

THE BROWN JOURNAL OF WORLD AFFAIRS

VOLUME XV



ISSUE I

FALL / WINTER 2008

Radicalism's Roots

Michael Chertoff

on the Western Roots of Terrorism

Iran: Inside and Out

Vali Nasr

on the Present and Future of Iranian Politics

Jahangir Amuzegar

on Iran's Oil Economy

Abbas Milani

and Michael McFaul

on Parliamentary Democracy in Iran

Innovations in Global Health

Jeffrey Sachs

on the State of Global Health

Adam Richards

and Eh Kalu Shwe Oo

on Malaria Eradication in Burma

Territorial Conflicts

Robert Wirsing

on Hydro-politics in South Asia

Essays

*Thomas Johnson
and Richard English*

J. Peter Pham

Aharon Klieman

on Afghan Counterinsurgency

on AFRICOM

on Middle Eastern Regionalism

US\$10.95

Global Malaria Eradication? Political Will Thwarts Technological Promises in Eastern Burma

ADAM RICHARDS
Fellow
UCLA

EH KALU SHWE OO
Secretary of the Karen Department
of Health and Welfare

Bill and I believe that these advances in science and medicine, your promising research, and the rising concern of people around the world represent an historic opportunity not just to treat malaria or to control¹ it—but to chart a long-term course to eradicate it...to aspire to anything less is just far too timid a goal for the age we're in.

—Melinda Gates, October 2007²

Clive J. Shiff, a malaria expert at the Johns Hopkins Bloomberg School of Public Health who fought malaria in the 1950s in what was then Rhodesia, says flatly that unless Africa can end both its poverty and its civic strife, “eradication is a pipe dream.”

—Donald G. McNeil³

179

DESPITE CURRENT TECHNOLOGIES FOR THE prevention, diagnosis, and treatment of malaria, complete eradication of the parasite will remain elusive until the global community addresses the predominantly human-made barriers that impede the provision of health services to the most marginalized populations. Drawing from the authors' successful experience controlling malaria in an area of active conflict in eastern Burma,⁴ we highlight the potential of new technologies, training, and support to empower local communities to control disease and build human resource capacity. We follow with a critical examination of the challenges facing cross-border disease programs and explore why malaria eradication efforts will fail unless governments respect the human rights

ADAM RICHARDS applies his training in internal medicine and epidemiology to provide technical assistance to community-based organizations along Burma's borders as part of the Global Health Access Program. He is currently a fellow in the Robert Wood Johnson Clinical Scholars program at the University of California, Los Angeles.

EH KALU SHWE OO has worked in health service delivery for displaced and conflict-affected persons in eastern Burma for more than thirty years. He is a founding member of The Backpack Health Worker Team and Secretary of the Karen Department of Health and Welfare.

Copyright © 2008 by the *Brown Journal of World Affairs*

of displaced persons along the Thai–Burma border. We conclude by discussing how cross-border approaches to malaria control provide an alternative means to meet the “responsibility to protect” populations living in failed states.

Our story begins in September 2007, when the brave Buddhist monks of Burma focused the world’s attention on their “Saffron revolution” and the nonviolent struggle for freedom after four decades of military rule in Burma. It is one month before Bill and Melinda Gates issue their invitational challenge to join in a new effort to eradicate malaria, and the two of us (AR and ES) sit on the bamboo floor of a thatch-roofed clinic in Ei Tu Hta—a camp built along the Salween River that separates Burma from Thailand by ethnic Karen who have been displaced from their homes. Of the estimated half-million internally displaced people in eastern Burma, 4,000 live here in Ei Tu Hta. We listen intently to one of them named Naw Paw,⁵ a despondent yet dignified woman, as she shares her personal struggle to reach the camp.

When she was several months pregnant with her fourth child, Burmese troops burned down her entire village, and she fled with her family to the jungle. After several weeks in hiding, her husband became feverish, and within several days he was dead. Having lost her home and husband, she trekked for three weeks through the jungle with her children, carrying the youngest on her hip and her fetus in her womb. In late August, as the monks marched in far-away cities, she and her children staggered into Ei Tu Hta, exhausted. Soon thereafter she, too, became febrile. Despite rapid diagnosis and treatment for her malaria, she delivered a stillborn child at approximately seven months.

It is likely that Naw Paw’s husband died of *Plasmodium falciparum* malaria and that the fatal parasite contributed to the loss of her stillborn baby. Malaria remains a primary cause of stillbirth and premature delivery along the Thai–Burma border.⁶ Hu-

180

Malaria remains a primary cause of stillbirth and premature delivery along the Thai–Burma border.

man ingenuity has produced technologies that would prevent their deaths—if only we could eliminate the political and financial barriers blocking delivery of these effective interventions where they are needed most. Before describing our successful experience

overcoming the majority of these barriers and reducing transmission of the parasite among internally displaced people, it is important to understand the context of malaria control in eastern Burma.

MALARIA IN EASTERN BURMA

EPICENTER OF DEATH IN SOUTHEAST ASIA

Eighty-nine percent of the estimated 52 million people of Burma live in malarial risk

Global Malaria Eradication? Political Will Thwarts Technological Promises in Eastern Burma

areas, and approximately 80 percent of reported infections are due to *Plasmodium falciparum*, the most dangerous form of the disease. The region has been described as the “epicenter of drug resistance,”⁷ and treatment with the limited number of remaining effective medicines is complicated by a flourishing trade in fake anti-malarial medicines.⁸ Every infection represents a deadly game of Russian roulette: despite woefully incomplete records, Burma records the highest malaria case fatality rate (3 percent) and the greatest number of annual malaria deaths (1,707, or 52.6 percent) reported in Southeast Asia.⁹

Although data for the country as a whole are limited, the malaria burden appears to fall disproportionately in remote border areas home to ethnic populations.¹⁰ Among the ethnic Karen living in so-called “Black Zones” of active conflict in eastern Burma, malaria accounts for up to nearly half (45 percent) of all deaths. Conflict has displaced over one million people in eastern Burma, and displaced populations experience exceptionally high infant (89 per 1,000 live births) and child (218 per 1,000) mortality rates that dwarf the risk of death in neighboring Thailand (18 and 21 per 1,000, respectively).¹¹ Malaria in eastern Burma not only kills the internally displaced, but it also threatens disease control efforts throughout Southeast Asia.

