Tropical medicine for the 21st century

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The specialty of tropical medicine originated from the needs of the colonial era and is removed from many of the health care requirements of tropical countries today. Tropical medicine concentrates on parasitic diseases of warm climates, although other infections and diseases related to poverty rather than climate dominate medicine in developing countries challenged by population pressure, civil strife, and migration. In the new century, tropical medicine would best be absorbed into the specialty of infectious diseases, which should incorporate parasitic diseases, travel medicine, and sexually transmitted diseases. Pressing questions for health care and research in developing countries concern the provision of appropriate services for problems such as HIV/AIDS, tuberculosis, sexually transmitted diseases, and injuries. The question of how to provide appropriate clinical care in resource poor settings for the major causes of morbidity and premature mortality has been neglected by donors, academic institutions, and traditional tropical medicine.

Tropical medicine arose from the needs of the colonial era, when infectious diseases such as typhoid were common in all countries, but diseases associated with tropical climates posed special problems for the European colonists. Today, our northern perspective of tropical medicine remains dominated by unfamiliar parasitic and other exotic diseases.[1] In reality, however, medicine in the tropics now concerns the health problems—mainly infectious diseases—of societies that are poor and also have warm climates. Non-clinical tropical medicine, sometimes referred to as international health, most often falls within the disciplines of public health and epidemiology.

The specialties in northern industrialised countries most closely allied to tropical medicine are infectious diseases and (especially because of its role in HIV and AIDS care) genitourinary medicine. In the United Kingdom, the specialty of infectious diseases has been little developed, but genitourinary medicine is strong. In other European countries genitourinary medicine does not exist as a distinct entity but is associated with other disciplines such as infectious diseases or dermatology.[2]

In industrialised countries clinical research in tropical medicine is weak. Patients with parasitic diseases are increasingly treated as outpatients, and the few that require hospital admission need access to modern technology that classic fever hospitals or tropical disease hospitals cannot provide. The teaching of postgraduate tropical medicine in Europe is threatened because of donor agencies' diminished interest in funding students to learn about clinical medicine of the South in institutes of the North. The tropical medicine establishment must ask what face it will present to the new century.

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Recent trends

Traditional tropical medicine is of limited relevance to recent trends in international health. Urbanisation within the developing world has focused attention on the health problems associated with poverty; in contrast, the traditional parasitic diseases of the tropics now affect predominantly rural people who also happen to be poor.[3] Population pressure, regional conflicts, migration, problems of the environment, and infectious diseases present global challenges that transcend individual nation states or ecological zones.[4]

Over the past decade infectious diseases have reasserted their importance.[5] Increasing resistance to antibiotics challenges complacency about the curable nature of infections. New infectious agents continue to emerge[5] and old diseases regularly escape control, as demonstrated in the 1990s by cholera in South America[6] and Central Africa,[7] diphtheria in the former Soviet Union,[8] plague in India,[9] and tuberculosis world wide. Industrialised countries must recognise the inevitability of microbial threats to health that demand a global approach to disease prevention and control.

The classic sexually transmitted diseases have drawn increased attention because of their role in promoting the spread of HIV infection.[10] Tuberculosis has been declared an emergency by the World Health Organisation,[11] fuelled considerably by the HIV and AIDS epidemic, and global surveillance for drug resistance in *Mycobacterium tuberculosis* is considered a high priority.

Traditional tropical medicine had also overlooked the burden of non-infectious disease in countries with poor resources. Some 20 million people are internationally displaced,[12] and millions more are exiles within their own countries, leading to an urgent need for expertise in the health care of refugees. The developing epidemic of tobacco related illnesses, especially in Asia, is a major cause for concern.[13] Maternal mortality remains a leading cause of death in women,[14] up to half of it resulting from abortions. Although unmeasured, rates of fatal and non-fatal injury from motor vehicle collisions are orders of magnitude higher in developing than industrialised countries.[15] The unquantified consequences of war and civil strife are disproportionately borne by citizens of resource poor countries, illustrated by the mutilating effects of anti-personnel mines.[16]

