The World Malaria Report 2015: prospects for malaria elimination

Progress in Africa remains patchy, and well behind the 2010 Abuja Declaration targets. Professor William R Brieger reports

The year 2015 marks important milestones in the fight against malaria. It marks 15 years since the Abuja Declaration of 2000 that set targets for coverage of basic prevention and treatment interventions,1 which needed to be maintained in order to achieve the next major milestone, the Millennium Development Goals (MDGs). By 2015 the world had hoped to ‘Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.’2 According to UNICEF,3 ‘Fifty-seven countries have reduced their malaria cases by 75%, in line with the World Health Assembly’s target for 2015,’ but clearly not all countries were on target.

As The World Health Organization’s (WHO) Director-General, Margaret Chan, points out in the Foreword to the World Malaria Report 20154 (WMR2015) that while ‘malaria mortality rates have fallen by 66% among all age groups, and by 71% among children under five,’ 438,000 malaria deaths still occur annually, 80% of which are in 15 mostly African countries. As a response, Dr. Chan points to WHO’s Global Technical Strategy for Malaria (GTSm) 2016–2030 that seeks to reduce both mortality and morbidity by 90% by 2030. A key message from the GTSm focuses on surveillance6 and calls on countries to adapt and develop tools that, ‘help the detection and targeting of this reservoir and the clearing of plasmodia from asymptomatic carriers,’ so that future malaria elimination strategies will succeed.

Based in part on the success of malaria interventions spurred by the Abuja Declaration and the MDGs, as well as the hard work that remains, the Sustainable Development Goals (SDGs) 2030 include a target for eliminating malaria and other diseases: ‘By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.’7 Does the World Malaria Report 2015 shed light on the prospects for achieving this goal?

Criteria for eradication

Before answering that question, it is important to understand what it is that makes a disease ‘eradicable’, or more correctly, what makes it possible to eliminate malaria in each country leading to the total eradication worldwide. Bruce Aylward and colleagues identified three main sets of factors by drawing on lessons of four previous attempts to eradicate diseases (including the first effort at malaria eradication in the 1950s and 1960s).8

1. biological and technical feasibility;
2. costs and benefits, and;
3. societal and political considerations.

So far, smallpox is the only success because as Aylward et al. pointed out biologically, humans were the only reservoir and, on the technical side, a very effective vaccine was developed. The eradication campaign was promoted in clear terms of economic and related benefits. While the early malaria eradication efforts started with political will and recognition of the potential economic benefits of malaria eradication, the will was not sustained over two decades. On the technical side at that time there was only one main tool against malaria, indoor residual insecticide spraying, and mosquitoes quickly developed resistance to the chemicals. Are we better able to meet the three eradication criteria today?
The WMR2015 lists the following achievements toward malaria elimination:

- Countries with fewer than 1000 cases annually increased from 16 in 2000 to 33 today.
- Sixteen former endemic countries in Latin America, Asia and the Middle East, reported zero indigenous cases in 2014.
- Three countries and territories reported fewer than 10 indigenous cases.
- WHO European Region reported zero indigenous cases for the first time in 2015.

**Challenges in Africa**
The WMR2015 notes that despite the reductions on morbidity and mortality mentioned earlier and the progress toward elimination in Asia, Europe and Latin America, intervention coverage statistics in sub-Saharan Africa, while having improved since 2000, remain well below the original Abuja Declaration target of 80% by the year 2010. Use of insecticide treated nets and intermittent preventive treatment for pregnant women hovers around 50%, while appropriate case management of malaria lags well below 20%, a far cry from the goals of universal coverage.

These coverage problems can be framed as part of the challenge in meeting the technical criteria for disease eradication as outlined by Aylward and colleagues. The WMR2015 explains that the problem is most pronounced in the 15 highest burden countries, and consequently these show the slowest declines in morbidity and mortality over the past 15 years. A further explanation of the technical challenges as outlined in the WMR2015 lies in ‘weaknesses in health systems in countries with the greatest malaria burden.’

Fortunately, the WMR2015 points out some new and promising technical advances that can aid the elimination effort. Seasonal Malaria Chemoprevention given monthly to children in the Sahel during high transmission months is being implemented successfully. Research continues to strengthen field-based malaria diagnostics to enable faster and more accurate identification of hotspots and outbreaks.

One would expect that the economic benefits criteria would be most pronounced in these high burden countries, which are also generally ones with low personal income. Ironically, the WMR2015 points out that it is the high costs of malaria care and the malaria burden that further weaken health systems.

