SCHOOL OF PUBLIC HEALTH

What
RESEARCHERS HOPED THEIR STUDY
the
WOULD PROVE THAT TREATING
Tea
HIV-INFECTED WORKERS IS GOOD
Leaves
FOR THE BOTTOM LINE. BUT WHAT IF
Say
THEY WERE WRONG?
A GOOD plucker, taking the two top leaves, can harvest 100 pounds of tea leaves a day.
They move through fields of green that stretch to the horizon, wading through the waist-high leaves, deftly twisting delicate shoots off the tops of thick-rooted plants, flicking the tender harvest into deep wicker baskets strapped to their backs. Their black faces, hidden under broad brims, are shaded from the equatorial sun, their hands are coarse, their fingers calloused, but nimble.

Tea pluckers, scores of them, are working the fields atop the high rolling hills of rural western Kenya, in the heart of African tea country.

A muzungu, Swahili for “white guy” — not a derogatory term, just a statement of fact — watches the pluckers, marveling at their speed and care. Speed because they are paid by weight, care because if the fresh leaves are bruised or crushed, they fetch a lower price.

Jonathon Simon is a long way from his third-floor corner office on Massachusetts Avenue at the Boston University Medical Campus, but he seems at ease, if a little awed, to be standing with his feet in African dirt. As founding director of BU’s Center for Global Health and Development, Simon sometimes jokes that if his center is doing its job right, his University digs should be little more than a post office box, his team’s focus being far-flung, aimed at places just like this.

Since 2001, BU researchers have been working with tea pluckers and with the plantation owners who hire them. What started as an effort to measure the devastating impact of AIDS on African workers has evolved into something much more hopeful: an attempt to prove that HIV-infected workers, given the same antiretroviral drugs readily available in developed countries, will return to near full productivity, benefiting their employers as well as their families.

It’s an argument that Simon, a School of Public Health professor and chair of the department of international health, now believes can be applied to many parts of the African, and the world’s, economy — to miners, coffee and cotton pickers, any laborers at work in the fields.

“My mantra, when I meet with corporate leaders, is, ‘Don’t run away from HIV. Invest in it. This is an opportunity,’” says Simon, watching the pluckers skim across the green sea of tea. He knows this may sound cynical to those who think health care should be provided regardless of economic factors. But he also understands the global reality: if it’s good for the bottom line, corporations will make it happen.

So BU’s presence in Kenya, centered in Kericho, a town at the epicenter of tea country, is no simple matter of bwanas descending, offering Western solutions. Nearly nine years in the making, it has grown into a mutually beneficial research collaboration, what Simon hopes will be a case study with
broad implications. The data that are emerging are his team’s harvest, just as the tea pluckers have theirs.

TRACKING AN EPIDEMIC

When BU started its Kenyan tea plucker research in 2001, forging a partnership with KEMRI, the Kenya Medical Research Institute (Kenya’s equivalent of the research side of the U.S. Centers for Disease Control and Prevention), and Walter Reed Army Medical Center, AIDS was devastating Africa. In some areas, 10 to 15 percent of the population was HIV-positive.

“It was such a dark time,” remembers Monique Wasunna, a physician who for two years was acting director of KEMRI. “It was a taboo, a curse, a death sentence to have HIV. If there was any testing, it was done in secret, because if you were found to be HIV-positive, you would lose your job. And there was nothing we could do to help.”

Simon’s group, originally nine scientists and five administrators who uprooted from Harvard and moved with him to BU in 2001, wanted to put some sense of scale to the crisis. Hardly the kind of heroic hands-on health care that wins endorsements from the Hollywood set, it was public health research, number crunching that might raise public consciousness about the enormity of the tragedy.

Donald Thea, an SPH professor of international health and a physician, who has been working with Simon since 1998, remembers being in South Africa in 2000, “doing work pro bono for a group that owns game parks there. They were looking to enhance the quality of life in communities around the parks. I was trying to help them do a needs assessment for health clinics in those areas and bumped into a guy who had been working at Walter Reed. He’d been looking at the impact of malaria in western Kenya.”

At the end of a hard day, ensconced poolside at one of the game parks, Thea posed what he called “the intangible, unknowable question” that the BU team was trying to solve: “How do you measure the effect of illness in a workforce, real tangible effects on productivity, the bottom line, and people’s lives, beyond simply absenteeism?”

You need to go to Kericho, the Walter Reed scientist told Thea. You need to look at tea plantations.

