

## Introduction

The Department of Medicine and Diagnostics (MEDDIA) of the Swiss Tropical Institute is the National Reference Centre for Imported Human Parasitic Diseases and the only institution in Switzerland that provides preventive, diagnostic and curative services for imported infectious diseases. Collaborative contacts exist with local specialists in tropical and travel medicine and with all major university travel clinics and departments of infectious diseases in Switzerland. Formal collaborations have been successfully established with the medical faculties of Basel, Bern, Lausanne, Geneva and Zurich. MEDDIA provides an expert umbrella for tropical and travel medicine issues to the outpatient department of the Bern University Hospital (Inselspital). The head of the department is the president of the Swiss Society of Specialists in Tropical and Travel Medicine (FMH), the current chairperson of the (Swiss) Expert Committee for Travel Medicine (ECTM), a member of several scientific committees of national and international conferences, and an editorial member of an Internet-based information source on travel medicine recommendations for lay people ([www.safe-travel.ch](http://www.safe-travel.ch)). The department has had a presence at the Annual Basel Travel Fair for 17 years.

Each year, MEDDIA's senior staff teach between 350 and 400 contact hours in over 100 tropical and travel medicine courses and seminars, at both the national and international level. Clinical tropical medicine is taught biannually in a 3-week course in Tanzania, offering excellent opportunities for staff continuing education. The private practice activities of a specialist in general, tropical and travel, and internal medicine guarantee integrated health care for patients of the medical department in Basel.

Travel medicine courses for national and international audiences provide up-to-date knowledge on relevant topics. The department was further chosen to hold the European Preparatory Course for the Certificate of Knowledge Exam of the International Society of Travel Medicine. All travel medicine courses are conducted in collaboration with the International Society of Travel Medicine, the Swiss Society of Specialists in Tropical and Travel Medicine, and the Expert Committee for Travel Medicine. Medical students are regularly trained at the department both in the travel clinic as part of their practical experience at medical school and during research studies for thesis work with the medical faculties at the Universities of Basel, Bern and Freiburg (Germany), and with the Swiss School of Public Health. The Swiss Federation of Physicians has officially approved the department as a training centre for postgraduate training of physicians in the field of tropical and travel medicine and of internal medicine.

Collaborative research on prevention and management issues for various infectious diseases is conducted with STI scientists and with partners in national and international institutions in Germany, Laos, the People's Republic of China, Peru, Tanzania, Angola and the Democratic

Republic of the Congo. The head and deputy head of department have formal appointments at the university hospitals of Bern and Zurich. Close contacts are maintained with the travel clinics in Lausanne and Geneva. Staff are also involved in ongoing research projects at the STI where clinical expertise for epidemiological studies and drug trials is required.

Research questions arising from the daily work in Switzerland's second largest travel clinic stimulate operational research studies, for example on traveller behaviours, trials of new or improved prophylactic and curative drugs against malaria, and vaccines for travellers.

### 13.1 Medical services

#### *Travel clinic*

The travel clinic is the largest of its kind in north-western Switzerland and also serves the populations of neighbouring areas in Germany and France. It is open 5 days a week in the afternoons. Pretravel advice was given to more than 10,000 clients yearly in 2006 and 2007. Information is continuously updated and harmonised with other leading travel clinics in Switzerland to ensure that the pretravel advice services meet the highest standards of quality. A telephone helpline service that is connected with other centres in Switzerland serves more than 32,000 callers each year.



Counselling at the Travel Clinic. (Photo R. Dürr)

#### *Outpatient department*

Five experienced specialists in tropical and travel medicine, three of them part-time, offer diagnosis and treatment services for travel-related diseases and check-up exams for people returning from or going to tropical countries. Consultant services are offered to neighbouring hospitals in the Basel region and to other Swiss hospitals. A 24-hour emergency service for advice and treatment of tropical and emerging diseases is offered to the general public, to patients from national and international organisations, and to medical doctors in private practice and hospitals. The department recorded more than 2,500 patient contacts each year from 2006 to 2007. Routine first consultations of returning travellers accounted for more than 1,500 per year, 450 of which were emergency contacts. The physicians also serve as staff

doctors for the growing number of STI employees and overseas students.

### 13.2 Diagnostic services

#### **National Reference Centre for Imported Human Parasitic Diseases and Molecular Diagnostics unit**

Every year, the reference laboratory carries out more than 29,000 serological, 6,500 haematological and 9,000 coprological examinations. In addition, the emergency diagnostic service examines more than 150 blood films a year for malaria outside regular working hours.

The number of polymerase chain reaction (PCR) tests to investigate cases of leishmaniasis, malaria and amoebiasis has steadily been increasing since its introduction into routine examinations in the year 2000. PCR results are mandatory to perform species-specific leishmaniasis treatment, assessment of mixed malaria infections in special cases, and differentiation between pathogenic and apathogenic amoebiasis.