A THREAT TO REGIONAL MALARIA CONTROL AND ELIMINATION

“It’s indefensible” to attempt [malaria] elimination in countries “where you have an enemy all round you.... It’s not going to be easy to contain the infections’ that cross borders.”

—Brian Greenwood, professor of tropical medicine at the London School of Hygiene and Tropical Medicine.¹²

The epidemiology community frequently points out that diseases and their vectors do not obey national boundaries. Several million people (and an unknown but certainly large number of anopheles mosquitoes) cross the border from Burma into Thailand every year—and many bring malaria parasites with them. Uprooted from areas in eastern Burma with relatively high malaria prevalence, Burmese migrants account for the majority of malaria cases in Thailand.¹³ Tak, a Thai province adjacent to Burma, consistently records the highest number of malaria cases of any province in the country, and the burden of disease is positively associated with proximity to border.¹⁴

Thailand, well known for its successful HIV programs, has also achieved remarkable reductions in malaria transmission, but these gains remain vulnerable to an incessant influx of malaria. Until concerted action is taken to address the burden of disease across the border in Burma, the task of eliminating malaria in Thailand will remain “near impossible.”¹⁵

ADAM RICHARDS AND EH KALU SHWE OO
RESPONDING TO MALARIA IN EASTERN BURMA

DOMESTIC AND INTERNATIONAL CHALLENGES

Myanmar faces a humanitarian crisis because... following Cyclone Nargis, the ruling junta largely blocked international access.

—The Wall Street Journal¹⁶

As a result of the inability to bring all our international staff we needed into the country, three weeks after Cyclone Nargis struck the Irrawady Delta, our aid deployment looks like we have only been on the ground for seven days.

—Médecins Sans Frontières, 26 May 2008¹⁷

World headlines recently captured the ruling junta's failed response to the "cataclysmic" cyclone Nargis and its obstructive stance toward international humanitarian assistance. Much of the world was shocked to see ships and planes loaded with life-saving supplies floating uselessly offshore or grounded on Thai tarmacs. As aid workers waited weeks for their visas, "bodies floated in and out with the tide," and the death toll continued to climb. For the people of Burma, however, the junta's response to Cyclone Nargis captured, in horrific microcosm, the utter neglect and callous disregard for the health of its citizens that the government has demonstrated for decades.

182

The Burmese government spends less than 3 percent of national expenditures on health, substantially less than its neighbors.¹⁸ In 2000, the World Health Organization (WHO) ranked Burma's health system second worst in the world—second only to Sierra Leone, which was experiencing widespread civil war at the time. In conflict areas of eastern Burma, government health services remain virtually non-existent.

In addition to under-investing in health care, the junta has increasingly constrained the humanitarian space available to international organizations operating within the country. In August 2005, the Global Fund for AIDS, Tuberculosis, and Malaria terminated a \$98.4 million contract with the United Nations Development Programme (UNDP), explaining that new travel restrictions imposed by the Burmese government had severely limited the ability of the UNDP and its partners to access project sites. Médecins Sans Frontières (MSF), among the most intrepid humanitarian organizations, was forced to end its malaria activities in eastern Burma in December 2005. As MSF explained, not only had the Burmese government made it very difficult "to provide equal access to health care," but the junta also wanted "to get rid of all humanitarian workers in...politically sensitive regions." The restrictions imposed on us reduced us to the role of specialist contractors subjected to the political will of the military junta. In reality, the Myanmar authorities do not want anyone to witness the acts of violence they are committing against their own people."¹⁹

The restrictions of the junta proved too much even for the International Commit-

Global Malaria Eradication? Political Will Thwarts Technological Promises in Eastern Burma

tee of the Red Cross (ICRC), which takes pride in its ability to work with all regimes to preserve access to vulnerable populations. In Burma, the ICRC was forced to reduce the scope of its activities by 90 percent and close five field offices, including those supporting work in conflict areas.²⁰

There currently are no large-scale internationally funded malaria programs targeting internally displaced people in eastern Burma, like Naw Paw, from inside the country.

CROSS-BORDER SUCCESSES

“You need to start in the places where the problem is worst, because almost by definition it’s going to take the longest time” to succeed there. “If you leave them till last, you cannot buy back that time.”

—Donald Hopkins, vice president for health programs at the Carter Center²¹

Frustrated by the failure to reach vulnerable border populations from inside Burma, the international community has begun to embrace cross-border approaches as a viable alternative. The largest cross-border initiative is funded by the Global Fund for AIDS, Tuberculosis, and Malaria. After pulling out of Burma, the Global Fund approved a multi-million dollar grant to China for malaria control in Yunnan and adjacent areas of Burma. Yunnan accounts for one third of all malaria cases in China, and 70 percent of cases in Yunnan are recorded along the border with Burma.²² China has quietly initiated a cross-border malaria control program, training local health workers and supplying them with Chinese-made insecticide treated nets, rapid tests, and anti-malarials. China’s embrace of this cross-border approach is exceptional not only for its size, but also for its groundbreaking approach to international frontiers. While other governments adjacent to Burma (Bangladesh, India, Laos, and Thailand) have shied away from cross-border initiatives, China—one of the most avid protectors of strict interpretations of state sovereignty—is pragmatically stepping across the border into Burma to address the threat of infectious disease.

