

MediPIET Summary report of work activities

Subhi Alshaer

Palestine, Cohort 6 (2023)

Background

1. About MediPIET

The Mediterranean and Black Sea Programme for Intervention Epidemiology Training (MediPIET) aims to enhance health security in the Mediterranean and the Black Sea region by supporting capacity building for prevention and control of natural or man-made threats to health posed by communicable diseases. It is a competency-based **in-service two-year fellowship** during which selected fellows conduct projects and field investigations at a MediPIET Training Site in their home country and attend MediPIET modules.

Since mid-2021, MediPIET is implemented by ECDC as a part of the [EU Initiative on Health Security](https://www.ecdc.europa.eu/en/training-and-tools/training-programmes/fellowships/medi Piet). You can find more information about the programme at: <https://www.ecdc.europa.eu/en/training-and-tools/training-programmes/fellowships/medi Piet>

2. Pre-fellowship short biography

Dr. Subhi M. Alshaer is the Preventive Medicine Department Director at the Jericho Health Directorate of the Palestinian Ministry of Health. He has a Master's degree in Infectious Diseases Prevention and Control and qualified as a Medical Doctor (MD) from Al-Quds University.

3. Fellowship

On 25 September 2023, Subhi Alshaer started his MediPIET fellowship at the Jericho Health Directorate, Ministry of Health, Palestine. This report summarises the work performed during the fellowship.

National supervisor: Dr. Daa Hujajjah

Scientific coordinator: Katie Palmer

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Fellowship projects

4. Surveillance

An Enhanced Surveillance System for Snakebites in Kajo Kaji, South Sudan, 2025

Background: Snakebite envenoming is a significant public health crisis in South Sudan, particularly in rural areas like Kajo Kaji county. The current surveillance system is inadequate for understanding the epidemiology of snakebites, leading to a critical information gap. This report outlines a plan to establish an enhanced, integrated surveillance system for snakebites in Kajo Kaji, leveraging modern technology to improve data collection, analysis, and reporting.

Steps in designing the system: The proposed system is based on a comprehensive review of existing Médecins Sans Frontières (MSF) work in Kajo Kaji and best practices in snakebite surveillance. The system will be integrated into the existing MSF clinical framework at the Mundari Secondary Healthcare Hospital and its supported primary healthcare centers in Kajo Kaji.

Key system features: The system will feature a standardised integrated data collection tool, an Excel database design to accommodate any type of data entry, and a dual-platform approach for data analysis using District Health Information Software 2 (DHIS2) for aggregated data and Power BI for detailed case-by-case investigation. The system will also include automated reporting and feedback mechanisms to ensure timely dissemination of information to all stakeholders.

Initial implementation steps: The initial phase will involve the development of surveillance materials (standardised operation procedures, data flow, patient registry, etc), training of healthcare workers, and a pilot implementation of the system. The long-term goal is to create a sustainable and scalable surveillance system that can significantly reduce the burden of snakebite envenoming in Kajo Kaji and serve as a model for other regions in South Sudan.

Conclusion: The establishment of an enhanced snakebite surveillance system in Kajo Kaji is a critical step toward addressing this neglected tropical disease. By providing timely and accurate data, the system will empower healthcare professionals and public health authorities to make evidence-based decisions, improve patient outcomes, and ultimately save lives.

Role and outputs: The fellow played a central role in the enhancing and development of the snakebite surveillance system in Kajo Kaji district. He contributed to writing the study protocol, designing the data collection tools, and preparing the metadata structure for integration into DHIS2. He also developed visual analytical dashboards using Power BI to support interpretation and reporting. Additionally, the fellow contributed to producing the initial report.

Supervisors: Dr Diaa Hujajjah, Iro Evlampidou, Letizia Di Stefano

Status: Ongoing

5. Outbreaks

Investigation of an Acute Watery Diarrhoea Outbreak Among Students of a Police College in the Jericho district of Palestine

Background: On 12 November 2023, an outbreak of acute watery diarrhoea at the Police College Training Centre in Jericho, Palestine was reported. The Ministry of Health's Preventive Medicine and Environmental Health Department (PMEHD) promptly investigated to identify the cause and implement control measures.

Methods: On 12 November 2023, PMEHD conducted an inspection. We defined a case as a student or staff member experiencing vomiting and/or diarrhoea starting from 1 November 2023. We conducted a retrospective cohort study and administered a web-based questionnaire to 145 individuals. Samples were collected from food stored in the college kitchen, water tanks, swabs from an external water cooler and internal water taps, and feces specimens from students, staff, and food handlers.

