of outbreak investigation and to eliminate the risk for other people with implementation of appropriate interventions to stop spreading of salmonellosis in the community.

Methods:

A retrospective cohort study was done. The defined case definition: any person who participated on 23.07.2017 at the funeral ceremony, who ate in the restaurant "Stejivi", village Hîjdieni, district Glodeni, with at list one of the symptoms fever, vomiting, abdominal pain, diarrhoea was use for active case finding. All 68 participants to the ceremony were interviewed using a structured and standard questionnaire with identification of food consumption and association with gastroenteritis. For microbiological investigations were taken samples for investigation from the areas from the local and from the patients. We calculated relative risk using stratified analysis.

Results:

Of the 68 participants of the ceremony, 27 had similar symptoms associated with consumption of the same type of food. First cases appeared on July 23, 2017 in the evening, however most cases were registered on 24.07.2017, between 00.00 and

06.00 – 11/27 (40.7%). Risk Ratio (RR) for distribution of cases of illness by sex was 0.9, with 95%CI (0.6259 – 1.4317) that indicated no gender differences of cases.

The analytical investigation demonstrated that cases are associated with salad (olive) consumption, relative risk was 9.97 (95% CI 3.32-28.52), stratified analysis revealed the persons who ate food which contained mayonnaise had higher risk to be affected (RR 24.37, 95% CI 3.55-16.7), comparing with others who used dishes without mayonnaise.

The epidemic curve indicated a point source outbreak, and primary hypothesis (people who have consumed mayonnaise salad have been exposed to an increased risk of illness became more acceptable). Diseases have been significantly associated with mayonnaise salad while for other consumed foods (eggs, meat, etc) attack rates was lower with no association.

Testing of the samples from the patients confirmed in five cases *Salmonella enteritis*. Due to the fact that outbreak investigation was conducted after two days of the exposure (contaminated food consumptions) it was not possible to collect samples of food or food scraps. In the samples picked from the mentioned restaurant to verify hygienic and sanitary conditions, no pathogenic flora: P. Mirabilis, K. Pneumoniae, E. Aerogenes, E. Coli were detected.

Conclusion:

The results of the outbreak investigation were not able to establish a direct link between contaminated food (not available food for sampling after ceremony) while epidemiological evidences highlighted mayonnaise salad as the most likely source of infection. *Salmonella enteritis* was identified in five samples from the patients, and this pathogen was responsible for outbreak. Also existing food safety regulations regarding preparation and storage of food need to be implemented accordingly by restaurant in order to avoid food-borne outbreaks linked to improper food hygiene and handling.

Status: Completed

Research

Title: Knowledge, attitudes, and practices of medical staff on vaccination for prevention of seasonal influenza in Republic of Moldova, 2017

Background:

In Republic of Moldova, influenza, acute respiratory infections and severe acute respiratory infections are recorded every year, generally representing 2/3 of the total number of infectious diseases recorded during the year. Vaccination against influenza is the most effective method of prevention for influenza reducing the risk by 60%. Over the last couple of years about 150 000 to 200 000 people from the Republic of Moldova got the influenza vaccine each year (children and adults with chronic diseases and tuberculosis, workers of the public health care institutions, public health

service, the elderly persons, etc.)

Objectives:

- Assess the knowledge of health care workers of seasonal influenza and vaccination;
- Look into the attitudes and review the practices of health care workers related to seasonal influenza and vaccination and develop a package of recommendations to improve the situation.

Methods:

The research was based on primary quantitative and qualitative data collected from medical staff with a questionnaire conducted in 10 administrative territories. The questionnaire addressed knowledge, attitudes and practices of health workers about seasonal influenza and vaccination against it. The data was entered and analysed using the IBM SPSS.

Results:

Almost all medical workers (98%) are informed about influenza causes, seasonal influenza symptoms; seasonal influenza consequences; positive effects of seasonal influenza vaccination. About 88% of health workers know how to reduce the negative consequences of vaccination against seasonal influenza. In terms of how health care workers get their information about seasonal influenza and vaccination, health managers accounted for 46.6%, followed by specialized conferences (24.9%) and specialty literature (12.6%). Around 75% of medical workers participated in training on seasonal influenza and vaccination in the last 3 years.

Health care workers' overall attitudes towards vaccination were positive, with 64.8% of them disagreeing that vaccination is altering one's immunity (wrong statement), and 71.5% disagreeing that vaccination does more harm than good. One quarter of respondents stated to have contracted seasonal influenza on the job over the last three years, and 87.0% of them stated to have heard their co-workers getting sick on the job with different communicable diseases. Three quarters (74.7%) consider that they are at risk to get sick with influenza in their department/institution, and the patients are source of infection.