If China’s malaria program represents the first cross-border approach to receive official sanction from one of Burma’s neighbors, the Karen Department of Health and Welfare’s program, administered from Thailand but implemented in Burma, demonstrates that cross-border approaches are feasible and effective—even when support from the host country is lacking. To meet basic healthcare needs in eastern Burma, approximately 110,000 internally displaced people rely largely on a network of 33 clinics run by the ethnic Karen health workers of the Karen Department of Health and Welfare.²³ Due to the precarious security situation in an area of active conflict, health workers participate in trainings conducted at various locations along the border, and must hand-carry supplies into Burma. In the Black Zones of Burma, where the government and

ADAM RICHARDS AND EH KALU SHWE OO

international organizations have faltered, the Karen cross-border malaria program has thrived, achieving consistent reductions in the malaria burden while rapidly expanding over the past five years. Starting from an initial pilot population of 1,800 internally displaced people living in four villages in 2003, the program now reaches over 38,000

The program now reaches over 38,000 in 44 villages, including Naw Paw and the other displaced Karen in Ei Tu Hta.

44 villages, including Naw Paw and the other displaced Karen in Ei Tu Hta. Each new cohort of villages has experienced reductions in prevalence and incidence of *Plasmodium falciparum* after program

implementation. The proportion of people infected at any one moment has consistently fallen from eight to 12 percent to less than four percent, and the number of new infections has dropped by about one-third. The program relies on two complementary keys for its success: state-of-the-art diagnostic and therapeutic technologies, and a flexible approach to supporting the human resources to take advantage of these technologies. By demonstrating the feasibility of implementing proven interventions in an area of active conflict, the Karen malaria program suggests how previously excluded populations might be incorporated into global initiatives for malaria control and eradication.

KEYS TO CROSS-BORDER SUCCESS

184

MODERN RAPID DIAGNOSTIC TEST TECHNOLOGY AND AN ANCIENT CHINESE HERB

Most malariologists in the region believe that early and accurate diagnosis and treatment with a novel class of anti-malarials holds the key to malaria control in Southeast Asia.²⁴ Artemisinin-related compounds, which prevent transmission in the population while producing a cure in the individual, are a boon to malaria control programs and the closest things to miracle drugs. Thousands of years after traditional Chinese healers employed the source plant *Artemisia annua* as a remedy for fever, artemisinin drugs continue to provide the most rapid killing of parasites of any anti-malarial. Most importantly, clinically significant resistance to the drugs has yet not developed.²⁵ In order to preserve the effectiveness of the artemisinins, the global health community has borrowed from the playbook for HIV/AIDS and tuberculosis and now recommends that artemisinin drugs be combined with other anti-malarials. However, artemisinin combination therapies are more expensive, by an order of magnitude, than most other anti-malarials.

In order to reduce costs and prevent or delay the development of resistance, it is essential to accurately diagnose disease. An exciting new rapid test technology adapted from techniques previously available only in advanced modern laboratories is now available in the jungles of Burma. The rapid test is a device that uses a pinprick of blood,

Global Malaria Eradication? Political Will Thwarts Technological Promises in Eastern Burma

much as an over-the-counter pregnancy test uses several drops of urine. With a retail cost of US\$0.62,²⁶ the easy-to-use RDTs boast an accuracy of over 95 percent. For internally displaced people like Naw Paw and her husband in eastern Burma, access to timely and accurate diagnosis and treatment can mean the difference between life and death. The Karen malaria program every year provides state-of-the-art diagnosis and treatment to thousands of internally displaced villagers. The challenge lies not only in political and financial commitment to make medicines and tests universally affordable, but also in the development of strategies to make them available in remote and unstable populations that often receive fewer services, despite experiencing a disproportionate burden of disease.

EMPOWERING COMMUNITY HEALTH WORKERS TO SCALE UP MALARIA CONTROL INTERVENTIONS

Technologies are only useful insofar as there are people with the training and support to utilize them. Fortunately, the essential role of human resources in malaria control has been recognized since its initial global eradication campaign of 1955, which placed a premium on institutional and human capacity sufficient for the challenge. Paradoxically, this priority led to the exclusion of many countries—including the majority of countries in Africa—from the campaign because they were perceived to lack the infrastructure and human capital necessary to implement effective interventions.²⁷ Leaving aside the ethical implications of promoting a “global” campaign that excluded the preponderance of human beings burdened by the disease, the imperative to expand human resources and strengthen health systems was implicit in eradication planning from the beginning.

The twenty-first century offers a more inclusive climate for countries struggling to address human resource challenges. As the initiative to strengthen health systems is further defined in relation to malaria control among internally displaced populations, our experience suggests several lessons for building human resource capacity to promote health in humanitarian settings.

First, internally displaced people can and should play an integral role in delivery of malaria interventions—and other health services—in areas of armed conflict. Despite growing international consensus that health worker shortages will require integration of non-professionals into service delivery,²⁸ the contributions and responsibilities of community health workers remain poorly articulated. Even among humanitarian experts inclined to support the training of community workers, most will “draw the line” when it comes to the internally displaced themselves, whose desperate condition and presumed lack of skills would appear to preclude them from playing an important role in malaria control. Circumstances in eastern Burma provided the Karen malaria program with the opportunity to prove the skeptics wrong.

In the conflict areas of Karen state there are virtually no physicians, and the presence of foreign nationals, including clinicians, can place communities at risk for retribution from the junta. To overcome the health worker shortage, the Karen malaria program relies on a “training-of-trainers” model, whereby community health workers from Burma receive training at various locations along the border. They return to target population areas in Burma to train their peers, as well as an increasing number of villagers with minimal prior health experience. Forty community health workers and over two hundred “lay” villagers newly empowered with novel and easy to use diagnostics have achieved the reductions in malaria transmission described above. Among the internally displaced in eastern Burma, where one-third of all clinical encounters are for malaria, the Karen malaria program has been so successful at reducing the burden of malaria that there are often not enough patients to use up the rapid tests and anti-malarial medicines. Fewer malaria cases has translated into more time for community health workers to devote to other non-malarial health initiatives, such as reproductive health, tuberculosis, landmine injury management, and general clinical care. In addition, the Karen Department of Health and Welfare has used excess supplies to expand to new areas where villagers request the program based on positive word-of-mouth reports from implementation areas.

