WILTON PARK

MALARIA: GETTING TO ZERO

Conference Report

967th WILTON PARK CONFERENCE

www.wiltonpark.org.uk

Report on Wilton Park Conference WP967

MALARIA: GETTING TO ZERO

Wednesday 15 – Friday 17 April 2009

In co-operation with The Global Health Group at the University of California, San Francisco, Global Health Sciences and Exxon Mobil Corporation

SUMMARY

The meeting on "Malaria: Getting to Zero" brought together high level leaders of countries and institutions involved in the fight against malaria to focus on issues of sustainability and the current 'implementation gap' experienced in countries that are pursuing goals of zero mortality and zero transmission of malaria. This report summarizes the presentations, comments, and dialogue that took place during the three-day meeting, and identifies key themes such as partnerships, financing, country ownership and integration of systems. Calls to action on advocacy for malaria efforts, implementation and sustainability of programs, data and research needs, accountability of donors and implementers, and improved dissemination of information are also described. Further information about country progress that was shared at the meeting, including countries' goals of zero mortality or transmission, main challenges, and priority intervention areas are provided in the Annex.

SETTING THE SCENE

1. Over the last ten years, there has been an unprecedented increase in global attention on malaria, and funding for interventions and research. The creation of the Roll Back Malaria Partnership (RBM) in 1998, the Millennium Development Goals in 2000, the Global Fund to Fight AIDS, Tuberculosis and Malaria in 2002, and the development and dissemination of improved tools, all have led to significant reductions in malaria transmission in countries around the world. Increasing international political will has been demonstrated through the creation of institutions such as the United Nations (U.N.) Special Envoy for Malaria, the United Kingdom's All Party Parliamentary Group on Malaria and Neglected Tropical Diseases, the U.S. President's Malaria Initiative (PMI), and the Congressional Malaria Caucus of the

United States. In 2008, nearly two billion dollars were spent on controlling malaria, marking a four-fold increase since 2004 and a twenty-fold increase since 1998. This financial, technical, and political support has made significant control of malaria possible, and has put the vision of national or progressive elimination, and eventual global eradication, back on the global agenda. The “Malaria: Getting to Zero” Wilton Park meeting capitalized upon this momentum, bringing together a diverse group to discuss two far-reaching global ambitions: zero mortality in countries still battling transmission, and zero transmission of malaria in countries that have achieved low burden.

2. These ambitious goals are embedded within a three part strategy for eventual malaria eradication, put forth by the Roll Back Malaria Partnership in its 2008 Global Malaria Action Plan: intensify control in the malaria endemic heartland; continue shrinking the malaria map by eliminating the disease where feasible; and invest in research and development of new tools to use in the fight against malaria. Currently, there are roughly 100 malarious countries in the world, 39 of which are eliminating malaria through a national goal or progression of sub-national goals. The Wilton Park meeting focused on the first two components of the global strategy, exploring the first goal of achieving zero mortality in the approximately 61 countries in the control phase, and achieving zero transmission in the 39 countries that are approaching or undergoing elimination either nationally or progressively.

