



MediPIET Report

Summary of work activities



Cohort 2
2015-2017

Milunka Milinković
Serbia

Training site: Institute of Public Health of Serbia "Dr Milan Jovanovic Batut", Belgrade, Serbia

National Supervisors: Dr. Mitra Drakulović & Prof. Anita Grgurević

Scientific Coordinator: Dr. Nikoletta Mavroei(March 2016)

Pre-fellowship short biography

Milunka Milinkovic is a medical doctor and currently finishing three year Epidemiology residency at University of Belgrade, Faculty of Medicine i.

Since 2009 she works in the Department for Epidemiological Surveillance, Centre for Prevention and Disease Control at the Institute of Public Health of Serbia "Dr Milan Jovanović Butut", Serbia. During this period she gained experience in the surveillance activities, mainly on influenza, foodborne and zoonotic diseases. Also she is engaged in the preparation of the Guidelines, writing reports regarding epidemiological situation of communicable diseases, and providing professional and coordinative support to the network of regional public health professionals. She is included in implementation and conduction ALERT system, during the public health emergencies in the country. She is a member of the National Committee for the Prevention population against communicable diseases.

Fellowship project

Surveillance project

Evaluation of severe acute respiratory infection (SARI) surveillance system in Serbia in season 2014/15

Background:

Hospital surveillance for SARI has been established in Serbia, since 2009 in the selected eleven hospitals, in the 4 cities. Objective of this surveillance is to monitor trend of severe forms of acute respiratory infections. It is passive hospital based surveillance with the active component from the

national level, performed during the influenza season (from 40 to 20 week). Population under surveillance are admitted patients during the. Geographic coverage is nationwide.

WHO case definition SARI is used

Data sources are: sentinel hospitals (11), regional Institutes of Public Health (4), National Influenza Centres for laboratory surveillance (2). Data tools are two reporting forms:

1. SARI aggregate data form (including the number of new SARI cases during the week, laboratory tested, laboratory positive for influenza, deaths due to SARI, and the total number of new admissions, according to defined age groups).
2. Reporting form for laboratory confirmed influenza cases (containing following variables: socio-demographic characteristics, clinical manifestations, underlying conditions, vaccination status, antiviral therapy, outcome, date of onset symptoms, date of hospitalizations, laboratory)

All data are collected from the sentinel hospitals to the 4 regional Institutes of Public Health (IPH) and disseminated to the National Institute of Public Health, where they were analyzed, and made weekly reports about epidemiological situation of influenza.

Epidemiological and virologic data collected from the sentinel sites are reported to the national health authorities on a weekly basis through the aggregated data forms. In each sentinel site there is a focal point person for the sentinel surveillance on SARI that fills out the data in the SARI aggregate data form and every Monday submitted to the regional coordinator for influenza (epidemiologist from the regional level). The regional coordinator for influenza submits the united data electronically to the National Institute of the Public Health, every Tuesday for the previous week. From the National Institute of Public Health the data are reported weekly to the European Center for Disease Control, through the TESSY platform. During the influenza season National IPH produces weekly reports regarding the epidemiological situation of influenza. Reports are available on the website of the IPH of Serbia, Additionally, they are disseminated to all stakeholders participating in the influenza surveillance and to the Ministry of Health.

Every SARI case in the sentinel hospital should be immediately reported via telephone to the competent epidemiological office in the district Public Health Institute, who inform the National focal point for influenza at the National Institute of Public Health.

The data about laboratory confirmed SARI cases are communicated by telephone from the National Influenza Center to the influenza coordinator at the district Institute of Public Health, who fills out the case based reporting form and submits to the National Institute of the Public Health.

Objectives:

To improve sentinel surveillance of SARI in Serbia in order to apply adequate preventive measures that will be based on the reliable surveillance system.

Methods:

We evaluated sentinel SARI surveillance system using data obtained from the National Institute of Public Health of Serbia, for season 2014/15, and for assessment of flexibility data from the season 2016/17. An updated guidelines of the Centers for Disease Prevention Control was used. System attributes analyzed included: simplicity, usefulness (descriptive analysis), completeness, timeliness and flexibility (quantitative analysis).

Results:

A total number of 125 weekly aggregated reporting forms and 152 case reporting forms of influenza positive SARI cases were collected and analyzed.

