

OPINION

The needs and requirements of medical doctors preparing to work in the tropics

The role of internal medicine with focus on the Physician Global Health and Tropical medicine (PGHTM) training programme

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Introduction

Many doctors from high-income countries (HIC) work in low- and middle-income countries (LMICs) for a limited period. The duration may vary from weeks in targeted and specialized missions, such as teams of ophthalmologists or plastic surgeons, to months for others who are at registrar level to become, for example, a specialist in internal medicine or paediatrics in HICs. For those in training for infectious diseases, this may lead to accreditation in tropical medicine; others e.g., in chest medicine focus on one disease such as tuberculosis. Finally, young doctors such as the Dutch Physician Global Health and Tropical Medicine (PGHTM) work for some years in rural or district hospitals in various capacities.

The training programme of the PGHTM is unique as it aims to train doctors in clinical medicine and public health with a particular focus on LMICs. It is a professional career step, not an added-on training. It requires 2 ¼ years of training after which doctors usually serve for a minimum of 2-3 years in LMICs before returning home and continuing their career. The baseline clinical training in the Netherlands is well structured and focuses on surgery and obstetrics & gynaecology (O&G) (9 months residency each, "classical profile"); a minority train in O&G and paediatrics (9 months residency each, "mother-and-child profile"). A 3-month national tropical course (NTC) is mandatory and includes clinical medicine, public health, health finance, health systems, and ethical aspects, among other components.[1] Throughout the curriculum, 10 compulsory training days need to be attended, which focus on special topics such as transcultural rehabilitation, ophthalmology, and dental health. Lastly, a non-standardized 6-month residency in an LMIC setting follows with variable exposure and duties; the aim is to be better practically prepared before taking up a position in an LMIC.

What is the need for the PGHTM - Malawi as an example

In Malawi, medical education leads to an MBBS degree (Medical Bachelor and Bachelor of Surgery), after a five-year curriculum at an accredited School of Medicine such as of the Kamuzu University of Health Sciences (KUHeS), formerly the College of Medicine, in Blantyre. After graduation, an internship

(15 months) follows with rotations in internal medicine, paediatrics, surgery, and obstetrics & gynaecology, each for 3 months. The last 3 months is mainly spent on public health. The intern is responsible for day-to-day care of patients in the wards and outpatient clinics and works under supervision of consultants and registrars (doctors in training to become consultants). After successful completion of the programme, the medical officer may be registered with the Medical Council and is allowed to practice independently.

What is required -Tropical Medicine: definition and changes since the year 2000

Tropical medicine traditionally referred to exotic, mainly vector-borne conditions, caused by parasites and occurring in warm climates. Examples are malaria, filarial diseases, sleeping sickness and helminthic infections.[2]

The HIV/AIDS epidemic, which started in the 1980s and that hit Africa disproportionately, completely changed priorities. Classical tropical diseases were overshadowed, and tropical medicine became, in the view of some, the medicine of immunosuppression.[3] A devastating tuberculosis (TB) epidemic followed in the wake of HIV/AIDS. The HIV/AIDS epidemic not only required training doctors and nurses in antiretroviral treatment, but also brought about new and severe infections associated with HIV/AIDS such as bacterial meningitis, pneumocystis jirovecii pneumonia (PCP), and sepsis (pneumococcal, non-typhi salmonellae) as well as new or previously less common cancers such as Kaposi's sarcoma and cervical carcinoma.

As world-wide most resources for research went to the big three (HIV/AIDS, TB, and malaria), advocacy brought other groups of diseases to the forefront. The neglected tropical diseases (NTDs) are associated with poverty and lack proper diagnosis and treatment; there is a huge gap in research.[4] Other emerging infections include epidemics of dengue or chikungunya, while other outbreaks were more focal such as the Middle East respiratory syndrome (MERS), the severe acute respiratory syndrome (SARS – caused by SARS CoV-1), and Ebola. Antibiotic resistance has become a major problem for the already limited choice of antibiotics in LMICs.

The COVID-19 (caused by SARS CoV-2) pandemic demonstrated the potential of rapidly spreading viral infections; other examples include influenza and avian flu with similar challenges in management and control. The COVID-19 pandemic showed how world-wide health systems may become overwhelmed by a new infection that hits LMICs hard and that uses up resources at the expense of other regular care.

Since 2010, the non-communicable diseases (NCDs) have been elevated onto national and global health and development agendas. [5] These include asthma, diabetes mellitus, hypertension, heart failure, and cancer, among others. NCDs cause 71% of all deaths, of which 77% are in LMICs.[6] While NCDs have been common in LMICs for decades, their importance was overshadowed by tropical diseases that needed proper diagnosis and treatment, while the (poor) management options for NCDs were taken for granted. Lately, western diet and lifestyle have become important additional risk factors. There is an overlap between infectious diseases and NCDs; for example, heart failure may be caused by HIV related infections (HIV, CMV) that cause myocarditis, or by rheumatic fever that causes valvular heart disease. Conversely, diabetes mellitus is a risk factor for severe COVID-19 and melioidosis, among other; patients with cancer or malnutrition are at risk of various infections.

