MediPIET Report
Summary of work activities

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Pre-fellowship short biography

Alba Merdani is a public health specialist with a Master degree in Public Health and background in Biology & Chemistry. Since 1999 she is working as a public health specialist in the Department of Epidemiology and Health Systems, at the National Institute of Public Health in Tirana. She is the National Coordinator for the Abortion Surveillance System in Albania from 2007 and on. During the work at the Institute of Public Health (IPH) she had the opportunity to develop and strengthened her knowledge and skills in many fields of public health. She has attended several national and international trainings, workshops, seminars and conferences mainly focused on the realm of statistics, epidemiology, mapping, chronic disease indicators, district health planning and management.

Fellowship projects

Surveillance project

1. Abortion in Albania for the period 2010-2015 (based on the abortion surveillance system)

Background: In Albania, prior to legalization of abortion in1995, abortion related maternal mortality rate was ranked among the highest in Europe and almost 50% of all pregnancies resulted in abortions. Abortion Law was approved in 1995 and despite the uncertainty about the number of abortions before the '90s, the trend of abortions has steadily declined since 1995. The Reproductive Health Survey carried out in 2002 found an incidence proportion of 73 per 1000 live births, which was 64% lower than the official data reported by the National Institute of Statistics. Taking in consideration that Albania has a low fertility rate (1.67 live births per woman-ADHS) and a high reliance on traditional contraceptive methods, which are less effective than modern methods (use of modern methods 11%-*ADHS in 2008-09*), the lack of data and the fact that the reporting was artificially lower constituted an important stimulation for monitoring. So in 2007 the Institute of Public Health, based on an Order from the Ministry of Health, has started to establish the National Abortion Surveillance System (NASS). The formal document for reporting abortions is the abortion form which must be necessarily filled by the doctor who performs abortion.

Objectives: Our main objectives were: (1) To describe the trends of abortion rate (number of abortions per 1,000 women aged 15-49 years) and abortion ratio (number of abortions per 1,000 live births) in Albania during 2010-2015; (2) To describe and compare the frequency of abortion by different characteristics: age, marital status, education level, employment, insurance status and pregnancy history); and (3) To compare the frequency of spontaneous and induced abortion for this period.

Methods: The information about abortion was received from the NASS. Abortion ratio (abortions per 1,000 live births) and age-specific abortion rates (abortions per 1,000 women within a specific age group) were calculated. While total abortion rates and by regions were calculated for women of reproductive age (15-49 years) using natality data from Ministry of Health, age-specific rates are estimated using demographic and natality data from Institute of Statistics. Counts, percentages, and rates were calculated using SPSS statistical software (version 15.0).

Results: From 2010-2015, the national abortion ratio significantly declined from 238.8 in 2010 (95%CI=234.3-243.4) to 199.0 in 2015 (95%CI=194.4-203.6; P<0.001). Abortion ratio and incidence proportion have reached the highest figure in the year 2011. In the years after we observe a linear decline in abortion number, incidence proportion and ratios following the decline trend of live births in Albania.

In 2015, 24.4% of abortions are reported as induced abortions (40% in 2010) compared to 75.6% reported as spontaneous abortions (60% in 2010). Women aged 25-34 accounted for the majority of abortions (49.1%) and had the highest incidence proportion (25.1 and 24.1 abortions per 1,000 women aged 25-29 and 30-34 years, respectively). Regarding place of residence, the total number of abortions is still higher in urban areas, but the cumulative incidence during the period 2010-2015 declined in urban areas (from 13.8 in 2010 to 7.5 in 2015) and increased in rural areas (from 7.3 in 2010 to 9.6 in 2015). For this period of time, the abortion ratio and the incidence significantly declined with 16.67% and 23.1% respectively. Almost half of all abortions are performed by women with a low level of education (8-years of education– from 43.7% in 2010 to 44.8% in 2015), while almost 16% by women with university degree (from 15.6% in 2010 to 16.4% in 2015). Abortions are increasingly performed by women who are unemployed (from 77.4% in 2010 to 83.6% in 2015) and uninsured (from 79.4% in 2010 to 83.7% in 2015).

Abortion continues to be underreported (only about 70% of the total number is reported with abortion form) and the information is not complete for private sector (missing information from 2013-2015). Nevertheless, this report is the first complete report in measuring the abortion rates and ratios in Albania and will provide the stakeholders with the necessary indicators regarding the incidence of abortion by age-specific groups. The statistics gathered from abortion surveillance show the number of abortion recorded not those carried out. The trend of abortion incidence during the period 2010-2015 shows a decrease, but we think that still the number of abortion is higher that the recorded abortions, as the use of modern contraceptive methods is very low and we still don't have complete data on abortion from the private sector.
Abortion rate in Albania becomes a more meaningful figure when we compare it to that of other European countries. From the latest United Nations' abortion statistics we can say that abortion rate in Albania (10.7 for the year 2012 and 8.3 for the year 2015) is below the rate of Eastern Europe countries: e.g. Bulgaria (year 2012 – 21.5), Romania (year 2012 - 18.6), and some countries of the Northern Europe: e.g. Sweden (year 2011– 20.8) and U.K (year 2012 - 16.6). Meanwhile the abortion rates in Albania are similar to those in Southern Europe countries: e.g. Italy (year 2012 – 9.4), Serbia (year 2011 – 10.4) and Montenegro (year 2011 – 6.4).
Abortion incidence data are essential to calculating the levels and rates of pregnancy overall, teen pregnancy and unintended pregnancy. Abortion surveillance is very important in order to guide and evaluate the programs focusing on unwanted pregnancies. This report will contribute in measuring the pregnancies that are unwanted and will provide the stakeholders with the necessary indicators regarding the incidence of abortion by age-specific groups.
In addition the report highlights the importance of continued abortion surveillance system in assessing the trend on abortion by districts, prefectures and overall Albania and also comparing the incidence of abortion in different age-groups.