Results: We identified 35 cases (attack rate=24.14%). Age range was 18-22 years with 91.42% (n=32) females. Vomiting and watery diarrhoea affected 75.43% and 85.77% of cases, respectively. All were exposed to internal water taps. Fifty-five people (including all female cases) used an external water cooler near the female dormitory, 35 (63.63%) of whom became cases. Exposure to the external water cooler was associated with illness (RR=17.45, CI=13.77-22.08). Laboratory analyses indicated mixed fecal contamination in the water cooler. Analysis of internal water taps, food contamination and stool testing yielded negative results for viral, bacterial, and parasitological profiles.

Conclusion: The likely source of the outbreak was mixed fecal contamination in an external water cooler. The immediate replacement of the cooler and water chlorination were crucial to prevent further contamination. Community awareness campaigns on safe water practices and hygiene were implemented. The importance of regular monitoring of water quality, vigilance in stool testing, and prompt reporting of any new incidents will help mitigate the impact of similar outbreaks.

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Role and outputs: The fellow was the principal investigator of the outbreak, providing an important input for the assembly and coordination of the team. He made the guidelines for data collection such as questionnaires, data extraction forms, and data entry masks, and carried out the systematic case identification and created the case definitions. He conducted the statistical analyses and submitted protocols to the ethical committee. Additionally, he communicated the results through a poster presentation at ESCAIDE 2024.

Supervisor: Dr. Diah Hujaijah

Status: Completed

Investigation of a foodborne outbreak in a summer school resort in Jericho, Palestine, 2025

Background: On 7 August 2025, Jericho Government Hospital, Palestine, was informed that several individuals had been admitted to the emergency ward as a result of acute gastroenteritis with severe abdominal cramps, vomiting, and diarrhoea. The patients were students and staff of a summer school at a resort. An epidemiological investigation was launched to identify the causative agent and initiate control measures.

Methods: The team of investigators visited the resort to collect food items and stool samples from patients. They designed a foodborne outbreak investigation form using Kobo Toolbox to collect information from individuals who attended the summer school and got clinical signs and symptoms of gastrointestinal illness. Microbiological examination was performed on stool samples as well as on water and food items by real-time PCR for viruses and bacteria.

Results:

In total, 163 students and staff members attended the summer school over five days (3-7 August 2025). Forty-two (25.8%, 42/163) showed clear clinical symptoms including diarrhoea (52.4%, 22/42). There were 15 severe gastrointestinal cases requiring emergency room treatment, with three patients hospitalised. Symptom onset started on the second day of the summer school, with cases appearing until the seventh day. The average exposure period, minimum and maximum incubation period were 25.9 hours, 24.0 hours, and 72.0 hours, respectively. Microbiological testing revealed *Salmonella spp.* in 9 of 10 stool specimens, in addition to chicken samples. The water examination was negative. The food item with the strongest association with illness was Ouzi rice with roasted chicken (attack rate: 88.5%, relative risk: 1.95; 95% CI 1.00 - 3.77).

Conclusions: The main food item likely to be the source of contamination was Ouzi rice with roasted chicken. Recommendations were made to the site to increase hand-washing, clean kitchen instruments with soap and water during food handling, cook poultry to sufficient temperatures, and separate raw poultry from other foods during preparation to prevent cross-contamination.

Role and outputs: The fellow had a central role throughout the whole outbreak investigation, providing input for the assembly and coordination of the team. He wrote the guidelines for data collection such as questionnaires, data extraction forms, as well as creating the case definitions and carrying out the systematic case identification. The fellow conducted the statistical analyses.

Supervisors: Dr. Diah Hujaijah, Dr. Amer AL-Jawabreh

Status: completed

6. Research

Factors associated with intestinal infection among patients attending Jericho Primary Healthcare Clinics: a cross-sectional study in Palestine

Background: Intestinal parasitic infections are a global issue, particularly affecting school-aged children and people in impoverished regions. The Palestinian Ministry of Health reports annual cases of giardiasis, ascariasis, enterobiasis, and amebiasis. This study aimed to assess the risk factors associated with intestinal parasitic infections among patients attending Jericho Primary Healthcare Clinics.

Methods: We conducted a cross-sectional study between June and August 2022. School-aged children (1-15 years old) attending primary healthcare clinics in Jericho governorate for abdominal pain were selected by convenience sampling. Face-to-face interviews were conducted using a structured questionnaire to identify and assess socio-economic status, clinical signs of intestinal infections, and risk factors for gastrointestinal infection (e.g. activities in and hygiene practices). Stool samples were taken from all participants and examined for adult worms, ova, cysts, oocysts, and larvae. We used logistic regression to calculate odds ratios (OR) with 95% confidence intervals (CI).

