

International Health Lecture 2009

This is a summary of the Academy of Medical Sciences' 2009 International Health Lecture on '*Malaria elimination: feasible or futile*' given by Professor Nicholas White FRS FMedSci at the Wellcome Collection on 17 November.

The summary is set out below in the left hand column. It can be read on its own or in parallel with the slides that accompanied the lecture, which can be found at <http://www.acmedsci.ac.uk/p44evid121.html>. The right hand column indicates which slides are relevant to which sections of text.

| Summary | Slide |
|--|--------------|
| <p>Malaria is an infectious, life-threatening disease caused by the parasite <i>Plasmodium</i>, which is transmitted via the bites of infected mosquitoes. It claims around 800,000 lives per year; most of them in sub-Saharan Africa, and around one fifth of the global population live in areas where malaria is present. But although the disease can be prevented and treated, it has yet to be eliminated. Here, Professor Nicholas White FRS FMedSci argues that eradication is possible and necessary, but that focus, funding, leadership and a commitment to long-term change are crucial.</p> | 2-5 |
| <p><i>The ups and downs of malaria</i></p> <p>Although malaria remains a serious threat to public health, it was once far more widespread and could be found in parts of Europe, Russia, China and the United States. The first effective treatment, the tree bark-derivative quinine, helped curb the disease in the late 19th and early 20th centuries. And the increased use of the pesticide DDT and the prophylactic drug chloroquine around the end of World War II later spurred the World Health Organisation (WHO) to launch the first Global Eradication Programme.</p> | 6-14 |
| <p>The largely DDT-based scheme, which lasted from 1955 to 1966, yielded mixed results. And although there was little change in sub-Saharan Africa, the disease was successfully banished in other areas including Europe and North America.</p> | 15-17 |
| <p>But inadequate funding, failing vector control and the emergence and spread of anti-malarial drug resistance meant the success stories were short-lived. And in Sri Lanka, for example, malaria rebounded from just 18 cases in 1966 to over half a million cases in 1969.</p> | 18-21 |
| <p>The focus shifted from eradication to containment and although a promising new group of anti-malarial drugs, the artemisinins, emerged from China in the 70's, there was an institutional reluctance to endorse them. As a result, malarial deaths increased in Africa in the 80's and 90's because the disease was treated with drugs that didn't work.</p> | 22-24 |
| <p><i>A change in fortune</i></p> <p>Then, in the new millennium, things began to change for the better. A renewed</p> | 25-35 |

interest in malaria, backed by high profile politicians and celebrities, saw funds flourish and in 2007 Bill and Melinda Gates declared war on the disease. Eradication was back on the global health agenda, but this time it was backed by hundreds of millions of dollars-worth of support from a mix of wealthy donors.

And the tools for the job are already in place. Indoor residual spraying with insecticides reduces transmission by killing the malaria-carrying mosquitoes. 36-39
 Insecticide-treated bed nets stop people getting bitten, and kill malaria carrying mosquitoes. In Kenya their free distribution has seen child deaths from malaria halved in high risk areas. 42-46

Lack of an effective vaccine is not seen as a barrier to elimination. If an effective vaccine is deployed it would prove useful in sustaining elimination. Potent artemisinin combination treatments (ACTs), recommended as first line of treatment by the WHO since 2006, have dramatically reduced malaria mortality whilst helping prevent the emergence of drug resistance. 40-41
 47-64

Where are we now?

In 2008, the Roll Back Malaria Partnership launched the Global Malaria Action Plan to rid the world of malaria. The plan focuses on three key areas: 165-66

1. Aggressive control in the malaria heartland to achieve low transmission and mortality in those tropical countries currently experiencing the highest burden of disease and death.
2. Progressive elimination of malaria from the endemic margins where transmission is low.
3. Research to bring forward a vaccine and better drugs, diagnostics, insecticides and other tools.

The Plan generated much interest from many different groups including WHO, The Global Fund, The World Bank and UNICEF, but in the absence of any clear leadership, it's unclear how it will be implemented. And current political unrest and conflict in parts of central Africa means that physical access to many of the most malaria-affected areas is restricted, making any interventions difficult and potentially dangerous. 67-70
 75-76
 78-79

In the meantime, the Malaria Elimination Group, recommends shrinking the malaria map by eliminating the disease in the 39 countries where it is nearly gone. And some countries have been quietly eliminating malaria on their own initiative – Algeria, Armenia and Morocco for example, have no local transmission and are shortly to be certified malaria free. 71-74

Is elimination possible?

So malaria *is* beginning to fade in those parts of the globe where control measures are being successfully applied, but the WHO's recommended 80% coverage target for ACTs remains optimistic with many people still unable to access these vital drugs. 81

Price too is prohibitive, and in 2004 the Institute of Medicine suggested that effective anti-malaria treatments be subsidised in the private sector to help make them affordable to all. But five years later, little has changed and cheaper, ineffective drugs 82-84

remain the mainstay of private care.

To make matters worse, current anti-malarials are often used at the wrong dose, and counterfeit versions are becoming increasingly common. There are not enough new anti-malarial drugs in the R&D pipeline, and those that do exist are variants of existing anti-malarials rather than new molecules with new properties. 85-96

Finally, and of great concern, are signs that our key drug against malaria, artemisinin, is starting to fail in Cambodia. The worry is that if malaria parasites develop full blown resistance to artemisinin and its derivatives, there will be nothing in the malaria drug pipeline to replace these compounds for five years or more. Given Cambodia's history as a site of emerging anti-malarial resistance, the elimination of malaria in Western Cambodia is therefore essential in order to prevent the spread of artemisinin resistance. But at the present time, there is no effective campaign in place to do this. 106-111

Hanging in the balance

The imminent, projected global costs of malaria control and elimination are around \$6.2 billion. But with the global economy still reeling from the recent financial crisis and emerging reports of artemisinin resistance, the concern is that plans for elimination will once more slip off the political agenda. 97-102

Political leaders should not fall into complacency, but honour their promises and commitments to control malaria. We have the tools to rid our world of malaria, but whether or not this will happen hangs in the balance. What is clear is that the huge humanitarian benefits of malaria elimination make the job worthwhile. And too much has been gained so far to lose the momentum for malaria elimination. 103-105
113

Weblinks

Roll Back Malaria Global Action Plan <http://www.rollbackmalaria.org/gmap/gmap.pdf>

Malaria Elimination Group <http://www.malariaeliminationgroup.org/>

WHO Malaria Information <http://www.who.int/topics/malaria/en/>

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