Our main recommendations will be to:

- Improve the quality of reporting by continuously training of the staff responsible for abortion system in the DPHD (reproductive health inspectors) on data collection, data entry, reporting and monitoring process.
- Focus on programs to reduce unmet need for modern contraception as an effective way to prevent unwanted pregnancies and abortions, for specific groups.

Status: Completed/Oral presentation in MediPIET annual conference Marrakesh, Morocco 2016
Published in the Albanian Medical Journal, Volume4, 2016.

2. Evaluation of abortion surveillance system for the years 2014-2015

Background: Since 2007, all abortions performed in public or private sector in Albania are reported to the Institute of Public Health, through the abortion form (official form) and based on Abortion Law. Information of abortion forms is the main source for estimating the differences of abortions among age-groups, differences on urban and rural areas, marital status, education level, employment, women's health insurance, type of abortion (induced or spontaneous), reason for terminating the pregnancy, date of last period, pregnancy history, method used to terminate pregnancy, type of anesthesia, gestation age, duration of stay in hospital, the attending doctor's name and ICD9 code.

The abortion surveillance system (ASS) provides the overall number and incidence of unwanted pregnancies, by age-groups and by place of residence. Abortion surveillance system is a *passive surveillance system*, because the abortion forms are compiled regularly by the doctors in maternity ward. Every three months, the key person in district level is required to report all the completed abortion forms to the Institute of Public Health (national level) using either the paper or electronic form. IPH reports annually to Ministry of Health and Institute of Statistics about the distribution of abortions by regions/districts and other indicators based on abortion form's fields. The abortion form contains two pages with 23 variables in total and to modify if needed. All the completed abortion forms are reported every three months, as requested from the local level to the national level. The abortion surveillance system can provide useful information to public health professionals, community-based organizations and researchers to understand abortion trends, identify age-specific groups with high-risk and help them to set prevention priorities and plan targeted health promotion strategies. No systematic evaluation has been conducted and published till now in Albania.

Aim: Our aim was to evaluate the ASS in Albania during the period 2014-2015 in order to improve the surveillance system and to adapt the family planning policies.

Methods: The evaluation followed the Centers for Disease Control and Prevention guidelines for evaluating public health surveillance systems. The evaluation focused on abortions data from 2014 – 2015 (public sector), the latest years for which data set is available. Health personnel (in 36 districts) involved in the surveillance system participated in the evaluation. We assessed the system's usefulness, simplicity, flexibility, data quality, acceptability, representativeness and timeliness. Abortion forms (#) reported through Abortion Surveillance System were compared with abortion cases in the abortion registers at the maternity wards (percentage of reporting with abortion form was calculated for the analyzed period) in order to assess the representativeness. We have calculated the proportion of missing values for each variable on the reporting form (23 variables in total) in order to assess the data quality.

Results: *Data quality*- Overall, the completeness of the abortion form for all the 23 variables was 93.2% (92.7% in 2014 and 93.8% in 2015). *Simplicity*- The existing 37 maternity wards reported data on abortion (100%) whereas -36 districts (100%) reported in paper form and 22 districts (61%) in electronic. 100% of reported cases to the abortion surveillance system met the case definition criteria.

Time to complete the abortion form is short -2-5 min (by 95% of physicians. The surveillance system operates with the existing financial and human resources. *Flexibility*- Abortion form is easy to be modified if needed. A new reporting form was adapted in 2007. Abortion form is able to adapt new changes in case definition, reason or technique used to perform abortion (includes the field "Other specify". Abortion form is able to be adapted to ICD10 Codes (now operating with ICD9). *Acceptability*- 100% is the proportion of public health specialists involved in the surveillance activities. Overall the completeness of the form was 93% for all 23 variables. 100% participation from the maternity wards (37). *Representativeness*- Cases notified by the ASS represent 74% of all cases (69.2% in 2014 and 78.2% in 2015) as compared to the total number included in the abortion registers. *Usefulness*- ASS is able to detect trend of abortions over years (time-person-place) and specifically to detect age-specific groups with high risk. The data from ASS provide information for different organizations and policy-makers. Every year there is a report produced by the IPH and sent to Ministry of Health and also to every public health directory. Timeliness- For 100% of districts (36) the data on abortion are reported quarterly to the IPH.

Conclusions: The ASS is rather simple, flexible, and provides timely valid data. The completeness of the abortion form is 93% for the analyzed period, but still there is missing information from the private sector. The information is used both at the local and national level and combined with other data (births, fetal deaths, contraceptive use) completes the picture of reproductive health in Albania. Representativeness and acceptability by the private sector physicians needs to be improved.

Recommendations: Implementing regular trainings and providing regular feedback at both the local level and private sector would allow raising awareness of the health professionals and harmonize the reporting. The results of the evaluation report should be used as a basis for planning the further steps to improve the abortion surveillance system.

Status: Completed/Accepted as oral presentation in MediPIET annual conference Brussels, 2017
Published in the Albanian Medical Journal, Volume3, 2017.

Outbreak Investigations:

Title: Acute gastroenteritis outbreak investigation in Tirana, March-May 2017

Background: Noroviruses are the most common cause of epidemic gastroenteritis, responsible for at least 50% of all gastroenteritis outbreaks worldwide often responsible for outbreaks in a wide spectrum of community and healthcare settings. Infection due to norovirus is extremely common in the community with as many as one in one hundred people becoming ill each year. Humans are the only known reservoir for human norovirus infections, and transmission occurs by three general routes: person-to-person, foodborne, and waterborne.

