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Malaria

Thank you, Chairman Coburn and Senator Carper. I appreciate the opportunity to testify here before you today.

The starting point for consideration of malaria programs is the fact that malaria is overwhelmingly – but not exclusively – a killer of African children. The greatest tragedy is that death from malaria is largely preventable if addressed in time and with basic interventions. That's also a call to action and a fact that does not weigh lightly on our hearts and minds.

In fact, malaria is the number one killer of African children, by most accounts, claiming the lives of at least one million each and every year. Between 80 and 90 percent of deaths from malaria are in sub-Saharan Africa, and of those deaths, about 80 to 90 percent are children under five years of age.

Remarkably, malaria is effectively eliminated in much of the world – with notable exceptions – but persists tenaciously in Africa. In fact, the disease has actually grown more deadly. Both in absolute terms and relative to the rest of the world, Africa is carrying a greater malaria burden and greater disease burden than it was two decades ago. Only in the past few years have we seen any clear indication that we might be turning the corner and making progress in some areas.

Why has malaria actually become more deadly in Africa when it has been effectively controlled or even eliminated as a health threat in most of the rest of the world? The answer is as significant to our considerations of where to go as it is surprising.

First, the effort to battle malaria in a comprehensive way and continent-wide is literally decades behind other regions. In the 1950s and 1960s, eradication of malaria was the number one global public health goal. In most other regions, including the Southern United States, the combination of insecticides and treatments was deployed on a massive scale across entire regions. The results were positive and significant. But not in Africa.

In 1955, a World Health Organization technical panel of the world's top malaria experts met in Kampala, Uganda. There, they decided to explicitly exclude tropical Africa from

the Global Malaria Eradication Program. The reasons were because of the intense and efficient transmission of the disease and because of the lack of infrastructure necessary to undertake such an intensive spraying effort. In short, Africa was left out because it was judged to be too difficult.

That decision essentially eliminated prevention and relied solely on treatment. Even until just the past few years, the backbone of the anti-malaria effort in Africa was limited to treatment of the disease once the symptoms appeared. While that response may have made sense in 1955 – and it may not have made that much sense even then – in retrospect it was a fateful and tragic decision that still has Africans paying a heavy price.

By the 1980s and into the 1990s, malaria infections and death rates were rising at alarming rates in Africa. The reason was treatment failure. Simply, as the disease adapted and evolved to the treatments, the drugs stopped offering the protection they once afforded. Populations in malarial areas became increasingly vulnerable.

It was not until the early 1990s that an organized and dedicated effort to introduce prevention measures on an appreciable scale began in Africa, funded largely by donors such as the United States. By this time the need for new treatments also became impossible to ignore.

Beginning in about 2000, three new, highly efficacious prevention and treatment tools became available through American and other donor research. Combined and fielded together, these measures represent the first truly comprehensive and globally-supported anti-malaria strategy to be deployed in the one place that needs it the most.

Comprehensive Strategy

USAID has in place a comprehensive strategy to battle malaria including, prevention, treatment, and malaria in pregnancy. This strategy also includes special efforts focusing on malaria in complex emergency settings. USAID programs for malaria control are based on a combination of internationally-agreed priority interventions and country-level needs for achieving the greatest public health benefit, most importantly, the reduction of most of the deaths.

The strategy contains three key components:

- Prompt and Effective Treatment with an effective anti-malarial drug within 24 hours of onset of fever;
- Prevention of malaria through the use of insecticide - treated mosquito nets (ITNs) targeted to young children and pregnant women, or spraying of homes' inside walls with insecticide; and
- Provision of Intermittent Preventive Therapy (IPT) for pregnant women as a part of standard ante-natal services.

Each of these interventions is backed by solid evidence of effectiveness under program conditions in reducing the sickness and death from malaria, especially in Africa.

Prevention of Malaria

The most effective way to prevent malaria is through the selective use of insecticides that kill the malaria-transmitting mosquito. Two options are available for getting insecticides into the homes of those most at risk: indoor residual spraying (IRS) and insecticide treated nets (ITNs). USAID supports the use of both IRS and ITNs. The real challenge is delivery of the insecticide to where it can do the most good to protect young children and pregnant women and thus to save as many lives as possible. That is, getting insecticide into the dwelling by the most available and efficient means. Both bed nets and spraying are very effective if used correctly; the choice of which intervention to use is determined by local conditions and needs.

Indoor Residual Spraying

IRS is the organized, timely spraying of an insecticide on the inside walls of houses. IRS is designed to interrupt malaria transmission by killing adult female mosquitoes when they enter houses and rest on the walls after feeding, but before they can transmit the infection to another person. Twelve insecticides are approved by the WHO for indoor spraying, one of which is DDT.