For SARI weekly aggregated data forms timeliness was 87.2% (109/125). Analysis of completeness in the aggregated data forms revealed a gap in the existing system of notification, where blank fields are considered as a zero. For case based forms, the median time from onset of disease to laboratory

confirmation was 6 days (range 1-18) and from laboratory confirmation to the notification, was 1 day (range 0-16). For the 92% (72/78) of variables that is included in case reporting form, completeness of data was 100%. Adherence to the case definition was 73% (111/152).

System has shown good flexibility, with the timelines and completeness of data 100% after implementation of the new system of reporting aggregated data in season 2016/17, comparing with the same period in 2014/15. SARI surveillance engages a large number of health professionals at different levels, with complex data flow and time consuming data management.

The information is used to monitor the activity of severe cases of influenza. There are no alert thresholds defined, the proportional contribution of influenza positive SARI cases to the overall hospitalisations is not routinely calculated.

Conclusion:

This is the first evaluation of the SARI surveillance in Serbia.

Completeness of case reporting form is strength of SARI surveillance system, with 72 variables that are completed 100%. Timeliness is satisfactory, with 87.2% of weekly reports that were received on a time. Median time from the laboratory confirmation to the notification of the influenza positive SARI case was 1 day. The system has shown a good flexibility, and has adapted to changing in reporting method of aggregated data. Usefulness: The system provides information for action, but they could be more used.

Recommendations

To improve simplicity and make the flow of information simpler. To educate health professionals regarding completeness all of data (date of sampling...). To evaluate remaining attributes of the system using a survey. Use the data to estimate burden of disease: proportional contribution to the hospital admissions, and correlate with ILI surveillance, and to set outbreak and alert thresholds and response procedures

Status: Completed

Outbreak Investigations:

Foodborne outbreak of gastroenteritis, among students in the resort Gučevo, Serbia, February 2017

Background:

On 26th February 2017, Regional public health institute was notified about thirteen cases of gastrointestinal illness, among 45 students that stayed on long weekend in the resort Gučevo. An epidemiological team was established from the members of district IPH and staff of sanitary inspectorate. First symptoms started on the 25th of February, among several persons with symptoms of chills, abdominal pain and vomiting.

Objectives:

An investigation was conducted to identify the source of the outbreak in order to implement control measures and to prevent further cases

Methods:

Retrospective cohort study was conducted .

Case definition: Case was defined as any person with at least one of the following symptoms: vomiting or diarrhoea or nausea or temperature > 37°C, after the 24th of February, who had been in the resort Gučevo.

A detailed questionnaire was developed, which contained basic demographic details, food exposures symptom description and duration, and illness history.

Based on the results of descriptive analysis we conducted retrospective cohort study and we used univariate and multivariate logistic regression analysis in order to calculate food specific relative risk (RR). Leftover food items, row meet, water, environmental samples and swabs from kitchen workers were collected for microbiological investigation.

Results:

A total number of 48 cases were investigated. The response rate was 81.2 % (39/48). 20 cases met case definition. Overall attack rate was 51,3% (20/39). Gender specific attack rate was 47.8% (11/23) for males, and 50% (8/16) for female. Main symptoms were nausea (90%), vomiting (85%), abdominal pain (85%), fever (75%) and diarrhoea (50%). The epidemic curve was compatible with common point source outbreak, picking on 26th of February. In the univariate logistic regression three food items were significantly associated with disease, whereas only stew was remain in the multivariate logistic regression analysis (OR= 21.58, 95% CI 1.54–300.62).

Laboratory investigation revealed following:

Leftover of stew and rice dishes detected a large number of *Enterobacteriaceae*. Samples of row meat were positive on *Staphylococcus aureus* (from 60 to 70.000 CFU/g). Hand swab of kitchen staff, environmental swabs and water samples were negative for pathogenic bacteria.

Conclusions: Epidemiological investigations showed that illness was significantly associated with the stew consumption. Aetiological agent was not definitely confirmed. Food served for lunch was contaminated by the improper hygiene practice during its processing

Recomendations:

This foodborne outbreak highlighted the importance of good food handling practices at all processing steps to reduce the possibility of introduction pathogen in the food chain. This highlithed the need of education of the employes worked with the food procesing. Also, it is important to strength and improve laboratory diagnostic in order to determine specific causative agent.

