



**ZERO
MALARIA**

| BRITAIN

THE UK MALARIA SCIENCE INDEX: RESEARCH FINDINGS

INTRODUCTION

A child under five still dies from malaria every minute of every day. In fact, children under five make up around three quarters of the 610,000 deaths a year from the disease, with nearly all the disease burden in sub-Saharan Africa.

And right now, clouds are gathering to form a perfect storm of challenges to worsen this picture. Malaria-carrying mosquitoes are continuing to form resistance to some key tools we've relied on for years to fight the disease. Deep cuts to global health have begun to bite both in terms of front-line delivery of tools and in research and development (R&D). A warming and increasingly unpredictable climate are making it harder to anticipate the spread of malaria as well as degrading some existing protections. Conflict, in parts of sub-Saharan Africa in particular, is destabilising health systems and weakening societies' ability to fight back. The list, unfortunately, could go on.

But, despite this, there is a very real reason for hope – science. Innovation in the labs around the globe, paired with the expertise and determination of frontline healthcare workers, give us realistic cause to believe that we can not only fight back against one of the world's oldest and deadliest killers, but that we can end it within our lifetimes.

Scientists right here in the UK have long played a key role in this battle, working hand in hand with partners in malaria-endemic countries. Sir Ronald Ross was the first British person to win a Nobel Prize, in 1902, and he did so for further understanding of malaria transmission.

And in recent years, UK scientists have been behind the groundbreaking malaria vaccines now in circulation in sub-Saharan Africa, as well as developing lifesaving new drugs and vector control products.

It's with this spirit of possibility that we at Malaria No More UK have embarked on The UK Malaria Science Index (UKMSI) – an effort to shine a light on the UK's specific contribution to the malaria fight. Partnering with leaders in the sector, we have surveyed 35 of the country's top malaria scientists to understand more about the UK's contribution to malaria R&D, our strengths and their sources, the barriers we face to realising new innovations, and the critical importance of partnerships around the globe.

With the UK and the wider world standing on the cusp of a new era in global health, we hope this research can serve as a reminder of our proud tradition as life-saving innovators and help to protect it.

Finally, we would like to thank the scientists for taking part in this first iteration of the UK Malaria Science Index. They did so voluntarily and would have had to sacrifice time from their extremely busy diaries. So, we are very grateful to these leading experts for offering up these invaluable insights which only they could have provided.

METHODOLOGY

This is the first time we at Malaria No More UK has conducted this research and, as such, should be treated as exploratory at this stage. We hope to repeat the UKMSI on an annual basis to deepen understanding, track changing trends, and widen our sample base.

We partnered with YouGov to help facilitate the creation, dissemination, and analysis of the survey, as well as working with an Advisory Panel of expert partners from across the malaria science sector to help guide the research. Our Advisory Panel members included:

- **Justin McBeath**, Chief Executive Officer of The Innovate Vector Control Consortium
- **Professor David Laloo**, Vice Chancellor of Liverpool School of Tropical Medicine and Professor of Tropical Medicine
- **Professor George Christophides**, Professor of Infectious Diseases and Immunity at Imperial College London

Respondents

In this first, exploratory phase, we have recruited 35 senior UK-based malaria scientists for our survey sample. Participation was voluntary, and respondents were informed about how their insights would be used. Our respondents have been selected according to:

- **Seniority:** A high level of seniority within UK-based institutions
- **Disciplines:** A range of malaria R&D disciplines across vaccines, vector control and drug development
- **Institutions:** A range of UK science institutions including universities, research organisations and industry

- **UK-focused:** Ensuring they are UK-based, work in the UK or have a strong focus in the UK so they can speak specifically to the domestic context
- **Backgrounds:** Representative of a range of demographic backgrounds to reflect different perspectives according to lived experiences

The organisations represented by the individuals surveyed and who helped to guide the research include: Imperial College London, The University of Oxford, The London School of Hygiene and Tropical Medicine, Wellcome, The University of Glasgow, The International Federation of Pharmaceutical Manufacturers and Associations, Flyttr, Medicines for Malaria Venture, The Malaria Consortium, The University of Cambridge, Innovative Vector Control Consortium, Target Malaria and The University of Dundee.

We appreciate the limitations this small sample has on the confidence of the conclusions that can be drawn from this research and believe findings at this early stage should only be treated as indicative of wider trends in the sector. If we repeat the survey in coming years, we hope to expand this sample, including the range and types of organisations, to better reflect the breadth of views across the sector.

Survey parameters

The UKMSI survey covered two main areas. Firstly, and primarily, it looked to understand more about the existing and future tools being developed with the involvement of UK-based institutions. Secondly, it aimed to gain insight on the perceived impacts of malaria R&D and its outcomes on the UK public.

FINDINGS

Opportunities in the malaria R&D pipeline

In terms of tools currently in development which have a strong potential for significant impact where UK backed scientists are making leading contributions, respondents were most likely to mention drugs and therapeutics (71%), followed by vaccines (69%) and vector control products (57%). Specifically, single-dose cures and long-acting injectables were mentioned in regard to drugs, and second-generation, blood-stage vaccines were also mentioned. We also asked participants which tools at earlier, 'concept-stage' being explored by UK-backed scientists they thought were most promising. Vaccines stood out as the most popular answer (40%), followed by techniques to genetically modify mosquitoes and gene-drive (26%).

