

## WHO Collaborating Centre Annual Report

**Name of the University, Hospital, Research Institute, Academy or Ministry**

University of Napoli Federico II

**Name of the Division, Department, Unit, Section or Area**

Department of Veterinary Medicine and Animal Production, Laboratory of Parasitology and Parasitic Diseases - Centro Regionale Monitoraggio Parassitosi (CREMOPAR)

<b>Reference Number</b>	ITA-116
<b>City</b>	Naples
<b>Title</b>	WHO Collaborating Centre for Diagnosis of Intestinal Helminths and Protozoa
<b>Report Year</b>	13 February 2024 - 13 February 2025
<b>Agreement Period</b>	13 February 2024 - 12 February 2028

### 1. Annual report on the agreed workplan

#### Activity ID: A-23870

**Activity Title:** Collect parasitological surveillance data in population of newly immigrated to the European Region

**Description:** As requested, the institution will provide WHO with parasitological surveillance data pertaining to migrants arriving in southern Italy which may assist health care decision makers in the management and control of intestinal parasite infections in non-endemic areas.

**Status:** Ongoing

**Activity report:** Despite the global rise in migration in recent years, the health needs of migrants remain insufficiently addressed, as pointed out by the World Health Organization (WHO). In response, the Collaborating Centre ITA-116 implemented regular parasitological surveillance among migrants arriving in southern Italy, aiming to support healthcare decision-makers in the management and control of intestinal parasitic infections in non-endemic settings. This activity (TOR1) was conducted in collaboration with Medical Centres for the Health Protection of Migrants and migrant reception centres in the Campania region. In 2025, a total of 192 migrants were screened, with parasitological analyses performed using the FLOTAC technique and immunological methods. Of those screened, 21 individuals (10.9%) tested positive for at least one intestinal parasite.

Among helminths, the most prevalent species identified were hookworm (33%), *Hymenolepis nana* (10%), and *Schistosoma mansoni* (5%). Among pathogenic protozoa, *Giardia intestinalis* (14%) and *Entamoeba histolytica* (5%) were the most frequently detected.

To ensure effective case management and control, antiparasitic treatment was administered to all individuals who tested positive, with medications donated by WHO. Additionally, data generated through this surveillance activity served as a case study to demonstrate how statistical modelling can enhance the identification of individuals infected with soil-transmitted helminths (STHs) (Purkiss et al., 2025, PLOS Neglected Tropical Diseases, in press).

#### Activity ID: A-23871

**Activity Title:** Provide technical expertise to WHO in the development and testing of innovative diagnostic methods and training on diagnosis of intestinal parasites

**Description:** The institution will support WHO on research to improve copromicroscopic techniques for the diagnosis of intestinal helminths (e.g., soil-transmitted helminths) and protozoa (e.g., *Giardia*, *Entamoeba*, etc.) through studies on the standardization, and the development of tools and methods to facilitate the procedures for WHO's consideration.

In addition, the institution will collate data on innovative procedures based on the following diagnostic advancements:

- 1) Artificial Intelligence (AI) for the automated reading and counting of parasitic elements to increase sensitivity, specificity, accuracy, and precision of copromicroscopic diagnosis. Specifically, AI will be developed for the coprological techniques most commonly used in developing countries (e.g., Kato-Katz and Mini-FLOTAC).
- 2) DNA identification to achieve high sensitivity and specificity of the diagnostic method and to enable quantitative diagnosis

(qPCR).

In addition, at the WHO's request of and under its guidance, the institution will provide technical support to WHO on: 1) conducting training targeted to the needs of a specific country or group of countries; 2) provide technical input and expertise in training activities organized by WHO as agreed; 3) develop training materials in line with WHO's recommendations for these activities (manuals, brochures, videos, interactive training). Training facilities for trainings to take place in the context of this activity will be made available as agreed with WHO. The institution will provide technical support on 1-2 WHO regional training activities on the diagnosis of intestinal helminths and protozoa, as requested by WHO. Training materials (manuals, brochures, videos, interactive training) validated by WHO will be provided by the institution.

