

**Written Testimony of
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President of the USA Board of Medicines for Malaria Venture
and Chair of MMV's Expert Scientific Advisory Committee**

**Before the
House Foreign Affairs Subcommittee on Africa, Global Health, and Human Rights**

December 5, 2011

Mr. Chairman, Congressman Payne and Members of the Subcommittee, my name is Dennis Schmatz, I am President of Medicines for Malaria Venture's (MMV) U.S. Board and I Chair the MMV Expert Scientific Advisory Committee. I thank you for the opportunity to testify on the role that drug development plays in combating malaria in Africa and around the world.

Since WWII, when malaria played a major strategic role in disabling hundreds of thousands of our troops, the United States has been a key player in the development of malaria drugs.¹ Those treatments, originally deployed for our troops, were used in the 1950s and 1960s to assist the first global wave of malaria eradication. As those drugs became less and less effective due to growing resistance of the parasite, the US again became involved in malaria drug development for our troops in East and Southeast Asia.

Since then, the United States has continued a leadership role in malaria drug research, in part to protect our continued interests around the world, and in part to care for the millions of people who contract the disease each year. When these people sicken, they are unable to earn wages, and countries lose billions of dollars in GDP per year.² In addition, malaria remains a

¹ Malaria affected US soldiers during World War II throughout Europe and Asia. For example, according to the US Army Department Office of Medical History, from 9 July to 10 September 1943, during the fierce Sicilian campaign, there were 21,482 hospital admissions for malaria compared with 17,375 battle casualties. Because most of the infections were with *P. vivax*, there were many incapacitating relapses during the spring of 1944. (citation: <http://history.amedd.army.mil/booksdocs/wwii/Malaria/chapterI.htm>) According to one military historian, there were as many as half a million cases of malaria among the military during the war.

Malaria continued to threaten troops in Korea but became even more of a problem in during the Vietnam War, as the parasite developed resistance to the frontline treatment of chloroquine. (citation: <http://www.npr.org/2011/09/01/139641878/at-walter-reed-military-medicine-fights-malaria>) Although the treatment and prevention of malaria for troops has improved significantly from these earlier wars, Walter Reed Army Medical Center continues to be very active in the field of malaria treatment and prevention, and MMV has worked with the Center in its development of new medicines.

² "Taking into account initial poverty, economic policy, tropical location, and life expectancy, among other factors, countries with intensive malaria grew 1.3% less per person per year, and a 10% reduction in malaria was associated

leading cause of death in many developing countries despite being a preventable and entirely treatable disease. While recent global efforts have made significant progress against the malaria parasite, the burden of malaria remains staggering, especially on the very young, as illustrated by the following facts:

- ▲ An estimated 781,000 people died from malaria in 2009
- ▲ 85 percent of people dying are children under the age of 5
- ▲ A child dies every 45 seconds from malaria and disease accounts for approximately 20% of all childhood deaths in Africa
- ▲ 125 million pregnancies are at risk of malaria every year, and up to 200,000 infants die as a result

As both the subcommittee and the Congress has recognized, continued investment in malaria drug research benefits both the United States and its allies, both troops and civilians, around the world. MMV itself received \$2.5M from USAID in 2011, and \$1.15M from the NIH. In turn, we will invest approximately \$10M in work in the United States in 2011 distributing additional funds from other donors such as the Bill and Melinda Gates Foundation, and the governments of the United Kingdom, Switzerland and Ireland.

MMV is your expert partner in this life-saving work.

As a public-private partnership based in Switzerland and registered as a 501(c)(3) in the United States, our mandate is to discover, develop and deliver effective and affordable medicines to those who need them most. We lead collaborations around the world to do three things:

- ▲ To protect the most vulnerable people, including children and pregnant mothers
- ▲ To find new treatments that make management of malaria better, cheaper and easier
- ▲ To prevent transmission and cure relapse of malaria to help finally eradicate this disease.