All the conditions mentioned above (classical tropical diseases, emerging infections, NTDS, NCDs) are in the domain of internal medicine (and paediatrics) and require supervised clinical training for those who manage these patients. (Figure 1) In LMICs, clinical expertise is provided in the central hospitals at the level of a specialist in internal medicine (UK: consultant physician; USA and Europe: internist). At the level of a district or mission hospital, adequate general training in curative medicine is required that includes internal medicine (as well as surgery, O&G and paediatrics – the “big four”); this applies to the locally trained doctor (as in Malawi) as well as the expat doctor. Figure 2 shows the level of knowledge required in internal medicine.

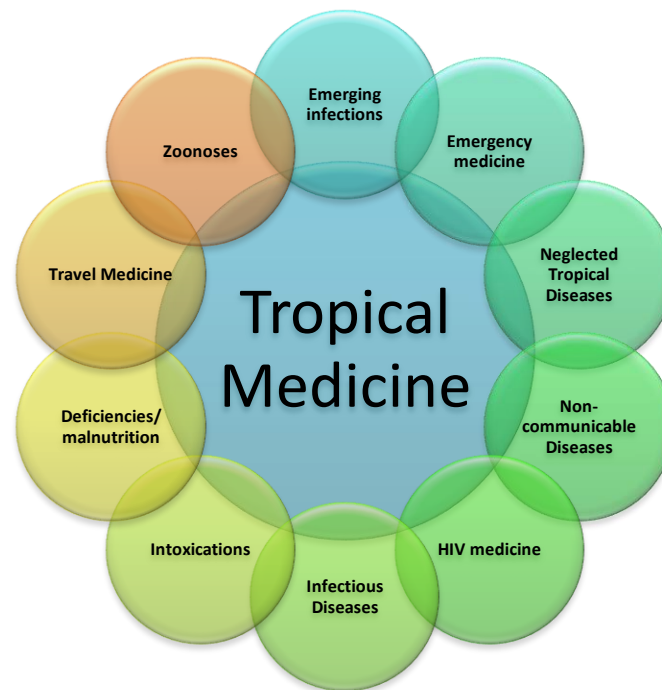


Figure 1. The changing scope of tropical medicine since the year 2000 (1)

Ethical and professional aspects - implications for those preparing to work in the tropics

The medical profession is well regulated in the Netherlands and other high-income countries; in the Netherlands (NL), the doctor is registered with the Royal Dutch Medical Association and the registration needs to be renewed after 5 years. The registration allows medical practice only in the specialty or special profile (e.g. PGHTM) for which one is registered; this touches on professional aspects as well as ethics. This is also becoming the norm in LMICs. It follows that any expat doctor should have the same competencies in the 4 major specialties with adequate and sufficient clinical exposure and supervision (*broad baseline training*).

Alternatively, one could consider a single specialization such as O&G and working as a specialist (*specialist training*). Another option would be training in e.g. the surgical specialties (surgery and O&G) or the medical specialties (internal medicine and paediatrics); this would require extended training that does not reach the specialist level (*dual limited specialist training*).

The added value of the PGHTM after returning to the Netherlands

The question arises whether the PGHTM doctors are contributing to health care in NL after returning. This is difficult to assess both from a quantitative and qualitative point of view. While some continue to work in this field, others chose to continue their career in a new area and become general practitioners or clinical specialists, or work in public health, e.g. in the municipal health service or other governmental organizations, non-governmental organizations, the WHO, or research. Their contribution may depend on their clinical training (homogenous, but restricted to surgery/O&G, or O&G/paediatrics – see above), the experience gained (heterogenous), and the scope of their current position.

It may be easier to define an optimal profile for the PGHTM aiming to work in LMICs and to contribute to health care after returning to the Netherlands (Table 1).

In conclusion, while surgical and obstetric skills remain important for the general medical doctor in many settings, tropical medicine or medicine in the tropics has changed to include a dominant role for internal medicine, starting in the late 1980s with the HIV/AIDS epidemic (Figure 1). It follows that baseline training should be broader and integrate adequate clinical training in internal medicine in the curriculum of the PGHTM, for an optimal contribution to health care in LMICs as well as health care in the Netherlands after returning.

Clinical	
	<ul style="list-style-type: none"> • broad postgraduate clinical experience, at least in the 4 major basic specialties (in HICs and LMICs) • wide understanding of the differences in the scope of medicine between HICs and LMICs
Public Health	
	<ul style="list-style-type: none"> • wide understanding of determinants of health; prevention and control of disease in HICs and LMICs – Global Health
Special focus on	
	<ul style="list-style-type: none"> • current priorities in Tropical Medicine and Global Health • epidemiology of disease, world-wide, and regional priorities • vulnerable populations: migrants, ethnic minorities, refugees, women, children, LGTB+ • antibiotic resistance • diagnostic tools and treatment, in LMICs • One Health • health systems • climate change and other human impacts on natural systems, affecting life and health (planetary health) • understanding cultural and social determinants of health care in HICs and LMICs
Special skills	
	<ul style="list-style-type: none"> • medical leadership • management skills • epidemic preparedness; outbreak management • emergency medicine, including triage • research methodology and understanding of major gaps in disease, control, and prevention, with priority on research in LMICs • teaching skills

Table 1. Optimal profile for the Physician Global Health and Tropical Medicine, for working in LMICs and after returning to the Netherlands

HICs high income countries

LMICs low- and middle-income countries

LGTB+ lesbian, gay, transgender, bisexual and other

References

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