Biological challenges to elimination are also identified in the WMR2015. Examples of existing and arising biological difficulties include —

- *Plasmodium vivax* malaria which requires a more complicated regimen to affect a cure and while the most common species of parasite outside Africa, especially in countries in the Asia-Pacific region that are getting closer to eliminating the disease. *P. vivax* also finds Ethiopia to be a major focus of infection and is becoming more common in eastern and southern Africa.
- ‘Since 2010, of 78 countries reporting (insecticide resistance) monitoring data, 60 reported resistance to at least one insecticide in one vector population, and 49 reported resistance to insecticides from two or more insecticide classes.’ This threatens the viability of insecticide treated nets and indoor residual spray interventions.
- ‘*Plasmodium falciparum* resistance to artemisinins has now been detected in five countries in the Greater Mekong subregion,’ in part because artemesunate monotherapy medicines were commonly available throughout the area until recently. Historically, chloroquine and sulfadoxine-pyrimethamine resistance spread from this area to the rest of the world and not artemisinin resistance marks a ‘Third Wave’ of resistance emanating from the region. 9
- ‘Human cases of malaria due to *Plasmodium knowlesi* have been recorded — this species causes malaria among monkeys in certain forested areas of South-East Asia,’ and so far human-to-human transmission has not been documented.

**Political will for eliminating malaria**
The Roll Back Malaria (RBM) Partnership (which is undergoing a major overhaul), and the Abuja Declaration of 2000 which RBM sponsored went a long way to building the political will needed to eliminate malaria in endemic countries. An example of this commitment is seen in the South African Development Community with its ‘Malaria Elimination Framework.’ Therein eight malaria elimination countries are identified. 10 There are four first-line countries where elimination could be imminent if health systems can respond - South Africa, Swaziland, Botswana, and Namibia. Their four neighbours, Angola, Zimbabwe, Zambia, and Mozambique

One of the standard ways to detect malaria parasites in health centres and hospitals is through microscopy.
Malaria elimination

are the second-line countries. Together regional partners have formed to ensure coordination for elimination efforts across borders. In fact the ‘Global Fund to Fight AIDS, Tuberculosis and Malaria has strengthened its commitment to the region through a US$17.8 million grant to the Elimination 8 (E8) regional initiative.’

In order to give greater political support to these elimination efforts the African Leaders Malaria Alliance (ALMA) met at the African Union Leaders Summit in Addis Ababa early in 2015 and resolved to eliminate malaria by 2030.13 This call to action was backed up with an expansion of ALMA’s quarterly scorecard rating system of African countries’ performance on malaria and other health indicators to include13—

• National Malaria Elimination Committee in place;
• Malaria is a notifiable disease (<24-48hrs);
• Case and foci investigation and case classification case;
• Reporting from private sector mandatory;
• Radical treatment of P. falciparum with primaquine;
• Radical treatment of P. vivax with primaquine;
• Confirmation of all malaria cases by rapid diagnostic test/microscopy;
• Quality assurance oversight by reference laboratory.

While much attention is focused on these E8 countries, the reality published in the WMR2015 is that only two countries on the African continent are either in a pre-elimination phase (<5% of suspected malaria cases tested parasitologically are confirmed cases), i.e. Cabo Verde, or in the elimination phase (<1 case per 1000 people), i.e. Algeria. Other countries on the continent are also setting their sights on malaria elimination.

‘Rwanda has scaled up malaria control interventions successfully and has set the ambitious goals in their 2013–2018 Malaria Strategic Plan (MSP) of achieving pre-elimination status,’ as reported by the US President’s Malaria Initiative.14

Sustained progress towards malaria elimination is not easy. The WMR2015 reports that three of the four South African Development Communities first-line E8 countries reported increases in the number of confirmed malaria cases in 2014 compared to the number in 2013. The report stresses that continued investments in malaria control, especially in diagnostic capacity, is required in these countries if they are to continue to progress towards elimination.

Moving forward the WMR2015 shares the GTSm’s vision and goals for eliminating malaria and preventing its re-establishment. For example with the goal, ‘Eliminate malaria from countries in which malaria was transmitted in 2015,’ WHO hopes to add 10 countries to the list by 2020, increase this to 20 countries in 2025, and finally reach 35 countries by 2030. This can only be achieved if endemic countries and their global partners maintain investments in sustaining interventions and strengthening surveillance.

References


A Community Health Worker tests the child with a rapid diagnostic test and treats malaria promptly.