The fight against malaria: Diminishing gains and growing challenges

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Since the year 2000, historic reductions in malaria incidence and mortality have been driven by the widespread distribution of bed nets, drugs, and insecticides for the prevention and treatment of malaria. Scale-up of these tools has been enabled by an increase in malaria financing compounded by price reductions, yet these trends are unlikely to continue at the same rate. Rapid population growth in high-endemic areas requires procurement of more of these tools just to maintain current coverage, even as prices are likely to increase as resistance to drugs and insecticides forces shifts to newer products. Further progress toward the long-term goal of malaria eradication requires a combination of greater funding, more cost-effective resource allocation, and fundamental changes to the global malaria control strategy.

The 2020 World Malaria Report recently looked back on two decades of the global fight against malaria (1). Historic reductions in malaria incidence and mortality have occurred since the year 2000 (Fig. 1). From 2000 to 2015, global malaria incidence was reduced by 27% but only by 2% in the years since then, leading the World Health Organization (WHO) to raise the alarm that progress has stalled and the world is at a crossroads in the fight against malaria (1). Where does the fight against malaria go from here?

This Review examines the gains achieved against malaria over two decades due to an historic increase in malaria financing compounded by marked reductions in the prices of key commodities. For years, these two trends enabled ever greater volumes of effective treatments and tools to be purchased and distributed throughout endemic regions, advancing toward the WHO’s goal of universal coverage of at-risk populations. Today, this strategy continues to suppress malaria transmission and save tens of thousands of lives every year, but it appears insufficient to deliver further progress toward malaria eradication due to several critical trends. First, the effective tools that are the backbone of the current antimalaria strategy such as drugs, insecticides, and bed nets will likely grow more expensive in coming years as resistance to drugs and insecticides forces shifts to newer products or combinations of products (2). Second, rapid population growth in high-endemic areas will demand procurement of these treatments and tools in ever greater numbers just to maintain current coverage. Further progress toward the ultimate long-term goal of malaria eradication requires some combination of greater funding, more cost-effective resource allocation, and fundamental strategic changes to recalibrate our malaria control efforts, still one of the best buys in global public health.

THE UNIVERSAL COVERAGE ERA

The African Summit on Roll Back Malaria in 2000 marked a turning point in the global fight against malaria after several decades of neglect. The call for new funding to support the Roll Back Malaria objectives was fulfilled by the initiation of the Global Fund in 2002 (Fig. 2). With contributions from the United States, European countries, and other donors, the fund distributed $1.2 billion in malaria grants over its first 5 years of operations (6), an amount that is, on average, now distributed annually to malaria programs through 57 active country grants and five regional initiatives. Donor funding accelerated further with creation of the U.S. President’s Malaria Initiative (PMI) in 2005. From an initial budget of $30 million targeted to three African countries, PMI’s bilateral contributions grew to $729 million across 24 countries in 2019 (7). Over these two decades, domestic financing of malaria programs by endemic countries also rose from an estimated $556 million in 2000 to $887 million in 2019, including estimated costs for patient care at public health facilities (1).

These resources enabled impressive progress on part of the vision set forth in the Abuja Declaration, particularly the procurement and distribution of insecticide-treated bed nets. Provision of bed nets to protect pregnant women and children initially was viewed as a “quick win” (8) that could be achieved even in countries with weak health systems through campaign delivery. Distribution of nets only to vulnerable populations would, however, prove insufficient
to realize communal protection (9) and reduce transmission (10). Doing so required a more audacious push to achieve and maintain “universal coverage,” as set forth in the revised 2008 Roll Back Malaria Global Malaria Action Plan (11). Seeking to cover the entire population resulted in high coverage among children and vulnerable groups (12) and theoretically offered protection even to those not sleeping under bed nets (9).

The drive for universal coverage led to a global scale-up of malaria commodities that continues to the present day (Fig. 3). Annual procurement of malaria bed nets increased from around 1 million in 2000 (13) to 230 million in 2020 (14). Malaria rapid diagnostic test procurement increased from <50 million in 2010, when the WHO revised its guidelines to recommend all suspected malaria cases be confirmed with a diagnostic test (15), to 419 million in 2020 (16). Only around 500,000 courses of artemisinin-based combination therapy (ACT) were procured in 2001 (17) when they were first recommended for treatment of malaria in places where resistance to older drugs was prevalent (18). The WHO quality-assured market for ACT peaked at 413 million courses in 2016 before declining thereafter with the termination of the Affordable Medicines Facility for malaria (1), although the overall market for ACT is likely far larger (19).

