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1001 Connecticut Ave NW • Suite 1250 • Washington, DC 20036
202.331.1010 • www.cei.org

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DDT Saves Lives in Fight against Malaria

By Roger Bate and Richard Tren*

The President's decision in June to spend an additional \$1.2 billion over five years to halve the cases of malaria around the world was very welcome. Sadly, this noble gesture may be worth less than it should be, due to excessive reliance on bad advice and continued trust in an agency with a poor record on malaria control.

It is the current fashion in international public health to attempt malaria control with insecticide-treated bednets. However, the U.S. Agency for International Development (USAID), which has been put in charge of the project, buys very few nets. In the recent past, while USAID has spent over \$400 million on malaria control, analysis of the 2004 budget shows less than 10 percent of this was spent on actual commodities that save lives.¹ USAID considers that its area of expertise is to provide technical assistance and this is consistent with why 81 percent of its 2004 budget never left the United States.¹ While USAID advises people to sleep under bednets and doctors to buy drugs, it regards the provision of these essentials to be somebody else's job. USAID is reticent about

***Roger Bate** is a resident fellow at the American Enterprise Institute (AEI) in Washington, D.C. He researches aid policy in Africa and the developing world, evaluating the performance and effectiveness of USAID, the World Bank, the Millennium Challenge Corporation, NGOs, as well as other aid organizations and development policy initiatives. Before joining AEI, Mr. Bate founded the Environmental Unit at the Institute of Economic Affairs in 1993, co-founded the European Science and Environment Forum (1995–2001), and Africa Fighting Malaria. He has also served as both a director and fellow at the International Policy Network in the United Kingdom.

Richard Tren is co-founder and director of Africa Fighting Malaria, a health advocacy group based in the United States and South Africa. His research focuses on the political economy of malaria control, the benefits of private ownership of water in South Africa, deregulation of agriculture, and health and development policy. He co-authored (with Roger Bate) *Malaria and the DDT Story* (Institute of Economic Affairs, 2001), which was published in South Africa, the United Kingdom, the United States, and India. Mr. Tren has completed research projects for, among others, the South African Government, and written frequently for *Business Day* (South Africa), the *Wall Street Journal Europe*, and *Business Standard* (India).

publishing data on its projects, but in the few cases that have been detailed it was shown that, while this advice had been dispensed, neither bednets nor drugs were available.¹

Net Distribution is not Disease Prevention. Nevertheless, USAID touts its policy as a success and hopes to apply the model in Angola. According to its own reports: “[T]he distribution of free ITNs [insecticide treated nets] to mothers at the time they bring their children for immunizations has been very successful in both Togo and Zambia.”^{2 3} Ninety percent of mothers went away with bednets. But distribution is not protection; unfortunately USAID considers distribution a successful end-point. This is a fatally flawed assumption for several reasons.^{i ii}

In the rural areas, after six months, only 72 percent of households had even bothered to hang up the nets.^{iv} Donald Roberts, Professor of Tropical Diseases at the Uniformed Services University of the Health Sciences, analyzed USAID’s papers for Africa Fighting Malaria—the organization that we head—and said that: “A review of data on use of insecticide treated nets in Zambia and Togo show that even when nets are provided free of charge, less than 56 percent of children possessing nets actually sleep under them. Net usage in urban areas is considerably less than the 56 percent usage in rural areas.”^{iii iv}

Only one net per household is distributed. Since children under five are at greatest risk of death, the youngest child is often allowed the protection, but what if there are several children under five in the house?⁴ What about other family members? Many malarial mosquitoes enter houses at sunset and feed most aggressively in the early hours of darkness, so unless a child is actually in bed under the net at nightfall he is at risk. If the protected child cannot sleep and wants to get into bed with Mom and Dad, stay up late, or get up early he is at risk.

Furthermore, the insecticide—usually synthetic pyrethroids—in the net wears off after several months and, unless USAID is planning to buy long lasting insecticide nets, the net has to be taken for re-treatment. It is unclear from the reports from Zambia and Togo how many nets were brought back for re-treatment. Additionally, nets can be torn easily and subsequently offer very little protection. USAID cannot claim success in net distribution when it doesn’t even know if the nets have been re-treated.

None of these problems were measured in USAID-backed reports to estimate real efficacy, and, far more importantly, there was no effort to measure impact on morbidity or mortality from malaria.

The Solution: Indoor Residual Spraying. Fortunately, there are highly effective alternatives. Several southern African states have initiated their own programs using a proven prevention method along with new treatment drugs to successfully control malaria. The only problem with this method is that it is politically unpopular in the developed world, and, most dismaying, it is shunned on environmental grounds that have no relationship to usage in malaria control.

The best method of protection against malaria, in use for 50 years, is indoor residual spraying (IRS), which consists simply of spraying insecticide on the interior walls of

houses. And the most effective, safest, cheapest, longest-lasting insecticide for this job is DDT—it crucially deters mosquitoes from entering a building where it has been sprayed. DDT eradicated malaria from the U.S. and Europe and its careful use led to dramatic declines in many other parts of the world. But over the last four decades environmental activists have persuaded public health professionals against using insecticide sprays, especially DDT.

