After fighting neglected diseases in Africa for a quarter century, former president Jimmy Carter takes on one of the continent’s biggest killers — malaria.
His once-sandy hair had gone all white; his shoulders were a bit more stooped; his freckled face was lined with new creases. But Jimmy Carter’s 82 years had diminished neither his trademark smile, which could still disarm skeptics at 20 paces, nor his enthusiasm for the long chance, which had propelled this obscure peanut farmer to national prominence in the first place. That quixotic spirit took him this past February to an impoverished corner of Ethiopia, where he would announce his most audacious crusade yet: to eliminate malaria, an elusive and ever-changing killer, from this ancient African nation of 75 million people.

Now rare in developed countries, the disease kills more than a million victims each year in the world’s poorest regions. At least 300 million people worldwide are incapacitated by malaria infections. The disease’s aches, fever, chills and other flu-like symptoms not only inhibit economic productivity but also suppress immune systems in its victims, making them more susceptible to tuberculosis and AIDS — both of which kill even more people than malaria does — and other life-threatening ailments.

“We can control malaria — absolutely,” Carter was saying, standing in the dusty courtyard of a clinic in the village of Afeta. Vultures wheeled overhead, and farmers in faded clothes lined up to receive new mosquito nets from the hands of the former president. Dressed in a blue plaid shirt and blue jeans festooned with a silver “J.C.” belt buckle, Carter noticed an old woman struggling to unpack her net. He pulled out a pocketknife, sliced open the heavy plastic packaging and presented the net to her. “There you are,” he said, flashing the smile.

The nets, treated with long-lasting insecticide, cost $5 each, but the villagers got them free, courtesy of the Atlanta-based Carter Center, the Ethiopian government and a host of other donors. While the villagers collected their nets, an entourage of reporters, documentary filmmakers, Secret Service agents and Ethiopian health workers got a malaria lecture from the one-term president and Nobel Peace Prize winner, who had been making foreign forays like this one — to fight disease, monitor elections and defuse international conflict — since founding the Carter Center with his wife, Rosalynn, in 1982.

“Most of those who die from malaria are little children, 1 to 5 years old,” Carter said as villagers huddled nearby, deploying their umbrellas against the rising heat. “It’s been around so long that people have become inured to it. We hope to demonstrate that we can do away with malaria in a major country. It will be an example to other countries of what can be done.”

Carter and his colleagues have already demonstrated what can be done in 17 African countries to prevent or treat debilitating diseases such as Guinea worm, trachoma, lymphatic filariasis, schistosomiasis and river blindness. All are classified by the World Health Organization as “neglected tropical illnesses.” “What that means is that they can be prevented or eliminated with proper treatment,” Carter told me. “These neglected diseases have disappeared in most of the developed world. In just a few years we’ve almost eliminated Guinea worm, which has gone from three and a half million cases down to about 25,000 — a 99.3 percent decrease. We treat about ten million people a year to prevent onchocerciasis, or river blindness. We’re making progress with trachoma, which is the leading cause of preventable blindness in the world. We’re helping to train a corps of healthcare workers through seven universities here in Ethiopia, so that even people in the most remote areas will have access to treatment. The success with these programs gives me confidence that we can have some impact on malaria.”

Carter had come too late to help little Amzia Abdela, a 2-year-old who died in 2006. She had lived deep in southwest Ethiopia, where farmers still turn the earth with wooden plows and plodding oxen, where goats sleep in red dirt roads and hornbills flap languidly from banana trees.

“She was shivering,” recalled the girl’s father, Abdela Abawori, a farmer in the village of Keta Chole. “She had a hot fever and a headache. Her joints were aching. My daughter was sick for almost two months. By the time we called the malaria worker, it was too late.” We conversed through Abate Tilahun, a program officer in the Carter Center’s Addis Ababa headquarters. Abate, soft-spoken
and courtly, translated from English to Amharic, a musical
tongue with Semitic roots that is the official language of
Ethiopia.

In short order, Abate had established that Abdela and
his wife, Nefisa, 35, have six other children, including a boy
born the month before. In a few weeks, the rains would
come again, and Abdela would plant his maize. I asked
about last year’s harvest.