THE HIGH COUNTRY

Seven hours of hard driving west of Nairobi, 7,000 feet above sea level, surrounded by tea fields, Kericho is a bustling market town that serves Kenya’s Rift Valley. Matatu, Toyota vans packed with passengers, clog the streets and blare warnings. Shops sell goods ranging from fresh produce to cheap Chinese shoes to hand-hewn bedposts and freshly killed livestock. Makeshift stalls line the streets and fill muddy fields at the edge of town. Kenya’s famous runners, native to this region, glide along the country roads in the morning, running five-minute mile after five-minute mile, barefoot.

One way or another, everyone in Kericho connects to tea, which arrived in Kenya in the early part of the twentieth century, following the travel routes of the British Empire and thriving in fertile Kenyan soil.

Today the great tea estates cover scores of square miles; one tea factory, fed by just four of the many estates, can process as much as thirty tons a day, most of it shipped to Europe, Pakistan, Egypt, and India. Americans covet Kenyan coffee, but much of the rest of the world sips Kenyan tea.
Pluckers are paid by weight — a good plucker, taking only the top two leaves and the bud off a plant with each flick of the wrist, can harvest 50 kilograms, or about 100 pounds, a day. A plucker might be paid the equivalent of about eight U.S. cents per kilo. To create an accurate payroll, the business-minded British have kept meticulous records for decades. A more precise, personalized measure of labor productivity would be hard to find.

And pluckers are not migrants. Tea plants can be plucked every ten days in good weather, so workers stay put, sometimes for decades, sometimes across generations. Estate owners have long understood that health care benefits the workers and improves the bottom line. As it turns out, plantation clinics and hospitals also kept meticulous records going back decades.

Could those charts, documenting the health of each worker, be overlaid on reports of the production of each worker, literally tracking, worker by worker, day-to-day production against the onset of HIV?

The study was planned in Boston, with input from Simon, Thea, Sydney Rosen, now an SPH research associate professor of international health, William MacLeod, now an SPH assistant professor of international health, and economist Jeffrey Vincent, who had worked with Simon at Harvard and moved to Duke University. Initial funding from the National Institutes of Health launched the project, aided by KEMRI and Walter Reed Army Medical Center. And because every element had to be rooted in and around Kericho, the team enlisted Margaret Bii (pronounced “Be”), with a sociology and community development degree from the University of Nairobi, to become point person and program manager.

Bii helped the team approach large tea plantation owners, asking them to open up their records. “We weren’t demonstrating any-thing needed earlier, and better. Sim-ilarly, regain their health. The re-searchers found hundreds of additional tea pluckers, who had survived long enough to reach local clinics, and Laza-rus-like, regain their health. The re-searchers found hundreds of additional pluckers whose health and produc-

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AIDS, it seemed that the only thing needed to produce enough data was careful, time-consuming grunt work.

But then came some “unpleasant surprises,” as Rosen calls them, that put the entire project in danger.

Some numbers had been reassigned, representing more than one worker — so much for a clear correlation of work and health. Some pluckers had brought in family members to help them pluck — so much for a clear measure of productivity.

The team’s initial cohort was small, fewer than 100 cases. Even so, Matthew Fox, an SPH assistant professor of international health, began to see trend lines, proof positive that AIDS wastes people long before they admit they are sick, long before it kills them.

“We weren’t demonstrating anything in the fields didn’t know,” recalls Fox. “They knew sick workers aren’t producing as much. And the companies who had allowed us in knew that, too. This was about proving to the bigger community the scale of the problem.”

“We were able to track decline that began long before frank expression of the disease,” Simon says, “and to do it at a level of specificity we couldn’t approach anywhere else in the world.”

The researchers’ work might have ended then and there, with a study tracking tragedy, consigned to academic shelves, but in 2004 something remarkable happened: it was called the President’s Emergency Plan for AIDS Relief, or PEPFAR.

**LET THE DATA SPEAK**

Persuaded by humanitarian arguments offered mainly by the missionary religious right, President George W. Bush pumped billions of dollars into fighting AIDS in Africa. The move, now seen by many as Bush’s great unsung success, helped Africans realize what Americans had learned years earlier — AIDS does not have to be a death sentence.

For the BU team, PEPFAR provided an opportunity to answer a crucial question: do workers who receive antiretroviral therapy return to full strength? If the answer were yes, it could persuade owners of tea plantations and perhaps other endeavors to treat their HIV-infected workers earlier, and better.

But what if the answer were no?

“It was a risk,” Simon acknowledges, “and within our group, there wasn’t unanimous opinion that we should go forward. We had deep debates about whether we should be doing this work with the private sector.”