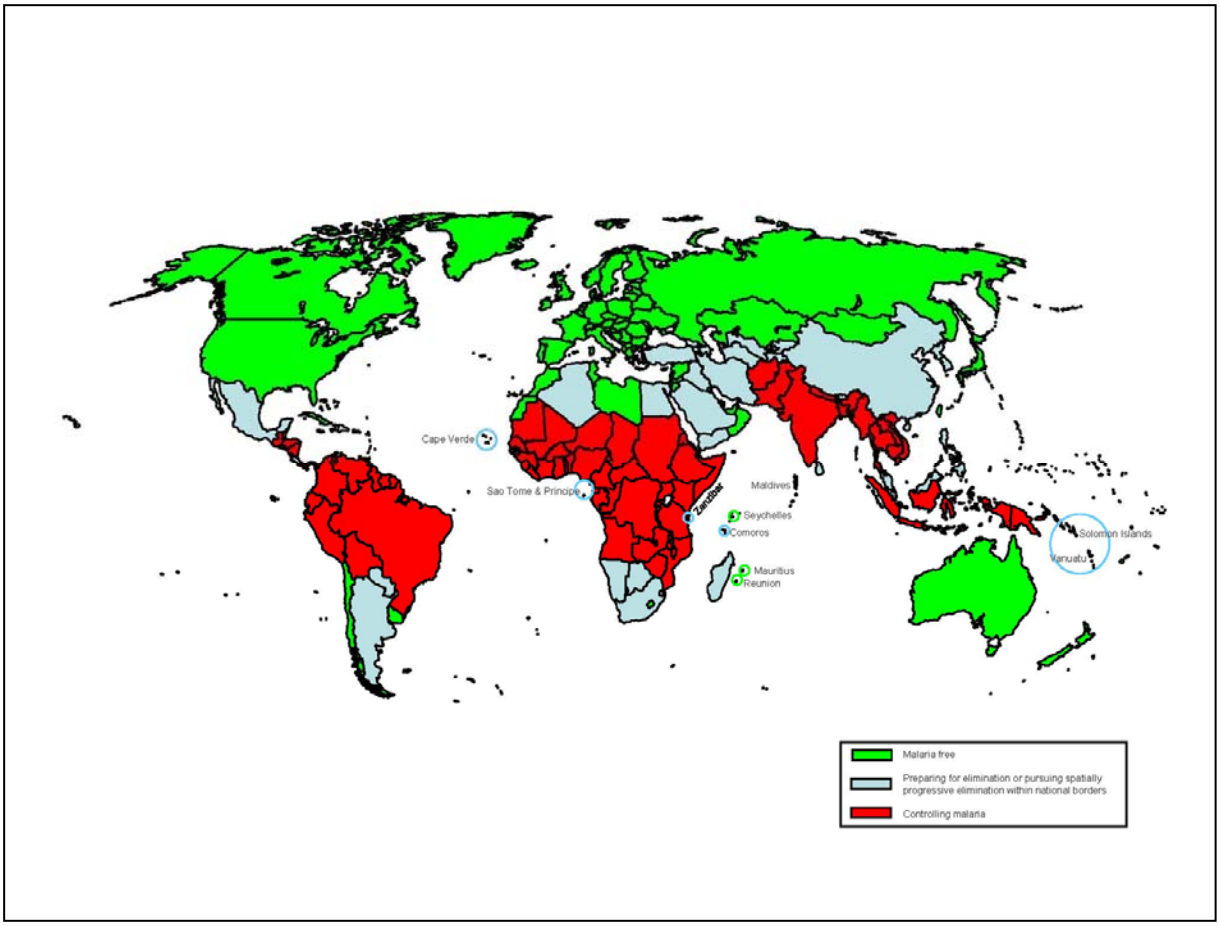

Figure 1. Malaria freedom, elimination, and control, by country, 2009 (Feachem and the Malaria Elimination Group, 2009)

3. Wilton Park participants included representatives from both low and high transmission countries, including seven ministers of health, as well as high-level representatives from the private sector, international non-governmental and non-profit institutions, bilaterals, multilaterals, academic institutions, and members of the media. The resulting diversity of perspectives led to robust discussions of the practical considerations of malaria control and elimination. Endemic countries shared programmatic strengths, weaknesses, and key challenges to success. A 'reality check' with journalists raised questions about the feasibility of elimination and concerns about over-ambitious goals. While the conference did not ultimately seek consensus on such issues, common themes and areas of action emerged which will inform the way forward.

THE MALARIA CONTINUUM

4. The fight against malaria is a flexible continuum with four main junctures: control; low and stable endemic control; elimination; and prevention of reintroduction (see Figure 2 below, which was created based on participant discussion). Although there is no exact formula for identifying a country's position along the continuum, countries at the margin of malaria transmission are typically closer to elimination than those in the endemic heartland. Countries must make their own choice, knowing that the defining characteristics of their place along the continuum may change over time. Specific country examples, including their recent progress and current challenges, can be found in the Annex.

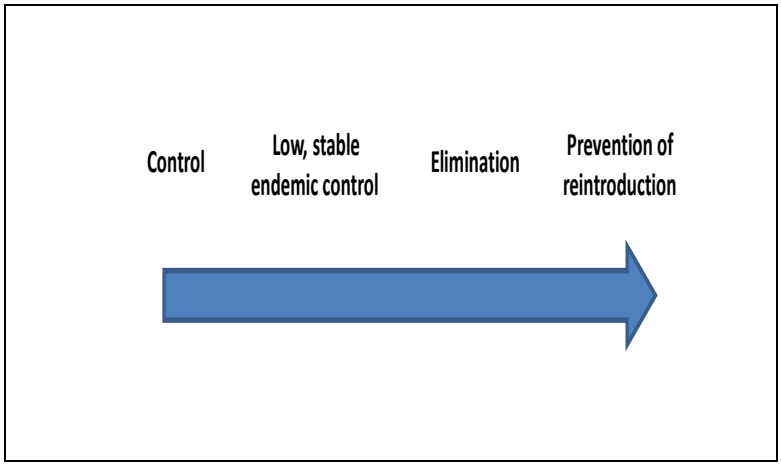

Figure 2. A schematic of the continuum from control to elimination

5. Funders and implementing partner organizations also focus their efforts at different points along the continuum. While it is rational and advisable for supporting agencies to focus their limited resources, meeting participants encouraged agencies to continue to simultaneously endorse and support the entire spectrum of activities. While the majority of donors currently focus support on control efforts in the heartland, some resources may begin to support elimination countries.

6. Moving along the continuum from control to low, stable endemic control is a success story and confers great benefits to a country. Given current global investment in malaria control, and the significant progress that many countries are

beginning to experience in reducing mortality and transmission, increasing numbers of countries are beginning to reorient their long term vision and see elimination, rather than sustained control, as their long term goal. In some settings, elimination is seen as a worthy goal that will be possible to accomplish with current tools. While countries find that invoking an ultimate goal of elimination serves as a strong tool to energize and galvanize their population's support for malaria prevention activities, some see danger in supporting highly endemic countries in discussing elimination as a goal, and in creating goals for accelerated control or elimination. These conversations could lead to the creation of overly ambitious targets. Yet others felt such goals are appropriate and necessary for countries that have achieved low transmission control, and these goals may serve to focus efforts and support while potentially bringing new partners to the table. All agreed that nuanced messages about elimination are critically needed to help countries and international donor agencies better understand the feasibility and practical considerations of elimination, and understand clearly the challenges faced along each stage of the malaria continuum.

