Malaria in Africa: progress and prospects in the decade since the Abuja Declaration

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Malaria is a global health problem but more than 70% of the total morbidity is in Africa.[1] 10 years ago, heads of state from across Africa signed a declaration in Abuja, Nigeria, to "halve the malaria mortality for Africa's people by 2010".[2] This Viewpoint discusses how far we have come in this effort, what we can expect for the future, and what our priorities should be.

Not long after the launch of the Global Malaria Eradication Programme in 1955, it became apparent that elimination was not yet achievable in sub-Saharan Africa. In 1969, global malaria eradication changed from a time-limited campaign to a long-term goal. The strategy started to focus on control, but in practice this approach relied on treatment of febrile illness and during the 1970s and 1980s, malaria-specific mortality began to rise frighteningly as resistance to chloroquine spread.[3]

By the early 1990s, the failure of national and international institutions to control malaria was increasingly seen as a disaster. A meeting of the world's health ministers in Amsterdam, Netherlands, in 1992 aimed to refocus attention on malaria by launching a global declaration on the control of the disease that gave special prominence to Africa and expressed the "urgent need for commitment to malaria control by all governments, all health and development workers, and the world community".[4] In 1995, the UN Secretary-General launched a special initiative for Africa that included malaria control as one of a limited number of specific goals. In 1998, the Director of WHO launched the Roll Back Malaria movement as a cabinet-level initiative. At the Abuja meeting in April, 2000, African leaders agreed to halve mortality from malaria in Africa by 2010 by implementing the strategies and actions of the Roll Back Malaria programme, ensuring that at least 60% of the continent's at-risk population was protected or treated with appropriate methods.[2] The Global Fund to Fight AIDS, Tuberculosis and Malaria was established in 2002[5] to make large-scale funding available for health-related Millennium Development Goals (MDGs).[6] Roll Back Malaria, leading the resurgence of interest and implementation, had an explicit focus on countries with a high burden of disease, and for the first time Africa was at the centre of international attention for malaria.

Despite a faltering start and substantial criticism, international advocacy has been remarkably successful. In 1998, worldwide spending on malaria control was around US$100 million.[7] By the end of 2009, the Global Fund had approved $5·3 billion for 191 malaria grants in 82 countries, almost 75% of all external financing for these countries.[8] The new funds have been used to support a fairly consistent set of priority interventions across most African countries, including use of insecticide-treated nets, selective use of indoor residual house spraying, reduction of maternal and neonatal consequences of infection during pregnancy, replacement of failing drugs with artemisinin-based combination therapy (ACT), and improvement of diagnostic capacities at the point of care with rapid tests. Most of these interventions were not available during the time of the Global Malaria Eradication Programme and therefore provide a new opportunity for revised objectives for malaria in Africa. The scale of the increased funding for malaria control and prevention has led to an exponential rise in the importation of bednets and ACTs.[9] Policies to support free mass-distribution of insecticide-treated nets have been established in an increasing number of African countries,[10] supported by WHO. More countries are adopting indoor residual spraying[9] to augment use of insecticide-treated nets. In 2003, only four countries in Africa had adopted ACTs as first-line treatment; by 2010 ACTs were first-line treatment in every malaria-endemic country in Africa.

Against general long-term trends of changing epidemiology, economic development, and population growth and mobility, more recent changes have included substantial reductions in malaria transmission and incidence of clinical malaria, reported from different locations across Africa.[11–15] In some of these situations the changes have been striking. In our own experience on the coast of Kenya, we have seen the incidence of severe malaria fall by more than 90% in 5 years, changing it from a major cause of childhood illness and death to a relatively minor problem.[14,15] Two points are important here. First, this reduction should not be assumed to be occurring everywhere in Africa; some areas even within a country show no change or continued increases in disease risks.[14] Second, although these changes could be attributed to enhanced prevention and control activities, the truth is probably much more complex. Certainly, on the Kenyan coast there is evidence of a long-term reduction in malaria transmission going back over 15 years, with recent falls in clinical disease the result of a much longer-term process that is not well understood.[15]

The first effect that good malaria control might be expected to have is a reduction in cause-specific malaria morbidity and mortality. Because malaria accounts for a large proportion of attendances at clinics and admissions to hospital, this reduction would be of major public health importance. However, many experts have argued that malaria has a major, although poorly defined, effect on increasing propensity to other diseases, particularly invasive bacterial disease.[16] With the decline in malaria transmission on the Kenyan coast, we have seen a

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remarkable reduction in admissions to hospital for children with life-threatening invasive bacterial diseases, particularly those caused by gram-negative organisms. This trend has been paralleled by a halving in all-cause child mortality over 20 years.

Changes in malaria, invasive bacterial disease, and all-cause mortality occurring in parallel over many years might simply suggest broader changes in society and access to health care. The experience of the island of Bioko, Equatorial Guinea, is therefore important. In 2003, a programme of integrated malaria control began on the island. An assessment of progress over the first 4 years showed major reductions in entomological indices of transmission and encouraging declines in rates of parasitaemia and anaemia. By far the most important result was a two-thirds reduction in mortality in children under 5 years of age.[13] Even more astonishing was the fact that this change took place over a short period, corresponding to the year in which malaria transmission was substantially reduced by an indoor residual spraying campaign. In effect, Bioko achieved its MDG for childhood mortality in a single year by a single intervention. Although Bioko has a fairly small population, why shouldn't the same sort of effect on childhood mortality be achievable in larger populations and in all malaria-endemic countries?