An increased number of gastroenteritis cases were reported at the Institute of Public Health (Department of Infectious Diseases) Tirana on April 4, 2017 from the two emergency units of the main hospital (Mother Theresa) in Tirana: communicable diseases emergency unit and pediatric emergency unit. The number of persons reported with gastroenteritis has increased significantly from April 1, onwards compare to the previous days and to the same period of the previous year. An outbreak control team was created and an outbreak plan was drawn up by IPH staff and in collaboration with the clinicians from the hospital. The team conducted descriptive epidemiological and microbiological investigations to determine the source and extent of the outbreak and to guide the appropriate control and preventive measures. The objective of the outbreak investigation was to identify the source and to initiate proper control measures in order to stop the current outbreak and prevent future outbreaks.

Methods: Two emergency units were contacted for the retrospective identification of acute gastroenteritis cases since the beginning of April and possible new cases among patients every day. Gastrointestinal symptoms were more common among children and elderly people. Acute gastroenteritis cases that occurred after April 1, 2017 were recorded.

To identify the possible cases, the data were taken from the registers of two units in "Mother Theresa„ tertiary hospital of Tirana. Any patient that was presented in Pediatric and Infectious disease emergency hospital the emergency hospitals of University Hospital Center (UHC) from April 1, 2017 with the following symptoms: nausea, abdominal pain, vomiting and/or diarrhea and/or fever, was identified. Descriptive epidemiology was performed on the collected cases of acute gastroenteritis with dates from March 29 to May 7 (outbreak period) and furthermore interviews were conducted with a subset of these cases, available family members and relatives, in order to collect the initial information on symptoms and possible exposures. Stool specimens were collected and were bacteriologically and virologically tested. Water samples at different points in the distribution system were collected and tested microbiologically for the presence of coli forms. Norovirus detection was performed by RT-PCR test.
Based on the results of the descriptive study, a waited case-control study (120 cases-120 controls), matched by place and residence was conducted during August 2017, using a questionnaire, in order to test the hypothesis that the tank water was the source of the outbreak. The case-control study was performed on 120 adult cases with gastroenteritis signs (phone numbers taken from the registers of the emergency units) and 120 controls of the same neighborhoods (controls were randomly selected from the same administrative units of cases by the GP registers) and they were telephone interviewed.

Results: *Descriptive*- The total number of AGE cases was 4910 and they were registered from March 29 to May7, 2017. The higher number of cases was observed between dates April 2 and April 18 (57.4% of the total cases). Units with higher attack rates for Tirana urban area were administrative unit no. 6 (AR=1.44 - 868 cases), administrative unit no. 9 (AR=0.92 - 476 cases) and administrative unit no.4 (AR=0.85 - 568 cases); and regarding rural area Farka (AR=3.08 - 358 cases) and Kamza (AR=0.58 - 427 cases) communes.
The patients were presented at the emergency units of "Mother Theresa„ hospital within the first 24 hours after the occurring of clinical signs. They have had mostly vomiting (94%) and abdominal cramps (84%), diarrhea (78%), nausea (74%) and few of them (9%) had fever. The majority of cases belonged to the pediatric age-group (less than 5 years old) (AR=3.0 and 33.2% of total cases) followed by the age-group 16-25 years old (AR=1.0 and 31.0% of total cases). Only 1.5% of patients presented in the Emergency Infectious Unit were hospitalized and among children presented in the Emergency Pediatric Unit only 5% were hospitalized. After some initial interviews with the cases it was concluded that they had not consumed common food items. The only risk factor related to this outbreak was found to be linked with the consuming of tank water.
Twenty eight out of the 57 faecal samples (49.1%) analyzed in the virology laboratory resulted positive for Norovirus and genotype II was identified. Microbiological testing of the drinking water (water supply system) resulted negative for coliforms at points in the distribution system.
According to the Water Supply System Enterprise the main water sources for Tirana Municipality are 4: Plant and hyrdo point Bovilla, Gravy source Dajti Basin which include Shen Meri source, Selita spring, Pump station and Dajti basin taks; Pumping stations I and II and Independent source. The water is processed using the normal physical treatment, chemical treatment and disinfection, e.g. pre-chlorination, coagulation, decantation, filtration and disinfection (final chlorination). During the treatment process the quality of drinking waters achieve the values required from the Albanian Standard for drinking water (STASH 3904:1997;VKM 145,1998). The quality of drinking water is regularly monitored by two chemical and microbiological laboratories in Tirana Water Supply Company and by the laboratories in the Public Health Directorate (Sanitary Inspectorate of Health). Both two laboratories make daily analysis of 16 samples taken in determined points in Tirana city network, for 7 physical-chemical parameters and 3 microbiological parameters (total coliform, E.coli and fecal Streptococci). The residual chlorine present in drinking water is constantly within the allowed norms at 0.5-0.8 mg/l. Nevertheless, Tirana water pipeline has a lot of amortized segments, hundreds of thousands of suction pumps installed in the network, thousands of deposits above and below the buildings, which are generally not cleaned, with the addition of residential areas and many intersections in the water supply network, with no 24 hour water supply and generally with delayed interventions in repairing the defects. Still there are areas which present problems in the water chlorination, such as New Ring and Kashar commune, Farke commune, the construction site over the artificial lake, Kamez and Vore municipalities.