USAID supports IRS programs in several countries, including Eritrea, Zambia, Mozambique, Kyrgyzstan, Liberia, Angola and Burundi.

IRS is best suited for areas with sufficient infrastructure to support the necessary logistics -- such as in South Africa -- or in urban settings when local transmission of malaria is well documented, and in refugee camps. IRS spraying programs are maintained successfully and effectively in some southern African countries, especially where large populations are exposed to unstable malaria.

But these areas do not represent the extremely rural hyper-endemic parts of Africa where most malaria deaths occur. The challenge of spraying is greater in Africa's remote areas because those hard-to-reach areas must be treated and re-treated often.

ITNs

Soaking bed nets with insecticides is extremely effective in protecting people from malaria. By consistently sleeping under a treated bed net, sickness from malaria will decrease by 45 percent, premature births will be reduced by 42 percent, and all-cause child mortality will be cut by 17 to 63 percent.

ITNs are deployed now in the desperately poor rural areas of countries in Africa, where malaria-related mortality is highest. Evidence documenting how the use of bednets effectively protects against malaria is based on Centers for Disease Control and Prevention (CDC) field trials supported by USAID.

Free Nets to Those Most in Need

USAID promotes targeting free or heavily subsidized ITNs for the most vulnerable populations (pregnant women and children under five years) and the poorest populations – thus ensuring economics are not a barrier to net ownership.

The long-term sustainability of ITNs depends upon both the targeted distribution of subsidized ITNs and expanding commercial market distribution systems. Thus USAID supports expanding commercial market distribution, and developing new technologies -- especially in the area of long-lasting ITNs, and the expansion of ITN production capacity. Recent evidence clearly demonstrates that the combination of commercial marketing and targeted subsidies produces household coverage equally distributed across the socio-economic profile – from the poorest to the wealthiest families.

We have witnessed considerable progress in expanding coverage with bed nets in the past several years. For example, net coverage in Malawi (nationwide) increased from 13 percent in 2000, to 60 percent in 2005. ITN coverage also increased from 11 percent to 43 percent in Senegal, from nine percent to 40 percent in Zambia, and from zero percent to 21 percent in Ghana.

According to the World Malaria Report, the number of ITNs distributed has increased 10-fold during the past 3 years in more than 14 African countries. Much of the success in increasing net coverage for the most vulnerable is attributable to linking it directly to antenatal care and/or child immunization services, or national child immunization campaigns. In all these cases, surveys show a significant proportion of the nets being used by the primary target groups of children under five and pregnant women. In Tanzania, 53 percent of children under five years of age and 42 percent of pregnant women were using nets in 2003.

Even more promising are new technologies that now provide long-lasting nets that remove the necessity for retreatment. The increasing availability of long-lasting insecticide treated nets (LLINs) which have an effective lifespan of about four years without the need for retreatment, will remove this requirement altogether. The advent of LLINs makes nets even more cost-effective that before and will certainly account for more lives saved.

Commercial Partnerships to Build Sustainability

ITNs can be delivered through a variety of channels – public sector, NGOs, community groups, and the commercial sector – and are readily added to existing services, such as antenatal services, or immunization programs. USAID employs innovative models for

the delivery of highly subsidized or free ITNs in collaboration with national malaria control programs in Ghana, Senegal and Zambia, as well as UNICEF, the United Kingdom Department for International Development (DfID), the International Federation of the Red Cross (IFRC), NGOs and private sector partners such as ExxonMobil. With UNICEF this involves delivery of subsidized ITNs linked to routine immunization; with the Red Cross, ITNs are provided at no cost as part of targeted measles campaigns, and with ExxonMobil, the nets are delivered via a heavily subsidized voucher program through antenatal clinics.

USAID is also in partnership with 13 major commercial firms (representing over 80 percent of the global capacity to produce and distribute ITNs) in a consortium called NetMark. NetMark is an innovative program to share the risks of developing ITN markets, to identify and reduce barriers to effective engagement of the commercial sector, and to create demand, thereby expanding the availability of affordable nets. In five African nations, the program has helped eliminate taxes and tariffs. We believe this successful cooperation with the commercial sector for insecticide-treated netting will serve as a model for future cooperation with the commercial sector in other parts of the world and with other health related products.

Prompt and Effective Treatment

Only a limited number of alternatives to failed drugs are available now. Given the fact that malaria predominantly affects the world's poorest nations, necessary economic incentives for development and production are troublingly scarce. As a consequence, in many malarious areas, a majority of the population does not have ready access to malaria treatment and those drugs that are available may be of substandard quality.