Serological tests against *Anisakis*, *Angiostrongylus* and *Gnathostoma* are increasingly requested from several centres in Europe, as such tests are not commonly offered by many other specialised laboratories.

The certification of the laboratory services according to EU standards EN ISO and IEC 17025 was renewed in 2007.



The Swiss Tropical Institute in full bloom. (Photo R. Dürr)

A task force consisting of staff from the MEDDIA and MPI departments is continuously working to improve and develop existing and new diagnostic tests for various parasitic diseases. Links with other service and research laboratories (e.g. Bern, Zurich, Hamburg, Antwerp) help to offer a full portfolio of diagnostic tests for parasitic diseases.

### 13.3 Mosquito repellent testing and advisory centre

More than 300 individual tests of insect repellent efficacy were performed using the established mosquito colonies (*Aedes aegypti* and *Anopheles gambiae*). Regular confirmation checks on the quality of the products and required to obtain the STI quality label have been performed. Products at various stages of development up to marketing have been tested. The strong media presence of the unit leader has increased the centre's profile over previous years, attracting new clients from Switzerland and other European countries.

The STI insect-breeding facilities were also used for testing insecticide-impregnated mosquito nets, combat fatigues, and other fabrics and materials for their repelling or killing efficacy. The production of mosquito eggs, which are sold to universities, research institutions and the agrochemical divisions of pharmaceutical companies, remained at the level of previous years. Eggs are used for various purposes, such as mosquito breeding for research and to screen pesticides for toxicity to larvae.

The demand for maggots of the greenbottle fly, *Lucilia sericata*, for debridement therapy of poorly healing wounds varied considerably. The enclosure of maggots

## CLINICAL AND DIAGNOSTIC SERVICES

### Mission statement

The department aims to maintain its role as a national centre of excellence in travel and tropical medicine and in parasitological diagnostic services in Switzerland and in other European countries. It is committed to further developing its national and international role through collaborative networking in order to offer its expertise to the medical community and serve the beneficiaries of the health services.

Services offered to medical personnel and the public:

- Provision of care for sick travellers returning from tropical and subtropical countries, as outpatients or in hospitals.
- Advice for short- and long-term travellers on preventive measures (general and individualised health advice on travel, vaccinations, disease prevention).
- Advisory services for physicians on tropical and travel-related health problems, including emerging diseases.
- Telephone helpline (24-hour service) for physicians and travellers.
- National Reference Centre for Imported Human Parasitic Diseases, including malaria diagnosis and management.
- Provision of general information through Internet services.
- Diagnosis of parasitic diseases using a wide range of tests.
- Quality control partnership for parasitic-disease diagnosis.
- Mosquito repellent testing and advisory centre.

in biobags, however, may be one reason for a considerable increase in the first half of 2008.



MEDDIA staff. (Photo C. Scheurer)

## Research in tropical and travel medicine

### HIV/AIDS treatment cohort in a rural setting in Tanzania

Since the start of the National Aids Control Programme (NACP) at St Francis Designated District Hospital (SFDDH) in Ifakara, as of June 2004 over 2,500 patients had been enrolled in the programme. Among those, all in need of antiretroviral therapy (ART) had begun treatment. The supply of antiretroviral drugs (ARVs) was uninterrupted since dispensing of ARV was introduced at the new Chronic Disease Clinic Ifakara (CDCI). In addition to the service for people living with HIV/AIDS and other chronic diseases, CDCI is actively collecting data on the outcome of patients on ART in rural Tanzania, in teaching staff at the SFDDH and other health facilities in the field of HIV/AIDS care and treatment, in facilitating different international courses on the topic of HIV/AIDS, in participating in workshops at the national level on HIV policy and in providing opportunities for medical students from Tanzania and various other countries to gain insight into how HIV/AIDS is managed in rural African settings. Supportive supervision services are offered to peripheral hospitals in two districts. The monthly Voluntary Counselling and Testing (VCT) uptake has increased 4.4-fold from 38.7 (pre-ART) to 170.6 (post-ART) clients tested per month.

During the last 3 years, the position of CDCI within the NACP changed substantially. Whereas at the outset SFDDH was one of the first rural district hospitals to dispense ARVs, it has now become one of the largest rural ARV-dispensing sites. The experience and opinion of CDCI staff are valued at the national level, as reflected for example in the invitation of members of CDCI and the Ifakara Health Institute (IHI) to participate in the first national HIV resistance workshop in Dar es Salaam in early September 2007.