KEY THEMES

Building partnerships between sectors: areas of opportunity and challenge

7. Many types of organizations and partners contribute to control and elimination programs; each having their own goals and motives for doing so. In some cases, government and non-government actors have come together to achieve common goals. For example, in Ghana, Anglogold Ashanti, an international mining and extraction company, has worked with the Ghanaian government to develop its own malaria control program for its workers at, and the communities surrounding, its Obuasi mine. In doing so, the company sought to reduce employee absenteeism, the burden on its health facilities, and the cost of medications, and gain the potential benefits of government, community, and shareholder approval for its investment. Noting the program's success, the Ghanaian government has collaborated with Anglogold to develop similar programs in other parts of the country. The company has also used the model program to expand its work into communities in other countries where it operates. In another example of public-private partnership, the

Nigerian government partners with the country's religious sector in the implementation of national health activities. Although Ministers of Health recognized the benefits of partnerships with non-state actors in achieving national goals, they also acknowledged that these partnerships can pose challenges, including in ensuring that partner activities are integrated under the national strategic plan, requiring oversight of methods of implementation and coordination with other efforts, and confirming accountability of cash flows and meeting of stated goals.

8. In many countries, faith-based organizations (FBOs) have also partnered with donor agencies and corporations to reach large numbers of people, for example in funding and implementing insecticide-treated net (ITN) distribution campaigns. Community-based organizations (CBOs) have played a similar role. Yet Ministers of Health warned that again, these organizations must work closely with governments to make sure that separate, parallel structures are not being created alongside the public sector.

Need for more regional collaborations

9. A second type of partnership needed is regional, cross-border collaborations for malaria control and elimination. An elevated risk of transmission exists along many country borders due to a mix of factors, including uncontrolled migration of at-risk populations, uncoordinated or imbalanced control efforts on either side of the border, inadequate health care services, unregulated drug supply and imperfect drugs, and under-equipped diagnostic and treatment facilities. Regional initiatives can address these issues in a comprehensive way by providing an opportunity for countries to share and align national strategies, and develop coordinated multi-country policy positions. These initiatives may also increase funding opportunities for countries, such as Botswana, that are otherwise not eligible for most international aid due to their elevated economic status. Two examples shared in the meeting of new regional initiatives include the Elimination 8 (E8) and the Asia Pacific Malaria Elimination Network (APMEN).

Elimination 8

10. E8 was launched in March 2009 to foster increased cross-border collaboration as a means of achieving regional elimination goals: the inaugural meeting brought together the four 'frontline' elimination countries of southern Africa, Botswana, Namibia, South Africa, and Swaziland, with their four northern neighbors, Angola, Mozambique, Zambia, and Zimbabwe, with a goal of collaboration under the malaria elimination protocol developed by the Southern Africa Development Community (SADC). Objectives for the partnership include strengthening cross-border collaboration between the elimination and control countries, and developing a sub-regional approach for achieving progressive, spatial elimination, including a functional mechanism for elimination support, and a framework for financing and pursuing resources which will move elimination forward in southern Africa.

Asia Pacific Malaria Elimination Network

11. APMEN was established in early 2009 to increase collaboration among countries embarking on, or already engaged in malaria elimination in the Asia Pacific Region, and, particularly, to raise awareness and support for strategies to address *Plasmodium vivax* malaria, which poses a major challenge to elimination in the region. The Network aims to facilitate knowledge and evidence sharing, advocate for regional concerns and cooperation, build capacity, and develop the evidence base for elimination in the region. APMEN is comprised of ten founding countries - Bhutan, China, Democratic People's Republic of Korea (DPRK), Indonesia, Malaysia, the Philippines, Republic of Korea (ROK), Solomon Islands, Sri Lanka, and Vanuatu – along with leaders and experts from multilateral and academic agencies.

Financing for malaria control and elimination

12. In addition to their need to create partnerships to achieve national goals, many governments require financial and programmatic support for malaria control and elimination interventions.

The current economic crisis

13. The long term horizons of zero mortality and zero transmission are heavily dependent on the existence of stable, consistent sources of financial support. The current economic crisis is having, and will continue to have, a tremendous impact on malaria efforts, including by exacerbating competition for scarce resources and funding among health priorities, and making funding for new and innovative programs, such as regional initiatives, harder to obtain. The possibility of a significant reduction in Global Fund income in 2009 compared to past years, for instance, may have a significant impact on implementation and sustainability of ongoing country programs and research. Research and development of future tools may likewise be impacted. Identifying potentially smaller financial mechanisms and moving away from large-scale government funding may be necessary.

Zero mortality and zero transmission: a funding either-or?

14. For some funders, such as the United States President's Malaria Initiative (PMI) and the United Kingdom's Department for International Development (DFID), supporting control programs, instead of elimination, is more closely aligned with their organizational mandate. Others, such as the Global Fund, have funded activities that will help low burden countries move closer to elimination. While some argue that funding for elimination creates competition between the two goals, donors will align themselves along the continuum according to their goals and mandates, and this spread of support will assure some level of funding for all activities along the continuum. Over time, as countries achieve significant levels of control and put in place reasonable plans for elimination, it is likely that some resources may begin to support these goals.