Simon pushed on. “We ended up saying, ‘Let the data speak.’ Our fundamental role is to very systematically collect information, present it in a fairly unvarnished way, and let the social policy decisions be informed.”

“Am I a social activist?” he asks. “Sure — off hours.”

With PEPFAR funding pouring in, Simon’s research team was able to build a new cohort of HIV-positive tea pluckers, who had survived long enough to reach local clinics, and Lazarus-like, regain their health. The researchers found hundreds of additional pluckers whose health and produc-
tion records could be correlated.

“By June 2006, we thought we had enough data and follow-up to do a quick preliminary analysis and look at the trends for people taking antiretrovirals,” recalls Bruce Larson, an SPH associate professor of international health, who has had a key role in the Kericho work. “We were worried about the results; we really didn’t know what we would be able to show. Then as we kept working, we saw it: the information was cooperating. I remember the weight lifted off our shoulders.”

For two months after first receiving antiretrovirals, Simon’s team learned, many workers faced hard adjustments. People needed that time to rebuild strength, but after they did, the trend was encouraging: people were returning to work and families, resuming their places in the fields and community, rapidly and almost completely. The investment in HIV that Simon was urging corporate leaders to make seemed to be paying off.

But as the numbers mounted, a disturbing anomaly surfaced: men were returning to full productivity, women were not. The issue could not be avoided; initial findings raising this question were published in the journal BMC Public Health in July 2009.

“And so I was faced with a remarkably tough question from an estate manager,” Simon remembers. “He said, ‘Dr. Simon, we cannot terminate a worker because of HIV status; we understand the law. But answer me this: can’t I fire a worker because she’s chronically underperforming?’ Honestly, I had no answer.”

**FACING THE FACTS**

In November 2009, Simon’s team reconvened in Kericho, gathering representatives of the tea plantations, the hospital staff, and the KEMRI leadership to present the latest findings and, in part, explore the troubling gender disparity.

At first, there was a typical African distance among those gathered, a form of politeness that can be interpreted, or misinterpreted, as wariness. Simon’s team wondered about the reception their research would receive, and they worried more about how their data might be applied.

After their PowerPoint presentation, the team fielded questions: is it possible that management is treating women differently from men or that women pluckers are doing more work than men after hours, around the home and with families, which could explain less field productivity? Should drug regimens initially tested on men be altered to improve results for women?

“We realize there are a lot of variables still in play,” Larson told the group. “The study size is small enough so that it might even be something as simple as one foreman treating men and women differently. That can happen in field research like this.”

“We have to remember,” Simon says, “we’re dealing with what I think is the first private sector provider of antiretrovirals in all of Africa. They took a huge step, and the data back them up. They know what we know now, and despite this one question, they have to feel good about that.”

“One surprise for me was hearing that it may also have to do with compassion,” says Larson. “If you or I have a headache, we go back to work. But if you’re HIV-infected, management is liable to give you a little more leave. That alone might skew productivity.”

Many questions remain, but as the numbers mount and the months pass, there now seems little doubt that workers on antiretrovirals, the gold standard “cocktail” of drugs for AIDS treatment, are able to do much more than simply survive, lingering in a twilight that burdens families and society.

Simon’s research indicates that HIV-infected workers who are treated with antiretrovirals are able, within seven months of treatment, to perform work similar to what they had done before they became sick.

“We were very pleased to see these reports coming in,” said Josephine Maende, a physician who has been working in a tea estate hospital since the onset of the pandemic, a few days after the meeting. “They affirm what we’ve been seeing: that even patients who were quite sick could take their drugs and return to work. We’re hoping this study will encourage the company to get people to come for testing much sooner, so we can start treatment before their productivity goes down. This is a very good incentive for better, earlier care.”

Back at KEMRI’s main offices in Nairobi, Wasunna offers an international perspective. “Look at what we’ve done with Boston University, look at what we’ve proven,” she says. “If you treat your people well, they live longer, they produce better results, and it’s less expensive to do that than let them slip into illness and death. That surely can be translated into policy, because now we have a strong, strong case. These results won’t end up on the shelf.”

But first they have to be published in final form. Analyses of the data gathered over four years should be completed, incorporated into manuscripts, and submitted for publication in April.

“We were very fortunate,” says Simon. “We were established here before treatment, so we were ready for the next big step. And we had such strong cooperation from the tea estate companies and from our partners. We were able to do our work, to let the data speak.”

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“The hope now is that many will listen.”

**WEB EXTRA**

Watch videos about BU in Kenya and the SPH study on HIV-infected tea pluckers at bu.edu/bostonia.