total targeted treatment survey. Therefore, it might be beneficial to include a clinical manifestation follow-up 2 months after treatment to identify *T p pertenue* infections with possible de-novo mutations and thus prevent their potential spread. Given the long generation time of *T p pertenue* (about 30 h), a 2-month period should be sufficient for roughly 50 *T p pertenue* generations, which should allow the detection of clinical symptoms. This measure will likely decrease the efficiency with which macrolide-resistant *T p pertenue* can spread even if additional costs will be required.

\*David Šmajs, Petra Pospíšilová Department of Biology, Faculty of Medicine, Masaryk University in Brno, Brno CZ-625 00, Czech Republic dsmajs@med.muni.cz

We declare no competing interests.

- Mitjà O, Godornes C, Houinei W, et al. Re-emergence of yaws after single mass azithromycin treatment followed by targeted treatment: a longitudinal study. Lancet 2018; published online Feb 7. http://dx.doi.org/10.1016/S0140-6736(18)30204-6.
- 2 Matějková P, Flasarová M, Zákoucká H, et al. Macrolide treatment failure in a case of secondary syphilis: a novel A2059G mutation in the 23S rRNA gene of Treponema pallidum subsp. pallidum. J Med Microbiol 2009; 58: 832–36.

- Gallo Vaulet L, Grillová L, Mikalová L, et al. Molecular typing of Treponema pallidum isolates from Buenos Aires, Argentina: frequent Nichols-like isolates and low levels of macrolide resistance. PLoS One 2017; 12: 1–14.
- 4 Li Z, Hou J, Zheng R, et al. Two mutations associated with macrolide resistance in Treponema pallidum in Shandong, China. J Clin Microbiol 2013; 51: 4270–71.
- 5 Flasarová M, Pospíšilová P, Mikalová L, et al. Sequencing-based molecular typing of treponema pallidum strains in the Czech Republic: all identified genotypes are related to the sequence of the SS14 strain. Acta Derm Venereol 2012; 92: 669–74.
- 6 Grillová L, Pětrošová H, Mikalová L, et al. Molecular typing of Treponema pallidum in the Czech Republic during 2011 to 2013: increased prevalence of identified genotypes and of isolates with macrolide resistance. J Clin Microbiol 2014; 52: 3693–700.
- 7 Tipple C, McClure MO, Taylor GP. High prevalence of macrolide resistant Treponema pallidum strains in a London centre. Sex Transm Infect 2011; 87: 486–88
- Grimes M, Sahi SK, Godornes BC, et al. Two mutations associated with macrolide resistance in *Treponema pallidum*: increasing prevalence and correlation with molecular strain type in Seattle, Washington. Sex Transm Dis 2012; 39: 954–58.
- 9 Chen CY, Chi KH, Pillay A, et al. Detection of the A2058G and A2059G 23S rRNA gene point mutations associated with azithromycin resistance in Treponema pallidum by use of a TaqMan real-time multiplex PCR assay. J Clin Microbiol 2013; 51: 908–913.
- 5 Šmajs D, Paštěková L, Grillová L. Macrolide resistance in the syphilis spirochete, Treponema pallidum ssp. pallidum: can we also expect macrolide-resistant yaws strains? Am J Trop Med Hyg 2015; 93: 678–83.
- 5 Majs D, Norris SJ, Weinstock GM. Genetic diversity in Treponema pallidum: implications for pathogenesis, evolution and molecular diagnostics of syphilis and yaws. Infect Genet Evol 2012; 12: 191–202.