Funding regional collaborations

15. While regional collaborations are needed to reach zero mortality and zero transmission, and the Global Fund Technical Review Panel (TRP) would like to see more regional projects, few such projects have been funded. This is due to several factors: the quality of regional applications is generally underdeveloped; the connection between individual country and regional plans is usually unclear; and

applications do not clearly state the value added by a regional partnership as compared to multiple, coordinated national requests. It is also difficult to fund advocacy and leadership activities. Participants felt that a multi-country collaboration should take the form of a legal, non-political platform supported at a high level, possibly with a neutral, non-governmental organization (NGO) functioning as a principal recipient. Regional collaborations can also be embedded within national applications. In general, it is important to clearly differentiate between general regional collaborations addressing a number of larger economic and other needs, and those focused specifically on cross-border interventions against malaria.

Perspectives and priorities of the donor community

Bilateral donors

16. From a donor agency perspective, those activities which closely align with the donor's general mandate are the most attractive to fund. Furthermore, donors look to balance three elements: the technical feat required to be successful and the potential for success; the length and cost of the effort; and the donor's ability to maintain political support for its activities among its leadership and constituents. Donor countries' constituents must be continuously educated about the level of resources needed to sustain malaria control and elimination efforts, therefore information about progress and successes of the funded efforts are needed on an ongoing basis.

17. Bilateral malaria efforts highlighted in the meeting included the U.S. government's President's Malaria Initiative, launched in 2005, which supports major malaria efforts in 15 focus countries in addition to several regional collaborations, such as in the Mekong River Basin. The Chinese government, while it is a recipient of Global Fund funds, also functions as a donor, providing small amounts of bilateral aid to support over 30 malaria programs in sub-Saharan Africa.

Multilateral

18. Multilateral institutions, such as the Global Fund, World Bank, and U.N. have made significant financial and technical investments in control and elimination over the last ten years. The World Health Organization and RBM have also provided technical assistance and smaller donations for building technical capacity. In general,

multilateral funders look to support countries that are moving from small projects to broader programs and from programs to national strategies, showing that sustainability is possible. This is evidenced by the new National Strategy Application (NSA) of the Global Fund, which focuses on strategies that are integrated into national plans, rather than on independent projects or programs. The World Bank, another major source of multilateral funding for malaria, has been mainly focused on scaling up control efforts for high transmission countries in sub-Saharan Africa, most recently with a focus on regional initiatives. The Bank is now shifting to a new strategy of supporting health systems strengthening rather than vertical programs.

Private sector

19. Many corporations worldwide support malaria interventions. One benefit of private sector funding compared to bilateral and multilateral agencies, is that companies' business strategies can allow for greater flexibility in the type of projects funded, their level of involvement, and their ability to fill in gaps and react quickly. Compared to other donors, private sector companies place greater value on monitoring, evaluation, and simple organizational structures. Building more efficient systems, such as focusing on distribution networks rather than individual programs, is also a priority. Some companies also train their workforce to become ambassadors to provide community education. Private sector partners emphasized that programs they fund must have low levels of bureaucracy, streamlined reporting structures, and must be trusted to operate with tremendous efficiency.

20. The fight against malaria, especially in this new economic climate, will require taking advantage of every possible resource, and the private, for-profit sector presents an opportunity for partnership that cannot be missed. The development of simple, understandable messages by governments and NGOs seeking to partner with the private sector support will facilitate these relationships.

Innovative Financing Schemes

21. Although there are many avenues of funding worldwide, there currently remains an estimated $3 billion annual funding gap. New, innovative funding mechanisms are needed to help address this gap, though meeting participants noted

that adding new flows to the Global Fund structure would be more efficient and less burdensome for countries than creating entirely new funding bodies. Several suggestions of potential relevance to malaria control and elimination have been made in a recently published report by the Taskforce on Innovative International Financing for Health Systems.[1]

Country and community ownership

22. To be most successful, governments must play a leadership role in coordinating and organizing malaria control activities in their country, and in engaging their populations in national and local efforts. Governments need to work together with the FBOs, CBOs, and private sector partners that operate in their countries to harmonize activities under the national strategic plan. National, regional, and district governments must also be engaged and willing to commit resources. If national plans incorporate shorter-term activities and smaller benchmarks to define progress, Ministers of Health will be able to use these short term wins to maintain popular support for their efforts, and fine-tune goals as they move toward a major elimination or control goal.

23. Community engagement should be seen as equally important as leadership from the national government. Reducing the scope of programs from national to sub-national, and assigning morbidity and mortality reduction targets to the sub-regional or community level may help to increase participation and support, by making targets more relevant at the community level. Pursuing initiatives that foster pride in and responsibility for malaria efforts will help to increase buy-in. Ethiopia's strategy for malaria management serves as an example of community involvement: members of the community function as part of the health system and take responsibility for the care of malaria patients. Similarly, Mexico has successfully engaged community volunteers to conduct regular vector control interventions in their local areas. The use of community champions, such as political and faith leaders, was also recommended to promote engagement in malaria control efforts within both local and national populations.

[1] www.internationalhealthpartnership.net/en/taskforce

Integration of health systems

24. Though controversial, the integration of vertical programs, such as malaria control, into the broader health system may serve to strengthen health systems. For instance, integrating fiduciary systems, public education, reporting, and data collection systems across HIV, tuberculosis and malaria could build sustainability and capacity across each disease program. Integration of distribution systems may also prove beneficial. Further data is needed on the benefits of integration, and where it can be done successfully without reducing rigorous oversight for control activities.

