Global Citizens

A Case Study in Global Health
Harnessing the Power of Partnerships

By Bob Einterz

To awaken the inherent power of academic medical centers and their research based universities like Indiana University and Moi University in Kenya, we must measure their success not just in terms of profits and publications, but also in terms of the health of our population and community, such as infant mortality, maternal mortality, HIV incidence, and other such indicators.

After all, if we do the best health research in the world, but that research is not translated into improved health for the population, what have we accomplished? And if my Kenyan counterparts train the best medical student in the world, but that student graduates into a dysfunctional medical system that robs him of hope and spurs him to migrate to another country, have we improved the health of the individuals in Kenya who right now are not able to access health care?

Instead, let's try a different approach. Let's dare to lead with care. Let's roll up our sleeves and get our hands dirty in the actual delivery of health care services, but in so doing, deliberately create a health care system that hosts research and hosts training, so that at the end of the day, no one of those three missions—care, research, or training—is any more or any less important than the other two.

Indiana University partnered with Moi University in Eldoret, Kenya in 1990 to help bring up Kenya's second medical school. In the first decade, we focused on teaching medical students, doing collaborative research and delivering health care services primarily at Mio

Teaching and Referral Hospital (MTRH). But, by the year 2000, the HIV epidemic had exploded across the continent.

In the US, the triple drug cocktail that transforms HIV from a certain death sentence into a manageable chronic disease had been discovered, the drugs were available in the health system here, and the incidence of AIDS here was plummeting. But, in Kenya, and throughout sub-Saharan Africa, the story was very different.

Wander into any community, and this is the scene one might see, repeated over and again, a grandmother caring for her gaggle of grandkids, their parents dead of AIDS. Efforts to prevent the epidemic had been a crushing failure, and most folks, ourselves included, doubted our capacity and Kenya's capacity to embrace the pandemic.

AMPATH OVER THE YEARS

1990

Dr. Bob Einterz, joined by his wife Lea Anne and three sons, becomes the first in a two-decade string of Indiana University faculty physicians to work alongside Kenyan colleagues, care for Kenyan patients, and teach IU and Moi University School of Medicine students. Doctors Einterz, Joe Mamlin, Charlie Kelley and Dave Van Reken had conducted a three-week world tour in 1988 seeking an international partner for IU School of Medicine, and committed to developing a relationship with the fledgling Moi University Faculty of Health Sciences (MUFHS) in Eldoret (later to be renamed Moi University School of Medicine).

Indiana University was attracted by the vision of Moi's dean, Dr. Haroun N.K. arap Mengech, who was committed to build the new school's curriculum around community-based experience and service, aka COBES. The COBES program at Moi University is also launched in 1990, as the school welcomes 40 medical students as the first-ever class at Kenya's second medical school. One of the first COBES sites, the rural health center in Mosoriot, Kenya, eventually becomes the site of AMPATH breakthroughs in electronic medical record-keeping and community-based HIV and primary care.

But, all of that changed in 2001 with a young gentleman, named Daniel Ochieng, a Kenyan medical student who had contracted HIV and was dying on the wards of the hospital in Eldoret. He was the first person ever treated in the public sector in Kenya, the first person in whom we witnessed the miraculous "Lazarus effect" of the triple drug regimen. When he got up from his deathbed and walked out of the hospital, he filled us with hope that we could take on this horrible epidemic.

We began to dream, and on paper, we created AMPATH. And when I say we, I mean Kenyans and Americans working together, mostly Kenyans, and always under the leadership of Kenyans. We began one clinic in Eldoret city, and one clinic in a rural health center in the town of Mosoriot. Importantly, we made an unwavering commitment to developing an electronic information system to anchor all of our care and research, making possible the complex integration that is key to a successful care system, and inviting cutting edge technology so that we can discover or make the next leap forward.

Many of our first patients quickly convinced us that Kenyans are as adherent to their medications as the average American. We were privileged to treat patients who demonstrated the courage to get up out of their death beds and walk back into their communities, HIV positive and living positively, to fight the stigma and to spread their message of hope throughout the country.

From two clinics and 45 patients, AMPATH grew to eight clinics and thousands of patients, and then 25 clinics and tens of thousands of patients. Today, there are more than 500 care delivery sites serving a population of 3.5 million people. This makes us the largest HIV control program in Kenya, and one of the largest in the world.

We have learned some important lessons along the way. Salina taught us one of our first lessons as we found here dying of HIV. My colleague Joe Mamlin started her on ARVs, and though she did not die, she did not really get better, until it finally dawned on Joe that Salina and her children were slowly starving to death. So, digging his hand into his pocket each week he saw her, he gave her a few shillings. Joe told her to go buy some food for her and her children. And Salina did just that, and Salina got better.