## The Lancet Commission on malaria eradication

Published Online April 16, 2018 http://dx.doi.org/10.1016/ S0140-6736(18)30911-5

This online publication has been corrected. The corrected version first appeared at thelancet.com on April 19, 2018

For African Leaders Malaria Alliance see http://alma2030.org/ For Asia Pacific Leaders Malaria Alliance see http://aplma.org/ For the RBM Partnership to End Malaria see https:// rollbackmalaria.com/ 20 years ago, infectious diseases dominated the global health agenda. Policy makers, researchers, implementers, and donors united in the fight against infectious diseases, creating the Millennium Development Goals, the Global Fund to Fight AIDS, Tuberculosis and Malaria, Gavi, the Vaccine Alliance, the US President's Emergency Plan For AIDS Relief (PEPFAR), the Roll Back Malaria Partnership, the Multilateral Initiative on Malaria (MIM),<sup>1</sup> and more. Tremendous progress was made. Malaria benefited spectacularly and there has been a 47% reduction in global deaths from the disease since 2000.<sup>2</sup>

2014 marked a high point in progress, with record lows in malaria cases concurrent with strong levels of funding for malaria control and elimination efforts.<sup>2</sup> At this point, leaders began considering the ambitious goal of malaria eradication.<sup>3</sup> Political momentum on the eradication front has since grown: WHO convened a Strategic Advisory Group in 2016 to determine the feasibility of malaria eradication on the basis of current trends;<sup>4</sup> the End Malaria Council was established to drive progress towards malaria eradication with a focus

on leadership, financing, and the introduction of new diagnostic and treatment technologies;<sup>4</sup> and regional leadership structures for Africa (African Leaders Malaria Alliance) and Asia Pacific (Asia Pacific Leaders Malaria Alliance) have been working to strengthen policy and political and financial commitment.

The process that has been called shrinking the malaria map is accelerating.<sup>5</sup> Since 1900, roughly half of all countries in the world have eliminated malaria, including 19 countries since 2000.<sup>5</sup> The European region is now malaria free, and Sri Lanka has been free of local malaria transmission for more than 5 years.<sup>6,7</sup>

Despite this progress, in 2017 there was an increase in malaria cases in the Americas, Asia, the Western Pacific, and particularly, in high burden countries in Africa.<sup>2</sup> This setback has contributed to scepticism about the technical feasibility of eradication. Although there are insufficient data on factors underlying the increase in cases, possible culprits include heavy rainfall in sub-Saharan Africa and India, declining malaria funding, insecticide resistance, and decreased access to interventions.<sup>2</sup> In light of these challenges, should

For **End Malaria Council** see http://endmalariacouncil.org/

the global health community still aim to eradicate malaria—have we set the bar too high? Or are these fluctuations in transmission to be expected as we work towards the ultimate goal of eradication?

The malaria community is reaching consensus that eradication is the only acceptable end goal. If we aim for anything short of eradication, the parasite and vector will become increasingly resistant to the drugs and insecticides available to combat the disease.<sup>8</sup> Without eradication, sustained effort would also be needed indefinitely, as the disease would be able to return with a vengeance, particularly in tropical areas with high anopheline vectorial capacity. There is also a strong ethical imperative to eradicate malaria, a disease mainly affecting poor and marginalised people. Malaria eradication offers a massive return on investment: every dollar spent returns up to US\$60 for the wellbeing of countries and their populations.<sup>9</sup>

With malaria eradication emerging as a pragmatic, ethical, and economically advantageous investment, the global health community needs more evidence to guide eradication strategies at national, regional, and global levels. To address this, The Lancet and the Malaria Elimination Initiative at the Global Health Group, University of California, San Francisco have convened the Lancet Commission on malaria eradication, designed to complement and supplement the WHO Strategic Advisory Group on malaria eradication. The Commission will elaborate the scientific, financial, and operational requirements to achieve malaria eradication. Some of the questions to be addressed by the Commission are shown in the panel. The Commission comprises 24 leaders in science, epidemiology, policy, finance, economics, and implementation (appendix). The Commissioners will meet two or three times over the next 12 months with the aim of publishing the Commission's report in 2019.