More than 80% of the healthcare workers were vaccinated in the last 2 seasons. 42.4% from total number of medical workers suffering from chronic diseases and 85,1% of them were vaccinated. In 82.3% of institutions vaccination campaigns were organized in the last 2 years. Only 32.5% of respondents were actively involved in the vaccination campaigns, and 60.0% were not very actively in this campaigns. The campaigns included trainings for medical staff in the institution, individual or group conversations with patients, as well as distribution of brochures.

In order to increase the level of vaccination, 80% of medical staff answer that we need to increase the social impact of these measures: medical staff who have been vaccinated needed to set an example for the population, involvement in these campaigns of public figures (politicians, culture people), as well as the development of material about vaccine benefits. All this should be promoted through television, radio, the internet, and the discussions organized by medical staff with patients.

Conclusion:

Medical workers are informed about influenza causes, seasonal influenza symptoms; seasonal influenza consequences; positive effects of seasonal influenza vaccination and how to reduce the negative consequences of vaccination against seasonal influenza. They have a good attitudes about influenza vaccination but vaccination coverage among health workers is not very high comparing with other risk groups. The package of recommendations to improve knowledge and attitude as well as change practices related to promotion of vaccination against influenza was issued to the Ministry of Health.

International Assignments:**1. Influenza Surveillance System in Republic of Macedonia, comparison with surveillance system in the Republic of Moldova**

Location: Republic of Macedonia

Date: 27.02.2017-03.03.2017 and 14.08.2017-18.08.2017

Organization: INSTITUTE OF PUBLIC HEALTH

Background:

The updated routine surveillance system for influenza in the Republic of Moldova in the current form has been activated after the AH1N1 influenza virus pandemic. The sentinel surveillance with 9 sentinel sites started to work in 2011.

International assignments (IA) hosted by Institute of Public Health in Macedonia aimed to share experience and ensure better quality management of the sentinel influenza surveillance in the Republic of Moldova. During the assignment I compared functions of the surveillance systems at the central and regional level in both countries, Macedonia and Republic of Moldova. During two weeks under supervision of Dr Gordana Kuzmanovska, I have learned how the surveillance system is structured, I was familiarized with forms for data collection and flow of information in order to further improve the knowledge and skills related to the influenza surveillance system. IA offered an amazing opportunity to share experience with specialists in epidemiology from Macedonian in the area of procedures for reporting of data on influenza surveillance, methods for data analysis and their graphic presentation.

Objectives: to learn the structure and functions of the surveillance system of ILI and SARI, laboratory support for influenza virus identification and data presentation based on GIS in Macedonia in comparison with Republic of Moldova.

Results:

A comprehensive influenza surveillance system in the Republic of Macedonia is well developed and functional Surveillance activities, analysis, and information sharing occur at local, regional and national levels of public health. Sentinel surveillance in Macedonia include 13 sentinel ILI/ARI sites with population under surveillance 1,7% of total population in Macedonia. SARI sentinel surveillance includes 5 SARI sentinel sites.

In Macedonia, reporting of cases from the sentinel system is voluntary. Case definition for SARI in Macedonia is adapted WHO case definition for severe acute respiratory infection (SARI) cases. Collection of the samples for virological monitoring is done according to protocol for implementation of ILI and SARI surveillance.

During the visits to the sentinel sites we looked at the procedures of weekly reporting of data and feedback from the central authority to sentinel sites. Some deficiencies related to weekly report sending from sentinel site were identified and issue was immediately addressed by correction of the e-mails.

The weekly sentinel surveillance system report on epidemic situation of influenza in Macedonia is well structured. The methodology for writing the report to administrative territories and to sentinel sites is very easy and clear.

During the deployment I gained the knowledge how to use of QGIS and I use this experience to creating weekly influenza activity maps in the Republic of Moldova. This map was supplemented to weekly report which is sent to sentinel sites. Also I shared our experiences on management of the influenza surveillance system in the Republic of Moldova.

Status: Completed

2. Title: Summer school on Scientific paper writing, Tunis, Tunisia, September 2017

Location: Tunis, Tunisia

Date: 28.08.2017-08.09.2017

Organization: The observatory of new and emerging diseases of Tunisia (ONMNE)

Background:

My second International Assignment took place between 28 August 2017 and 08 September 2017 in Tunis, Tunisia. This was the first Summer School on Scientific Paper Writing, organized by National Observatory of New and Emerging Diseases (ONMNE). The ONMNE as a training site for MediPIET project and was offered the opportunity for me to participate in this course on scientific paper writing.

Objectives: to gain knowledge and experience on preparation of the manuscript for international journals, creation of bibliography with endnote and use multivariable analysis based on Stata and SPSS software for editing and analysing all sorts of data.