For sure, the cause of HIV is a virus that is transmitted primarily through sexual intercourse. But, its root causes and the root cause of the misery that it extracts on a society go much deeper, to matters of gender inequity and food and income insecurity. So we, created our own farms and reaching out to World Food Program, began to feed 30,000 people a day, making a number of very hungry people very happy.

But, it became very clear very quickly that such a response was not sustainable. So, we reached out to our colleagues at Purdue University and their world-class school of agriculture as well as the business school at Notre Dame. More recently, companies like DowAgroSciences have joined the effort alongside Kenyan agricultural experts at Moi and in the Ministry of Ag. This dynamic collaboration has developed a number of programs in the agricultural and business sectors to assure food and income security.

For example, we organized women's groups in the urban slum of Kitale to begin sack gardens, an ingenious yet simple technology that is of particular value to the poorest of the poor. The process begins by taking a gunny sack and filling it with soil in just the right way, planting vegetables like kale on the top and in holes along the sides, and watering just two times weekly. With this, a family of five with just three such sacks can grow their minimum daily requirements of vegetables and even a bit of excess to sell in the market.

We also learned that by organizing small groups of men and women—usually women—to make small loans among themselves and to take responsibility for their

1991

Diana Menya and Gabriel Anabwani became the first of many Moi University faculty members to visit Indiana and establish collegial relationships with faculty members there. Over the twenty years of partnership, more than 400 Indiana University School of Medicine students have received training in Kenya, and the opportunity for global health experiences in Kenya and Indiana has been cited by many top-flight medical school applicants as the reason they chose to enroll at IU School of Medicine.

1992 After a series of student strikes, Moi University Faculty of Health Sciences (MUFHS) closes for nearly 9 months. Team leader Charles Kelley and his wife Lorraine persevere in Eldoret and affirm IU's commitment to the mission of MUFHS.

1994 Under Chris Suelzer's leadership, IU students and residents begin to work with a rescue center for street kids. Over time, their efforts evolve into more robust efforts to address the challenge of street kids, including National Institute for Health (NIH) supported research and the Tumaini Centre.

investments, we helped thousands of individuals step up to the first rung of the ladder to self-sufficiency. And, working with several thousand subsistence farmers to facilitate a number of farming cooperatives that are now competing for tens of thousands of dollars of forward delivery contracts. Particularly gratifying, a few of the groups have now reached the point where they are donating some of their cereals back to the most needy in their community, in effect, creating community food banks.

And then there were more challenges. An untreated pregnant woman infected with HIV has nearly a 50% likelihood of transmitting the virus to her infant but a treated mother has less than 5% chance of transmitting the virus to her infant. So, we had implemented aggressive treatment protocols in every ante-natal clinic throughout our area.

We soon discovered, however, that some woman never came to antenatal clinic, and in that population of women who never came to antenatal clinic, the prevalence of HIV was three to four times higher than in the cohort of women who came to ANC. In other words, we discovered that doing a near perfect job of treating women who came to our facilities meant that we were still failing to prevent most of the infants from getting HIV.

So, we said to ourselves, if they won't come here to our facilities, we will go into the community. We developed a cadre of community health workers, testers and counselors, and off they went, onto the rutted roads, over the river, through the maize fields, past the lurking crocodiles, and into the homes, testing every pregnant woman and every man and woman in the household who had the potential to engage in sexual intercourse.

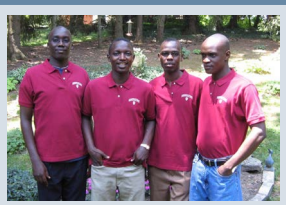
The results were striking. Nearly 98% of all households welcomed AMPATH's testers and counselors into their homes. Since the inception of AMPATH, we enrolled more than 160,000 HIV infected individuals, and we reduced the rate of transmission of HIV from mother to child from nearly 50% to less than 3%. The body of scientific evidence now suggests that if we get enough HIV infected individuals on treatment, and reduce the "community viral load", we will likely stop the epidemic. We believe AMPATH is on track to doing just that.

As our successes in HIV control and treatment multiplied, we turned our attention to the challenge of primary health care in the population as whole irrespective of HIV status. We reached out to our colleagues at University of Toronto, and linking them with their Kenyan counterparts began to address maternal and child health. With help from Purdue School of Pharmacy, we are assuring secure and stable drug supplies and training the pharmacists to manage them. We are also addressing issues of safe water and other related challenges.

That is where we are today, transitioning our HIV care system into a comprehensive primary health care system, in effect, getting back to the reason Indiana and Moi partnered in the first place in 1990. Along the way, we discovered that a large and growing segment of the Kenyan population had become more like us than we would like to admit. Rather than just HIV and the diseases of poverty, Kenya—like so much of sub-Saharan Africa—is now facing a growing epidemic of non-communicable, chronic diseases. Specifically, Africans face a burgeoning prevalence of diabetes, hypertension, chronic lung disease, cancer, and heart disease.