The Commission's work will emphasise the dual imperative to shrink the malaria map, while intensely reducing the burden of disease in high transmission areas. The Commission will pay special attention to the endgame: the last battle that will probably play out in high transmission countries in equatorial Africa. The comprehensive synthesis developed by the Commission will be intended to propel continued progress towards elimination using available tools in parallel with the development of future innovations, including the

## Panel: Questions to be addressed by the Lancet Commission on malaria eradication

The Lancet Commission on malaria eradication will develop a comprehensive roadmap for the eradication of malaria. Questions to be tackled by the Commission include:

- Why should we eradicate malaria and what return on investment can we expect?
- What are the costs of eradication and who will pay?
- How will global megatrends (eg, urbanisation) facilitate or impede malaria eradication?
- In which countries will malaria eradication prove most difficult and where will the last battlegrounds be?
- Which new game-changing technologies are likely to be essential to complete the eradication task?
- How will malaria eradication support universal health coverage and vice versa?
- How can programme implementation be strengthened at the national and subnational levels?

potential use of CRISPR-Cas9 gene drive technology to modify parasites or mosquitoes. 10,11

While the task of malaria eradication will be formidable, 20 years of progress have brought us more than halfway there. This month is an important time for the malaria community. MIM reconvenes in Dakar, Senegal, after 21 years at the 7th MIM Pan African Malaria Conference on April 15–20, 2018, where researchers will share the latest research findings and agree on new strategies to advance elimination and eradication. Today the pace of scientific advance and innovation continues to accelerate with pilot studies to evaluate the first malaria vaccine underway.12 At the same time, leaders gather in London, UK, on April 16-20 at the Commonwealth Heads of Government Meeting where malaria is firmly on the agenda. The 53 Commonwealth countries are home to 60% of all malaria cases and 52% of all malaria deaths. 2,13 A bold commitment by the Commonwealth could greatly increase the prospect of malaria eradication within a generation.

The fight against malaria has made exceptional progress in the past decades. We are now poised to embark on a journey towards eradication. Building on this momentum and harnessing the combined energy and commitment of politicians, scientists, implementers, and the public and private sectors, we have both the opportunity and responsibility to create a world free of malaria.<sup>5</sup>

For the 7th MIM Pan African Malaria Conference see http://s289900589.onlinehome. fr/mim2018/en/

For the Lancet Commission on malaria eradication see http://www.shrinkingthe malariamap.org/eliminationeradication/lancet-commissionmalaria-eradication/

For the **2018 Commonwealth Heads of Government Meeting**see https://www.chogm2018.
org.uk/

See Online for appendix

\*Ingrid Chen, Rebecca Cooney, Richard G A Feachem,
Altaf Lal, Winnie Mpanju-Shumbusho
UCSF Global Health Sciences, University of California,
San Francisco, San Francisco, CA 94158, USA (IC, RGAF);
The Lancet, New York, NY (RC); Sun Pharmaceuticals Industries
Limited, Haryana, India (AL); and RBM Partnership to End Malaria,
Grand-Saconnex, Geneva, Switzerland (WM-S)
ingrid.chen@ucsf.edu

RC and WM-S declare no competing interests. IC and RGAF receive grants from the Bill & Melinda Gates Foundation, which is supporting this Commission. The Malaria Elimination Initiative (MEI) of the Global Health Group at UCSF exists to accelerate the progress of malaria elimination and eradication. The MEI collaborates in this endeavour with numerous governments and organisations around the world. Funding comes from multiple sources. AL is the Senior Advisor Global Health and Innovation at Sun Pharmaceuticals Industries Limited; Sun Pharma has developed the antimalarial drug Synriam, which has been launched for use in India, and Sun Pharma's Foundation for Disease Elimination and Control is working with the Indian Council of Medical Research and Government of Madhya Pradesh to demonstrate feasibility of eliminating malaria using case management and vector control strategies in 1233 villages of District Mandla in Madhya Pradesh.

- Bruno JM, Feachem R, Godal T, et al. The spirit of Dakar: a call for action on malaria. Nature 1997; 386: 541.
- WHO. World malaria report 2017. Geneva: World Health Organization, 2017. http://www.who.int/malaria/publications/world-malaria-report-2017/ report/en/ (accessed April 4, 2018).
- 3 Gates B, Chambers R. From aspiration to action: what will it take to end malaria? 2014. http://endmalaria2040.org/ (accessed April 4, 2018).