Status: Completed

Research 1

Risk factors for severe acute respiratory infection among influenza-positive cases in Serbia, 2014/15

Background:

Influenza is disease that cause significant morbidity and mortality all over the world. Evaluation of pandemic H1N1 in 2009 highleted the need for routinely monitoring of severe forms of influenza. Obesity and pregnancy were identified as a risk factor associated with AH1N1 pdm, while chronic disease was risk factor for both pandemic and seasonal influenza. Most of the studies about risk factors for SARI that are available are from developed countries. In the Serbia sentinel hospital surveillance on SARI has been established since november 2009. Since then, there were poor

investigation about risk factors related to SARI. Also, in the season 2014/15 was reported the highest number of SARI cases since the pandemic year.

Objectives:

To identify the risk factors for SARI among laboratory confirmed influenza cases in Serbia, in the season 2014/15.

Methods:

As data sources we used national surveillance data (IPH of Serbia).

Case definition: An acute respiratory illness with onset during the previous 7 days requiring overnight hospitalization that includes: history of fever or measured fever of $\geq 38^{\circ}\text{C}$, AND cough, AND shortness of breath or difficulty breathing. As a study design we used cross-sectional study. Study population was laboratory confirmed influenza cases in the winter season 2014/15 (40 to 20 epidemiological week).

As data collection tools we used case based reporting form for laboratory confirmed influenza cases that includes: Socio-demographic characteristics (age, gender), clinical signs and symptoms, underlying condition (chronic diseases, obesity, pregnancy), vaccination status, laboratory data (type/subtype of influenza), outcome. Specimen collection included nasopharyngeal and oropharyngeal swabs, and for the molecular diagnostic was used RT-PCR method.

We conducted descriptive analysis and univariate and multivariate logistic regression analysis to evaluate the risk factors for SARI. All variables that were associated with SARI in the univariate analysis at significant level $p < 0.2$, were included in multivariate logistic regression

Results:

During the observed season a total of 461 SARI patients were reported. From all reported SARI cases 65.7% were tested for influenza virus. 238 SARI cases were positive for influenza virus (78.5% of all tested SARI cases). A (H1N1) virus was confirmed in 47.8%, A(H3N2) in 29.4%, and B in 20.2% SARI cases. 30.7% of SARI influenza positive cases have chronic heart disease, 14.3 were immunocompromised and 13.0% have chronic lung disease. Only 0.4% of cases were vaccinated. It was reported 34 patients with fatal outcome among SARI influenza positive cases (Case-fatality ratio was 14.3%).

In multivariate logistic regression analysis the following factors were significantly independently related to SARI: older age (OR= 1.05, $P < 0.001$), chronic disease (OR=5.94, $P < 0.001$), pregnancy (OR=8.70, $P = 0.048$) and influenza A(H1N1)pdm09 (OR=2.85, $P = 0.001$).

Conclusions:

In the Serbia in season 2014/15 influenza (AH1N1) pdm was a strong risk factor for SARI. Persons who had chronic disease, older persons and pregnant women were more likely to develop SARI than other influenza positive cases.

Influenza surveillance may be useful tool to monitor risk factors for severe outcome of influenza. These findings enable us to identify risk groups for SARI and may help us in targeting and prioritizing vulnerable populations for immunization, what is especially important in the light of overall low vaccination against influenza.

Recommendations:

According to the results of our study, increasing vaccination coverage of the vulnerable population will be the most effective preventive measure, in order to prevent severe forms of influenza infection. Also, it is important to maintain virological surveillance on influenza, as well as to improve epidemiological surveillance on influenza, establishing electronically surveillance system.

Status: Completed

Research 2

Behaviour, practice and attitudes of infectious diseases specialists regarding to reporting communicable diseases

Background:

Epidemiological surveillance of communicable diseases through the mandatory-reporting system is essential for the planning and evaluation of disease prevention and control programs. Although infectious disease specialists in Serbia are essential participants in the surveillance, according to our knowledge there are no researches on their behavior and attitudes regarding communicable diseases reporting. Besides that, since 2016 in Serbia are in place the new Law of protecting population of communicable diseases, that is in accordance with the EU legislation.

Objectives:

To asses behavior and attitudes infectious disease specialists regarding reporting communicable disease in order to identify gaps in the reporting, plan relevant awareness raising and training activities.