Analytical- In the case-control study, the mean age of cases and controls was 36.3 years old (SD=15.1) and 39.4 years old (SD=15.3) respectively. Among the 120 cases, 91.7% of them had diarrhea and vomiting symptoms during March 29 – May 9, 2017.
Illness was significantly associated with consumption of tank water (OR=22.2 P-value=0.000 and 95%CI=7.75–63.44) and tap water (OR=3.3 P-value=0.002 and 95%CI=1.58–6.90). Controls were 99,5% more likely to have consumed bottled water compared to cases OR=0.05 and P-value=0.000; 95%CI=0.03–0.10.
After stratification for the tank water consumption, both consumption of tank and tap water remained significantly associated with disease: OR1=0.42 p=0.2 and 95%CI=0.13–1.32 and OR2=7.54 p=0.000 and 95%CI=3.4 –16.38 respectively. Further, the consumption of tank water modifies the effect of tap water (tap water OR=3.3 without stratification, after the stratification OR=7.54).
Discussions/Limitations- In our study cases could be more likely to report drinking tank and tap water than controls, due to the delay between exposure and their telephone interview. Virological and microbiological samples were small, and we think that having more water samples from the affected areas would have benefited in the investigation.

Conclusions and Recommendations: In this report we have presented an outbreak of acute gastroenteritis which occurred in Tirana from March 29 to May 9, 2017. The outbreak has affected more than 4900 cases with the following symptoms: nausea, abdominal pain, vomiting and/or fever. The highest attach rate for rural area was observed in Farka (3.08) and for urban area in Tirana 6 (1.44), Tirana 9 (0.92) and Tirana 4 (0.85). Epidemiological and microbiological investigation suggested that the source of this outbreak was Norovirus genotype II (49.1% of samples). Microbiological testing of the drinking water (water supply system) at points in the distribution system resulted negative for coliforms; still in Tirana water pipeline has a lot of problems, a lot of amortized segments, a history of drop of water and problems with the water chlorination in Kamza and Farka communes.
In the case-control study, drinking tank water was significantly associated (22.2 times higher for cases) with gastroenteritis while drinking bottled water was protective. We also found an association with drinking tap water (3.3 times higher for cases) which can be linked with the problems of water supply system. After the stratification depending on the consumption of tank water we concluded that consuming tank water modifies the effect of tap water. Although the initial hypothesis only referred to tank water the analytical study identified that the source of outbreak is related with consumption of both tap and tank water. In order to prevent possible outbreak in future it is recommended to monitor the source and final tap water quality, proper chlorination and adequate monitoring of water supply quality and give information to population to obtain drinking water form safe sources.

Status: Completed/Main investigator of analytical study

Research

Title: Assessing laboratory capacity at regional level for cutaneous anthrax, Albania 2010-2016

Background: Anthrax is an acute disease caused by the spore-forming gram-positive bacteria Bacillus anthracis. Human anthrax cases are classified into three forms according to the transmission route: the cutaneous form (90-95% of all human B.anthraxes infections worldwide), the gastrointestinal form, and the inhalational form- pulmonary anthrax. Anthrax is a zoonosis (a disease which primarily affects animals, but causes disease in humans) that causes acute mortality in ruminants occurs on all the continents except Antarctica. The disease occurs worldwide with an estimate of 20,000 to 100,000 new human cases each year. Cutaneous Anthrax in Albania occurs in some predominantly farming areas, mostly in the districts of southern regions: Gjirokastra, Tepelena, Vlora and Korca. The disease was widespread before (153 outbreaks in animals from 2006-2014) but now after introduction of the vaccine the number of outbreaks has been drastically reduced (23 outbreaks from 2013-2015) thanks to the control programs carried out in accordance with the guidelines of WHO and OIE.

There are two forms in which the data for anthrax human cases are reported to the IPH: aggregated

data (14/Sh form) and individual data (14-2 (z)/Sh form). The aggregated data on Anthrax cases are send every month through the 14/Sh form, and present the information for each infectious disease aggregated number by month for each disease (16 ones in total). The individual forms contain highly detailed epidemiological information about the anthrax case-patient thus increasing first of all the specificity of the surveillance system and qualitatively enriching the system epidemiological evidence. Therefore the individual forms, which contain general demographic information about the case and epidemiological data, serve as necessary complementary to the 14/Sh Form's aggregated data. The reporting to central level is within 24 hours of clinical suspicion of the case.

Case Definition for Anthrax
Suspected (Probable): a clinically compatible case of illness without isolation of B.*anthracis*. Clinical signs- painless skin lesion developing over 2 to 6 days from a papular through a vesicular stage into a depressed black eschar with surrounding edema. Fever, malaise and lymphadenopathy may accompany the lesion.
Confirmed: a clinically compatible case of cutaneous, inhalational or gastrointestinal illness that has laboratory confirmation for B.*anthracis* in clinical specimens. The regional epidemiological service in cooperation with regional clinical service fills out the individual form (which contains information by time-place-person) and sent the individual form to the IPH after appropriate laboratory confirmation. IPH prepares an annual report regarding the incidence and preventive measures taken for Anthrax cases in the population. IPH estimates anthrax incidence and investigates in place if an outbreak occurs. The data on individual anthrax forms are entered in a database every year (EPIInfo). Suspect cases are not always confirmed in the laboratory. When laboratory tests are conducted, the diagnosis of anthrax is established only by microscopic identification at the regional laboratories.

Objectives:

1. To identify the high risk age-groups, region distribution and trend over years (period 2010-2016) of human anthrax cases.
2. To identify the gaps in laboratory capacity (confirmation of anthrax cases) for different regions in Albania.