Results: Of 660 eligible patients, we included 495 (75%). Most (38.0%, 188/495) were aged between 5 to 9 years and (47.3%, 234/495) were males. Most (n=352, 71.1%) were city residents, 23.2% (n=115) were villagers, and 5.7% (n=28) lived in refugee camps. Sixty-three (12.7%) patients had pathogen positive stool samples: 25 cases (5.1%) had *Entamoeba histolytica*, 32 (6.5%) had *Giardia lamblia*, 4 (0.8%) had *Entamoeba coli*, and 2 (0.4%) had *Candida sp.* infections. Pathogen positive stool samples were positively associated (OR=1.16, 95% CI=1.04-1.19) with having family members that had a recent history of gastrointestinal symptoms and negatively associated with self-reported hand-washing before meals (OR=0.89, 95% CI=0.84-0.98).

Conclusions: The presence of intestinal infections among a significant portion of children in the population raises concerns about sanitation and hygiene practices. Raising awareness regarding good hygiene practice after toileting and before meals or food preparation are recommended.

Role and outputs: The fellow was the principal investigator of the project. He developed the protocol and instruments for data collection and submitted the ethical approval to the review board. He conducted data entry and cleaning and performed the statistical analyses. He wrote the manuscript, for which he is the first author. The manuscript has been submitted to a peer-reviewed journal (reference [1] in the publications list).

Supervisors: Dr. Asad Ramlawi, Dr. Daa Hujaijah

Status: Completed

Barriers to Disease Notification Among Primary Healthcare Physicians in West Bank, Palestine, 2024

Background: Robust communicable disease surveillance is vital for early outbreak detection and policy formulation, especially in the West Bank's unique public health landscape. Primary healthcare physicians are pivotal to this system, yet their notification practices are influenced by various systemic barriers. This study examined their knowledge, attitudes, and practices to identify these barriers, facilitating targeted interventions to build a more resilient infrastructure.

Methods: We conducted a cross-sectional study that utilised a validated, self-administered questionnaire to assess the knowledge, attitudes, and practices (KAP) of primary healthcare physicians regarding disease notification in the West Bank. A sample of 215 physicians was recruited from Ministry of Health clinics across northern, central, and southern regions using a proportionate stratified sampling technique. The instrument evaluated demographic profiles, notification knowledge, perceived barriers, and reporting behaviours. Data were analysed using R studio program version 4.4.2, employing descriptive statistics, independent t-tests, and one-way ANOVA to identify significant determinants of notification practices, with a p-value < 0.05 considered statistically significant.

Results: Among 223 respondents, 30.9% demonstrated good knowledge of the disease notification process, while 93.3% reported positive attitudes. Common misconceptions included laboratory confirmation being required for notification (61.0%) and that surveillance case definitions require laboratory criteria (65.5%). Over 80% of respondents notified their last-encountered measles, mumps, or chickenpox case, but only 52.4% of the 63 encountered measles cases were notified immediately. Commonly reported barriers included lack of time (60.5%), and uncertainty about which diseases to notify (38.1%) and when (32.3%). Knowledge and attitude scores were not significantly associated with notification practices, although physicians who received recent supervisory feedback on disease notification had higher odds of notifying chickenpox cases (OR: 4.01, 95%CI: 1.40-11.43). Compared to general practitioners, other medical specialties had lower odds of notifying mumps (OR: 0.21, 95%CI: 0.06-0.81) and chickenpox cases (OR: 0.23, 95%CI: 0.08-0.69).

Conclusions: Despite positive attitudes towards the notification system, knowledge gaps and misconceptions may contribute to underreporting of notifiable conditions. Strengthening training, clarifying guidance, improving feedback mechanisms, and addressing identified barriers and preferences may enhance disease notification performance by primary healthcare physicians in the West Bank.

Role and outputs: The fellow was the data collector for this research project. He was responsible for the protocol development and administered the survey to primary healthcare physicians across selected districts in the West Bank.

Supervisors: Dr. Samer Asad, Dr. Daa Hujaijah

Status: Completed

7. Scientific communication

Conference presentations

Alshaer S, Hujaijah D, Palmer K. Investigation of an acute watery diarrhoea outbreak among students of a police college in the Jericho district of Palestine. Presented at: European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE); 19–21 November 2025; Stockholm, Sweden. (Poster Presentation)

Publications and outputs

Alshaer S, Ramlawi A, Hujaijah D. Factors associated with intestinal infection among patients attending Jericho Primary Healthcare Clinics: a cross-sectional study in Palestine. Submitted manuscript.