Results:

On this summer school we were familiarized how to use "End Note" for working with the bibliography. The work with bibliography is necessary to start a scientific work. This is the first step of work in the introduction part of any scientific papers. After this we have discussed about the structure of Introduction part (to describe the situation from situation on the word → regional level → local/country level).

We have discussed about "IMRAD" structure of a paper: Introduction, Methods, Results, and Discussions and about the six "Ss" of scientific writing: simple, short,

structured, sequential, strong, specific. It was also discussed about argument matrix template, and the direction that the paper need to follow.

At the same time, we talked about results and the structure of this part of paper. have been described the points to be respected to have a well-organized chapter. These are: points to key patterns & main exceptions to these patterns, using simple terms that avoid statistical language, abstains from presenting methods, does not interpret results, and maximizes the use of objective and quantified evidence.

An important part of this chapter are graphics, figures and tables that have been demonstrated the best models to show all of these. For graphics, the rules to be followed are to have a clear, focused message, type of graph adapted to data/message, analogy information privileged, minimized ink-to-data ratio, justified choice of colours / patterns, complete time, place and person title, sufficient size for graphs/ fonts. For tables we need to respect 2 components: organization of the data (tables with identical structures merged, homogeneous content (indicator), standard structure from dummy table, non-redundant data, rows sorted out, correct calculations, consistent rounding up, alignment for easy reading and comparison) and layout and presentation (complete indicator, time, place & person title, short descriptive parallel headings, justified use of capital letters, minimal use of acronyms, explanatory footnotes, one table per page in landscape format).

The discussion part need to be a bridge from results to conclusions through interpretation, to place results in the context of what was known before, to recall results briefly without repeating them extensively, to discuss multiple possible explanations, to compare results with previous ones only with a purpose. We presented ways to work with IBM SPSS Statistics 22. This program was used to analyse existing data for later elaboration of the article used during the training. The experience gained during this period is an exceptional one, and it will be necessary and beneficial to prepare the articles for publication in national or international journals.

Status: Completed

Scientific communication

- One oral presentation at MediPIET ASC 2016
- 2 oral presentation accepted for MediPIET ASC 2017
- Oral presentation on Trends in Influenza Research, September, 2017, organised by WHO

Teaching experience

1. **Lecture and case-study on epidemiological surveillance and outbreak investigation**

In collaboration with expert from Norwegian Public Health Institute, we conducted one-day training on Principles of Epidemiological Surveillance and Outbreak Investigation. The training included theoretical part with presentation and practical part – table-top exercise (case study on Outbreak Investigation of

Gastroenteritis). Ceban Alexei and I, under supervision of Natalia Caterinciuc, have facilitated practical part of training for Residents Epidemiologists of the 1st and 2nd year from State Medical University and young epidemiologists and microbiologists from National Centre of Public Health and Municipal Centre of Public Health.

2. **Workshops on ILI, ARI and SARI surveillance in Republic of Moldova**

On 16.02.2017, was organized the workshop on influenza surveillance and control, ARI and SARI by specialists of NCPH. The workshop was attended by 45 people from the sentinel sites (epidemiologists, family doctors, infectious diseases doctors).

On 14 July 2017, was organized a workshop with all epidemiologists from Centre of Public Health (36 persons) that were involved in influenza surveillance in 2016-2017 season. At the workshop were presented the data regarding the surveillance of ILI, ARI and SARI throughout the Republic of Moldova for the season 2016-2017, and were discussed the problems encountered by them during the supervision period, as well as the ways to solve them.

Next steps

To work as a public health specialist and trainer with a focus on infectious diseases epidemiology in local, regional, national and international contexts. This 2-years programme allowed me to obtain knowledge on different aspects of epidemiology. I will use the information obtained in this 2 years for preparing of other specialists in public health (at the national and international conferences). All my knowledge will be used for improvement of the work of the Public Health system in Republic of Moldova.

Supervisor's conclusion

During the two-year of MediPIET fellowship, Dumitru Capmari was involved in numerous public health activities including outbreak investigations, evaluation of the epidemiological surveillance activities, and research projects as described in the list of core competencies of the MediPIET programme.

He timely and successfully conducted and finished all appointed activities. His reports were timely prepared and concise with main findings and recommendations clearly identified and explained. Dumitru increased his skills, abilities, and knowledge, developed professionally during the fellowship; he solved given tasks in a highly competent way, with an increasing degree of independence, but at the same time seeking assistance as appropriate. Also, he has been exposed to various challenges, either administrative or epidemiological, and he has succeeded to overcome such situations and to take benefits from such experiences.

I am confident that his knowledge, attitudes, and behaviour are those of a senior field epidemiologist. I am confident that his work will continue to be of benefit for the country.

Scientific Coordinator's conclusion

Text

References

References for your activities mentioned in the portfolio like publications