Methods: This is a cross sectional study, focused on human anthrax cases reported in the IPH, from 2010-2016. We calculated the incidence proportion by 100,000 by year, gender, place of residence (urban/rural and region) and age-specific incidence proportion by year and average for the period under study. We calculated the frequency of suspect and confirmed cases by year at the national and regional level.

We have used a questionnaire designed from the needs of the study to assess the laboratory capacity at regional level (12 regions). Data collected through the questionnaire were on human resources, Bio-safety level, test the microbiological regional laboratory performs to confirm a suspected human athrax case, type of sample taken, and type of bio-safety level laboratory is classified. The data are presented in tables, graphs and maps (using the Health Mapper application). The program used for data analysis is SPSS.

Results:

A total of 271 human anthrax cases are reported during the period 2010-2016 nationally (19 cases in 2010 and 34 in 2016). The total number of human anthrax cases reported by the monthly aggregated form was 271 whereas by the individual forms was 199 (73.4% reported with the individual form completed). During the period 2010-2016, the incidence range was from 0.62 in 2010 to 1.21 in 2016. The highest incidence and number of human anthrax cases is reported in 2014 (2.14–incidence and 60–total number of cases) and the lowest incidence is registered in 2010 (0.62 –incidence and 19-total number of cases). Gjirokastra and Vlora are the two regions with the highest incidence proportion every year: for 2016 incidence proportion 12.5 and 11.4 respectively. The highest incidence for Gjirokastra was in 2011-19.4 and for Vlora in 2014-19.9. The highest incidence of the human anthrax cases were observed in the age-group 45-59 years old (from 0.2 per 100,000 in 2010 to 2.2 in 2016).The majority of the cases were resident in rural areas (higher incidence compared to urban area), and men are more affected than women (higher incidence than females).

35.5% of suspected human anthrax cases are not confirmed with laboratory results, thus justifying the need to assess the laboratory capacity at regional level.
Based on the results of the questionnaires applied at all regional bacteriological laboratories, we can conclude that all the regions (100%) have an epidemiologist, only Tirana region has 10 (4 in Public Health directorate and 6 in the National Institute of Public Health. Three regions: Diber, Kukes and Shkodra (25%) do not have microbiologist, in order to perform laboratory confirmation when a human anthrax diagnosis is suspected. All the regions are equipped with technical personnel in the microbiological laboratories, and Tirana region have the highest number (27) compare to other regions.
Laboratory test for confirmation of human anthrax is performed in only 5 regions out of 12 (41.7% of them). Almost 58% of the regions (7 regions) are not able to perform any diagnostic test to confirm a suspected human anthrax case, mainly due to the lack of bio-safety level conditions (100% of them). Only in 6 regions (50%) the lab personnel and epidemiologist are trained for taking and transporting the samples on human anthrax suspected cases. 100% of regions are not using recommended PPE-s when taking and diagnosing anthrax.
For all the 5 regions that are performing laboratory test for anthrax diagnosis, the type of sample collected if human anthrax case is suspected, is swab from vesicular fluid or lesions in the skin of human suspected.
In all the 12 of regions (100%) the laboratory security level is unclassified. None of them is certified in any level of bio-safety (BSL-2 recommended for anthrax detection).

Conclusions and recommendations:

Status: Ongoing

International Assignments:

1. Title: Brucellosis surveillance system (Exchange of knowledge between three countries), National Institute of Public Health of Kosovo, 3-14 April 2017

Background: Brucellosis, also known as "undulant fever", "Mediterranean fever" or 'Malta fever" is a zoonosis and the infection is almost invariably transmitted by direct or indirect contact with infected animals (cattle, sheep, goats, pigs and camels through direct contact with blood, placenta, fetuses or uterine secretions) or their products (consumption of contaminated raw animal products, especially unpasteurized milk and soft cheese). Brucella melitensisis the most prevalent species causing human brucellosis. In clinical terms, brucellosis is a complex entity with the most common sign being an undulant fever, frequently associated with chronic debilitating disease, accompanied by a variety of other symptoms. Prevention of human infection is primarily based on raising awareness, food-safety measures, occupational hygiene and laboratory safety. In most countries, brucellosis is a notifiable disease.

In Albania the surveillance system of communicable diseases has been and it continues to be a mandatory one. The actual notification system contains 73 nosologic entities of communicable diseases (ICD9 code) presented in a standard official form named 14/Sh. The aggregated data are send every month through the 14/Sh Form, and present the information for each infectious disease according to place (urban and rural), specific case definition (suspect and confirmed case), age-groups (16 ones in total). The 14/Sh monthly Form of the actual reporting system is obligatory by law to be accompanied by the Individual Forms. The individual forms contain a highly detailed epidemiological information about the case-patient (protocol field investigation) thus increasing first of all the specificity of the surveillance system and qualitatively enriching the system epidemiological evidence. Paper form still represents the main form of data storage at local level.

The first cases of human Brucellosis in Albania are reported in 1958. Albania remains an endemic zone for Brucellosis. For the period 2010-2013 are reported in total 1573 cases of Brucellosis in humans. The incidence rate (cases per 100 000 inhabitants) are as followed: 12.7 for the year 2010 (390 cases), 14.3 - for the year 2011 (440 cases), 14.5 - for the year 2012 (442 cases) and 9.9 - for the year 2012 (301 cases). The incidence decreased over years: in 2015 there are registered 160 cases of Brucellosis

in humans (5.7 cases/100 000 inhabitants) compare to 442 cases in 2012 (14.5 cases/100 000 inhabitants). The most affected areas are districts in the South part of Albania; the incidence is higher in Pogradec, Kolonje, Kukes, Vlore and Sarande. The largest number of cases has been reported during spring and summer, but despite the seasonal nature of the disease, there have been cases reported throughout the year. For the year 2015, the age-group 45-59 years account for about 32.2% of total reported cases, followed by the age-group 25-44 years and persons aged 60 and older. Sporadic cases have been reported also in the 5-14 years old individuals. Brucellosis cases have been recorded not only in rural areas, but also in urban ones. Still, the vast majority of reported cases (>85%) pertain to rural areas and, recently to suburban ones as well. The incidence in humans has continued to rise in central regions indicating a failure to contain the northward spread of brucellosis in sheep and goats. Men are affected about three times more often than women, because for every woman affected by brucellosis there are about three infected men. Of course, men are more engaged in occupations that increase exposure to brucellosis cases that are reflected in disease incidence rates several times higher in males than females.