CALLS TO ACTION

Increase leadership and advocacy for malaria

25. Achieving the dual goals of zero mortality and zero transmission will require a united effort among multiple partners and institutions. The current view that governments alone must deal with this disease burden must shift – all partners must play a role. Communities must also be engaged as leaders in the fight against malaria. By defining clear roles for communities to engage in efforts, and demonstrating the tangible benefits they will enjoy as a result, countries should be able to leverage their citizenry to become extensions of the national infrastructure, for example, by helping with vector control or facilitating case reporting. This type of community engagement may also lead to the creation of a consumer-driven culture where communities demand malaria interventions, and countries articulate goals and ask neighbors, partners, and donors to help them with implementation. At a national level, increasing the interest, knowledge base and engagement of local journalists will help to create awareness and the potential for local advocacy.

Sustain malaria efforts

26. It is critical that current and future efforts in elimination and control be sustained. This is dependent upon political will, financial support, and diverse partnerships.

Assure political will

27. Getting through the last mile of the malaria continuum will require political will at the highest level. Countries that have made significant progress towards

eliminating malaria in recent years, such as Sri Lanka and Morocco, credited the support of public sector officials at all levels and the intersectoral alliances that sustain support. Public declarations about malaria goals serve to clarify political support and may trigger donor interest.

Sustain financial support

28. The current economic crisis may be an opportunity for more intelligent use of funding. Evaluation may take precedence over equity: prioritization of country activities may be needed to best use limited resources. It was also noted that, on a global scale, attention must be focused on outcome-based financing, streamlining flows of funding, and aligning the resources of major donors to increase health systems financing. At the country level, the crisis also offers an opportunity to engage more effectively with private, NGO, CBO and FBO partners, and for Ministries of Health to work closely with the national Ministry of Finance to find solutions.

Regional and cross-border collaborations

29. Donors could work to better understand and support regional and cross-border collaborations for malaria control and elimination. The RBM Partnership's Harmonization Working Group should develop guidelines around the types of collaborations and how to estimate the value added by these initiatives.

Private sector engagement

30. Country governments should take advantage of the many potential contributions that the private sector offers in addition to funding, such as technical skills or product development. Countries can facilitate private sector interest and engagement through the development of a case for action with clear goals and priorities which includes a roadmap of priority actions, clear opportunities to co-brand, and models of similar partnerships as examples when relevant. Cultural flexibility will be necessary on both sides.

Close the implementation gap

31. Within developing countries, a disconnect persists between high level strategies for implementation and on-the-ground realities. Finding better ways to

create actionable policy and support implementation of programs by endemic countries and their partners is a high priority. Resolving this issue will require several actions, including the scale up of human resources in quantity and skill-set, and improvements in procurement, supply chain management, and supply forecasting. Some participants felt that productive demand for effective and reliable prevention, diagnosis, and treatment will only be built when quality services are consistently available when needed.

32. Moving from control to elimination requires fine-tuning of a country's health system and an adjustment in the mix of interventions used for diagnosis, case management, and case investigation. Training and retraining is also involved as elimination requires behavior change across malaria control programs and across the population.

33. The assumption that governments have the internal capacity to carry forward all of these activities is not realistic. Governments need to become more proficient at contracting out services or engaging partners to take on portions of the work. Published case studies of successful delegation and contracting are needed to provide examples for governments to use when designing and planning activities.

Improve current research and data collection

34. A major current global priority is to improve the quality and quantity of data collection in areas such as prevalence and intervention coverage. Other priorities include evaluation, operational research, and establishing the elimination research and development agenda.

Improve data collection

35. High quality data on key topics, including prevalence and ITN coverage, and the cost-benefit of elimination when compared to sustained control, are needed to establish a baseline, measure progress, establish causal links and potentially increase funding opportunities. On a global scale, building an understanding of the epidemiology of risk and further research on the best way to share lessons from

different contexts, such as from islands to mainland areas or countries, will greatly benefit countries.

'Evaluate and communicate'

36. Monitoring and evaluation of malaria interventions is useful in identifying the distribution of needs and burden, the optimum interventions at different scales and in different geographical and ecological contexts, and whether resources are applied appropriately. Yet most funds for this work, from the Global Fund and others, are either poorly used or not used at all. Current gaps include: tools and analytic capacity, regularization and design of health information systems, surveillance systems, health surveys, impact evaluation, and integration of data into management structures. Lessons learned from previous programs and interventions are generally not well disseminated and not integrated into program planning.

Increase quality and quantity of operational research

37. As countries and programs scale up interventions, many questions remain about which interventions are most effective, if other innovative solutions are needed, and how much is needed for how long. In the current economic climate, operational research is even more critically needed to help answer these questions and ensure that resources are allocated as efficiently as possible. Operational research will be a critical part of this solution. Yet this field is generally undervalued when compared with genetics or immunology, and is seen as a "second class science," making it difficult to raise funds and attract skilled people. One possible solution is to allot this research its own category in Global Fund proposals, separate from monitoring and evaluation, which may increase its use.

Implement the research and development agenda for elimination

38. Although some countries can probably eliminate malaria using tools available today, the vast majority will require new and more intensive measures. Research must be conducted in partnership with work in the field, and new tools and information on how best to apply them, are needed. However, in order to take advantage of any new tools, countries must map transmission risk and collect data on transient populations, including border crossings. Sufficient health system

capacity to deliver the new tools is also important. Key elements of the research agenda are:

Vaccines

- Vaccines of various kinds, including transmission-blocking vaccines, will be needed. Questions remain about how the new vaccine, which is going into Phase III field trials, will be deployed.

