

## Editorial: Lymphatic filariasis endemicity – an indicator of poverty?

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**keywords** lymphatic filariasis, malaria, millennium development goals, poverty

Health is a cherished human value shared across geopolitical and sociocultural divides. It is thus a sad indictment on our global morality that despite enormous biomedical advances and global economic prosperity in the past few decades, huge disparities in health status persist between and often within countries. The Public Health movement, notwithstanding an apparent metamorphosis from the 'Old' to the 'New', has largely failed to narrow the health divide between wealthy and poor nations. In no sphere is this disparity more obvious than that of infectious diseases. Thirty per cent of the global burden of disease and a quarter of all deaths are still attributed to infectious diseases, and more than 95% of these deaths occur in the developing world where poverty is prevalent (Gwatkin *et al.* 1999; Folch *et al.* 2003).

Thus, the United Nations commitment made in 2000 to reduce poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women through the achievement of key Millennium Development Goals (MDGs), was most encouraging (World Bank 2003). This prioritization of poverty reduction has subsequently elicited unprecedented support from governments and aid donors, and provides a unique window of opportunity to make real progress in narrowing the global development divide and alleviating poverty in the least developed countries. The MDGs are aspirational and visionary in nature. The goals were selected as sample *indicators* of progress towards ensuring equitable opportunities for enjoying a healthy, productive and fulfilled life.

However, a word of caution is indicated as the goals may become ends in themselves. A distinct risk exists that governments and funding bodies may focus on the achievement of the goals in isolation of the broader context of poverty and poverty elimination. In the health sector, the goals of a reduction in child mortality by two-thirds, a reduction in maternal mortality of three-quarters, and halting and reducing the spread of AIDS, malaria and other life threatening diseases were intended to be indicators of a

functioning health care system, which is part of a nation's sociocultural and economic environment. There are many alternative health issues that could have been chosen to reflect the success of development efforts in reducing poverty. Ongoing occurrence of waterborne outbreaks, for example, is a sensitive indicator of the provision of basic services and capacity of health services to appropriately respond to contain waterborne disease outbreaks. Similarly, the elimination of chronic parasitic diseases that depend on poor sanitation, inadequate water supply or limited/no control of insect vectors for their transmission, for example, intestinal helminths, schistosomiasis or lymphatic filariasis (LF), would be another valuable health indicator of poverty alleviation and more equitable health service provision.

Lymphatic filariasis is a particularly interesting case in point. This parasitic infection, one of six diseases considered potentially eliminable, was endorsed for global elimination as a public health problem by the World Health Assembly in 1997 and a global elimination programme, using annual mass drug administration, was established in 2000 (Ottesen *et al.* 1997). Despite encouraging early expansion of the global LF elimination programme, it has become apparent that the donation of drugs alone will not be sufficient to ensure that all individuals at risk receive annual treatment for the period of 5–6 years believed necessary to interrupt transmission. Most notably no additional African countries have embarked on mass campaigns in the past 2 years due to lack of funds for operational delivery of programme activities.

Lymphatic filariasis receives much less international attention than other infectious diseases such as malaria, TB and AIDS because people do not die as a direct consequence of LF. Nevertheless, it exists within the context of poverty and, because of its debilitating consequences it contributes significantly to the ongoing incapacity of affected individuals and their families to escape poverty.

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Despite considerable rhetoric, there is little published evidence of an association between LF and county-level poverty (Molyneux 2003). Compelling evidence of the role of LF in contributing to household poverty has been gathered on a limited scale in northern Ghana, southern India and Haiti (Gyapong *et al.* 1996; Coreil *et al.* 1998; Ramaiah *et al.* 1998, 1999; Nanda & Krishnamoorthy 2003). In the Philippines, there is an apparent association between LF endemicity and poverty at provincial level (Galvez Tan 2003). We used country-level per capita income and the human development index for 2001 (United Nations Development Programme 2003) and LF endemicity data from May 2000, the year that the global elimination programme was launched, to explore the association between LF, poverty and development (World Health Organization 2000).

Of 175 countries where per capita income and LF endemicity were available, 73% (47/64) of low income countries (<\$746/per capita/annum) were LF endemic, compared with 33% (24/72) of middle income countries (\$746–\$9205/per capita/annum) and only 5% (2/39) of high income countries (>\$9205/per capita/annum) (Pearson chi-square, 2 d.f. = 68.789;  $P < 0.0001$ ). Similarly, of 161 countries where the human development index (HDI) and LF endemicity were available, 94% (30/32) of lowest developed countries (HDI <0.500) were LF endemic, compared with 43% (33/77) of medium developed countries (HDI 0.500–0.799) and only 11% (6/52) of highest developed countries (HDI >0.799) (Pearson chi-square, 2 d.f. = 57.427;  $P < 0.0001$ ). Eighty-nine per cent (41/46) of countries classified as least developed were LF endemic.

These dramatic ecological associations cannot be easily ignored. The burden of LF in poor countries is unlikely to be the direct result of poverty, with an important contribution of environmental conditions that support vector breeding and survival (Hotez *et al.* 2004). Nor do the associations take account of the confounding effect of other diseases, particularly malaria that is co-endemic with LF in many countries (Gallup & Sachs 2001; Molyneux & Nantulya 2004). However, it appears that LF endemicity could serve as an indicator of poverty and partially reflect progress in achieving global poverty alleviation.

The LF example is a good case in point because of the focus on elimination. Despite the considerable investment in elimination programmes, ongoing sociocultural and economic conditions will continue to make people vulnerable to the negative consequences of LF. Without additional significant international investment in primary health care development, it is unlikely that the poorest countries with the least developed health infrastructure will

benefit from the global effort to rid the world of this scourge.

Equity and human rights principles demand that we strive towards equal health opportunities for marginalized and impoverished communities (Braveman & Gruskin 2003). LF and poverty are intimately interconnected. We will not have conquered poverty while individuals in poor countries remain at risk of LF infection.

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