The Directory of Veterinary Service in cooperation with the sanitary control authorities are responsible for the general regulation of veterinary issues related to animal health and respective zoonotic diseases. According to the reports from the Veterinary Directorate, a relatively small number of cattle are tested for brucellosis each year. If an abortion is reported, cattle in the herd are tested with the RBT as a screening test: CFT is used as a confirmatory test. If the animal is found to be positive on testing they were slaughtered. Informal reports suggest that brucellosis is more widespread than recorded data indicate. Besides limited test and slaughter of positive animals, vaccination has also been used for its control in some of the larger herds. As concluded in the Strategy for improved brucellosis control in Albania (2007), although the number of human cases in recent years has declined, this should not be attributed to the success of the control measures applied in animals.

Objectives: To get acquainted with:

- the surveillance of communicable diseases in Kosovo, and particularly the electronic brucellosis system
- the collection, analysis, interpretation and dissemination of data on Brucellosis
- preparation of the weekly/monthly bulletin
- sharing the experience between three countries: Albania, Kosovo and FYROM for brucellosis surveillance system in order to suggest potential modifications/improvement of the respective SS in Albania.

Results:

In Kosovo there are three levels of health care:

- central level represented by the tertiary health care (NIPH; Clinical center)
- regional level represented by the secondary health care (7 regional hospitals and regional public health centres including 38 communes)
- local level represented by the primary health care as main family medicine concept
- The Surveillance System of Communicable Diseases in Kosovo is called SCDS. System is created based on WHO recommendations for surveillance of communicable diseases.

The Kosovo surveillance system of communicable disease is electronic and there are 72 diseases for which the reporting is mandatory. Now Kosovo is in the process of reviewing the list of communicable diseases. The data presented in the software are based in two main forms (institution and individual data). Doctors (from hospitals and family medicine centers) send notification forms to the NIPH. The same electronic system exists in regional institutes and they send every week the data regarding these 72 diseases.

Kosovo is considered an endemic zone for Brucellosis. For the period 2008 – 2011 in 26 municipalities of Kosovo are registered 322 cases of brucellosis, the largest number of patients in 2010 with 105 cases or 32.6% compare with the total number and morbidity rate 3.8 per 100 000 inhabitants. During 2008-2011, the highest rates for Brucellosis are among male patients with 217 cases (67.4%) compare to 105 female cases (32.6%). The ratio male/female resulted to be 2/1. For the period 2013 – 2016 in

Kosovo are registered 129 cases of brucellosis, the highest incidence in 2013 with 3.1 per 100 000 inhabitants.
The nature of this disease is seasonal with higher recorded cases during the spring-summer time (cattle delivery season), there are no differences between age-groups and males are more affected. The information regarding brucellosis is collected through an individual form, which contain general demographic information about the case and epidemiological data. Every day the responsible person in the NIPHK check the laboratory software called MedLis, which register all the analyses of the Central Lab in the University Hospital Center. When a case is confirmed from the lab the staff from NIPH goes in the communicable diseases clinic and completes the individual form regarding the case. If the person cannot answer the questions they contact the family relatives. The diagnostic tests for confirming Brucellosis in Kosovo are: BAB test (Brucella abortus bovis test) and WRIGHT test (serological agglutination test).

FYROM represents an endemic area where brucellosis prevails as a dominant zoonosis with high morbidity and big economic losses. Brucellosis is mandatory notifiable disease in FYROM since 1960. Since 1988, every year the government approves a special program for prevention and eradication of brucellosis in the human population in FYROM. First individual cases registered in 1962 (3 cases), also the first outbreak among humans was registered in 1980 (102 cases). In 1992 it is registered the largest number of cases (922 cases). For the period 2001-2015 highest incidence is registered in 2008 (I=24.0/100.000) and lowest incidence in 2015 (I=1.1/100.000). Introduction of vaccination in animals starting in 2008, also vaccination of animals significantly reduced human cases. The trend of the registered number of people infected with brucellosis in the period 2007-2016 is declining. Males are more affected than females (trend in the last 30 years). Brucellosis reporting system in FYROM is as follows. If the GP suspects brucellosis, he sends the patient to infectious diseases specialist where the patient is accepted for further examination. The diagnosis is set by sending the material to the laboratory for microbiological analyses (BAB and Brucella capt. on local and regional level). Sample for all diagnosed cases on local and regional level must be sent to IPH for confirmation. Then the infectious diseases specialist CD forms the case to the Center for Public Health. Epidemiologist from local or regional level goes on field and is performing epidemiological investigation, preparing epidemiological survey and taking samples from other exposed persons. After that, CD form, epidemiological survey and a report is sent to the IPH.