186

Second, enhancing the capacity of local organizations facilitates rapid response to emerging infectious disease threats. Soon after Naw Paw arrived in Ei Tu Hta, the camp confronted the possibility of a severe malaria epidemic. A Karen health department survey in August 2006 revealed that close to one-third of camp residents harbored *Plasmodium falciparum* in their blood. Equipped with three years of skills and experience in nearby areas, the health department arranged for immediate transport of bednets, rapid tests, and medicines to the camp, and local program officers conducted trainings to upgrade the skills of Ei Tu Hta’s health workers, who were previously unfamiliar with the program. The result: workers with at most the equivalent of a high school education effectively responded to high rates of infection, without substantial international technical assistance.

As the Karen Department of Health and Welfare organized its response in Ei Tu Hta, a large international non-governmental organization conducted a malaria survey of its own, which validated the high malaria prevalence found earlier by the Karen health department. It had been years since anyone last documented prevalence as high as 18 percent in the dry season along the Thai-Burma border. Fearing a serious malaria epidemic, the international organization made a case for donors to provide substantial emergency resources for Ei Tu Hta. Meanwhile, the indigenous workers continued to apply the lessons learned over the previous three years. By the time international assistance arrived in Ei Tu Hta several months later, the prevalence of *Plasmodium*

falciparum had dropped to five percent.

This crisis represented the first real challenge of the Karen health department's capacity to prevent a potential malaria epidemic. Implementation of the initial response was not without several shortcomings, but the results speak for themselves: by the time the supplies arrived in Ei Tu Hta via traditional channels of international assistance, the epidemic had been averted. Building the capacity of internally displaced—and other marginalized populations—to respond rapidly to potential outbreaks is essential as we move forward in our quest for eventual malaria eradication. It also provides a foundation for organizing rapid responses to other infectious threats, including cholera, filariasis, and avian influenza, among others.

HUMAN RIGHTS VIOLATIONS AND OTHER HUMAN-MADE BARRIERS TO MALARIA CONTROL

If human rights violations are underway, and the populations we are attempting to work with around a given health threat are subject to those violations, it is simply bad science and poor public health practice not to investigate the potential interactions at play.

—Chris Beyrer, Professor of Epidemiology & International Health and
Director of the Johns Hopkins Center for Public Health & Human Rights²⁹

Prior to our participation in the Karen malaria control program we were cautiously optimistic about the possibility of achieving modest reductions in the malaria burden in eastern Burma. The resounding success of the program has transformed our doubt into confidence, and we strongly believe that substantial reductions in malaria transmission are possible in many conflict areas of eastern Burma. However, we soberly recognize that even well-funded health workers implementing technologically advanced interventions will be insufficient to eliminate—much less to eradicate—malaria until we acknowledge and take action to ameliorate the political and structural barriers to improving the health of internally displaced populations.

While the Burmese government neglects health services and obstructs international access to conflict areas, it lavishes support on the military, whose standing army of over 400,000 troops consumes 40 percent of government expenditures.³⁰ In ethnic border areas, the military carries out its so-called “Four Cuts” policy, cutting food, funds, recruits, and information to armed opposition groups. In practice, this results in the widespread, systematic violation of basic human rights of the population. A wide range of organizations have extensively reported summary executions, forced displacement, forced labor, rape, confiscation of land and property, attacks against health clinics and medical personnel, and the destruction of rice fields and food storage facilities.³¹ It is estimated that the conflict in eastern Burma has destroyed more than 3,200 villages.³²

Widespread human rights violations alter the landscape of malaria risk in eastern

Burma. A recent survey among internally displaced people documented that violations not only were widespread, but also were associated with specific health outcomes, including infection with malaria. More than one-quarter of households reported destruction or theft of vital food, crops, or livestock; almost one-third of households included members who had been forced to work against their will; and nearly one-in-ten households were forcibly displaced within the preceding 12 months. In the more heavily contested areas of northern Karen State, where Naw Paw and most of the residents of Ei Tu Hta previously lived, the corresponding figure for forced displacement was over 60 percent. The same survey found that each of these violations was associated with malaria infection, and furthermore that malaria risk increased with the number of violations per household.³³ These findings suggest that the elevated malaria risk experienced by internally displaced populations in eastern Burma does not arise simply from the absence of health services but that human rights violations may contribute directly to increased risk of infection.

If human rights violations modify traditional risk factors for malaria, then disease control programs must take these pathways into account and modify their intervention strategies accordingly. Failure to address what Link and Phelan famously called the “fundamental causes” of disease is, to borrow from Chris Beyrer, “simply bad science and poor public health practice,” and will fall short of the goal of eliminating malaria in eastern Burma. The dilemma is analogous to the classic case every medical student learns, that of the child who repeatedly goes to the emergency room covered in rat bites. The physician can choose to treat the individual bites, but the patient will continue to return covered in bites until the rats are eliminated from the home.

Despite the success of the Karen malaria control program in most areas, the recent military offensive has forced the Karen Department of Health and Welfare to cancel operations in nine villages (with over two thousand people) in 2007. Until

188

Ongoing displacement will continue to confer an excess risk of malaria and death to villagers like Naw Paw’s husband, febrile in the jungle and without life-saving medicine.

we can guarantee secure, unfettered access to these populations, efforts to advance technologies and invest in human capital will prove insufficient to eradicate malaria. Current technologies make impressive gains possible among

many internally displaced people living in neglected areas, but ongoing displacement will continue to confer an excess risk of malaria and death to villagers like Naw Paw’s husband, febrile in the jungle and without life-saving medicine.