The laboratories of SFDDH and the Ifakara Health Institute provide routine HIV testing and follow-up of patients

undergoing therapy. CD4 cell count, an important tool for deciding the best time for a patient to begin ART and in monitoring treatment success, is offered by our lab not only to patients attending the clinic but also to patients being treated at three other hospitals in the two districts. We also provide p24-antigen testing, which allows early (starting 6 weeks after birth) diagnosis of the serostatus of a baby born to an HIV-positive mother and to diagnose treatment failure in patients on ARVs.

Four hundred and eighteen of 681 patients (61%) presented late at the CDCI. Data are available for at least 12 months or until death for 282 (67%) late presenters starting ART. Late presenting was observed more frequently in this rural Tanzanian setting than in other African sites. Late presenters with a CD4 cell count <25 cells/ $\mu$ l had a significantly lower chance of survival, although a considerable number among them survived. The Kilombero-Ulanga-Anti-Retroviral-Cohort (KIULARCO) will generate further data on clinical outcome, behavioural changes, social conditions and adherence to ART of patients attending CDCI, which will help us to understand the impact of the availability of ART in rural Tanzania.

Scientists: F. Brenneke, C. Hatz, N. Heuer, F. Schwitz, M. Stöckle, M. Tanner

Collaboration: M. Battegay (University Hospital, Basel), H.J. Furrer, C. Fux, M. Täuber, S. Zimmerli (University Hospital, Bern), N. Garcia, B. Jullu, P. Kibatata, A. Marzan, E. and R. Mchomvu, H. Mshinda, E. Mossdorf, A. and S. Navarini, F. Schwitz, M. Stöckle, A. Vinzenz, H. Urassa (Ifakara Health Institute and SFDDH, Ifakara)

Funding: Cantons of Basel-Stadt, Basel-Landschaft and Solothurn



The Chronic Disease Clinic in Ifakara, Tanzania. (Photo C. Hatz)

### Studies on cardiac and endocrine involvement in human African trypanosomiasis

Because antitrypanocidal drugs have some arrhythmic potential and because previous observations have shown heart involvement in human African trypanosomiasis (HAT), more data on HAT myocarditis and its evolution under antiparasitic treatment are needed to be able to evaluate the cardiotoxic effect of new antitrypanosomal compounds. In 60 patients with *Trypanosoma brucei gambiense* HAT, heart involvement as shown by electrocardiogram (ECG) alterations was observed much more frequently (71%) than in previous reports (35–48%). The ECG changes were associated neither with clinical signs

and symptoms nor with deterioration of NTpro-BNP (brain natriuretic peptide) or elevation of troponin levels. An antiparasitic treatment-induced accentuation of an inflammatory response is the most likely explanation. However, a direct cardiotoxic effect of the drugs cannot be ruled out. The results of an ongoing study, investigating the effect of pentamidine and pafuramidine maleate on ECG alterations, will provide further information.

Symptoms consistent with hypothyroidism or adrenal insufficiency are frequently reported in the literature in patients with HAT. Although in most cases no clear underfunction of the thyroid or adrenal gland could be demonstrated, transitory adrenal insufficiency was suspected in 8% of HAT patients at admission and in 9% at discharge. Basic knowledge on endocrine function in patients with *T. b. gambiense* is essential for managing these patients optimally.

Scientists: [B. Blum](#), C. Burri, C. Hatz  
Funding: Schweizerische Herzstiftung; Margarethe und Walter Lichtenstein Stiftung; Freiwillige Akademische Gesellschaft; Roche Ltd.; Rothen Labor, Basel

### Other topics

Treatment with artemether-lumefantrine of non-immune patients with acute, uncomplicated *Falciparum* malaria

Scientists: B. Beck, B. Blum, V. D'Acremont, B. Genton, [C. Hatz](#), O. Veit, J. Werlein  
Technicians: E. Escher, M. Dobler  
Funding: Novartis Ltd.

Neurological adverse events in African children treated with mefloquine

Scientist: [C. Hatz](#)  
Technician: I. Grilli  
Collaboration: S. Frey (UKBB)  
Funding: Mepha Ltd.

Malaria risk assessment for travellers in various endemic countries. Long-term vaccination schedules for hepatitis A and B vaccination in travellers. Perception of health risk among travellers attending the travel clinic.

Scientists: B. Beck, B. Blum, F. Brenneke, C. Burri, V. D'Acremont, B. Genton, E. Grüter, [C. Hatz](#), H.P. Marti, R. Nüesch (University Hospital, Basel), W. Rudin, M. Stöckle, M. Tanner, O. Veit, P. Vounatsou, J. Werlein  
Technician: E. Escheri  
Student: N. Heuer  
Collaboration: S. de Vaillière, Y. Müller (Travel Clinic, University Medical Outpatient Clinic, Lausanne); J. Evison, M. Funk, M. Muetsch, P. Schlagenhauf, R. Steffen (University Hospital, Zurich)  
Funding: STI

### Publications

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