The number of people reportedly protected by indoor residual spraying of insecticide campaigns increased to a peak of 182 million in 2010 (20) before declining to under 100 million in 2020 (16). The number of children receiving at least one dose of sulfadoxine-amodiaquine for seasonal malaria chemoprevention increased from 170,000 in 2012 to more than 33 million in 2020 (16). Of the $3.2 billion in active malaria grants from the Global Fund as of March 2021, 74% was budgeted for commodities and their procurement and distribution (21). Forty-eight percent of PMI’s 2020 malaria operational plans were budgeted for procurement and distribution of bed nets, insecticides, and drugs for seasonal chemoprevention, with an additional 15% for procurement of ACT and rapid diagnostic tests.

Increased demand for malaria treatments and tools contributed to substantial reductions in their prices (Fig. 3). The Global Fund’s

![Fig. 1. Global malaria cases and deaths. Shown are cases of malaria caused by P. falciparum and P. vivax and total malaria cases and deaths globally from 2000 to 2018 (estimates from the Malaria Atlas Project; www.malariaatlas.org). Shaded areas depict 95% confidence intervals. Illustrative counterfactuals (dashed lines) are linear extrapolations fit to data from 2000 to 2006 before the major scale-up of distribution of commodities such as drugs, insecticides, and bed nets.](credit:A. MASTIN/SCIENCE TRANSLATIONAL MEDICINE)
The global population living in regions with endemic malaria transmission quadrupled from 709 million in 1900 to 2.8 billion in 2002, with growth rates greatest in the highest-endemic regions (e.g., an almost \(11\times\) increase in populations living in regions with malaria prevalence of \(>75\%\)) (28). During the two decades that followed, populations at risk of malaria in Africa increased from 560 million in 2000 to 953 million in 2019 (a 70% increase), compared to a 28% increase for the remainder of the world’s at-risk populations (1).

Sub-Saharan Africa is projected to contribute the majority of the world’s population growth over the remainder of this century (29). The 10 countries with the highest estimated malaria incidence rates in 2019—Benin, Burkina Faso, Liberia, Rwanda, Central African Republic, Nigeria, Sierra Leone, Mali, Democratic Republic of the Congo, and Mozambique (1)—are projected to have a median annual rate of population change of 2.69% from 2020 to 2025 (using the United Nations’ median projection), which is above the sub-Saharan Africa’s overall rate of 2.52% and the global average of 0.98% (29). Highly endemic countries are thus the fastest growing regions of the fastest growing part of the world (Fig. 4). This population growth means that keeping up current coverage for prevention and treatment—i.e., not seeing lower coverage and thus potentially a rise in malaria rates—will require procuring about 2.7% more commodities each year over the next decade for the highest-incidence countries. At this annual rate, by 2030, there will be 30% more people to protect and treat for malaria in these high-endemic countries and thus 30% higher budget requirements for commodities if all else stays equal.

**COMMODITY COSTS**

Over the past two decades, scale-up of vector control has involved predominantly pyrethroid-based insecticides, contributing to widespread insecticide resistance in the mosquito vector of malaria across Africa (30). In areas of known resistance, the WHO recommends switching to different classes of insecticides (31). In the case of bed nets, products with the synergist piperonyl-butoxide (PBO) can temporarily restore the action of the insecticide in areas where pyrethroid resistance is known to be conferred by a monooxygenase-based resistance mechanism (32). PBO-treated bed nets may reduce malaria incidence and prevalence compared with conventional bed nets in those settings (33) and are therefore currently recommended for use in areas with moderate to high insecticide resistance. Demand for PBO-treated nets is accordingly growing rapidly, from 5 million procured in 2018 (representing 3% of nets going to sub-Saharan Africa) to 97 million in 2021 (44% of nets going to sub-Saharan Africa), according to the Alliance for Malaria Prevention’s Net Mapping Project. PBO-treated nets procured in 2020 that were recorded in the PQR database had a median price of $2.57 [interquartile range (IQR), $2.53 to $2.61] compared to $2.00 (IQR, $1.99 to $2.00) for conventional pyrethroid nets, a 29% premium. Dual insecticide nets are also being trialed and may replace both pyrethroid and PBO nets, but prices are likely to be even higher for these products at least for the near term. In addition to insecticide resistance, concerns have also been raised that the focus on procuring the cheapest bed nets possible may have compromised their quality, including durability (34); higher-quality bed nets may prove more effective but will come at a higher cost.