In protecting the most vulnerable, MMV can point to two recent successes. First, in 2009, we launched Coartem® Dispersible in partnership with Novartis. Coartem® Dispersible is a cherry flavored pediatric formulation of the effective but bitter adult drug Coartem®. Before the

with 0.3% higher growth,” Gallup, John Luke and Jeffrey D Sachs, “The Economic Burden of Malaria”. Am. J. Trop. Med. Hyg., 64(1, 2)S, 2001, pp. 85–96.

development and distribution of this pediatric drug, adult tablets were crushed and given to children. The dosing was approximate, and children often spit or vomited it up, making dosing, and thus a cure, even more difficult. Since the new drug's launch in 2009, however, the situation has changed: over 92 million doses have been distributed in 35 countries and it is rapidly becoming the preferred treatment throughout Africa for young children.

Following up on this breakthrough drug, MMV partnered with Guilin Pharmaceutical Company, to manufacture and deliver an injectable artesunate to treat severe malaria. Studies published in the U.K. medical journal *The Lancet* show that injectable artesunate results in 22.5% fewer deaths than the commonly used IV quinine.³ It is much easier to administer than an IV drip, and it has many fewer side effects. Because of these and other factors, Doctors Without Borders estimates that some 195,000 lives could be saved each year with this drug.⁴ Since it was launched in January of this year, our partnership has been responsible for delivering over 1.1 million vials of this life-saving drug, enough for 237,000 severely ill patients.

Most recently, MMV developed Eurartesim with sigma-tau Pharmaceuticals and received European Medicines Agency approval in October, 2011. Eurartesim is highly effective against *P. falciparum* malaria in adults and children, has a simple dosing regimen (only three administrations over three days) and has significant protection against new infections for at least two months after treatment. Developed to high international standards, DHA-piperaquine meets WHO clinical treatment recommendations as it combines two active antimalarial ingredients in a single tablet: the highly potent artemisinin-derivative (dihydroartemisinin) with a second antimalarial (piperaquine) which protects the first one against the emergence of resistance.

MMV is very proud of what we have accomplished with all of our partners to date.⁵ Despite our best efforts, however, there are acute medicine needs that are still unmet. Key

³ Dondorp AM, Fanello CI, Hendriksen IC, Gomes E, Seni A, Chhaganlal KD, et al. Artesunate versus quinine in the treatment of severe falciparum malaria in African children (AQUAMAT): an open-label, randomised trial. *Lancet* 2010;376:1647-57.

⁴ *Making the Switch: Ensuring Access to Improved Treatment for Severe Malaria in Africa*. Medecins Sans Frontiers. April 2011

⁵ Among our partners in the United States are Rutgers University, Merck and Company Inc. in Whitehouse Station, New Jersey, the University of Nebraska Medical Center, Drexel University College of Medicine, the University of Pittsburgh, Columbia University, Cornell University, Anacor Pharmaceuticals Inc. of Palo Alto, California, Bio Ventures for Global Health in San Francisco, the University of South Florida, and Walter Reed Army Institute of Research.

among them is that resistance to artemisinin, the primary compound in all of the frontline drugs, appears to be developing on the Thai-Cambodian border.⁶ This is the same location where the last great waves of malaria resistance to chloroquine developed.

The last time this happened the world was caught empty handed, with millions of people exposed to malaria and no effective drug to cure them. Our own citizens were among them.

We simply cannot be caught empty-handed again. We must have new drugs at the ready to combat resistance when it develops. Those drugs simply aren't there right now. And should resistance emerge with no treatments to combat it, we will lose much of the successful work that has been accomplished to roll back malaria around the globe.

The current drugs are imperfect, either because the full treatment takes too long to complete, or the cost of treatment is prohibitive for those who need the treatments the most. In order to solve this dilemma, MMV is working on a single-dose cure that is not based on artemisinin. A single-dose cure could dramatically change the way that malaria is treated throughout the world. Such a drug, currently known as OZ439, is currently in Phase II studies. Incidentally, the number 439 refers to the number of different compounds we had to develop in order to get to such a promising molecule.