Vector control

- There is a need for new tools once we get to the point of elimination, requiring the involvement of skilled professionals, especially entomologists.
- New classes of insecticides must be identified and developed.
- Information is needed on the timelines and circumstances for when interventions, such as indoor residual spraying (IRS), can be reduced or stopped if a country has achieved elimination.

Case detection and diagnosis

- There will always be pockets of transmission, whether autochthonous or imported, so detection of the source of infection is a research priority.
- Mapping should be improved to locate foci and sensitive areas.
- Better sampling strategies for detecting the last parasites should be developed.
- Field-friendly diagnostic tests are needed that are highly sensitive and specific and can detect gametocytes as well as asexual parasites for both *Plasmodium falciparum* and *Plasmodium vivax*. Improved tests using Loop-Mediated Isothermal Polymerase Chain Reaction (LAMP) or Polymerase Chain Reaction (PCR) technology are also a priority.

Treatment

- Delay and minimization of resistance to artemisinin-based combination therapy (ACT) is a high priority, as is continued research into new first-line drugs.
- A drug that kills *Plasmodium vivax* and *Plasmodium ovale* hypnozoites and that is safe to use in glucose-6-phosphate dehydrogenase (G6PD) deficient individuals is an urgent requirement. New drugs that kill *Plasmodium*

falciparum gametocytes are also needed. Medicines for Malaria Venture (MMV) has included this priority in their research agenda.

- Mass drug administration (MDA) is still considered controversial, although widely used in Asia and elsewhere. More research into the benefits and risks of MDA is necessary.

Make accountability a norm

39. Global health today has become a big business, yet different sectors have varying degrees of accountability. The private sector typically insists on clear standards, although this has not necessarily been true for their charitable work. Standards of accountability and transparency vary greatly among foundations and bilateral and multilateral funding agencies. Ensuring proper management of funds is also an ongoing concern both for donors and recipients. One possible improvement is to move away from the current model, which emphasizes financial accountability as a measure of success, to one that measures efficiency more broadly in terms of deaths averted, productivity gained or lost, cost per person covered, or other similar metrics. Meeting participants generally endorsed a movement towards outcome-based funding approaches.

40. National and local media also present another opportunity to hold leaders, governments, and health systems accountable. Through community education programs and investigative reporting, national and local media have the potential to empower citizens to demand greater service and access to treatment, and hold organizations and institutions accountable for fulfilling their promises. The national press has generally not been active in this arena and could play a much larger role.

Improve the dissemination of information

41. There is a need for quicker, broader dissemination of information that informs programs and policies. Additional policy research is needed by countries and donors to guide decision making, and the research community needs to find ways to disseminate current studies and findings to the general public in a timely and accessible format. Representatives from the private sector called for a clearinghouse for the plethora of institutions, their roles, and current research, as well as metrics

and documentation of progress to help them understand the current landscape, and how to best invest their resources. The private sector also noted its own role in increasing peer-to-peer information sharing of activities and best practices.

CONCLUSIONS

42. There has been substantial progress toward the goals of zero mortality and transmission in the past ten years - finding the right level of ambition tempered with realism will continue this progress. Realistic targets for each goal that take into account current tools and understanding will move the malaria control and elimination agenda forward. Once these targets are established, players must shift from the pursuit of a quick win to seeking a sustained victory. There is a moral and financial argument for sustaining malaria activities, for affected people as well as taxpayers and investors of donor countries who have made significant investments in malaria efforts.

43. Successes must be measured, well documented in an accessible way for many types of readers, and disseminated. Operational research should focus on documenting country experience. Priorities also include active case detection, surveillance, laboratory support, and cross-border strategies. Key players should be aware that, outside Africa, the endgame will be a battle against *Plasmodium vivax*.

44. Voices within the malarious countries must speak up and be heard by their governments, donors, and other international bodies. Leaders and communities must advocate for their health, demand control and elimination activities, and ensure accountability. Local media must play a role. Engaging community involvement in non-endemic areas will also build support for bilateral and multilateral programs: publicizing the fight against malaria in donor countries is one way to achieve this goal.

45. The current economic crisis may be used as an opportunity to create more intelligent and efficient ways to use resources. Country activities may need to be prioritized to allow countries to hit realistic targets, and resources may need to be moved to support goals with the best chance of success. The crisis also offers an

opportunity for countries to engage more effectively with partners, drawing on resources within the private sector, NGOs, CBOs and FBOs. Thinking creatively yet strategically will lead to greater progress toward zero mortality and zero transmission on a global scale.

Cara Smith Gueye
July 2009

Wilton Park Reports are brief summaries of the main points and conclusions of a conference. The reports reflect rapporteurs' personal interpretations of the proceedings – as such they do not constitute any institutional policy of Wilton Park nor do they necessarily represent the views of rapporteurs.[2]

[2] Should you wish to read other Wilton Park reports, or participate in upcoming Wilton Park conferences, please consult our website www.wiltonpark.org.uk To receive our e-newsletter and latest updates on conferences subscribe to http://www.wiltonpark.org.uk/news

ANNEX: ACTION IN THE FIELD

The continuum of malaria control to elimination becomes clearer when seen through the lens of an individual country's progress in reducing transmission and its strategy for future efforts. Countries heading toward zero transmission are typically seen along the margins of endemic transmission, while those geared toward zero mortality tend to cluster in the malaria heartland. However, participants cautioned that labelling a country as being at a certain stage is a judgment and definitions may not be helpful, as their situation will change over time. The countries highlighted in this report are those that shared their experience, strategies, successes, and challenges during the three-day meeting. A vast amount of country information was shared during the meeting through presentations and discussion - only a small portion has been summarized below.