“Abdela says he grows 1,300 pounds of maize a year,”
Abate said.

“That sounds pretty good.”

“Oh, no, it’s not nearly enough,” said Abate. “He says
the family will suffer. They need at least 2,600 pounds to
get by. He says they have to fill up on bananas and stuff.”

Abdela was painfully thin, his face lined with wrinkles,
making him appear much older than his 40 years. He had
straw in his hair, and he wore ragged pants held together by
patches. Rubber boots flapped around his skinny legs, and
his double-breasted coat was ripped at the shoulder. Yet he
was uncomplaining and dignified, an upright man who had
already lived through a vicious Marxist regime, followed by
years of turmoil, drought, war and now a young death in the
family. He had learned to take the blows and carry on, as
resilient as Ethiopia itself.

Like many in this proud country, Abdela knew that
Ethiopia has never been colonized by foreign powers. It
also has its own ancient script, its own branch of the
Orthodox Church, even its own way of keeping time—by
the Ethiopian calendar it is 1999 and its millennium is still
in the future. “These things make us unique,” said Teshome
Gebre, a resolutely buoyant man who heads up the Carter
Center’s health operations in Ethiopia. “We also claim to
have the entire world because of Lucy,” he said, referring to the
3.2-million-year-old hominid fossil, Australopithecus afarensis,
discovered in northeast Ethiopia in 1974.

Abdela led me uphill, past fenced gardens and scraggily
coffee trees, arriving at a truncated summit where he pointed
to a pebbly mound of earth sprouting weeds. “She’s just
here,” he said. He took a step around the little grave, not
a yard long. “My mother is here with her,” he added,
indicating an older burial at right angles to the first.

Neither was marked.

The sounds of morning wafted up the hillside—children
laughing, plowmen whistling to their oxen, roosters crowing
in the sun. Abdela uprooted the weeds obscuring his daugh-
ter’s grave and threw them aside. “I miss her,” he said softly.
“Of course I have a strong feeling of losing my daughter. I
think about her and I fear for my family.”

“Why is that?”

Abate translated: “He says almost all of his children
have been attacked by the malaria. Others could die.”

Elsewhere in Ethiopia, I would meet parents who had
great expectations for their children, as prospective doctors,
teachers, lawyers. Abdela’s ambition was more basic—
he simply wanted his children to live. That was enough
for now.

Abdela led me to his little house, where two goats were
tethered by the entrance and smoke from a cooking fire
coiled toward the sky. His 4-year-old daughter, Adia, rushed
out to greet us. He scooped her up in one arm, and with
the other threw back the frayed cloth flap that served as
his front door. He ushered me into his darkened house,
where I could make out two new mosquito nets hanging
in the gloom. The whole family had been sleeping under
them for a week. During that time, Abdela had made an
important discovery.

“When I woke up after the first night,” he said, eyes
widening with wonder, “there were dead mosquitoes all
around! Dead flies too!”

By the time Carter arrived in Ethiopia in February,
the first of 20 million bed nets were in country—roughly
two for each household in malarial areas—dispatched by
airplane, truck, bus and even donkey cart. Prime Minister
Meles Zenawi, a longtime supporter of Carter’s Ethiopian
initiatives, had agreed that his government would distribute
17 million nets; the Carter Center would hand out the
remaining 3 million in areas where it operated other
health programs. Under an agreement with the Ethiopian
government, the Carter Center will monitor the nation’s
malaria program until 2015, by which time it is hoped
that epidemics of the disease will be relegated to a chapter
of Ethiopian history. The Carter Center’s cost would be $47
million, one of the organization’s biggest investments ever.

Since the late 1800s, it has been known that bed nets
could prevent malaria by shielding humans from marauding
Anopheles mosquitoes. The female mosquitoes, which make
their rounds by night, inject victims with malaria parasites.