Stepping back, we asked respondents to think about how the UK has developed into a leader in malaria science and what conditions have been created to enable this. Institutional strength, long-term policymaking and industry all came up as factors. *"This type of research takes decades to produce..."* said one, *"...success and sustained investment and persistence is required."* Another focused on the UK's *"historic strength"* with *"some of the best tropical-infectious-disease institutes... long-standing funding specialties...and a generally very strong bioscience university and biotech sector"*. Similarly, another praised *"world-class institutes"* helping to make the UK *"a global hub of innovation and development."*

Further to this, respondents also believe that malaria science contributes in some way to the UK's life sciences strategy in general. 83% believe it supports collaboration between academia, industry and global partners and 69% believe it helps to develop new technologies or approaches with wider applications beyond malaria.

UK malaria scientists were also in strong agreement on the importance of partnership with global stakeholders in

order to achieve R&D goals, in particular with countries in sub-Saharan Africa (SSA). A considerable 89% felt country partnership with SSA countries is very important to UK malaria R&D.

Health security and benefits to the British public

The goal of all malaria scientists is to contribute to eradicating the disease and lifting the significant burden felt predominantly by people in SSA. However, as part of this survey we also wanted to understand more about the secondary, downstream benefits to people in the UK.

We found, for example, that 80% of our respondents believe that malaria science provides health benefits to the UK public, with around one in four (26%) strongly agreeing with this statement. Scientists saw these benefits as stretching beyond health, however, and into the national economy, geopolitics, and society more generally. One said:

"Global malaria is an economic shackle impacting over one-third of the human population. Remove that shackle and the economic motor of the UK will rev up, benefiting the UK as a whole."

Speaking about how the benefits feed back into R&D, one participant said malaria science *"strengthens our academic institutions and our civil service"*, another agreed that it *"supports the development of excellent scientists"*.

Thinking about the health security of the UK public, 80% also think malaria science helps to make the UK safer, with 26% thinking it makes the UK much safer. Elaborating on this, one respondent said:

“Malaria science...is a vital component of epidemic and pandemic preparedness and resilience. Malaria science translates into expertise in diseases with epidemic and pandemic potential.”

Expanding on the theme of pandemic preparedness in particular, some 88% believe malaria science could play a role in helping us respond to future pandemics. One said: *“Malaria research raises infectious disease awareness amongst healthcare workers and the UK academic and government establishment... Many UK malaria researchers pivoted to the Covid-19 response successfully and significantly.”*

Hurdles to achieving malaria R&D outcomes

Despite the optimism around UK malaria R&D and the secondary benefits it can bring to the UK public, the scientists we surveyed saw funding as a significant hurdle to be overcome. For example, nearly all (94%) saw funding as being a threat to the success of research, development, and approval of future tools, with 86% choosing international regulatory hurdles and 69% selecting difficulty securing partnerships for trials and approvals.

Commenting on funding in particular, one said: *“Funding for global health has always been limited... but the huge scale back of investment in support for this type of research in the last couple of years is almost unprecedented.”* Another said:

“R&D is crucial to keep up the pace with something... adapting as fast as... malaria and Anopheles mosquitoes.

As governments and other agencies look to cut funding... there may be a temptation to cut funding to grassroots R&D to help support deployment of existing tools... This would be a huge mistake as innovation and discovery are absolutely critical to maintain the momentum in the fight against malaria.”

Similarly, participants also saw funding shortfalls as being the primary threat to implementation and scale-up of future tools, with 94% also listing funding as a top concern, followed by climate change and extreme weather events (71%) and the changing nature of the malaria burden (69%).

The strength of opinion on funding was, again, very clear.

“I think this is the biggest threat to tackling malaria. We already have many of the tools we need, but not the funding to deploy them to greatest effect,”

said one. *“In the current global economic and political climate... there can be no greater risk than the collapse of existing malaria control programmes...”* said another. Others also saw funding cuts for the rollout of tools as being a barrier to the development of new ones: *“There is not currently enough budget to implement current technologies to the extent needed. It is unclear how newer, more expensive technologies may be scaled up or combined with current technologies to reduce malaria burden.”* Similarly, another respondent highlighted the need for funding beyond R&D in order to feed ongoing research: *“Not only is funding needed for implementation, it is also critical for monitoring and reporting. Especially for novel and self-sustaining tools like gene drive...”*

ANALYSIS AND CONSIDERATIONS

The survey findings reveal optimism among UK malaria scientists around the potential of the tools in development to have a significant impact in the fight against the disease. And they see health security and pandemic preparedness as being the central benefits to the UK public, as well as boosts to economic growth and the advancement of the UK's life sciences sector at-large.

However, both the potential of these tools to save lives and the downstream benefits that will flow from them will remain unrealised if certain barriers are not overcome; in dealing with funding shortfalls in particular. Whilst climate and regulation remain front-of-mind obstacles, the severe cuts to global health come through loud and clear as the most important factor hindering R&D into lifesaving innovations. Cuts to the deployment of existing tools are also acknowledged as limiting development of future ones.

We believe these two sides of the coin can be understood equally by UK policymakers who might see this evidence; that UK malaria R&D has significant lifesaving potential to people urgently in need around the world as well as helping foster security here in the UK, but only with the right financial backing. With a new government and new cabinet in place in the UK, we hope the range of possibilities of the UK's malaria science sector are appreciated and the support provided to ensure they're realised.

The malaria burden in sub-Saharan Africa, already at record-high levels, is likely only getting worse due to the aforementioned convergence of a 'perfect storm' of threats. And domestically, with a rapidly changing climate and the emergence of new, previously little-known global health threats, bolstering national health security should be among the priorities of the UK's new intake of decision-makers, too.

We look forward to discussing the results of this research with scientists in the sector, other advocates and UK policymakers, and working towards viable solutions to enhance the UK's malaria R&D sector. Over time, it is our hope that we can deepen and improve this research project to garner richer and more reliable insights.





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THIS REPORT WAS PRODUCED BY MALARIA NO MORE UK (CHARITY NUMBER 1126222)