Where this dubious advice has been followed, malaria rates have risen proportionately to the reduction in spraying. But fortunately, those countries that did not have to rely on foreign funding for malaria protection—and could therefore afford to make their own public health decisions—went back to using DDT. A private initiative by a mining company in Zambia, covering over 360,000 of its workers, their families, and surrounding villages, reduced malaria incidence by 50 percent in just one year.⁵ After South Africa suffered its worst ever malaria outbreak, it decided to risk Western displeasure and revert to the old methods. In one year, incidence of malaria was reduced by 80 percent.⁶ Uganda is currently considering a return to DDT but is being threatened by the European Union (EU) with sanctions against agricultural products. The EU claims that DDT bought for public health protection could be corruptly sold to farmers and that residues would end up in produce.

USAID's Wrong Approach. USAID's initial plans for spending the new funds grudgingly include some indoor residual spraying in Angola and Uganda, but only in very limited ways. USAID has no plans to procure DDT for Uganda and while the Global Fund may be procuring DDT, USAID is not actively supporting this decision even though it is the desire of Uganda's government. Uganda's Minister of Health, Jim Muhwezi noted recently that, "DDT has been proven, over and over again, to be the most effective and least expensive method of fighting malaria."⁷ Were USAID not to support the use of DDT, they would be failing the citizens of Uganda and would be opposing that sovereign government's wishes.

Unfortunately USAID also considers, mistakenly, that IRS cannot be used in rural areas of the country because of logistical obstacles. Several other countries such as South Africa and Zambia are using IRS effectively in rural areas, and Uganda can too.

If one describes success as merely distributing bed nets, costs can be kept low, but as explained above distribution is not disease protection. Furthermore, given the agency's history of preferring to fund workshops and consultants rather than malaria-prevention commodities, these plans should be viewed with some skepticism. In addition, it has been Uganda's stated policy for some time to use DDT in malaria control, yet USAID considers that DDT can only be purchased as a last resort. The reality is that USAID officials have never been sufficiently convinced that we have reached that last resort, despite the fact that more than a million people die of malaria in Africa every year and that DDT is currently saving many thousands of lives in numerous different countries.

Finally, aside from these technical issues, your goal of "halving" malaria cases will remain meaningless in the absence of reliable baseline data on malaria cases. Right now there are none. Halving an unknown quantity is an impossibility. Unlike most bednet

dependent malaria programs, most of the IRS programs in Africa carefully monitor changes in death and disease and adapt their programs so that they are as effective as possible. Tragically for millions of African children, the World Health Organization and its partners in the Roll Back Malaria program—including UNICEF, USAID, and the World Bank—never bothered to measure baseline malaria rates in 1998 when the program started. This did not deter the Roll Back Malaria partners from pledging to halve the burden of malaria by 2010; a patently dishonest and insulting promise. Meanwhile, the estimates that do exist show a probable *increase* in malaria cases and deaths over the past decade.

Concluding his analysis of bednet distribution programs in Togo and Zambia and USAID's favored approach, Professor Roberts says: "These data show the fatal flaw of placing total reliance on use of insecticide treated nets for malaria prevention. Additionally, the costs, planning, and infrastructure required for net use are far greater and more demanding of scarce public health resources than proponents are willing to admit."

Conclusion. President Bush has shown great foresight and compassion in determining to control malaria, and has consistently mentioned the need for IRS. But by setting a target that is not measurable, and using USAID, which grudgingly accepts moderate coverage of IRS, as implementing organization, little good will come. Yet it is not too late. If the Bush Administration shifts USAID to buying malaria-preventing commodities, especially DDT, and assesses performance on actual cases and deaths rather than simple bednet distribution, real success is possible.

Notes

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2 USAID Memo "President's Malaria Initiative (PMI) Jump Start Activities" Washington DC, Undated

3 Grabowsky M, Nobiya T, Ahun M, et al. 2005. "Distribution of Insecticide-Treated Bednets During an Integrated Nationwide Immunization Campaign – Togo, West Africa, December 2004." Article published in Centers for Disease Control and Prevention (CDC) Mortality and Morbidity Weekly Review (MMWR). October 7, 2005 / 54(39); 994-996.

4 Grabowsky M, Farrell N, Hawley W, et al. 2005. "Distribution of Insecticide-Treated Bednets During a Measles Vaccination Campaign Achieves High, Rapid, and Equitable Coverage at Low Cost." 2005; 1--40 (in press). Copy on file with authors.

5 B. Sharp et al. (2002) "Malaria control by residual insecticide spraying in Chingola and Chililabombwe, Copperbelt Province, Zambia" Tropical Medicine and International Health, 7, no 9: 732-36

6 R. Tren & R. Bate (2004) "South Africa's War Against Malaria – Lessons for the Developing World" Policy Analysis No. 513, Cato Institute, Washington DC

7 IRIN News.org "Anti DDT lobby could slow fight against malaria, minister says." 25 April 2005, IRIN UN Newswire.

http://www.irinnews.org/report.asp?ReportID=46790&SelectRegion=East_Africa&SelectCountry=UGANDA