POLICY BARRIERS TO CROSS-BORDER ASSISTANCE

The untimely death of Saw Say, another internally displaced person living in Ei Tu

Hta, tragically highlights additional human-made barriers to malaria control in eastern Burma. Like Naw Paw, 15-year-old Saw Say was displaced from his home near the new Burmese capital of Naypyidaw. In early December 2006, during the first few months of the Karen malaria response in Ei Tu Hta, he became ill with high fevers, a severe headache, and a stiff neck. Karen medics confirmed with a rapid test the diagnosis of severe *Plasmodium falciparum* malaria and initiated a course of intravenous anti-malarial medicine. Unfortunately the supply chain from Thailand had been interrupted by a deteriorating local security situation and tighter restrictions on cross-border access. As health workers waited for intravenous fluids necessary to continue the infusion, Saw Say's condition deteriorated, and he fell into a coma and died.

An autopsy report might have described extensive parasitic involvement of the vessels in his brain, with the attributed cause of death listed as "severe malaria with cerebral involvement." Arguably, however, Saw Say did not die of infection from a malaria parasite. Malaria—even multi-drug resistant malaria—remains a treatable disease, and every malaria death is preventable with early treatment. A more in-depth investigation into the political obstacles that prevented Saw Say from receiving life-saving medicine illuminate a more insidious—yet entirely preventable—causal chain leading to his death in Ei Tu Hta camp.

Saw Say fell victim not only to the systematic violation of his human rights but also to the passive neglect of the international community, which has failed to respond to the needs of the internally displaced. Saw Say's death easily could have been averted with the medicines sitting in storage across the Salween River in Thailand. But what separated him from life-saving treatment was more than a body of water and an international border. Between Saw Say and his treatment lay a thicket of international regulations that impede the timely and affordable transportation of medicine across borders and policies that hinder the freedom of movement of health workers within Thailand.

In the Southeast Asian setting of ubiquitous fake anti-malarials it is reasonable for Thailand to regulate the importation of artemisinin drugs to ensure quality. Unfortunately, however, the restrictions are nonspecific and proscribe importation of several low-cost single-pill artemisinin combinations certified by the World Health Organization. The consequent reliance on component drugs decreases adherence to treatment regimens and increases costs seven-fold compared to single-pill combinations purchased in neighboring countries.³⁴ Attempts to ship high-quality medicines from other countries result in unacceptable customs delays. In order to purchase medicines in Thailand, the Karen program must rely on private donations because a maze of regulations has prevented, as of May 2008, the use of select United States government funds to purchase artemisinin derivatives in Thailand.³⁵ Caught in this Catch-22 between

government restrictions and increasing drug costs, the Karen program has had to defer expansion to thousands of villagers in need.³⁶

Purchasing medicines in Thailand is easy compared to transporting them across the border into Burma. The permeability of the border between Burma and Thailand is in constant flux, as international political winds and the whims of local security officers open the channels to large migrations of goods and people only to slam them closed again. The unpredictable supply line holds predictably fatal consequences for internally displaced villagers, like Saw Say, who depend on a reliable flow of medicines. Thailand, which has neither ratified the 1951 Convention relating to the Status of Refugees nor its 1967 Protocol, hinders cross-border health services by failing to recognize Burmese migrants in Thailand, including health workers based in eastern Burma. This often makes it more difficult for Karen health workers to travel the few kilometers along the border on Thailand's paved roads than to carry supplies for up to a month over mountainous terrain inside Burma. As Human Rights Watch recommended in a 2004 report, Thailand should "respect the right to freedom of movement, expression, and assembly of all refugees, whether living in camps or urban centers, consistent with the Universal Declaration of Human Rights and articles 12, 19, and 21 of the International Covenant on Civil and Political Rights, to which Thailand is a state party."³⁷ International donors, humanitarian agencies, and governments should prioritize the safe and consistent transportation of humanitarian supplies and health workers within Thailand in order to facilitate the delivery of cross-border assistance to internally displaced populations in Burma, much as China has facilitated cross-border assistance into Burma from Yunnan.

190

HEALTH WORKERS IN PERIL

Working in eastern Burma places health workers in constant fear of harassment, torture, and death. According to interviews with health workers from several ethnic health organizations, the junta confiscates medicines, disrupts health trainings, and threatens village leaders and potential patients who might assist or receive services from ethnic health workers. In eastern Burma, a simple health education poster is perceived as a threat and can precipitate threats from local officials. Constantly under surveillance, health workers fear retribution, which disrupts the provision of health services. When health workers fail to avoid the junta, they are often intimidated, arrested, or killed. Eight health workers have died in the past decade while providing humanitarian assistance.

Tragically, the health workers of eastern Burma are not alone in their daily confrontations with mortality: one study recently documented 33 deaths among the staff of humanitarian organizations in less than four years—and intentional violence accounted

for over half of the deaths reported.³⁸ If the conditions impeding health-related work in eastern Burma hold implications for the junta under Customary International Humanitarian Law and the Geneva Conventions, they also hold implications for malaria eradication.³⁹ Our inability to protect impartial health workers and guarantee their access to vulnerable populations represents a profound failure of modern political institutions and global disease control. Despite the bright promise of novel technologies, our inability to deliver services to the most desperate people stains our collective conscience. From the perspective of villagers like Naw Paw and Saw Say, the complex eradication debate is over: although they believe in the possibility of cross-border programs to substantially reduce the malaria burden among their fellow villagers, they know that as long as humanitarian workers are denied access or worse, attempts to eliminate malaria will fail.

CROSS-BORDER MALARIA CONTROL—MEETING THE RESPONSIBILITY TO PROTECT

The global resurgence of malaria...has...been driven [in large part] by political upheavals, warfare, and the massive displacement of human populations.