Methods:

Cross-sectional study was conducted.

Defined study population was 87 specialists of infectious disease in Serbia. Sample was randomly selected among 87 infectologists from the territory of Serbia obtained from the Health statistical yearbook of republic of Serbia 2015, Institute of Public Health "Dr Milan Jovanovic Batut. The sample size for the study was calculated using the following assumptions: 95% confidence interval, margin of error (5%), anticipated frequency of 50%, and population of 87. A sample size of 72 was calculated using Open Epi. A self-administered questionnaire was distributed in November 2017 to 72 infectologist by the e mail. Likert scale was used for the scoring.

Results:

In this study 30 infectologists returned the questionnaire, with the 41,67% response rate. The mean age of infectologists is 48,2 years (Range 28-67). Predominant gender is female (53,3%) and majority of infectologists are from the territory of Belgrade city 56,7%.

Practice regarding notification showed that 100% of infectologist reports communicable diseases in the paper forms and 33,3% via telephon. 96,7% of them are acquainted with the legislation regarding reporting. In the previous week 76,7% of them at least once time reported communicable disease.

Often and very often in a daily work (30%) use available epidemiological data from the national level, comparing with the 53,3% from the international level. 50% of infectologists completely disagree and disagree that reporting takes a lot of time in a daily work, and more than half (53,3%) completely disagree and disagree that reporting procedure is complicate. All of participants (100%) agree and completely agree that epidemiological information is important for the clinical practice. Majority of participants (80%) completely agree and disagree that availability of epidemiological information from Serbia would modify their clinical judgement.

Regarding feedback information, 100% of participants agree and completely agree that obtaining epidemiological data could improve notification communicable diseases. Majority of them (56.6%) think they have to have feedback information regarding on current outbreaks and possible emergences , and 40% that they need to have updated information quarterly.

Conclusions

This study revealed that only 30% of the infectologists are using epidemiological data from the national level on a daily basis. Despite this fact, all participants think that epidemiological informations are usefull for their clinical practice and that availability of epidemiological data could modify their clinical judgment. They have a need to be informed more frequently according to the epidemiological situation.

Recomendation

There is a need for further developing of surveillance system in the future, and to enhance engagement and participation of infectologists as an active stakeholders in the surveillance system.

Status: Completed

International Assignments:

I INTERNATIONAL ASSIGNEMENT

Development of guideline for the detection and investigation of foodborne outbreaks

Background

International assignment took place in the Health Emergency Information & Risk Assessment Division of Health Emergencies and Communicable Diseases- WHO, Regional Office for Europe, Copenhagen from 19-30th June, 2017, and a continuation in WHO Country Office and National Centre for Public Health, Republic of Moldova, from 3-5, July 2017

Objectives

1. Review of the literature

2. Review of other relevant examples from countries having already worked with the WHO team on the same or similar topic
3. Review of the procedures and work currently undertaken on the same topic by Moldova, with the support of the WHO team
4. Drafting the Guidelines for the detection and investigation of foodborne outbreaks
5. Working on site visit in Chisinau - Moldova in the WHO country office,
6. Introduction with alert and response operations daily procedures in the WHO Regional Office for Europe
7. Assisting as an observer to the radio-nuclear functional training exercise jointly organised with the International Atomic Energy Agency (IAEA) from June 21-22

Methodology

During this international assignment I had reviewing the available literature of the Guidelines for foodborne outbreak investigation, as well as other relevant examples from countries that have already worked on the same topic (Armenia, Uzbekistan).

I was also participated as observer in a functional simulation exercise led by International Atomic Energy Agency (IAEA) on nuclear emergency, that was held from 21-22 of June, 2017. The exercise was evaluated response to a major nuclear /radiological emergency. During this exercise WHO was assessed its internal and external communications procedures regarding notification of acute public health event

During this International assignment, I was also participated on round table daily meetings in the Division of Health Emergencies Communicable Diseases. Purpose of this meetings was a sharing the information's on current Public Health Events, based on a Daily List, information's on current significant signals regarding events that are not included in the Daily List. It was held discussion of WHO response, if it is necessary, agreement regarding communication strategy and products, and the technical input.

Site visiting in WHO Country Office and National Centre for Public Health, Republic of Moldova was continuation of my work, regarding development Guideline for Foodborne outbreak investigation. In the WHO country office I was introduced with the general aspects of working, IHR implementation and the guideline development process. We were jointly worked on the outbreak case definitions in the Guideline.