**Status:** Ongoing

**Activity report:** Advancements in Diagnostic Approaches for Intestinal Parasites - The WHO Collaborating Centre ITA-116 continues to enhance the diagnostic performance for intestinal protozoa and helminths through innovative methodologies, including machine learning and molecular techniques. Notably, diagnostic advancements have incorporated the Kubic FLOTAC Microscope (KFM) and state-of-the-art molecular tools (Cringoli et al., 2021, *Parasitology*; Maurelli et al., 2023, *Current Tropical Medicine Reports*; Capuozzo et al., 2025, submitted). In 2024, the Centre continued to capture and archive images of soil-transmitted helminths (STHs) using the KFM and initiated the first validation trials. Preliminary results were presented at the 14th European Multicollloquium of Parasitology (EMOP), held in Poland from 26–30 August 2024 (Pepe et al., 2024). Furthermore, CC ITA-116 introduced a new molecular diagnostic tool into routine parasitological workflows: the Allplex™ Gastrointestinal Panel (Seegene, South Korea). This multiplex PCR assay enables simultaneous detection and identification of six protozoa of public health importance: *Blastocystis* spp., *Cryptosporidium* spp., *Cyclospora cayetanensis*, *Dientamoeba fragilis*, *Entamoeba histolytica*, and *Giardia intestinalis*. Additionally, the Centre contributed to a systematic review of waterborne outbreaks caused by *Giardia* across Europe, emphasizing the critical need for accurate diagnostics in outbreak settings (Pace et al., 2025, *Food and Waterborne Parasitology*, in press).

Capacity Building and Training Initiatives

CC ITA-116 is also engaged in capacity building activities, including the organization of the “Pemba Summer School 2025.” This two-week international training course (29 June – 12 July 2025) will be hosted at the Public Health Laboratory Ivo de Carneri in Pemba Island, Zanzibar (Tanzania), in collaboration with the Public Health Laboratory Ivo de Carneri (WHOCC TAN-8), the Ivo de Carneri Foundation (Italy), and the University of Lancaster (WHOCC UNK-324), United Kingdom.

## Activity ID: A-23872

**Activity Title:** Supporting WHO in its work in endemic countries on surveys for the monitoring of the changes in STH epidemiology (prevalence and morbidity)

**Description:** Provide technical input and collate data by conducting surveys under the preventive chemotherapy programmes and for tracking the impact of Soil Transmitted Helminths (STHs) control in the six WHO regions. A database, containing STH data from WHO/NTD standardized reports and the scientific literature, will be continuously updated (Progress of implementation, Impact of intervention on STH prevalence and Impact of intervention on STH morbidity, Drugs donated) and provided to WHO for its use and consideration in WHO materials.

At the request of WHO and with its guidance, the Institution will support WHO in its work with countries to assist in the development of the survey plan. As requested by WHO, the institution will provide “on-the-job training” (i.e., participate in the initial stages of the survey to ensure that the appropriate sampling procedures are used, and that local staff are familiar with them) in line with WHO's rules and procedures. As requested by WHO and mutually agreed, the institution will provide support in the analysis and interpretation of epidemiological data

**Status:** Ongoing

**Activity report:** Geospatial Tools for Supporting Preventive Chemotherapy Programmes - The public WebGIS platform (Maurelli et al., 2021, *Geospatial Health*)—developed by the WHO Collaborating Centre ITA-116 to support countries in conducting surveys under Preventive Chemotherapy (PC) programmes—continues to be an important tool in the fight against soil-transmitted helminthiasis (STHs). The platform is accessible at: <https://ccita116.parassitologia.unina.it>.

The database is regularly updated with data from multiple sources, including the Joint Reporting Form (JRF), Expanded Programme Reporting Form (EPRF), national Ministry of Health reports, and peer-reviewed literature. In 2024, data from five additional countries were incorporated, increasing the number of countries identified as requiring PC for STHs to 88.

Ongoing collaboration with the WHO NTD Control Department includes regular reporting and review of updates to country endemicity status. These updates are discussed in monthly virtual meetings and shared through email communication.

Key Updates in 2024:

- A new graph illustrating the global trend of donated anthelmintic drugs (albendazole and mebendazole) from 2012 to 2024, disaggregated by drug type and WHO region, was added to the “Drugs Donated” section of the platform: [https://ccita116.parassitologia.unina.it/drugs\\_donated](https://ccita116.parassitologia.unina.it/drugs_donated).