—Randall Packard⁴⁰

The United Nations High Commissioner for Refugees estimates that there are 20 to 25 million internally displaced people in the world.⁴¹ Of the 43 countries with internally displaced populations, only four are malaria free. In the twentieth century, internal conflict diminished or reversed the gains of malaria control efforts in numerous countries, including Nicaragua, El Salvador, Tajikistan, Burundi, and Afghanistan.⁴² In order to avoid a recapitulation of these failures we need to achieve substantially greater access to displaced populations. Might the “responsibility to protect” provide a way forward?

In September 2005, the United Nations unanimously approved the responsibility to protect, giving the international community the responsibility to act when governments directly imperil or otherwise fail to protect their people. Cyclone Nargis challenged the international community’s ability to translate this doctrine into action in Burma; but the responsibility to protect was “dead as a doornail” in the Security Council. Despite the rallying cry of Bernard Kouchner, the French Foreign Minister (and a founder of Médecins Sans Frontières), governments and large international organizations were unable to reach the majority of cyclone victims for at least six weeks (at the time of writing). Local community and religious groups, by contrast, were able to reach tens of thousands of victims, despite the opposition of Burmese officials. Much of the financial support came from international groups, but local organizations were able to circumvent the official channels of aid controlled by the junta.⁴³


By successfully providing humanitarian relief to populations inaccessible to the

government or the international community, the local cyclone response fulfilled in part the responsibility to protect. The local response to Nargis organized from within the country did not directly challenge traditional notions of Burma's national sovereignty; nevertheless, the junta opposed any attempts of the Burmese to assist each other—and those who took on such work assumed great personal risk. For example, Zarganar, Burma's best-known comedian, recruited several hundred volunteers to provide aid to over 40 villages and was subsequently arrested for his efforts. Zarganar was perhaps the most conspicuous victim of the junta's hostile attitude towards cyclone relief, but he was far from the only Burmese citizen harassed or arrested for providing assistance to the Irrawaddy Delta. As the international community attempted to negotiate with the junta, Zarganar and many other Burmese risked their lives to take direct action to meet the responsibility to protect. Although the local response remained far from sufficient, it successfully assisted cyclone victims without the security assurances of an international military force.

The Karen malaria program and similar cross-border initiatives represent creative solutions to the dilemmas of humanitarian response in failed states, and enable local communities to address and improve their own health. As such, they represent alternative approaches to meet the responsibility to protect. Increased international support for such efforts, coupled with the elimination of impediments to cross-border assistance, provide an opportunity to save lives without resorting to an armed humanitarian invasion “at the point of a gun.”⁴⁴

192

The malaria eradication effort has drawn generously from the lexicon of war, describing the “battle” against malaria and anopheles using the “latest weapons” from the “available arsenal” of drugs, bednets, and insecticides. If there is an enemy in this scenario, it is not the mosquito or the parasites: it is us. The battles that hinder malaria eradication are waged as fiercely between our fellow humans as they are against deadly parasites or stubborn mosquitoes. Victory over the scourge of malaria will require not only that we vanquish the vector and the pathogen but also that we promote universal human rights.

The theme for World Malaria Day 2008 was “Malaria—a disease without borders.” Our policies must acknowledge this obvious reality and address the arbitrary political and social barriers to disease control. As the world once again gets excited about the possibility for malaria eradication, we would like to propose a theme for World Malaria Day 2009: “Malaria—a RESPONSE without borders.” 

NOTES

1. Control is the deliberate reduction of disease incidence to a locally acceptable and manageable level. Elimination is the deliberate reduction of infection incidence to zero in a delimited geographical area.

Global Malaria Eradication? Political Will Thwarts Technological Promises in Eastern Burma

Eradication is the permanent global reduction of infection incidence to zero through deliberate efforts. Adapted with permission from Simon I. Hay, David L. Smith, and Robert W. Snow, "Measuring malaria endemicity from intense to interrupted transmission," *Lancet Infectious Diseases* 8, no. 6 (June 2008): 369–378.

2. Malaria Forum Keynote Address, 17 October 2007, Seattle, WA.

3. Donald G. McNeil, Jr. "Eradicate Malaria? Doubters Fuel Debate" *New York Times*, 4 March 2008.

4. This article uses the name Burma rather than Myanmar. This is the form preferred by the leaders of Burma's pro-democracy movement, the legitimate winners of the 1990 elections.

5. Names and personal details have been altered throughout this article to ensure security.

6. Meghna Desai, Feiko O. ter Kuile, Francois Nosten, Rose McGready, Kwame Asamoah, Bernard Brabin, and Robert D. Newman, "Epidemiology and burden of malaria in pregnancy," *Lancet Infectious Diseases* 7, no. 2 (February 2007): 93–104.

7. Chansuda Wongsrichanalai, Khin Lin, Lorrin W. Pang, M. A. Faiz, Harald Noedl, Theera Wimonwattawatee, Anintita Laoboonthai, and Fumihiko Kawamoto, "In vitro susceptibility of *Plasmodium falciparum* isolates from Myanmar to antimalarial drugs," *American Journal of Tropical Medicine and Hygiene* 65, no. 5 (November 2001): 450–455; Eric Stover, Voravit Suwanvanichkij, Andrew Moss, David Tuller, Thomas J. Lee, Emily Whichard, Rachel Shigekane, Chris Beyrer, and David Scott Mathieson, *The Gathering Storm: Infectious Diseases and Human Rights in Burma* (Berkeley, CA: Human Rights Center, University of California, Berkeley; Baltimore: Center for Public Health and Human Rights, Johns Hopkins Bloomberg School of Public Health, 2007).