Countries heading toward zero mortality

Ghana

Malaria has a significant negative impact on population health in the country - forty percent of all health-related expenditures are the result of malaria-related illnesses, as are 35% of all hospital or clinic admissions. All-cause mortality for children under five is likewise considered to be malaria-related. There are serious economic impacts of the disease as well: a national study calculated the cost of treatment, medication, lost productivity and other factors to be a GDP loss of U.S. $760 million in 2006. The cost of eliminating malaria is estimated to be a total of U.S. $50 to 100 million, and the new government has committed to elevating current control measures to eliminate. A current priority is gathering data on confirmed cases and working with NGOs to sustain activities during the economic crisis. Challenges include insecticide resistance and the cost of artemisinin-combination therapy (ACTs). The country will work with regional collaborations with Togo, Cote d'Ivoire, and Nigeria, the Economic Community of West African States (ECOWAS), in addition to continuing to collaborate with Anglogold Ashanti and other private sector companies, to develop and maintain strong national malaria control efforts.

Nigeria

In Nigeria over 90% of the 149.2 million population is at risk for malaria, and half of the population will contract at least one infection annually. Malaria also accounts for 30% of childhood mortality and 11% of maternal mortality. In response, the country has set ambitious targets to increase coverage of interventions and reduce transmission: the 2010 national goal includes the reduction in morbidity and mortality by 50%, provision of two long-lasting insecticide nets (LLINs) per household, ITN coverage of 80% of children under five, scale up of diagnosis, 80% coverage of intermittent presumptive treatment of malaria during pregnancy (IPTp), integrated vector management including larviciding, and beginning their indoor residual spraying (IRS) activities.

In order to reach these targets, the Ministry of Health plans to use community-based interventions, behavior change communication, operational research to inform interventions and measure effectiveness, and private sector facilitation. Challenges include streamlining the health system's tiered structure to ensure coordination, health system strengthening, health worker training and retention, expanding human resource capacity, and integration of a procurement and management system. A total of U.S. $1.2 billion is the estimated cost for these activities. National and Global Fund contributions will not be sufficient. Priority actions are the elimination of unlinked, independent, vertical funding streams, building partnerships for resource coordination and technical assistance, integration of channels of distribution of HIV and malaria treatment for economies of scale, and involving community-based organizations, the private sector, and the interfaith community to complement public sector facility-based interventions.

Zambia

In Zambia, malaria is endemic in all nine provinces, with 90-100% of the population, approximately 12 million, at risk. The disease is the leading cause of illness and second leading cause of death. Thanks to significant scale up of interventions, malaria parasite prevalence has been reduced by 50% since 2006, and malaria cases across all age groups have declined 54% from the years 2000-2002 to 2008. The strong partnership between the Ministry of Health and its partners is cited as a

key reason for success. Also, since 2002, Zambia has distributed six million ITNs, increased IRS coverage to 50%, assured availability of rapid diagnostic tests (RDTs), and increased IPTp. Major challenges include maintaining donor interest, and strengthening research and data collection. Priority areas for elimination are active case detection, and maintaining coverage and usage of existing interventions through improved logistics and marketing. Cross-border collaborations, training and utilization of community health workers, increased confirmed diagnosis, maintenance of funding sources, and epidemic preparedness in order to prevent outbreaks, are also key focus areas.

Countries heading toward zero transmission

Botswana

In Botswana, a country with a population of 1.8 million, malaria transmission is seasonal, and is mainly concentrated in the northern part of the country. Up to 800,000 persons are at risk during the peak transmission season, depending on the amount and location of rainfall. Incidence rates have decreased since 2001. Botswana is committed to the 2015 elimination goal set forth in 2007 by Southern African Development Community (SADC) and the African Union (AU). A recent increase in political support and community involvement is a result of information, education, and communication campaigns (IEC), legislation requiring notification, vector control, case management, and epidemic response to reduce transmission. Priority action areas for the country include research, cross-country collaborations, accountability, and communication between partners. Major national challenges include implementing vector control among agricultural and cattle-based populations, creating synergy between local and national government transportation pools for distribution of medicine, and dissemination of resources to remote communities. Better data on prevalence is also needed. HIV activities have also diverted major financial and human resources that formerly were directed toward malaria: for example, Family Welfare Educators used to educate families about ITNs, spraying, and building permanent structures, but they now focus on HIV prevention. As a middle-income country, Botswana is not eligible for most international funding for malaria.

China

China has made significant progress in recent years in reducing malaria transmission. The cases that do develop are largely concentrated in the central provinces, border areas with Myanmar, and on Hainan Island. In 2008, the incidence rate in China was only 0.2/10,000. However there are challenges in some areas and 10% of cases are imported. The Ministry of Health believes that elimination is possible by 2015, but national funds only can support U.S. $596 million of the U.S. $777 million total required to achieve the goal. A recent costing analysis of elimination in one province of China, Hainan Island, showed that it will require U.S. $0.25 for every person on the island and U.S. $2 per person at risk. Another challenge will be the engagement of central and local governments in elimination, especially in low incidence areas where HIV and tuberculosis compete for resources.