Conclusions and recommendations: All the three countries have a surveillance system for Brucellosis in humans. The reposting way is quite the same: from all health-care providers in it is required an immediate (within 24 hours) and mandatory reporting of all human Brucellosis cases. The cases are confirmed by laboratory and for all the confirmed cases it is completed an individual form, which include demographic information as well as food history or direct contact with animals. This form should be reported to the central level (Institute of Public Health). It is also mandatory reporting from laboratories of positive results, independent of physician reporting. Each human case should be investigated for surveillance purposes, and include demographic information as well as food history, animal contacts, type of work or activity at onset, and recent travel history. In addition, it is highly recommended a joint investigation from veterinarian sector.
In Kosovo (compare to Albania and FYROM) the surveillance system is electronic (at the NIPH and in regional institutes), thus giving the opportunity to report the suspected cases within 24 hours.
Another advantage is that the laboratory software called MedLis can be accessed from all epidemiologists in the NIPH (National Institute of Public Health) and they can check if a case is confirmed, thus giving the opportunity to timely detect the Brucellosis cases and give better feedback to data providers. Data shared through this electronic system can be further analyzed and provide information that helps public health professionals to take their decision. The electronic surveillance system gives identification on time for all suspected cases of Brucellosis.The earlier detection of brucellosis cases minimizes the timelier to respond to Brucellosis cases.

Status: Completed

International Assignments:

2. Title: Health Information System; Department of International Health, School CAPHRI (Care and Public Health Research Institute), Faculty of Health Medicine and Life Sciences, Maastricht University, 12-23 June 2017

Background:
Most of EU Member States have long tradition with gathering and analyzing health indicators in order to efficiently plan the health and Public Health services development in an evidence based approach. Typically, national information systems compile data from several sources based on national data gathering routines. A special effort was made to adjust ECHI shortlist indicators (with 88 key health indicators) to be used in data collection throughout Europe from 2013 and on. All adjustments were done in close collaboration with Eurostat and national experts on health surveys.
ECHI indicators are organized under five main chapters: demographic and social-economic situation, health status, health determinants, health services and health promotion; covering five policy areas: health services and health care, aging and population, health determinants, diseases and mental health and health in all policies (list of ECHI indicators by policy areas can be found here: *http://ec.europa.eu/health/indicators/docs/echi_relevance_by_policy_area_en.pdf*).
The ECHI indicators can be viewed as a full health information system as they cover all aspects that are needed for evidence-based decision-making, and for monitoring the health of European citizens.

The situation in Albania since 1990 is characterized by a particularly rapid transition towards a democratic regime and a free economy. This has led to significant socioeconomic and cultural changes, which are likely to have an impact on health. Health information, health indicators and health care and their connection with the basic social indicators at the individual and national level is incomplete, inaccurate, fragmented and incoherent. Consequently, the decision-making lacks professional grounds. The Albanian Ministry of Health collects a large amount of data, mainly from Regional Health Directorates. The data are aggregated at national level, but the facility level users did not receive feedback from the central level after analysis. Health information department in the Ministry of Health do not have adequate capacity to analyze or use health information for planning, decision-making or monitoring quality of care. In Albania there is a lack of reporting disaggregated data at local and regional level and Albania's health indicators are well below the average levels for the region.

Hospital morbidity data are systematically collected by statistical offices of every hospital before being sent aggregated to Ministry of Health. Institute of Public Health analyses these information and has access in detailed data. The hospital based data have information on diseases classified according to ICD9, and allow disaggregation for sex, some fixed age groups, region and rural/urban.
In 2013, WHO and Eurostat suggested the application of a unique core set of health indicators (ECHI) for all countries in the European region, with the attempt to harmonize and standardize information systems. Based in this suggestion for our country it was a need to update the frame of health indicators.

Objectives:

- To get familiar with the Health Information system (core set of health indicators) used regularly in Netherlands, in order to compare it with our system and improve it.
- Advantages of linking data from different sources in order to improve the health information system quality and to increase the effectiveness of health services.

Results: In the Netherlands, many hospitals have new systems that allow them to share information both within the organization and with partners in care chains, such as GPs, pharmacists and laboratories. Most GPs in the Netherlands use information systems that enable them to link electronic patient files to an expert system (such as guidelines), communicate with pharmacists and generate data for disease prevention and research. All Dutch patients have a unique identification number (*burgerservicenummer*). Virtually all general practitioners have a degree of electronic information capacity—for example, they use an electronic health record and can order prescriptions and receive lab results electronically. At present, all hospitals have an electronic health record.

In 2006, the Dutch Minister of Health, Welfare and Sport has announced the ambition to bring the Netherlands back into the top five for health, within the EU. In this framework he asked from RIVM (Netherland National Institute for Public Health and Environment) to update the picture of Dutch public health compare to other EU Member Stated, and to base this on the ECHI indicator shortlist. In 2008 RIVM produced the report "Dare to Compare!", a report that provides a detailed view on the availability, comparability and quality of data sets, both within the Netherlands and throughout the EU. Comparison of the Netherlands to EU countries is done for a set of more than eighty European health indicators, for example, disease, lifestyle and prevention.
In regard to ECHI shortlist of indicators (88 indicators) the Netherlands compare to EU countries that has availability of them is ranked *as one of the best*, with 95% availability. The availability of Dutch public health data is generally rather good in terms of meeting the requirements of the ECHI indicators shortlist, but one of the concerns is the continued availability of hospital-based data, especially the data linked to specific diagnosis. The Netherlands places among the countries that have a long tradition of Health Interview Surveys and therefore remain careful in adapting and integrating EHIS into its running survey programme. However, in "Dare to compare!" it was concluded that stronger national coordination and data ownership is needed in the Netherland. As for dissemination of public health data and indicators, at national level it is done through Public Health Status and Forecasting report and at the international level, data reports are sent to WHO-Europe, followed by the OECD and Eurostat.