Resistance to the insecticides historically used for indoor residual spraying makes this intervention less effective (35). New insecticide products for malaria vector control are now available to mitigate resistance, including the new class of neonicotinoids and new formulations such as Actellic 300CS (Syngenta Crop Protection AG), SumiShield 50WG (Sumitomo Chemicals Co. Ltd.), and Fludora Fusion (Bayer SAS). Adopting these next-generation products will be complicated by their higher prices, although efforts are underway to seek lower prices for these insecticides (36).

Resistance of the malaria pathogen *Plasmodium falciparum* to artemisinin-based combination drugs is widespread throughout Southeast Asia (37), and potential signs of resistance have recently been reported in Africa, including Rwanda (38), Tanzania (39), and Uganda (40). Resistance of *P. falciparum* to sulfadoxine-pyrimethamine, the drug used at large scale for intermittent presumptive treatment of children and pregnant women, is also widespread across much of Africa (41). Alternatives to artemisinin-based drugs are not yet available, but switching national treatment policies to select the ACT most likely to be effective given resistance data (42), deploying multiple first-line drugs (43), or using combinations with multiple partner drugs (44) may help to improve the effectiveness of treatment. However, the drugs most procured by African malaria programs (and thus globally), artemether-lumefantrine and artesunate-amodiaquine,
are also the cheapest of the ACTs today. Switching drug regimens comes with substantial operational and financial cost, as previously experienced when moving from chloroquine to sulfadoxine-pyrimethamine (45) and from sulfadoxine-pyrimethamine to ACT (46). The Global Fund’s pooled procurement mechanism reference pricing provides a child’s dose of artemether-lumefantrine for $0.27 and artesunate-amodiaquine for $0.19 (47). In contrast, the cheapest children’s doses of alternative ACT regimens—such as pyronaridine-artesunate, dihydroartemisinin-piperaquine, and artesunate-mefloquine—cost $0.41, $1.00, and $1.22, respectively.

Parasite evolution is also compromising the effectiveness of the most commonly deployed type of malaria rapid diagnostic test (48), which identifies the presence of the histidine-rich protein 2 (HRP2) of P. falciparum. Loss of the HRP2 gene—which so far has been observed at high rates in Eritrea, Ghana, Nicaragua, Peru, and Sudan (49)—allows the parasite to evade detection by the cheapest rapid diagnostic tests available today. Alternative rapid diagnostic tests are available but have historically been less accurate (50) and, likely due to lower demand, more expensive. Rapid diagnostic test prices may also increase for reasons other than pathogen evolution. In 2020, during the coronavirus disease 2019 (COVID-19) pandemic, rapid diagnostic tests for detecting severe acute respiratory syndrome coronavirus 2 were sold for substantially higher prices. This created a competing priority, given that they could be made on the same manufacturing lines as rapid diagnostic tests for malaria (51). Encouraging a steady supply of malaria rapid diagnostic tests for detecting severe acute respiratory syndrome coronavirus 2 were sold for substantially higher prices. This created a competing priority, given that they could be made on the same manufacturing lines as rapid diagnostic tests for malaria (51). Encouraging a steady supply of malaria rapid diagnostic tests in the future will thus require coordinated efforts to ensure a sustainable market, likely including accepting higher prices.

New tools for fighting malaria may become widely available in the coming years, but they will stretch malaria budgets even further. In particular, the RTS,S/AS01 vaccine recently became the first vaccine against any human parasitic infection to be recommended by the WHO. With efficacy of around 40% and a likely initial cost of around $20 for the four-dose regimen plus around $11 to $13 in delivery costs per child protected (52), the vaccine is unlikely to be as cost-effective as other malaria control interventions (53). Even a modestly effective vaccine has the potential to avert large numbers of clinical cases if deployed preferentially to highest-endemic settings (54), but it may further strain malaria budgets given the WHO recommendation that it should be used in addition to existing malaria interventions and not as a replacement.