Of the four species of these parasites, the most common and
most dangerous is Plasmodium falciparum. They lodge in the
liver, where they remain dormant for a period of ten
days or so before flooding into the bloodstream. There
they destroy red blood cells by the tens of thousands, which
triggers the characteristic symptoms: “Coldness overtakes
the whole body. Tremors … accompany the cold sensations,
beginning with the muscles of the lower jaw … The expres-
sion has meanwhile changed: the face is pale or livid; there
are dark rings under the eyes; the features are pinched and
sharp, and the whole skin shrunken,” according to a 1911
account, still accurate today. Most of the 300 million to
500 million people infected worldwide survive a malaria
attack, which may arm them with a resistance that makes
future attacks less debilitating. In some cases, the parasite
remains in the body and emerges weeks or even years later
to cause a relapse; perhaps 15 percent of cases in Ethiopia
are recurring.

If you could avoid the insect’s bite, however, you could
avoid the disease. The new nets blanketing Ethiopia add a
high-tech twist to the old protective strategy: they not only
block the insects, but, as Abdela Abawori had discovered,
they kill any that come in contact with the nets. They have
the insecticide deltamethrin woven into the mesh, and with
no apparent risk to humans, they retain their mosquito-
killing potency for up to seven years.

Carter explained: “We first got involved with bed nets
in Nigeria, where we’ve used more than 100,000 to control
lymphatic filariasis, or elephantiasis. The problem with the
old nets was that they had to be reimpregnated every year.
So you had to go back into every village and every home to
keep the nets working. It was an almost insurmountable
problem. This new technology makes it a one-shot deal. It
doesn’t just repel mosquitoes—it kills them. It kills them!
This would not have been possible several years ago.”

Carter’s organization is not the only one to deploy this
latest armament in the mosquito wars. A group called
Malaria No More, a nonprofit collaboration between
American business groups and charities, is distributing
more than a million new insect-killing nets in other African
countries. President Bush has launched a five-year, $1.2
billion initiative against the disease, to help purchase and
distribute new nets, to provide malarial drugs for treatment
and prevention during pregnancy, to spray insecticide
indoors and to boost public education. Others have stepped
up with financial commitments for a worldwide campaign:
the Global Fund to Fight AIDS, Tuberculosis and Malaria
of them bestsellers. His latest, provocatively titled Palestine:
Peace Not Apartheid, created a storm of protest for criticizing
Israel—and expressing sympathy for the Palestinians—and
led to several resignations from the advisory board of the
Carter Center.

IT IS TOO SOON to tell if Carter’s malaria crusade will
succeed. But the organization’s track record suggests
cause for hope on a continent where that can be rare. After
Carter departed Ethiopia, I remained behind to see how
his colleagues were handling established campaigns against
river blindness and trachoma, two devastating diseases that
have long plagued this country of rumpled mountains and
foaming rivers.

Those rivers were part of the problem. Day after day, I
saw women doing their wash in the swift current, where
boys gathered water in goatskins and men watched
over cattle slurping from the river. The same waters
were home to a black fly of the Simulium species,
a nasty little customer that cut a wide swath in
Ethiopia, infecting more than 3 million people with
onchocerciasis, or river blindness, and placing some
7.3 million at risk for the disease. The flies feed on
human blood. In the process, they infect their
hosts with the parasite Onchocerca volvulus, which
gives the disease its scientific name. Once inside a
person, the worm-like parasites live for up to 15
years, producing millions of little worms called
microfilariae. These crawl under the skin, causing
inflammation, lesions, intense itching and a mot-
ting of the epidermis known as “leopard skin.” In
severe or prolonged cases, they may migrate to the
eyes, causing impaired vision or blindness.

By the time 78-year-old Mekonen Leka turned
up at the Afeta health clinic in February, he was
complaining of blurred vision and intense discom-
fort. His bony shins and ankles were spotted with
the white blotches characteristic of onchocerciasis,
and long, livid scars ran up and down his legs from
constant scratching. “I feel like there’s something
crawling around under my skin,” he said, reaching
for a sharp stick to dig at his shins once more. He sat
propped against a tree, his legs splayed before him,
telling his story: he was infected six years ago, while
planting coffee near the river; the itching kept him
from sleeping; that, in turn, kept him from working;
one of his children took care of him; he could still
see well enough to get around, but he worried that
his eyesight would get worse.