Currently the best treatment on the market for drug-resistant malaria is artemisinin combination therapy (ACT). Based on a traditional Chinese herb, ACTs are extremely effective, yet far more expensive than previous treatments.

The United States, through USAID, is playing a leading role in ACT roll-out. Since 1998, we have supported safety and efficacy testing of artemisinin combination treatment (ACT) in Africa. ACT is a three-day treatment made from the extract of Artemisia annua, or wormwood, a plant that until recently grew only in Vietnam and China. USAID is working with the Global Fund to Fight AIDS, Tuberculosis and Malaria to make funding available for ACTs, and we are working with 25 countries in Africa to complete the regulatory and public health legwork to roll-out ACTs. USAID also supports the transport, ordering and stocking of ACTs in rural clinics, trains health-care workers and educates parents on the treatment.

Since 2001, 40 countries, including 20 African nations, have switched from old drugs to ACT. An estimated 15 million malaria cases were treated with the drug in 2003, and demand for ACT will rise to 150 million treatments by 2007. But supply of this drug is limited. This shortfall will change later this year, when, because of a USAID – World

Health Organization (WHO) partnership with agricultural producers in Africa makes African-grown artemisinin readily available on the market.

In January, USAID supported the planting of 450 hectares of *Artemisia annua* in Kenya. This month, another 450 hectares of the life-saving plant are taking root in Tanzania under a similar program. Diversifying the location where the plant is grown will allow more drugs to be dispatched around the world faster. Because of the rich soil and warm climate, the African plant may produce much more extract than its Asian sister, treating far more cases, providing an additional 20-40 million pediatric treatments by the end of 2005.

USAID is presently working with 25 Global Fund recipient countries to prepare detailed plans for the introduction of ACT over the next year. In addition, USAID works directly with pharmaceutical companies to upgrade their ACT production capacity in order to increase the pool of companies manufacturing WHO approved ACTs. By 2006 we expect that worldwide supplies of ACTs will be in line with demand. In the interim, strategic targeting of ACTs will be required to ensure that those countries with high levels of drug resistance have adequate drug supplies.

USAID also works to document and address drug resistance. In the Mekong region in Asia, USAID is instrumental in documenting the extent of the drug-resistant problem in the region as well as studying the factors – such as poor drug use and poor drug quality – that contribute to the emergence and spread of resistance. Documentation of changes in drug resistance, quality and use will enhance the ability of countries to evaluate their national malaria drug policy and to introduce changes from a more informed perspective. This information is critical for focusing interventions on priority areas in order to preserve the effectiveness of current antimalarial drugs that are safe and affordable. A similar regional effort is underway in the Amazon region of South America.

Prevention of Malaria in Pregnancy

Each year, more than 30 million African women are at risk for Plasmodium falciparum malaria infection during pregnancy. Infection during pregnancy leads to anemia in the mother and the presence of parasites in the placenta. The resulting impairment of fetal nutrition contributing to low birth weight (LBW) is a leading cause of young infant deaths and fetal underdevelopment in Africa. The prevalence and intensity of malaria infection during pregnancy is higher in women who are HIV-infected. Women with HIV infection are more likely to have symptomatic infections and to have an increased risk for malaria-associated adverse birth outcomes.

WHO recommends intermittent preventive treatment (IPT) using the antimalarial drug, sulfadoxine-pyrimethamine (SP) as the preferred approach to reduce the adverse consequences of malaria during pregnancy. Since more than 70 percent of pregnant women in Africa attend antenatal clinics, provision of safe and effective antimalarial drugs in treatment doses are easily linked to antenatal clinic visits. The potential of IPT to attain high levels of program coverage, and its benefit in reducing maternal anemia and

LBW, makes it a preferred strategy in sub-Saharan Africa. In HIV-negative pregnant women, two doses of IPT provide adequate protection, but a minimum of three doses appears to be necessary in HIV positive women.

USAID played a key role in supporting the original studies in Africa that documented the efficacy of IPT in preventing the impact of malaria on both HIV positive and HIV negative pregnant women and their babies. Many countries have already changed their policies to incorporate IPT. Currently, through a coalition of partners, USAID is assisting ministries of health in about 10 African countries to implement IPT and distribute ITNs as part of a package of health interventions at the antenatal clinic level. Over the last year this technical assistance contributed significantly to revision of outdated policies in Senegal, Ghana, Rwanda, and Zambia, and to increased implementation of revised policies in the Democratic Republic of Congo, Tanzania, and Kenya.

Thank you.