Such successes have brought a sense of optimism to the malaria community. In October, 2007, a meeting was held in Seattle, WA, USA, that transformed the framework of global malaria control. Unexpectedly, the central idea was that malaria eradication was not only possible, but should be the only goal.[17] Many articles flooded the scientific and popular press and previously cautious malariologists, released from a 40-year collective depression after the perceived failure of the global eradication campaign, have been invigorated by the notion of elimination. Roll Back Malaria and WHO's targets moved quickly from carefully designed plans to support the MDGs to supporting a "universal roadmap to ensure nationwide malaria control, elimination, and eventual eradication".[18] Several African ministries of health announced plans for eliminating malaria within the next 7–10 years.

Increased advocacy and international funding have had an effect on disease in some areas of Africa and this success must be applauded. However, progress has been, on a continental scale, modest at best. Even though the public health effects of insecticide-treated nets had been reported for more than 15 years, in 2002 the proportion of African children sleeping under insecticide-treated nets was only 1·8%. With the rise in funding and changing methods of delivery, this proportion rose to 18·5% by 2007.[10] Although this increase is encouraging, tens of millions of children remain unprotected[9,10] and 33 countries had coverage of less than 40% in 2007.[9,10,15] Treatment of all clinical cases of malaria with an ACT has so far proven to be the most challenging target to meet. Despite the overwhelming evidence that ACTs are preferable to existing monotherapies, and the substantial and important investment in discovering new products, these drugs still reach only a small proportion of people who need them.[9] Poor planning, tendering, and drug supply continue to result in shortages of new effective medicines to treat malaria in the public sector. When ACTs are available they are often dispensed presumptively, without accurate diagnosis.

There has been an unprecedented increase in international funding for malaria control. However, in 2007 only three countries had more than $4 per head at risk to undertake an integrated package of control: Djibouti, Sao Tome and Principe, and Equatorial Guinea. Average funding per head for 20 countries in Africa was less than $1.[19] There remains a substantial funding gap. Full, effective coverage of an efficacious intervention strategy consisting of prevention, disease management, and health promotion has been estimated to cost $4·46 per person in Africa per year,[20] or $2·9 billion for populations living under conditions of stable *Plasmodium falciparum* risk in Africa in 2007.[19] Although this cost is high, the experience of the past 10 years has shown that it is not an inconceivable target; indeed, continued pressure on donors is needed to reach and maintain this level of funding.

There is an obvious euphoric sense that elimination might be possible when low levels of transmission have been reached. However, the move from low prevalence to no transmission is not simply a matter of "more of the same" and a final push. A fundamentally different approach is needed, with a completely different set of activities involving surveillance of communities and travellers, and massive investment at a time when the public health consequences of malaria infection are negligible. A recent analysis of the feasibility of malaria elimination in Zanzibar, an island that has reached a position of low parasite prevalence and subsequent substantial declines in disease incidence,[11] suggests that active detection of all new cases would be difficult and would not be cost effective over the next 25 years; overall elimination would be 65% more expensive than maintaining sustained control.[11]

The problem of maintaining investment in control once the disease is of minor importance is often emphasised. However, this is not fundamentally different from the case with control of childhood diseases by vaccines in the Expanded Programme on Immunization and no one is seriously suggesting that we should stop funding measles vaccination. Nonetheless, the consequences of donor fatigue are very real and the effects could be worse than simply losing ground and slowly migrating backwards up the mortality curve—rebound is something potentially far more devastating. Reducing present amounts of malaria funding that are providing effective intervention coverage in some countries would be disastrous.

Some of the Abuja targets for 2010 can be reached for some but not all countries in Africa, and we need to focus on a bigger picture of funding universal coverage at a continental scale if we are to reproduce the successes of areas where scaled intervention and effect has been reported. Eradication is the dream of all public health professionals, whether they work on tuberculosis, measles, or malaria. However, in the short to medium term, by which we mean 10–20 years, emphasis on elimination or eradication in strategic plans for most African countries is at best irrelevant and at worst counterproductive if it results in a deviation of resources from previously set goals and raises expectations that cannot be met.

We believe the priorities are clear. We have made substantial progress in international and national advocacy and investment in malaria control. There is convincing evidence that, with currently available methods, malaria can be reduced from a major public health priority to a fairly minor burden on already stretched health systems. Additionally, the secondary benefits of good malaria control are so great that many countries could go a long way to achieving their MDGs for reducing childhood mortality by immediately focusing and intensifying their effort on malaria control. The situation that will deliver this success can be characterised as low endemic control. This goal is admittedly less attractive than elimination or eradication, but it is achievable, its financing requirements are predictable, and its effects are measurable. Achieving this public health benefit across Africa within the next 10–20 years would leave a legacy that the global community could be proud of in 2030.

Contributors

RWS wrote and revised the report. KM contributed to intellectual content and helped to revise the report.

Conflicts of interest

We declare that we have no conflicts of interest.

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