In the National Centre for Public Health, Chisinau, Moldova, I get acquainted with the initiation of Guideline development. It was started with the two days workshop organized in the June, 2017, during when were defined following issues: Analysis of the situation regarding outbreak investigation in the country, SWOT analysis with the identification weaknesses and strengths the system, identification of all partners that has to be involved in the working group, identification of legal frame of document, end users, and with implementation and evaluation of the Guideline.

I have also participated on the meeting of the working group that was organized Ministry of Health and National Centre for Public Health, and I was shared experience from the Serbia and the knowledge that I have obtained in WHO regional office, regarding Guideline development.

Results

During this International assignment, I have made Proposal/Concept note for the initiation the same process in Serbia, since there is no existing Guideline nether standardized procedures for the foodborne outbreak investigation.

As observer in a functional simulation exercise led by International Atomic Energy Agency (IAEA) on nuclear emergency exercise, I became familiar with the reporting system and communication between WHO regional office and headquarters and regional National focal point for IHR.

Site visiting in National Centre for Public Health, Chisinau in Moldova helped me to get acquainted with the practical issues and the initiation of the Guideline development process that started in June in this country, with the organized workshop for the all stakeholders.

Conclusions and recommendation:

According to the IHR (2005) it is essential to prevent and reducing the likelihood of outbreaks and other public health hazards and events. An essential part of any program for the control of outbreaks is the ability to detect outbreaks at an early stage through effective surveillance, to facilitate timely investigation and control measures. Since there is no existing national guidelines/documents that cover outbreak investigation management in Serbia, there is a need for its development. The Network of District Institutes of Public Health of Serbia is well placed to detect and respond to outbreaks within their own jurisdictions. However, for most of the outbreaks, the source of the infection remains unknown. There is a need for development of operational guidance for the investigation and management of outbreaks of communicable disease at all levels that standardises the agreed procedures in outbreak investigation. These guidelines should also assist public health professionals to manage both local and multi-jurisdictional outbreaks, and those involving different sectors, particularly in relation to roles and responsibilities.

This process could be started in 2018, with aprovement of the Ministry of Health of Serbia, according to recommendation of the National Institute of Public Health of Serbia. The plan is to start with establishing working group and technical support of the WHO could be obtained. Suggestion is that it should be generic one, from the start, that could be further specifically completed by annexes, regarding different hazards. Objective of this guidance is to improve and standardizing the detection and control of outbreaks and to provide step by step instructions in order to conduct effective, efficient, consistent and coordinated outbreak investigations.

The target audience of this guideline will be epidemiologists and public health staff from the 24 District Institutes of Public Health, which conduct outbreak investigation on the territory of jurisdiction (25 districts). It can also be used by other public health staff as a guide for performing outbreak investigation, analysis and implementing response measures.

Status: Completed , Proposal of the Guideline drafted

II INTERNATIONAL ASSIGNEMENT

Development of guideline for the detection and investigation of foodborne outbreaks

Background

Second International assignment took place in the Foodborne Diseases Office, KEELPNO, Greece, from 23 October – 3 November, 2017.

Objectives

1. To be introduced and get familiar with the guidelines in place, the procedures followed and the practices applied with regard to FBDs outbreak investigation in Keelpno, at the national level in Greece.
2. To be introduced to all the above as per the multi country food borne outbreaks at the European level.
3. To complement and finalise the draft guidelines for the FBDs outbreak investigation in Serbia.

Methodology

With the support of the mentor, I was introduced with the Toolkit for investigation and response to Food and Waterborne Disease Outbreaks with an EU dimension and international alert systems. Also, I get acquainted with the main activities of the Unit for foodborne and waterborne diseases, Department of Epidemiological Surveillance and Intervention. These activities include coordination and evaluation of foodborne diseases surveillance, analysis and interpretation of the collected epidemiological data, investigation of sporadic cases and outbreaks of foodborne diseases, collaboration with other bodies (Hellenic Food Authority, Ministry of Rural Development and Food) and with international organizations (EFSA, ECDC, WHO).

Results

This International assignment provide me to get familiar with the specificities and practices applied in the KEELPNO with regard foodborne diseases outbreak investigation at the national level in Greece. At the same, I get acquainted with the national involvement in multi country food borne outbreaks investigation at the European level .