Conclusions and recommendations

Advantages of the Netherlands HIS:

- Availability of data in the Netherland is very good (they have 95% of ECHI indicators available). The Netherlands can provide data from national data sources for the majority of ECHI indicators. The main data sources for these indicators are data registers (mainly GP register, the hospital discharge register and the population register) and health interview surveys.
- Several improvements in harmonized data collection (since 2009) have been achieved, which have significantly contributed in the data situation for ECHI indicators, as well as in better estimates for several indicators.
- Data linkage is possible in the Netherlands, thus preventing double counting of events and ensuring the comprehensive monitoring of the health system.

For Albania, working with the core set of health indicators (ECHI indicators) will be a good starting point for strengthening the link between health information and policy-making. To improve reporting by private health care facilities, a first step could be to assess the current situation by looking at potential barriers to and incentives for reporting, as well as the adequacy of the current legal framework (for private hospitals reporting should be obligatory).From this point of view, the implementation of ECHI list of indicators will be important contribution in the country's integration process and will enable the Albanian Ministry of Health to compare our standards and practices with all countries in the EU. Digitalization of health and healthcare-related information shall be used in order to increase the transparency of communication with the public and to start with the application of the standards for public and service providers. It is important the comparison of our country's health indicators with the neighboring countries and EU countries as well. We have to focus on the sustainability of data collection systems in order to improve and increase the utility of health information system.

Status: Completed

Scientific communication

One manuscript as first author published in the Albanian Medical Journal Vol.4-2016;Monitoring trends of abortion rates in Albania, for the period 2010-2015 (1)

One manuscript as first author published in the Albanian Medical Journal Vol.3-2017; Evaluation of abortion surveillance system in Albania for the period 2014-2015 (2)

Participation in the 2nd National Congress "Care during pregnancy and childbirth" organized in Tirana, with an oral presentation regarding the abortion surveillance system; 4-6 March 2016 (3)

Participation with an oral presentation in the International Conference of Public Health "Health Indicators as an important tool for strengthening health information system in the European Region" organized in Tirana, May 4, 2016 (4)

Participation in the Annual Scientific Conference of MediPIET "Protecting Public Health Across Borders" with an oral presentation " Abortion in Albania for the period 2010 – 2015", Marrakesh, Morocco. 6-8 December, 2016 (5)

Participation in the 5th International Public Health Conference: "Behavioral determinants of health and disease in the countries of the European Region". Poster presentation 9 May, 2017 (6)

Second author in one manuscript published in the Albanian Medical Journal, Vol.4-2016. (7)

Second author in one manuscript published in the Albanian Medical Journal, Vol.2-2017. (8)

Third author in a manuscript on the Institute of Public Health Bulletin, Volume 3, 2016 (9)

Abstract accepted as oral presentation "Evaluation of abortion surveillance system in Albania, for the period 2014-2015" in the Annual Scientific Conference of MediPIET "Regional contributions and synergies for Global Health Security" to be held in Brussels, Belgium, 27th November – 1st December, 2017 (10)

Teaching experience

Trainer for the reproductive health specialists at district level in the TAIEX workshop on "Surveillance and prevention of Congenital Malformations" organized in Tirana, from 5-6 October 2017 in cooperation with Ministry of Health in Albania and Instituto Superiore di Sanita in Rome, for the improvement of Congenital Malformation Surveillance and Abortion Surveillance System.

Miscellaneous (additional activities)

TV communication

Interview in Klan Plus television - The situation on the number of abortions in Albania and way of reporting; 15 September 2017 (http://tvklan.al/spitalet-private-fshehin-abortet/)

Next steps

Alba will continue to work as a public health specialist in the Institute of Public Health in Tirana, Department of Epidemiology and Health Systems. She will continue to be the national coordinator for the Abortion Surveillance system in Albania, working for the improvement of this surveillance system based on the results from the evaluation report and produce action oriented and public health relevant information.

We plan to develop the Core set of ECHI indicators, based on the experience gained during the international assignment in Maastricht University, in order to improve the health information system in Albania and to be comparable with other countries as well.

Together with supervisors and national focal point, based on the experience gained during the two years of MediPIET fellowship, we are planning to implement cascade trainings in Albania. These training will contribute in strengthening the national and local capacity.

Supervisor's conclusion

During her MediPIET fellowship, Alba Merdani was involved in some variety of public health activities: outbreak investigations, surveillance, and research project. Alba being a follower from non-Communicable Diseases Department, but during this period had received major concepts in the field epidemiology of infectious diseases. With correctness and commitment to the tasks Alba, has shown seriousness in the work.
Alba has successfully completed the duties of this fellowship.
At the same time, Alba had been using this opportunity in order to develop new skills and further support her professional perspectives. I think and believe that the knowledge and experience gained from Alba will not only serve it but also the institution.

Scientific Coordinator's conclusion

Alba was already an experienced PH professional before being appointed as one of the Albanian MediPIET Cohort 2 fellows. Working with Alba, in my identity as the country Scientific Coordinator, was synonymous to engaging in a fruitful scientific dialogue with a committed, knowledgeable, hard working and scientifically curious colleague. Alba was able to add new knowledge and skills to her background, with regard to PH action oriented communication, to analytical epidemiology and statistical methodology and to outbreak investigation using analytical epidemiology.
Further, Alba was able to develop attitudes and practices compatible with the new skills and knowledge application, enabling her to successfully manage the challenges related to the fellowship. I hope that she will be able to efficiently use them for the promotion of PH epidemiology in the National IPH of Albania.

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