8. A. M. Dondorp, P. N. Newton, M. Mayxay, W. Van Damme, F. M. Smithuis, S. Yeung, A. Petit, A. J. Lynam, A. Johnson, T. T. Hien, R. McGready, J. J. Farrar, S. Looareesuwan, N. P. Day, M. D. Green, and N. J. White, "Fake antimalarials in Southeast Asia are a major impediment to malaria control: multi-national cross-sectional survey on the prevalence of fake antimalarials" *Tropical Medicine and International Health* 9, no. 12 (December 2004): 1241–1246.

9. World Health Organization Regional Office for South-East Asia, *Malaria: Disease burden in SEA region* (New Delhi: 2005).

10. Doung Socheat, Mey Bouth Denis, Thierry Fandeur, Zaixing Zhang, Henglin Yang, Jianwei Xu, Xingwu Zhou, Samlane Phompida, Rattanaxay Phetsouvanh, Saw Lwin, Khin Lin, Than Win, Soe Win Than, Ye Htut, Somsak Prajakwong, Chaiporn Rojanawatsirivet, Rungrawee Tipmontree, Saowanit Vijaykadga, Supawadee Konchom, Le Dinh Cong, Nong Thi Thien, Le Khanh Thuan, Pascal Ringwald, Allan Schapira, Eva Christophel, Kevin Palmer, P. R. Arbani, Chusak Prasittisuk, R. Rastogi, Feliciano Monti, Carlo Urbani, Reiko Tsuyuoka, Stefan Hoyer, Leonard Ortega, Krongthong Thimasarn, Sakda Songcharoen, Jean-Pierre Meert, Frederick Gay, Lawrence Crissman, Cho-Min-Naing, Wongsrichanalai Chansuda, Dowreang Darasri, Kaemthong Indaratna, Pratap Singhasivanon, Sirichai Chuprapawan, Sornchai Looareesuwan, Suvanee Supavej, Chev Kidson, Visut Baimai, Surapon Yimsamran, and Kasinee Buchachart, "Mekong malaria. II. Update of malaria, multi-drug resistance and economic development in the Mekong region of Southeast Asia," *Southeast Asian Journal of Tropical Medicine and Public Health* 34, supp. 4 (2003): 1–102.

11. Thomas J. Lee, Luke C. Mullany, Adam K. Richards, Heather K. Kuiper, Cynthia Maung, and Chris Beyrer, "Mortality rates in conflict zones in Karen, Karenni, and Mon states in eastern Burma," *Tropical Medicine and International Health* 11, no. 7 (July 2006): 1119–1127; Adam Richards, Linda Smith, Luke C. Mullany, Catherine I. Lee, Emily Whichard, Kristin Banek, Mahn Mahn, Eh Kalu Shwe Oo, and Thomas J. Lee, "Prevalence of *Plasmodium falciparum* in active conflict areas of eastern Burma: a summary of cross-sectional data," *Conflict and Health* 1, no. 9 (5 September 2007); Thailand Burma Border Consortium, *Internal Displacement in Eastern Burma: 2006 Survey* (Bangkok: Thailand Burma Border Consortium, 2006).

12. Susan Okie, "A new attack on malaria," *New England Journal of Medicine*, 358, no. 23 (5 June 2008): 2425–2428.

13. Malaria prevalence among Burmese migrants is up to 20 times higher than among local Thai citizens. Viroj Wiwanitkit, "High prevalence of malaria in Myanmar migrant workers in a rural district

near the Thailand-Myanmar border,” *Scandinavian Journal of Infectious Diseases* 34, no. 3 (2002): 236–7; Richards, et al., “Prevalence of plasmodium falciparum in active conflict areas of eastern Burma: a summary of cross-sectional data.”

14. Guofa Zhou, Jeeraphat Sirichaisinthop, Jetsumon Sattabongkot, James Jones, Ottar N. Bjørnstad, Guiyun Yan, and Liwang Cui, “Spatio-temporal distribution of *Plasmodium falciparum* and *P. vivax* malaria in Thailand,” *American Journal of Tropical Medicine and Hygiene* 72, no. 3 (March 2005): 256–262.

15. “Prevention of reintroduction (of malaria once it has been eliminated) is always challenging, but it is near impossible for a country that has porous borders with several countries with endemic malaria. . . . Even one border with a malaria-endemic area can undermine elimination, and many of the countries that might be targeted border. . . . areas with high malaria transmission.” Richard Feachem and Oliver Sabot, “A new global malaria eradication strategy,” *Lancet* 371, no. 9624 (10 May–16 May 2008): 1633–5.

16. James Hookway, “Relief Groups Remain at Ready to Aid Myanmar,” *The Wall Street Journal*, 27 May 2008, A7.

17. Médecins Sans Frontières, “Three Weeks After Cyclone Enormous Needs Still Unmet in Myanmar: Interview with MSF emergency coordinator, Jean-Sebastien Matte,” 26 May 2008.

18. Other countries include China (5.6 percent), India (6.1 percent), Laos (3.2 percent), Bangladesh (3.4 percent), and Cambodia (12 percent).

19. Médecins Sans Frontières, “Medical charity pulls French staff from Myanmar,” *Agence France-Presse*, 31 March 2006.

20. United States Government Accountability Office, “International Organizations: Assistance Programs Constrained in Burma” (Washington, DC: 2007).

21. Okie, “A new attack on malaria.”

22. China CCM, *The Global Fund for AIDS, Tuberculosis and Malaria Proposal Form: Sixth Call for Proposals* (2006).

23. Chris Beyrer, Voravit Suwanvanichkij, Luke C. Mullany, Adam K. Richards, Nicole Franck, Aaron Samuels, and Thomas J. Lee, “Responding to AIDS, tuberculosis, malaria, and emerging infectious diseases in Burma: Dilemmas of policy and practice,” *PLoS Medicine* 3, no. 10 (24 October 2006); Thomas J. Lee, Luke C. Mullany, Adam K. Richards, Cynthia Maung, and Htee Moo, “Burma: The Impact Of Human Rights Violations On Health Among Internally Displaced Persons In Conflict Zones” in *Public Health and Human Rights: Evidence-based Approaches*, eds. Chris Beyrer and H. F. Pizer (Baltimore: Johns Hopkins University Press, 2007); Lee, et al., ““Mortality rates in conflict zones in Karen, Karenni, and Mon states in eastern Burma.”