- The fourth and fifth issues of the CC ITA-116 newsletters were published, providing regular updates on the GIS platform, detailed analysis of progress in PC programme implementation, and news on the Centre's ongoing activities: <https://ccita116.parassitologia.unina.it/newsletters>.

## 2. Annual report on other activities requested

**Should WHO have requested activities in addition to the agreed workplan, please describe related actions taken by your institution [maximum 200 words]. Please do not include in this report any activity done by your institution that was not requested by and agreed with WHO.**

#### Other Activity Report

On the occasion of its redesignation as a WHO Collaborating Centre, CC ITA-116 hosted a roundtable discussion on 14 May 2024 at the University of Naples Federico II, Naples (Italy). The event brought together experts in Neglected Tropical Diseases (NTDs) to discuss current challenges and innovations in the field.

Subsequently, on 30–31 May 2024, Professor Laura Rinaldi was invited to Ghent (Belgium) to present the work and experiences of CC ITA-116 to the international Consortium of Experts in Neglected Tropical Diseases (CENTD).

In July 2024, staff members of CC ITA-116 participated in the Pemba Summer School 2024, held on Pemba Island, Tanzania. The course provided participants with practical training in local health service delivery and the epidemiology and control of selected NTDs.

On 30 January 2025, CC ITA-116 contributed to a conference in Verona (Italy), organized by the Department of Infectious and Tropical Diseases and Microbiology of the IRCCS Sacro Cuore Don Calabria Hospital in Negrar (WHOCC on Strongyloidiasis and other Neglected Tropical Diseases - WHOCC ITA-102), in support of the World NTD Day 2025. On this occasion, Professor Laura Rinaldi delivered a presentation on access to and availability of drugs for NTDs.

### 3. Resources

**Indicate staff time spent on the implementation of activities agreed with WHO (i.e. those mentioned in questions no. 1 and no. 2 above). Do not include any data related to other activities done by your institution without the agreement of WHO. Please indicate staff time using the number of “full-day equivalents” – a day of work comprising 8 hours (e.g. 4 hours work per day for 7 days should be recorded as 3.5 full-day equivalents).**

**Number of staff involved (either partially or fully)**

Senior staff	Mid-career staff	Junior staff, PhD students
2	3	1

**Number of full-day equivalents, total for all staff involved**

Senior staff	Mid-career staff	Junior staff, PhD students
84	105	35

**Implementation of the agreed workplan activities (i.e. those mentioned in questions no. 1 and no. 2 above) normally require resources beyond staff-time, such as the use of laboratory facilities, purchasing of materials, travel, etc. Please estimate the costs of these other resources as a percentage of the total costs incurred (e.g. if you incurred costs of USD 100 and the value of your staff time was USD 50 which makes the total of USD 150, please report 33.3% and 66.7%).**

Percentage of costs associated with staff time	Percentage of costs associated with other resources	Total
40.00	60.00	100.00

### 4. Networking

**Describe any interactions or collaboration with other WHO Collaborating Centres in the context of the implementation of the agreed activities. If you are part of a network of WHO Collaborating Centres, please also mention the name of the network and describe your involvement in that network [maximum 200 words].**

The CC ITA-116 has established collaborations with other WHO CCs, including BEL-42, SWI-71, TAN-8, UNK-324, ITA-102, ITA-107, and ITA-115. Notably, in partnership with CC UNK-324, a predictive model was developed that integrates country-level indicators and individual variables to estimate the risk of STH infections among migrant populations (Purkiss et al., 2025, PLOS Neglected Tropical Diseases, in press). In addition, monthly briefings have been held with WHO (Department of Control of NTD) and CC SWI-71 (Swiss TPH) to discuss ongoing work related to estimating the global prevalence and burden of STH infections following several years of PC, using geostatistical methodologies. Furthermore, as previously mentioned, CC ITA-116, in collaboration with CC TAN-8 and CC UNK-324, is organizing the Pemba Summer School 2025, which will take place in July 2025 on Pemba Island, Tanzania.

CC ITA-116 has also been included as a partner in the CENTDs initiative, coordinated by CC BEL-42, which was approved under the 5th Call for International Thematic Networks.

Finally, throughout the year, the heads of CC ITA-116 have participated in a series of regular briefings with other WHO CCs to collectively discuss new strategic interventions aimed at accelerating the prevention and control of NTDs.