“It makes me very weak,” said Mekonen. “I
have come to the clinic to beg for medication to
stop the itching,” he said.

The medication was ivermectin, a drug originally
developed for deworming cattle and dogs and now produced
for people as Mectizan by Merck & Co., which donates the
doses. In 2006 alone, the Carter Center distributed more
than 2.5 million treatments to Ethiopians. Administered
once a year in tablet form, the drug does not kill the adult
worms, but it controls the spread of their offspring, which
gives patients like Mekonen immediate relief from itching.
More important, it will ensure that his vision would deteriorate no further.

He would have to wait a few weeks for the drug, when area health clinics planned a massive treatment. I witnessed several of these drug campaigns, which were run and attended by Africans. The events were announced in local markets and promoted on posters, resulting in hundreds of patients showing up for medicine on a specified day. Nobody just pocketed his pills and went home, but swallowed them under the watchful eye of health workers who dutifully recorded each patient’s name in a bound ledger, measured his or her height with a wooden stick, and determined the proper dosage accordingly.

“Our number one complaint is still malaria,” said Yeshimebet Moges, the chief nurse at the Afeta health clinic, where patients were lined up 30 deep for afternoon checkups. “But we’re seeing a lot of onchocerciasis patients too. They itch; they get the treatment; the complaints disappear. And there’s a side benefit—a lot of people have discovered that the medicine also gets rid of intestinal worms and other parasites, which can be a big problem for children. Our patients are really grateful—they bring us coffee, bananas, avocados, oranges.” A few satisfied customers have even named their children Mectizan, a tribute to the drug that healed them.

Mectizan means that millions of children will not go blind or know the misery that onchocerciasis has visited on their elders. With luck, a new generation might be well enough to attend school instead of suffering at home or staying there to nurse a sick parent. “If one family member is taken out of production because of sickness, it affects the whole family and eventually the economic development of Ethiopia,” said Teshome Gebre. “This is one of the reasons we have a poor country. You need healthy working people if you want to reach the dream of economic progress.”

It had been a long while since Sintayhu Tegegn, 45, felt well enough to work. The widowed mother of three sons had contracted trachoma, a bacterial infection occurring throughout Ethiopia, and now she suffered from trichiasis, a late stage of the disease that affects a million Ethiopians and requires immediate surgery to preserve sight; another 15 million to 20 million have an early phase of the ailment, which can usually be arrested by antibiotics.

“My eyes started hurting two years ago,” she told me, as we sat outside a village clinic in Merawi, a dot on the map in northwestern Ethiopia. Along with several hundred patients, she was awaiting eye surgery. “The pain has become unbearable,” she said, tightening a white cotton shawl around her head to screen out the sunlight. “I have trouble cooking for my family because the smoke irritates my eyes. Sometimes I can find a neighbor to help me—sometimes I just have to go to the kitchen and endure the pain because there’s nobody else to feed my family. I can’t sleep because of the pain. I can’t close my eyes. If I do, then I can’t open them because of the pain.” She had them closed as we spoke.

The disease, known from ancient times, is transmitted by flies or spread from person to person. The vector, a fly known
As *Musca sorbens* (cousin to our familiar housefly, good old *Musca domestica*), swarms around the eyes and runny noses of children, feeding on the moisture and leaving behind a microorganism called *Chlamydia trachomatis*. Infections from the microorganism settle under the eyelids, which become inflamed and thickened. With time the lids begin to scar from the inside, causing them to curl in upon themselves. When this happens, inverted eyelashes begin to scratch the cornea, which eventually clouds over like frosted glass, causing blindness. In Ethiopia, where the disease is known as “hair in the eye,” the ailment afflicts primarily children and the women who care for them.

“It is very much an illness of gender,” said Mulat Zerihun, the eye surgeon in charge of the Carter Center’s trachoma programs for the sprawling Amhara region. He worked his way through a sea of patients waiting to be screened in the Merawi clinic. When he came to Sintayhu Tegegn, he pulled his magnifying goggles into position, cupped her chin in his hands and tilted her head up. Like many suffering from late-stage trichiasis, Sintayhu had found respite by plucking her eyelashes with tweezers, which more than a few patients wore like amulets around their necks. “Pulling the lashes helps for a day or so,” Mulat said, but then they grow back, sharp and bristly, and they scratch the eyes worse than before.