24. The efficacy of either indoor residual spraying or long-lasting insecticide treated nets (LLITNs) remains unproven in the context of forested areas Southeast Asia, where vector behavior likely reduces their impact. C. Lengeler, “Insecticide-treated bed nets and curtains for preventing malaria,” *The Cochrane Library* (Chichester, UK: John Wiley & Sons, Ltd., 2004).

25. Brian M. Greenwood, David A. Fidock, Dennis E. Kyle, Stefan H. Kappe, Pedro L. Alonso, Frank H. Collins, and Patrick E. Duffy, “Malaria: progress, perils, and prospects for eradication,” *The Journal of Clinical Investigation* 118, no. 4 (1 April 2008): 1266–76.

26. This is the retail cost of Paracheck[®], the particular device used by our health workers since 2001. Paracheck[®] grew out of a collaborative efforts spearheaded by PATH (Seattle), a non-governmental organization that specializes in translational efforts to increase access to technologies in developing countries.

27. Martin S. Alilio, IB C. Bygbjerg, and Joel G. Breman, “Are multilateral malaria research and control programs the most successful? Lessons from the past 100 years in Africa,” *American Journal of Tropical Medicine and Hygiene* 71, supp. 4, part 2 (October 2004): 268–278; Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria* (Baltimore: Johns Hopkins University Press, 2007).

28. Lincoln Chen, Timothy Evans, Sudhir Anand, Jo I. Boufford, Hilary Brown, Mushtaque Chowdhury, Marcos Cueto, Lola Dare, Gilles Dussault, Gijis Elzinga, Elizabeth Fee, Demissie Habte, Piya Hanvoravongchai, Marian Jacobs, Christoph Kurowski, Sarah Michael, Ariel Pablos-Mendez, Nelson Sewankambo, Giorgio Solimano, Barbara Stilwell, Alex de Waal, and Suwit Wibulpolprasert, “Human resources for health: overcoming the crisis,” *Lancet* 364, no. 9449 (27 November 2004): 1984–1990.

29. Chris Beyrer, *War in the Blood: Sex, Politics and AIDS in Southeast Asia* (Bangkok and London:

Global Malaria Eradication? Political Will Thwarts Technological Promises in Eastern Burma

White Lotus and Zed Books, 1998).

30. Stover, et al., *The Gathering Storm: Infectious Diseases and Human Rights in Burma*.

31. Amnesty International, *Crimes Against Humanity in Eastern Myanmar* (2008).

32. Thailand Burma Border Consortium, *Internal Displacement in Eastern Burma: 2006 Survey*.

33. Luke C. Mullany, Adam K. Richards, Catherine I. Lee, Voravit Suwanvanichkij, Cynthia Maung, Mahn Mahn, Chris Beyrer, and Thomas J. Lee “Population-based survey methods to quantify associations between human rights violations and health outcomes among internally displaced persons in eastern Burma,” *Journal of Epidemiology and Community Health* 61, no. 10 (October 2007): 908–914.

34. The price of rapid diagnostic tests in Thailand is similarly marked up 50 percent. Thus, border malaria programs often make “alternative arrangements” to avoid high import taxes, such as flying a volunteer round-trip to neighboring countries to hand-carry medicines into Thailand. Importantly, the quality of artemisinin derivatives must be ensured by, for example, sending samples to the United States Centers for Disease Control to verify adequate amounts of active ingredients.

35. At the time of writing, the U.S. Agency for International Development required that medicines be purchased from U.S.-certified companies (out of a real concern for the quality of medicines). However, Thailand required that all medicines be purchased in Thailand (where there were no companies producing certified artemisinins).

36. The Thai-Burma border is not the only international boundary separating patients from essential medicines. Jim Kim and Paul Farmer famously—and illegally—hand-carried expensive medicines from the United States to Peru to enable treatment of patients with multi-drug resistant tuberculosis living in poor hillside communities of Lima. Many of these patients would have died without the life-saving contraband, and Kim and Farmer are appropriately recognized as global health heroes in part for their courageous smuggling. Their work played a key role in convincing the international community to acknowledge the possibility, and indeed to embrace the imperative for treating MDR-TB in developing countries. With appropriate international attention—and funding—Kim and Farmer no longer hand-carry their medications.

37. Human Rights Watch, *Out of Sight, Out of Mind: Thai Policy toward Burmese Refugees and Migrants* (February 2004).

38. E. A. Rowley, B. L. Crape, and G. M. Burnham, “Violence-related mortality and morbidity of humanitarian workers,” *American Journal of Disaster Medicine* 3, no. 1 (January/February 2008): 39–45.

39. Geneva Conventions I-IV, including Common Article 3, and Customary International Humanitarian Law Rules 25–30 and Rules 109–111 provide for the protection of medical personnel and medical objects, and for the protection and care of the sick and the wounded, respectively. See Amnesty International, *Crimes against humanity in eastern Myanmar* (2008).

40. Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*.

41. The Office of the United Nations High Commissioner for Refugees, *The State of the World's Refugees 2006: Human displacement in the new millennium*.

42. Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*.

43. For example, the international advocacy organization AVAAZ has raised over \$2 million for monk-led relief efforts; and a coalition of eight community groups along the Thai-Burma border raised several hundred thousand dollars to provide assistance to over 40,000 cyclone victims in the Irrawaddy Delta.

44. Robert D. Kaplan, “Aid at the Point of a Gun,” *The New York Times*, 14 May 2008.