And this is where I circle back to where I began discussing the role of the United States as OZ439 originated at the University of Nebraska, was developed in a collaboration with partners on two other continents, and was funded and nurtured by MMV. If it lives up to its promise, OZ439 could be one of the most valuable gifts that the United States has brought to the fight against malaria.

In truth, though, because drug development is a complex scientific process, and because there are often unexpected events during clinical development, neither MMV nor its partners can take the risk of depending on just one compound in development. Therefore we are developing a

⁶ According to the World Health Organization's Global Plan for Artemisinin Resistance Containment "Artemisinin resistance has been confirmed in a limited area within the Greater Mekong subregion, and evidence from other potential foci in this region is under review. Experts agree that we have a limited window of opportunity to contain or eliminate the resistant parasites before they spread to higher-transmission areas, putting at risk recent progress in malaria control. The urgency is increased by the fact that no other antimalarial medicines are available that offer the same levels of efficacy and tolerability as ACTs, and few promising alternatives are available in the immediate research and development pipeline." *Global Plan for Artemisinin Resistance Containment*, WHO 2011. p. 15.

portfolio of projects around the world, including other very promising projects in the United States which can supply the next two generations of drugs to combat malaria.

You have heard, and you will hear, my distinguished colleagues on the panel discuss the crucial places that preventions such as nets and vaccines, vector control such as insecticides, and diagnostics play in the fight against malaria. These interventions and the continued deployment of new drugs against this parasite will be crucial in order to eradicate the disease. If there is anything that the world learned in its last great foray into eradication, it was that over-reliance on one weapon quickly led to defeat.

In conclusion, Ladies and Gentlemen, the United States Congress, and the Executive Branch through the President's Malaria Initiative, USAID and NIH, are all key players in this area. MMV, is pleased to be a partner with you in this arena, and looks forward to our eventual victory in this fight.

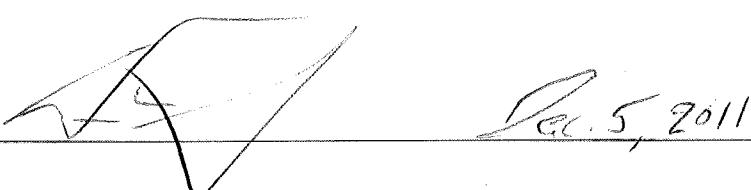
Without a continuous supply of innovative medicines, defeating malaria will not be possible. A future without malaria is within reach, but only if we stay vigilant toward completing the mission.

Thank you for the opportunity to testify.

United States House of Representatives
Committee on Foreign Affairs

"TRUTH IN TESTIMONY" DISCLOSURE FORM

Clause 2(g) of rule XI of the Rules of the House of Representatives and the Rules of the Committee require the disclosure of the following information. A copy of this form should be attached to your written testimony and will be made publicly available in electronic format, per House Rules.

1. Name: Dennis Schmatz, Ph.D.	2. Organization or organizations you are representing: Medicines for Malaria Venture
3. Date of Committee hearing: December 5, 2011	
4. Have <u>you</u> received any Federal grants or contracts (including any subgrants and subcontracts) since October 1, 2008 related to the subject on which you have been invited to testify?	5. Have any of the <u>organizations</u> you are representing received any Federal grants or contracts (including any subgrants and subcontracts) since October 1, 2008 related to the subject on which you have been invited to testify?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. If you answered yes to either item 4 or 5, please list the source and amount of each grant or contract, and indicate whether the recipient of such grant was you or the organization(s) you are representing. You may list additional grants or contracts on additional sheets.	
USAID 2008: \$1.5M; 2009: \$1.5M; 2010: \$1.5M; 2011: \$2.5M NIH 2008: \$1.06M; 2009: \$1.08M; 2010: \$1.1M; 2011: \$1.5M	
7. Signature:  Dec. 5, 2011	

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