**KEEPING UP WITH THE RED QUEEN**

In ecology, “Red Queen dynamics” refer to how organisms must continually evolve and adapt to survive (55). The name refers to the character in Lewis Carroll’s *Through the Looking Glass* who tells Alice that “it takes all the running you can do, to keep in the same place” (56). To keep malaria in the same place will require maintaining the current coverage of drugs and bed nets, even as populations at risk grow rapidly and the need to adopt next-generation commodities reverses the trend of ever cheaper tools. Malaria funding increased by an annual average of 15% from 2000 to 2009 but only 1.6% from 2009 to 2017 (Fig. 2). The 2017 estimate of donor and endemic government expenditure on malaria of $3.3 billion is only about half of the $6.4 billion estimated to be required for full implementation of the WHO’s Global Technical Strategy (57).

Maintaining current coverage with commodities will require available funding to keep up with growing populations at risk and increases in commodity prices. For example, if commodity costs increase by 5% per year—which would mean the average $2 price of bed nets today would rise to $2.55 by 2025 (i.e., around the current price reported in the PQR for a PBO net)—in combination with the 2.52% annual population growth forecasted by the United Nations, then funding would have to increase by >7.5% to compensate. This is a nearly fivefold greater rate than has occurred over the past decade. To keep pace, budget needs would have to double by 2030.

If program costs rise faster than donor funding, then the coverage with effective treatments and tools will decline, and malaria incidence will rise. Such an event would echo the resurgence experienced in the late years of the Global Malaria Eradication Program in the 1970s (58). At that time, increasing resistance of the malaria mosquito vector to cheap DDT insecticide necessitated changes to more expensive alternatives that increased the cost of indoor residual spraying from three to eight times (59). The cost increases occurred at the same time that donor support constricted. Both United Nations International Children’s Emergency Fund and United States Agency for International Development (USAID) ended most of their contributions to...
the program between 1970 and 1973 (60) as it became clear that the global program was not on track to achieve its stated aims. As coverage necessarily fell because of reduced funds to buy more expensive products, a devastating resurgence of malaria occurred throughout much of the world (58).

OVERCOMING THE CHALLENGES

The growth of at-risk populations coupled with at least near term increases in the cost of commodities will mean that today’s strategy against malaria must evolve to avoid a reprisal of the failure of malaria control in the 1970s. Further reductions in malaria rates over the coming years are feasible, but we suggest that they will require some combination of (i) increases in available funding, (ii) more cost-efficient deployment of today’s tools and strategies guided by high-quality disease surveillance, (iii) strengthened health systems to prevent mortality and drive sustainable reductions in transmission, (iv) better engagement of the private sector, and (v) investment in noncommodity-based approaches and transformative technologies to fundamentally change malaria risk.

Increase Funding

Substantial growth in funding for malaria programs and supportive systems from donor and domestic sources could enable maintenance of coverage or even outpace current trends if the new funding was optimally targeted. After all, similar concerns about the implausibility of sufficient donor funding were raised over a decade ago when it was proposed to pursue universal bed net coverage, yet extraordinary growth in donor contributions followed (61). After a record replenishment, Global Fund distributions for malaria grants reached an all-time high in 2020 of over $1.4 billion (6), and USAID’s 2020 budget of $770 million was also its largest yet. Excitement about the new malaria vaccine could also encourage new contributions.

An important opportunity for malaria is to leverage increasing global enthusiasm for strengthening febrile case management and surveillance in the wake of the COVID-19 pandemic (62). The core systems that enable timely treatment and optimal resource allocation...
specific priority locations) can theoretically have substantially greater impact on malaria transmission than untargeted distribution (68), although empirical evidence of such impact is still lacking (69). The potential of a targeted approach is highlighted by the attribution of the successes of the smallpox eradication campaign to a shift from universal coverage (i.e., mass vaccination) to targeted strategies that greatly reduced the population receiving vaccine but achieved high coverage in the specific places where it would have the greatest impact (70).

Any targeting plan would need to be devised by governmental programs on a local basis, but consideration of population distributions across malaria endemicities provides a sense of the opportunities for better targeting to affect malaria budgets. About 90% of the 1.1 billion people in sub-Saharan Africa live in areas with some malaria risk (Fig. 4). Targeting tools for prevention such as bed nets only to those who live in areas that had a prevalence of >10% in 2000 (before the start of intervention scale up and thus a proxy for areas of intrinsic risk in the absence of intervention) would reduce the population to be covered to 836 million. Targeting only those in the highest risk places, where prevalence was once >50%, would focus on the 333 million people living in those geographies.