In contrast, the classic tropical diseases concentrated on by the World Health Organisation,[1] Tropical Diseases Research Programme, or the programme on the great neglected diseases of mankind of the Rockefeller Foundation[17,18] have attracted relatively little recent attention. Parasitic diseases cause much morbidity and mortality, but, excepting malaria, opinion of their overall importance in comparison to other pressing problems has shifted recently. In summary, the urgent health problems of poor countries today are broader than those studied a century ago by Manson, the father of tropical medicine.[19]

Poverty rather than climate

The health problems facing resource poor countries result more from socioeconomic conditions than specific ecological conditions. Even epidemiological changes in some of the classic tropical diseases, such as resurgent trypanosomiasis in east or central Africa or, recently, yellow fever in Kenya, may stem more from

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Infectious diseases regularly escape control—as demonstrated in the 1990s by diphtheria, tuberculosis, plague, and cholera—here, in La Paz

poverty or civil strife than from biological factors alone.

In some areas socioeconomic divisions within individual countries match those between North and South overall. India's middle class, for example, is more numerous than that in any European country and expects health care of European standards; at the same time millions of Indians suffer the classic diseases of poverty. Levels of health in parts of inner city New York are no better than in Bangladesh.[20] Poverty rather than climate is the major risk factor for global inequalities in rates of morbidity and premature mortality.

In many resource poor areas, especially in Africa, the medical infrastructure developed in the 1960s is decaying. Buildings and supplies for medical, surgical, and pathological services have deteriorated greatly, and there is reduced emphasis by aid donors on clinical medicine. The degradation of infrastructure that has occurred parallels the decline in real value of local salaries, which takes health care workers in resource poor countries out from their official workplace in search of extra income.

The World Bank's 1993 world development report, *Investing in Health*, identified two areas where investment would provide maximal gains in healthy life years saved in resource poor countries: (i) a public health package, increasing preventive measures and including vaccination coverage and health promotion activities and (ii) a package of essential clinical services, including improved perinatal care and family planning services; facilities for the treatment of tuberculosis, sexually transmitted diseases, and other common infections; and care for the frequent and serious diseases of childhood.[21] Basic surgical services, particularly for obstetrical complications and for trauma, are also required.

The delivery of these essential services should be at the centre of discussions about the future of clinical medicine in the tropics. Research is needed to establish the most efficient way of delivering health care. Appropriate, locally relevant subjects for clinical research include the health care of displaced populations, the prevention and control of injuries, the definition of a minimum standard of care for HIV and AIDS, determining the burden of specific diseases in developing countries, and audit of clinical resources, drug prescribing, and patterns of health care utilisation. Surgical specialties should also promote appropriate research and define relevant standards of care of major problems such as injuries. It is unfortunate that funding bodies traditionally supportive of tropical medicine research have not adapted to the changing priorities highlighted by the world development report.[21]

Training and continuing education for clinicians and other health care workers also need strengthening. This will require realistic investment in health care infrastructure, finding the middle road between yesterday's inappropriate prestige projects ("disease palaces") and today's neglect of basic facilities.

The future

If clinical tropical medicine within Europe is isolated and far removed from the needs in resource poor countries, what future direction should it take? Two fundamental issues need addressing: firstly, within Europe, tropical medicine should be integrated into the strengthened clinical specialty of infectious diseases; secondly, much more thought needs to be given to the requirements and nature of clinical services in resource poor countries and to the role of Northern donor agencies and academic institutions in enhancing development of these services.

The discipline of tropical medicine in Europe would best be absorbed within the specialty of infectious diseases, of which parasitic diseases is one viable and essential subspecialty; travel medicine should be another. This cannot occur, however, without the strengthening and recognition of infectious diseases as a valid subspecialty of internal medicine, as it is perceived in the United States. Sexually transmitted diseases is another discipline that might best be encompassed under infectious diseases. The uniquely British concept of a separate career structure for specialists in sexually transmitted diseases divorced from the broader subject of infectious diseases is ill adapted to a future within Europe and the broader world.

In recent years the European schools of tropical medicine have concentrated on public health interventions and their evaluation. The tropical schools, and international donors funding students attending them, should recognise that they also have a role in training clinical researchers and practitioners from developing countries, especially in the light of the World Bank's recent report.[21] Appropriate research will be multidisciplinary, involving clinicians, epidemiologists, microbiologists, health economists, and health planners.