Alshaer S, Evlampidou I, Di Stefano L, Hujaijah D. An enhanced surveillance system for snakebites in Kajo Kaji, South Sudan, 2025 (SOP Report for MSF)

8. Teaching activities

The fellow was the primary instructor responsible for a comprehensive two-hour interactive workshop on "Consolidated Guidelines for HIV and STD Prevention, Diagnosis, Treatment, and Monitoring" held on 27 May 2024, at OASIS Hotel in Jericho city. The audience included primary healthcare doctors, general practitioners, residents, specialists (pulmonologists, internal medicine doctors), registered nurses, laboratory technicians, radiology technicians, and administrative staff from both primary healthcare centers and hospitals. After the training the participants were expected to understand HIV/STD epidemiology, recognise clinical signs and symptoms, and be able to apply WHO testing algorithms and analyse antiretroviral therapy regimens.

The fellow created several training resources including a structured presentation on HIV epidemiology, modes of transmission, diagnostic methods, treatment protocols (ART, PrEP, and PEP), and prevention with the emphasis on the Palestinian context and using WHO guidelines. He applied teaching method that combined a lecture with visual slides, audience discussions, and an interactive Q&A session which promoted active participation and made the complex medical concepts more understandable.

9. Other activities

- Participated in Introduction to R course with Applied Epi, 19–22 September 2023, online (ECDC Learning Portal)
- Participated in training Introduction to SARS-CoV-2 wastewater analysis virtual training 6, online (ECDC Learning Portal)
- Participated in TEPHINET CDC FETP Technical Webinar 'Every outbreak is a story! Using qualitative and descriptive data clues to complete the story'
- Participated in PH microbiology I, Basic phylogeny and AMR 17-18 June 2024, online (ECDC Learning Portal)
- Participated in Genetic Epidemiology and Bioinformatics Training Programme, online (ECDC Learning Portal)
- Participated in Unix for beginners & Introduction to the Conda ecosystem, online (ECDC Learning Portal)
- Participated in GenEpi-BioTrain – Virtual training 13 – RSV Insights: Genomic Evolution, Treatments, and Public Health Strategies, online (ECDC Learning Portal)
- Participated in GenEpi-BioTrain – Virtual training 16 – Building bioinformatics workflows, online (ECDC Learning Portal)
- Participated in GenEpi-BioTrain – Virtual training 18 – Empowering AMR Research through R: Analysis and Visualisation, online (ECDC Learning Portal)
- Participated in Integrated respiratory virus surveillance 4 March 2025 – AURORAE, online (ECDC Learning Portal)
- Participated in Investigate an outbreak – e-learning workshop, online (ECDC Learning Portal)
- Participated in Social and Behavioural Sciences for the Prevention of Infectious Diseases – Webinar series, online (ECDC Learning Portal)
- Participated in Fellowship Writing Abstracts for Scientific Conferences, 31 March 2025, online (ECDC Learning Portal)
- PETAL Seminars (Using AI in everyday epidemiology: an introduction, 26 May 2025), online (ECDC Learning Portal)

10. International assignments

Enhanced event-based surveillance and epidemic intelligence during mass gathering events

Within the Epidemic Intelligence team at ECDC, I had the invaluable opportunity to actively participate in the health event monitoring process and threat evaluation during a critical surveillance period. Over the course of two weeks (ten working days), my daily routine involved systematic morning surveillance activities focused on identifying and analysing potential public health threats across Europe, with particular emphasis on the Paris 2024 Paralympic Games period. My primary responsibility each morning was conducting comprehensive article monitoring through the Epidemic Intelligence Information System (EIOS) platform. I systematically screened and analysed media reports and health-related articles to detect any emerging threats that could potentially impact public health in Europe during the Paralympic Games. While my main focus was on threats relevant to this major mass gathering event, I also monitored significant international health events to maintain broader situational awareness. Before noon each day, I participated in the Surveillance Unit's round table meetings, where I contributed to team discussions by sharing and presenting the findings from my morning monitoring activities. These collaborative sessions allowed me to engage directly with experienced epidemiologists and learn how surveillance data is synthesised, prioritised, and communicated within a European-level public health agency.

This hands-on experience provided me with advanced skills in real-time health data analysis, rapid risk assessment methodologies, and event-based surveillance specifically tailored for mass gatherings. The preparatory work for the Paris 2024 Paralympic Games served as an exceptional learning opportunity, demonstrating how systematic surveillance supports public health preparedness for large-scale international events.