Mulat peeled back Sintayhu’s eyelids, studied her for a moment and announced a verdict: “Both eyes will be all right. There’s no clouding on the cornea. You will feel a lot better in a few days.” Mulat plunged back into the silent crowd while Sintayhu’s 15-year-old son led her into a small room where surgeons were already at work on one patient.

Sintayhu was lucky to fall under the care of Mitikie Wondie, 34, an ophthalmic nurse suited up in a surgeon’s cap, mask and latex gloves. She settled Sintayhu on the table, draped her face with a sterile cloth and told her to hold steady. After injecting each eyelid with local anesthetic, Mitikie went to work: she threaded a needle through the upper lid of one eye, pulled it up with a loop of silk and slid in a stainless steel retractor to hold the lid in place; with a scalpel, she made a small incision along the margin of the lid and the tarsal conjunctiva; this relieved tension on the damaged eyelid, which allowed her to unfold the eyelid, freeing it from scraping against the cornea; with the lid restored to its proper position, Mitikie closed the incision, squeezed antibacterial ointment in the eye and patched it down with gauze, repeating the process on Sintayhu’s other eye. All through the 12-minute operation, Sintayhu lay barefoot and unflinching on the table, watched over by four surgical assistants who handed equipment to Mitikie, swabbed blood from Sintayhu’s eye and listened intently as

Nearly one million of Ethiopia’s 75 million people are blind, among the highest rates in the world. Clinics supported by the Carter Center (eye specialist Mulat Zerihun examines a boy) have saved the sight of 67,000 people who suffer from trachoma.
Mitikie described what she was doing. The assistants were in training, and would soon be allowed to perform a few operations under Mitikie’s supervision.

“We’ll probably perform 40 surgeries in this clinic today,” Mulat said, “and another 40 down the road in Dur Bete. We could do more, but we’re giving these young people exposure to training, so they will be able to do what Sister Mitikie does.” His honorific title for Mitikie referred to her position as a nurse, not to holy orders. When he praised her, she shrugged, pulled on fresh gloves and went to work on a new patient, one of the 67,000 trachoma surgeries the Carter Center has coordinated in Ethiopia since 2000.

Sintayhu, meanwhile, was ready for home. She stood a little unsteadily, her eyes taped with gauze, and called for her shoes, pointed and black with red stars on each toe. She pulled her shawl protectively over her head, locked arms with her son and went out into the light. With him on one side, a niece on the other and a neighbor following, Sintayhu navigated a passageway crowded with patients, stepped gingerly into the clinic’s sunbaked courtyard and disappeared through a gate. Now maybe she could sleep.

The eye-saving surgery at Merawi and other rural clinics was but one component in Carter’s multifaceted campaign against trachoma. The Carter Center also works with the Ethiopian Health Ministry and volunteer groups such as Lions Club International to distribute antibiotics from Pfizer, Inc., which has donated 5.5 million doses of Zithromax, its version of azithromycin. The drug not only arrests trachoma but also knocks out a wide range of other ailments, among them scabies, lice and the respiratory infections that haunt children.

The trachoma initiative also includes a public education campaign emphasizing the importance of face washing and hygiene in preventing the disease. To encourage such washing, the Carter Center and the Lions Club have drilled more than 119 community wells in the region. And in order to stop trachoma at its source, the former president has inspired an unprecedented sanitation campaign.

“I used to be known as the president who negotiated peace between Egypt and Israel,” Jimmy Carter told a recent gathering of health workers in Addis Ababa. “Now I’m known as the number one latrine builder in the world.”

The flies transmitting trachoma breed in human feces. In the fields where they spend all day and sanitary facilities are unknown, farmers have traditionally squatted behind any convenient bush or maize plot. “As you can see, we live in a big country,” Mulat said as we drove through yellow fields and lumpy mountains bordering Lake Tana, where the Blue Nile uncoils on its long journey toward Sudan. “Our tradition is to defecate outside in the fresh air under the sky. This is what the farmers have always done.”