The clinical courses run by the European tropical schools, such as the diploma in tropical medicine and hygiene, attract talented and enthusiastic health care professionals from industrialised countries. These courses need to evolve to reflect the changes in clinical priorities, and the schools should liaise more closely with international relief organisations, medical charities, and medical schools in developing countries.

Increasing formal links and exchanges between departments in universities and institutes offers a way of providing international clinical experience to younger medical staff and support for collaborative research. Such exchanges should extend beyond infectious diseases and encompass other disciplines such as internal medicine, surgery, obstetrics and gynaecology, anaesthesia, pathology, and public health. Such links require careful monitoring so that they address relevant problems and exchange appropriate technology and skills. Promising schemes of this nature are already being developed through voluntary funding,[22] but more robust financing will be required.

Conclusions

The era of 19th and 20th century tropical medicine which taught us so much has passed, and the very

term is losing relevance. Infectious diseases needs strengthening as a clinical specialty in Europe and should encompass parasitic and sexually transmitted diseases, as well as travel medicine. Since infectious diseases are more prevalent in underprivileged communities, experience in resource poor settings should be considered important.

The question of the role and future of clinical services in resource poor countries is more relevant than the future of tropical medicine itself as a discipline. In developing countries, defining what constitutes appropriate services and working to provide them should be seen as the real challenge for medicine in the tropics. If account is not taken of today's changed realities, the continued decline of tropical medicine as understood in Europe seems inevitable.

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Letter from Ethiopia

Harnessing the strengths of the leprosy programme to control tuberculosis

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Tuberculosis remains a leading cause of death in Ethiopia but there is no effective national tuberculosis control programme. By contrast, the leprosy control programme has been very successful, with a 10-fold reduction in the number of leprosy cases requiring antibacterial treatment, though patients with nerve damage require continuing care. The paradox of rising numbers of tuberculosis cases and declining numbers of leprosy cases may be solved by joint leprosy-tuberculosis clinics. The strengths of leprosy fieldworkers in control management, case holding, and compliance can be harnessed in developing an effective tuberculosis control programme. Implementing a joint programme in Ethiopia may be beneficial not only for tuberculosis patients but also for leprosy patients, who are thus brought closer to general medical services.

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The name Ethiopia is for most people in the West synonymous with famine and powerful visual images of starving children and hapless mothers. But it is now 10 years since the last major famine. In 1994 the rains were good, and in most of the country there is little evidence of acute starvation. Nevertheless, persisting poverty is everywhere: many people go barefoot, boys play with footballs made of rags, and cigarette smoking is unknown except among affluent doctors.

The dire economic conditions are reflected in disease patterns. The Ministry of Health's document *Health Indicators 1994* shows that infectious diseases accounted for six of the 10 leading causes of inpatient mortality.[1] Tuberculosis heads the list, causing 15·1% of all hospital deaths (n=6358) and an estimated 30% of deaths among medical patients. HIV infection is spreading in Ethiopia but has not yet reached the epidemic proportions of neighbouring African states. In the capital, Addis Ababa, HIV infection and tuberculosis are seen as coinfections, accounting for around 40% of tuberculosis cases. But in rural areas coinfection is less common, though accurate figures are not yet available.

Despite the magnitude of the tuberculosis problem in Ethiopia there is currently no effective national tuberculosis programme. There is no national registration of cases, no nationally agreed treatment regimen, no national monitoring of drug resistance patterns, and no means of ensuring adequate and secure tuberculosis drug supplies to hospitals. The Ministry of Health is well aware of these problems and has been looking for appropriate solutions. One possible solution seems to be emerging from an unexpected source—namely, the national leprosy programme.

Successful leprosy control programme

With leprosy, unlike tuberculosis, there is a real prospect of disease control. By comparison with tuberculosis programmes, leprosy control has been well funded, mainly by outside agencies. A major step forward in leprosy control has been the introduction of multiple drug therapy, which combines the use of three antileprosy drugs in a defined treatment period (either six or 24 months). This drug combination has produced bacteriological cure in virtually all patients, with relapse rates of only 1%, and so has enabled many leprosy patients to be released from treatment.

As the case load for leprosy fieldworkers declines the