Hosting country and institute: European Centre for Disease Prevention and Control (ECDC), Sweden

Supervisors: Jon Bilbatua, Dr. Daa Hujajjah

An Enhanced Surveillance System for Snakebites in Kajo Kaji, South Sudan, 2025

There is a high burden of snakebite envenoming in Kajo Kaji. Frequent encounters between people and venomous snakes in the region have made it a priority for public health intervention. During this international assignment, I was actively involved in enhancing the surveillance system for snakebites, which is currently basic. As an epidemiologist and data analyst on the team, my role has been multifaceted. I was responsible for analysing the incoming data to identify trends and hotspots, which is crucial for targeted interventions. Furthermore, developed and implemented Standard Operating Procedures (SOPs) and training materials for community-based surveillance.

Hosting country and institute: South Sudan (Remotely), MSF Brussels

Supervisors: Iro Evlampidou, Letizia Di Stefano, Dr. Daa Hujajjah

11. MediPIET modules attended

1. Introductory Course, 25 September to 13 October 2023, Spetses, Greece, attended in person
2. Study Protocol and Scientific Writing, 26 October to 8 November 2023, virtual
3. ESCAIDE Scientific Conference, 22–24 November 2023, Barcelona, Spain, attended in person
4. Multivariable Analysis, 19–23 February 2024, Berlin, Germany, attended in person
5. Qualitative Research, 19–22 March 2024, virtual
6. Vaccinology Inject Day, 2 April 2024, virtual
7. Rapid Assessment and Survey Methods + Mass Gatherings, 17–19 April 2024, Dublin, Ireland, attended in person
8. One Health and VBD module, 3–7 June 2024, virtual
9. Project Review 2024, 26–30 August 2024 Lisbon, Portugal, attended in person
10. Ethics, 6 November 2024, virtual
11. ESCAIDE Scientific Conference, 20–22 November 2024, Stockholm, Sweden, attended in person
12. Time Series Analysis, 9–13 December 2024, Bilthoven, the Netherlands, attended in person
13. CBRN, 7–11 April 2025, Montenegro, attended in person
14. Rapid Assessment and Survey Methods + Mass Gatherings, 15–19 April 2024, Athens, Greece, attended in person
15. Project Review 2025, 25–29 August 2025, Lisbon, Portugal, attended in person
16. ESCAIDE Scientific Conference, 19–21 November 2025, Warsaw, Poland, attended in person

12. Personal conclusions of fellow

Being a MediPIET fellow over two years has been an amazing opportunity to improve my field epidemiological and public health professional competencies. The scope of the curriculum, which combined intensive training modules with practical-field assignments, exposed me to the vital skills for outbreak investigation, surveillance system design and evaluation, epidemiological research, and scientific communication. Through these activities, I managed to use epidemiological methods to solve public health problems that are related to the real world.

The emphasis of the programme on both technical skills and professional development has provided supported me in making effective contributions to the prevention and control of infectious diseases at the national and regional levels. The international network of fellows and supervisors established through MediPIET will remain an enormous asset for future collaborations and knowledge sharing. This fellowship, above all, has become an instrument for me to practice evidence-based public health and has provided me with the necessary skills and confidence to lead epidemiological investigations and make a valuable contribution to public health decision-making in my own country.

13. Acknowledgements

I want to show my appreciation to the people who have given me a lot of support during my MediPIET fellowship. I owe a lot to Dr. Daa Hujajja for his outstanding supervision and instruction which contributed to my epidemiological skills and also to Dr. Asad Ramlawi for his guidance and providing valuable ideas regarding the practice of public health. I truly appreciate Katie Palmer for her committed coordination and enthusiastic support, which facilitated my fellowship journey and made it more effective. I would like to recognise my family, my wife Laila Bali and my colleague Amer Al-jawabreh for their technical knowledge and collaborative spirit during the journey especially the outbreak investigation projects. I wish to thank Kostas Danis, Pawel Stefanoff, and Amy Mikhail for their valuable guidance during the fellowship.

I am also profoundly grateful to Iro Evlampidou and Letizia Di Stefano from MSF Brussels for their crucial assistance throughout the surveillance project in South Sudan. My sincere thanks also go to the epidemic intelligence team at ECDC, especially Jon Bilbatua, for his guidance on the international assignment regarding event-based surveillance for the Paralympic Games in France.

The shared wisdom, endurance, and commitment of these eminent professionals have helped me to successfully complete this program.