- 4 WHO. New WHO advisory group tackles key questions on malaria eradication. Oct 11, 2016. http://www.who.int/malaria/news/2016/ advisory-group-malaria-eradication/en/ (accessed April 4, 2018).
- 5 Newby G, Bennett A, Larson E, et al. The path to eradication: a progress report on the malaria-eliminating countries. Lancet 2016; 387: 1775-84
- 6 WHO. From over 90 000 cases to zero in two decades: the European Region is malaria free. April 20, 2016. http://www.euro.who.int/en/media-centre/ sections/press-releases/2016/04/from-over-90-000-cases-to-zero-in-twodecades-the-european-region-is-malaria-free (accessed April 4, 2018).
- 7 Senaratne R, Singh PK. Against the odds, Sri Lanka eliminates malaria. Lancet 2016; 388: 1038-39.
- 8 malERA Refresh Consultative Panel on Insecticide and Drug Resistance. malERA: an updated research agenda for insecticide and drug resistance in malaria elimination and eradication. PLoS Med 2017; 14: e1002450.
- 9 Tanner M, Greenwood B, Whitty CJM, et al. Malaria eradication and elimination: views on how to translate a vision into reality. BMC Med 2015; 13: 167.
- 10 Hammond A, Galizi R, Kyrou K, et al. A CRISPR-Cas9 gene drive system targeting female reproduction in the malaria mosquito vector Anopheles gambiae. Nat Biotechnol 2016; 34: 78–83.
- 11 Lee MC, Fidock DA. CRISPR-mediated genome editing of Plasmodium falciparum malaria parasites. Genome Med 2014; 6: 63.
- 12 PATH Malaria Vaccine Initiative. RTS, S. Ghana, Kenya, and Malawi to take part in WHO malaria vaccine pilot programme. 2017. http://www. malariavaccine.org/malaria-and-vaccines/first-generation-vaccine/rtss (accessed April 11, 2018).
- 13 Commonwealth Heads of Government Meeting London 2018. Towards a common future. 2018. https://www.chogm2018.org.uk/ (accessed April 12. 2018).



## Social lobbying: a call to arms for public health



The term lobbying derives from the public lobbies of the UK Houses of Parliament in London, where concerned citizens have gathered since at least the 16th century to speak with elected officials on the sidelines of legislative debates. In today's parlance, lobbying has evolved to represent a more pernicious and systematic approach to influencing lawmakers, occurring much deeper within the corridors of power.

In 2018, industry representatives from food to automotive to energy sectors and beyond exercise their right to petition elected officials in the name of profits, not people. In the past decade, companies have spent more than US\$3 billion annually on lobbying in the USA alone.¹ Between 2002 and 2012, total expenditure on lobbying by business in the USA grew at 4% per year, twice the growth rate of US gross domestic product. Expenditure over the same period on lobbying by the sugary-drink and fast-food industries grew at 9·2% and 12·3%, respectively.² Carefully protecting special interests, many companies and industry groups lobby to prevent new laws and regulations that threaten profits, including efforts to curb the consumption of products known to harm human

health. Unsurprisingly, lobbying has been identified as one of four key channels—along with marketing, extensive supply chains, and corporate social responsibility—that contribute to the success of corporate influence.<sup>3</sup>

Contrastingly, civil society and non-profit sectors do not engage in lobbying to the same extent. A 2007 study of a cross-section of over 1700 non-profit advocacy groups found that almost two-thirds had "never" or "infrequently" engaged in lobbying.<sup>4</sup> Further research found that just half of non-profit organisations surveyed from a range of disciplines in the USA were engaged in even the least-demanding forms of lobbying or advocacy.<sup>5</sup>

In this context, we define social lobbying as advocacy with the intention of influencing decisions made by governments, solely to protect and further the greater social good, including health. There are various reasons why public health organisations—universities and research groups, non-profit, civil society organisations, and other advocates—largely shy away from social lobbying. Many non-profit groups, particularly health and human services organisations, rely on government funding, making them less willing to engage in political