Farmers were indignant a few years back when Mulat began talking about the link between trachoma, flies and toilet habits, and suggested that latrines could help. “Why should we change?” Mulat recalled them asking. “Our ancestors did it this way. We do it this way! We’ve been to cities. Their latrines smell terrible!”

To answer such complaints, Mulat staged latrine-building workshops in a few communities, with raffles. “The lucky winner got a latrine,” Mulat said. Neighbors did the construction, using simple materials such as saplings and cornstalks. “Once people saw how the latrines worked and they started using them, they really liked them — especially the ladies.” In this conservative region, women had been suffering for years because it was a cultural taboo for them to defecate in daylight, when they could be seen. “It brought shame and ridicule on your family,” Mulat said. “They basically had to go to the bathroom at night, which could be very inconvenient.”

With women leading the charge, latrine fervor soon swept the Amhara region, where more than 300,000 new household privies have been built since 2002, far beyond the 10,000 that health officials initially had in mind. Neighbors competed to see who could build the best one. Having visited a few of those reeking city latrines the farmers complained about, it was with some trepidation that I made the half-hour hike down a broken boulder field,
across a sluggish creek and up into the scrubby hills near Lake Tana to meet Wallegne Bizvayehu, a farmer who proudly showed me his family privy, one of 300 new sanitary facilities in his village of 6,000. It was a simple structure about ten feet deep and three feet wide, with airy walls of woven maize stalks and a slanting thatched roof lined with an orange plastic tarp. Wallegne’s outhouse was a clean, odorless, well-swept building, with thin bars of sunlight shining through the walls, and not a fly in sight — an island of unaccustomed privacy in a village of barking dogs, farm chores and family obligations.

“Since we built it I believe we’ve been healthier,” Wallegne said. “We’ve decreased our visits to the nurse’s station.” Inspired by Wallegne’s example, three neighbors were building new latrines. “They’ll build them themselves,” Wallegne said, “but of course I will help if they need it.”

This seemed to me the salient lesson of Jimmy Carter’s efforts in Ethiopia, where Africans were helping Africans. The former president made the high-level contacts with prime ministers and health officials, then went home to raise the contributions. He gathered a small but talented technical staff in Atlanta to supervise and plan projects. But they remained largely invisible on the ground in Africa, where the recent history of charity has been written in overblown promises, unrealized dreams and squandered billions.

“Most of the money spent on foreign aid never gets to the suffering people,” Carter told me. “It goes to the bureaucrats and to wasteful contractors. There’s data showing that for every $100 in available aid for the control of disease and suffering in Africa, only $20 gets to the people who need it.”

Determined to improve upon that record, Carter (a notoriously frugal child of the Great Depression) has kept his expenses low, infrastructure small, accounting systems rigorous and expectations reasonable. Over the past two and a half decades in Africa, he has been happy to take small steps, to build upon them and to let local people take credit for the programs that work. In Ethiopia, he has drafted respected professionals such as Teshome Gebre and Mulat Zerihun, who built their own network of indigenous helpers. These villagers were the ones who went to the markets and made the announcements of forthcoming clinics, kept the records, dispensed the medicine, trained the nurses and performed the eye surgeries.

“That is the key to success,” said Carter. “We don’t come in to impose something on a country. We get invited. We help. But all the work gets done by local people.”

And now local people were fanning out to make sure the nets were properly deployed all over Ethiopia, which may yet win its long struggle with malaria.

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A not-for-profit, nongovernmental organization, The Carter Center has helped to improve life for people in more than 70 countries by resolving conflicts; advancing democracy, human rights, and economic opportunity; preventing diseases; improving mental health care; and teaching farmers in developing nations to increase crop production. The Carter Center was founded in 1982 by former U.S. President Jimmy Carter and his wife, Rosalynn, in partnership with Emory University, to advance peace and health worldwide. Please visit www.cartercenter.org to learn more about The Carter Center.