Ethiopia

Ethiopia is making major strides in malaria control, and recently held a meeting to determine a long term plan for elimination. The new target includes progressive elimination by 2015 and full elimination by 2020. Currently, Ethiopia's six largest regions carry 85% of the overall burden. Over a one year period, a 15-fold increase in ITN distribution and an increase in confirmed diagnosis reduced parasite prevalence to less than 1%. While the interventions achieved a high level of success in the six regions, regional officials at the elimination planning meeting expressed concern about continuing activities at the current pace. The fact that the country did not have a formula for shifting from control to elimination and financing was also a concern. In response, the Ministries of Finance and Health had identified internal funding channels, creating confidence in their partners and likelihood of additional external funding. A next step will be to develop realistic metrics for two to three-year milestones that would inform the final timeline. Ethiopia has already recruited and trained a workforce of 30,000 community health workers (CHWs), an investment that can be used to support elimination activities as it is estimated that these workers have not yet been used at full capacity.

Mexico

Mexico has succeeded in eliminating malaria in many provinces. During their transition from control to elimination, the country has prioritized economic development, along with community education and involvement. Community volunteers perform environmental management, removing algae from ponds to reduce mosquito larvae growth, which leads to significant reduction in malaria transmission. Mexico consciously involves local communities as partners, in order to achieve sustainability.

Morocco

Morocco has made great strides in reduction of transmission, and has begun the WHO elimination certification process, hoping to achieve elimination status in 2009. Risk of transmission persists only in the north-west portion of the country, and in 1998, only three regions reported 16 total indigenous cases. In 2005, there were no reported local cases, and currently there are less than 0.5% confirmed positive cases. Initial major declines in transmission resulted from the introduction of DDT during World War II; initiation of IRS, microscopy, treatment, and antilarval control activities furthered declines in the mid 1970s. *Plasmodium falciparum* was eliminated in 1974. Even with the major declines in transmission, the country maintains the same level of diagnostic staff and capacity. To maintain vigilance, Morocco plans to continue its efforts to intensify active surveillance in areas of high risk, continue entomological surveillance and update databases on vector susceptibility, improve serological and molecular diagnostic techniques, and maintain knowledge of health professionals. Using research to drive the national strategy helps decision makers: an office of research, evaluation and service was created to supervise and evaluate malaria control efforts, and the country is part of Emerging Diseases in a changing European Environment (EDEN). The country pursues integrated vector management (IVM) as an intersectoral group, involving its Ministries of Health, Environment and others.

Namibia

Namibia, which has a population of approximately 2.3 million, has made significant progress toward elimination. Sixty percent of the population lives in the malarious portions of the country, which are concentrated in the north. Malaria ranks third in disease priority after HIV and tuberculosis. Morbidity and mortality dropped 79% by 2007, partly due to increased case management using rapid diagnostic tests (RDT) and introduction of ACTs, and an increase in IRS coverage since 2005. Incidence was 47.9/1,000 in 2007, and mortality was 8.5 deaths per 100,000 that same year. Namibia's leadership is fully committed to the SADC goal of elimination in the country by 2015; however, significant challenges remain along the borders with Angola, Zambia, and Botswana because of differing national control measures. The country has also identified a major need to increase the number of epidemiologists, entomologists, and parasitologists to support the malaria program.

Sri Lanka

Sri Lanka's elimination experience provides key lessons about the importance of surveillance and sustained political will. Sri Lanka's history with malaria elimination began with the launch of the national eradication campaign in 1957. By 1967, cases were virtually eliminated; however, sprayers were soon transitioned to other employment and, three years later, the country faced a severe outbreak of over one million cases. The country has made great strides in re-eliminating the disease, and today, remaining malaria transmission is concentrated in a 16.5 kilometer area of the conflict zone. The malaria program retains a strong focus on diagnosis, examining up to one million microscopy slides each year. Intensified control activities and mobile malaria clinics are deployed in areas with positive slides, and those identified as vulnerable in studies. In 2007, Sri Lanka had a total of 196 microscopy-confirmed cases, and in the last several years there has been zero mortality due to malaria. The country hopes to eliminate *Plasmodium falciparum* malaria by 2012 and *Plasmodium vivax* malaria by 2015. The country's national economic development initiative serves as a springboard for elimination by providing better housing conditions, clean water, and free education and health care. Challenges to elimination include health professionals moving overseas, trade unions restricting activity scale up, and climate

change. Yet the main obstacle to elimination is malaria transmission in the conflict zone. The Ministry of Health has continued to send treatment and insecticide supplies to the region to maintain activities during the conflict.

Zanzibar

The two islands that form Zanzibar, Unguja and Pemba, form a total surface area of 2,648 square kilometers and have a population of approximately 1.2 million. Prevalence has decreased substantially since 2003. The main strategies for maintaining sustained control in Zanzibar are IRS and distribution of free LLINs to vulnerable groups, namely to pregnant women, children under five, and HIV positive individuals. Malaria activities are focused on the district level. All health facilities, which are within five kilometers of the population, provide microscopy or RDT diagnosis and distribute free ACTs. Health facilities report cases on a weekly basis using cell phone technology, in order to analyze data in real time for rapid response. The government is currently exploring ways to better coordinate funding and bring together funders, implementers, and partners to review resources and sectoral needs. The country has recently commissioned a robust assessment of the operational, technical, and financial feasibility of elimination on the island.