Successfully improving the cost effectiveness and sustainability of our strategies will only be feasible with high quality intelligence on malaria and intervention coverage. Although surveillance is a core pillar of the WHO’s Global Technical Strategy launched in 2015 (11), it is arguably less important under a universal coverage strategy than one that seeks to target interventions efficiently. Strengthening surveillance systems and analytical capacity within endemic country governments and local research institutions will require allocating additional resources in the near term. Those resources should prioritize routine in-country data collection and use and enable incorporation of more advanced approaches such as genomic surveillance and mathematical modeling. Digitization of data systems and improved geospatial infrastructure can put at-risk populations on the map and increase accountability by visualizing programmatic gaps. Demonstrable improvements in data quality can give programs more confidence to target and tailor resources accordingly (71). Near-term investments in data quality may therefore prove cost-efficient over the long term as they enable more impactful use of available malaria funding. For example, improvements in entomological surveillance enable programs to understand where different types of mosquito vector resistance to various products occur and thus where next-generation bed nets and insecticides can be cost-effective despite being more expensive than current products (72).

Strengthen health systems
Universal access to diagnosis and prompt effective treatment is an important component of the first pillar of the WHO’s Global Technical Strategy (11). Besides its importance for treating illness, increasing coverage of curative treatment for sick individuals may reduce malaria incidence (73) and decrease malaria transmission by curing infections (74). Empirical measurement of case management quality and its effects can be challenging (75), but increasing routine treatment rates may have caused about 20% of the decline in malaria prevalence in Africa since 2000 (23). These reductions could result from replacing ineffective drugs with effective ones (76, 77), increasing treatment-seeking practices (78), or improving access to quality case management services (79).

Today, the quality and coverage of appropriate routine treatment of malaria illness are highly variable both between (80) and within

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**Figure 5. Treatment sought for febrile childhood illness.** Shown are the percent of health survey respondents who reported seeking treatment for febrile childhood illness in the prior 2 weeks, the percent who received a blood test if treatment was sought, and the percent of those receiving an antimalarial drug who received ACT. Data are derived from all available national demographic health surveys from 2000 to 2020 (reported at www.statcompiler.com).
Investment in noncommodity-based approaches and transformative technologies

Cyclical campaign delivery of insecticide-based commodities does not change the intrinsic risk of malaria and thus must be continued in perpetuity to avoid a resurgence of malaria. Interventions that more permanently reduce human-vector breeding contact may thus be important near-term investments for long-term gains. Such approaches, which must be designed and implemented by those expert in local contexts, would also build the environmental and structural resilience necessary to sustain the gains catalyzed by commodities such as bed nets and insecticides, especially during the increasing future challenges that can be expected as climate-related disruptions worsen.

There is a substantial body of evidence that housing improvements including screening windows and eaves may reduce malaria prevalence (93) and incidence while also reducing incidence of other mosquito-borne diseases (94). Despite the inclusion of housing improvements in the Abuja Declaration and a subsequent consensus statement from Roll Back Malaria and the United Nations Development Programme calling housing improvements an “important and sustainable component in the global effort for malaria control and elimination” (95), they are not typically included within intervention packages today. Similarly, efforts to reduce breeding sites, once a core component of antimalarial efforts (96) and still practiced extensively in countries including the United States (97), fell out of favor with scale-up of insecticidal, commodified measures that are minimally tailored to local contexts. Although not recommended in all situations, larval source management may present meaningful opportunities in certain settings where breeding sites are not too extensive (98). These sorts of approaches are not simple for a health system to deploy nor necessarily as cost-effective as tools such as bed nets. However, efforts undertaken by government ministries outside the health sector, such as programs aimed at improving housing quality or sanitation, might still contribute to reductions in malaria and would represent local solutions to local problems. Encouraging actors such as the agricultural and mining sectors, as well as communities themselves, to reduce breeding sites or improve housing quality could be pursued through a combination of subsidies, taxes, education, and legislation.