With the mentor support and daily reviewing, I have complemented and finalise the draft guidelines for the FBDs outbreak investigation in Serbia.

Conclusions and recommendation:

Developed draft guidelines for the FBDs outbreak investigation will be presented to the authorities of the National Institute of Public Health of Serbia and the Ministry of Health. Recommendation is to start with the process of the Guideline development in 2018, with the organized working group. With acquired knowledge and experience during this IA and with the developed draft guideline for the FBDs outbreak investigation, I could be active member of this working group, and taking the leading role in this process.

Status: Completed

Scientific communication

Second MediPIET Annual Scientific Conference, Marrakesh 2016: " Risk factors for severe acute respiratory infection among influenza-positive cases in Serbia, 2014/15" – Oral presentation

Abstract " Evaluation of SARI surveillance system in Serbia in season 2014/15" is accepted for oral presentation during third MediPIET Annual Scientific Conference in Brussels, November 2017

Abstract " Foodborne outbreak of gastroenteritis, among students in the resort Gučevo, Serbia, February 2017 " is accepted for oral presentation during third MediPIET Annual Scientific Conference in Brussels, November 2017.

„Current epidemiological situation regarding zoonotic diseases in Serbia in 2015" XVIII Epizootiology and epidemiology Symposium, Kraljevo, Serbia , April 2016-Oral presentation

Teaching experience

At the Institute of Epidemiology, Faculty of Medicine, University of Belgrade, I was included as a facilitator in a three days training in Investigation of outbreak using EpiInfo 7 for the epidemiology residents, June 2017.

Miscellaneous (additional activities)

If you have more activities that is not mentioned under previous sections, please write it here.

Next steps

- Conducting in the IPH of Serbia two trainings on Vector Borne Diseases and on CBRN topic using MediPIET material for MD, epidemiologist working in the network of 24 regional or district IPHs in Serbia in 2018.
- Development of Guideline for the detection and investigation of foodborne outbreaks in Serbia
- Development of Guideline with case definition for epidemiological surveillance on communicable diseases in Serbia
- Continuation of activities in conduction epidemiological surveillance on influenza and zoonotic diseases

Supervisor's conclusion

MediPIET fellows were actively involved in adopting 2012 EU Case definitions for reporting communicable diseases, in Serbia, as well as, to the community network.

In Serbian MediPIET training site, fellows' projects contributed in improving Influenza and West Nile fever surveillance systems, by evaluating ones, for 2014-15 and 2016-17, respectively.

MediPIET fellows' participation in International assignments provided introduction of best practices in foodborne disease outbreak investigation and epidemic intelligence at national and international level.

MediPIET fellows' achieved skilfulness in project preparing, conducting surveys, data analysis and its presentation, that further enabled their communication of results on 2016 and 2017 Annual Scientific Conferences and 2017 Summer School and Refugee and Migrant Health Trainings of trainers.

Serbian fellows participated in application evidence-based epidemiological practices by applying analytical methodology in outbreak investigation for the first time in Serbia, 2015-17.

Serbian MediPIET fellows will participate into integration of Core competences (Vector-borne diseases and CBRN Threats) into Serbian PH curriculum of epidemiologists, Program for Cascade training for Serbian (170) and neighbouring countries' epidemiologists and representatives of agricultural and veterinarian sectors, May 2018.

Serbian fellows are translating available lectures and case studies of MediPIET training material that will be in use in Serbian Cascade training, May 2018.

Serbian fellows started collaboration with the WHO, Regional Office for Europe; National Centre for Public Health, Moldova and KEELPNO, Greece.

Scientific Coordinator's conclusion

It is with great satisfaction that I followed Milunka's progress during the fellowship. She not only acquired new knowledge and skills with regard to analytical methods in epidemiology, statistical methods and PH action oriented scientific communication, but she also developed skills and attitudes with regard to the team work and personal development. She has successfully implemented all the assignments, through which, she developed new skills and expertise. Working with Milunka proved to be a fruitful experience triggered by her topic specific scientific curiosity and intense commitment.

I am now extremely happy to see Milunka approach new projects to be developed in a way to consolidate the new working methodology for the benefit of the Department of Infectious Diseases Epidemiology and of the National Institute.

References

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