Investment in transformative technologies must also continue to develop the next-generation tools and strategies that can more effectively achieve sustainable gains against malaria. Promising strategies for preventing malaria in the future include highly efficacious, long-lasting vaccines (99), chemoprevention (100), and monoclonal antibodies (101). Technologies such as genetically modified mosquitoes and other biological means of modifying mosquito populations hold potential for transforming malaria vector control as well (102). Although these future technologies may be required for the ultimate goal of malaria eradication, they should be pursued in parallel with efforts to use today’s tools as effectively as possible. As Hackett wrote in 1937, our “duty is to fight the disease now with weapons already proved useful, albeit imperfect, rather than to fold the hands while awaiting a problematical therapia magna of the future” (103).

CONCLUSIONS

Before submitting proposals for Global Fund resources, endemic countries are required to devise a National Strategic Plan that
describes the interventions they would ideally like to implement. Typically, the price tag for these plans is far higher than the resource envelope available from the Global Fund, PMI, and domestic budgets. For example, Nigeria calculated a total funding need of $1.26 billion for 2018–2020 with a potential unfunded gap of $180 million after adding up available domestic and donor allocations. Given this shortfall, national malaria programs go through a prioritization exercise to decide what the highest priority budget items are and which components of their strategy will go unfunded. The global malaria community today finds itself in an analogous situation: The annual price tag of nearly $9 billion by 2030 for its universal coverage strategy is nearly three times higher than the funding available today. Advocating for donors to fill that gap is appropriate given the considerable cost-effectiveness of investments in malaria, but, simultaneously, it is critical to plan a strategy that optimizes the funding that is committed in reality.

The numbers for the coming years are daunting. They suggest that further progress against malaria using current strategies, which are responsible for saving the lives of millions, is unlikely in the absence of another step change in the amount of funding available to malaria programs and the health systems within which they are grounded. This critical juncture comes even as the continued pursuit of universal coverage through bed nets, indoor residual spraying, and seasonal malaria chemoprevention may be increasingly challenged by severe weather, social upheaval, and population movement. To address these challenges, the global malaria community, led by the WHO and aligned within the Roll Back Malaria partnership, has begun to take steps toward shifting its approach to a more data-driven, efficient strategy that has the potential to make the math work. These efforts mark an important step away from the universal coverage strategies that are now providing increasingly diminishing returns. At the same time, however, truly changing course appears to require more extensive changes.

Given population growth and rising commodity prices, malaria programs will have no choice but to embrace resource optimization approaches that target resources more carefully and give priority to protecting those most in need and at highest risk. The malaria community needs to proactively channel more of its funding into malaria programs and the health systems within which they are grounded. This critical juncture comes even as the continued pursuit of universal coverage through bed nets, indoor residual spraying, and seasonal malaria chemoprevention may be increasingly challenged by severe weather, social upheaval, and population movement. To address these challenges, the global malaria community, led by the WHO and aligned within the Roll Back Malaria partnership, has begun to take steps toward shifting its approach to a more data-driven, efficient strategy that has the potential to make the math work. These efforts mark an important step away from the universal coverage strategies that are now providing increasingly diminishing returns. At the same time, however, truly changing course appears to require more extensive changes.

Given population growth and rising commodity prices, malaria programs will have no choice but to embrace resource optimization approaches that target resources more carefully and give priority to protecting those most in need and at highest risk. The malaria community needs to proactively channel more of its funding into strengthening general health systems—including those beyond the direct oversight of malaria-specific programs—to provide sustainable access to quality case management services, rather than relying primarily on vertical campaign delivery channels. Governments will need to embrace means of providing services that leverage resources beyond donor funds, such as the private case management sector and out-of-pocket expenditure for protective tools by those who can truly afford it. Today’s strategies must be supplemented with multisectoral approaches that can transform malaria transmission dynamics by improving housing quality and removing vector breeding sites. These changes will require critical improvements in data systems that can provide the information that is critical to making wise decisions with limited budgets.

The pursuit of quick wins through campaign delivery of bed nets to protect the most vulnerable has evolved and expanded into continual cycles of vertical interventions with the goal of universal coverage. These aspirations, laudable although they are and as effective as they have been in preventing morbidity and mortality, will draw increasingly out of reach as populations grow and prices increase in the absence of substantial increases in funding. It is urgent to evolve our malaria control strategy to strengthen and better use surveillance systems for decision-making, to reinforce health systems to ensure high coverage of quality case management, to engage in a broader array of community-driven approaches to reducing malaria. Each of these ideas can be found in the Abuja declaration written more than 20 years ago. The success of this third decade of the modern era of malaria control depends on whether these ideas are finally realized.

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