AMPATH responded. In March 2013, we are breaking ground on the first building in East Africa dedicated to the control of chronic diseases, applying the same principles and academic approach that were keys to success in controlling HIV: the first two floors are for care, the next floor for research, and the top floor for education and administration. With help from our colleagues at Duke and Brown, we are

1995 Five Kenyan medical students take elective rotations in Indiana, the first of nearly 150 students who will take electives at AMPATH Consortium schools over the ensuing 20 years.



1996 As Chairman of the Department of Medicine at IU, Craig Brater commits $500,000 to initiate an endowment to support IU's tripartite mission in Kenya.

1997 The ASANTE Consortium, later to be renamed the AMPATH Consortium, is launched. The group of North American universities to join Indiana University School of Medicine in partnership with Moi University would grow to include Brown University's Alpert Medical School, Purdue University School of Pharmacy, Duke University Medical Center/Hubert-Yeargan Center for Global Health, Lehigh Valley Hospital, Providence Portland Medical Center, University of Utah School of Medicine, George Washington University School of Public Health, and University of Toronto Faculty of Medicine. University of Massachusetts Medical School, University of Notre Dame/Eck Institute for Global Health, and University of California – San Francisco.

bringing up Centers of Excellence in Oncology and Cardiopulmonary diseases linking this building anchored in a tertiary care center to all levels of the health care system, including the most remote community in AMPATH's catchment area.

Now that I've outlined the benefits of AMPATH's approach, I would like to conclude this essay with a description of three of the key features of our model. First is our relentless emphasis on "care leading the way." Research and education are critical components of any academic mission. Indeed, if we look at the amount of funds that AMPATH attracts for just research alone, not counting the tens of millions of dollars for care, it is substantial. But, AMPATH has been successful because the academic health centers that comprise it *dare to hold themselves accountable for the health of the population*, and that then becomes the foundation for all research. We must Lead with care… and leave nobody behind!

Second, to be successful in the global sphere and to be an agent of enduring transformation for the good of all, the circle that defines who we are must encompass not just ourselves but also our partner institutions and our global communities. AMPATH's success is a reflection of the capacity of North American universities to cooperate over the long haul, to be inclusive, collaborative, and unfailingly respectful of host Kenyan leadership.

Third, we must embrace technology. In our case, an Open MRS platform and the AMPATH electronic Medical Record System is the foundation for all of our care and research activities. Created and designed by AMPATH's investigators and scientists for AMPATH and with demonstrated proof of concept within AMPATH, this technology has now been adopted in more than 40 other countries. This is just a wonderful example of bidirectional innovation.

The reward for our work comes in many forms. Consider the story of Rose who was dying of HIV when we met her years ago. She was successfully treated with food and medicines and returned to the clinic with a bag of potatoes and onions in her right hand as a gift to those who gave her hope. She wanted to thank the PEPFAR program, Moi, IU and their academic partners, and for their many supporters too numerous to name. Her thanks was literally for her life and life of her children.

Then there is Pamela who appeared to us not HIV infected but rather she was afflicted with rheumatic heart disease, a preventable and surgically treatable disease in this country. Unfortunately, she died a short while after she arrived and her death spurs us to bring up a more effective PHC program for thousands like her.

We will remain inspired by success stories like Rose's and deeply burdened for losses like Pamela's. Indiana University will remain in the pursuit of giving our best gifts—medical skill and innovation—to African partners who took the lead and will sustain our shared success for generations. This East Africa partnership saves lives there and enriches our own lives here. Taken together, hope has replaced despair and global health is being reinvented.

Bob Einterz, MD, co-founded the Academic Model Providing Access to Healthcare (AMPATH), a consortium of North American universities in partnership with Moi University and Moi Teaching and Referral Hospital. AMPATH, which Einterz currently directs, is responsible for creating a comprehensive system of health care services, research and training — run entirely by Kenyans. AMPATH's primary care and chronic disease management programs deliver healthcare services to a population of more than 3 million people in western Kenya. Einterz is also the Donald E. Brown Professor of Global Health and Associate Dean for Global Health at Indiana University School of Medicine, and director of the Indiana University Center for Global Health.

1998

Waiting for visas to visit the U.S., John Sidle and a group of Kenyan medical students are on the steps of the U.S. Embassy in Nairobi when it is bombed by Al Quaeda. They are not physically harmed.

2001

By this year, over 20 million Africans are estimated to be infected with HIV, the virus which causes AIDS. But almost none are being provided the anti-

2000

Indiana University School of Medicine surgeon Dr. Dave Matthews, along with his wife Emily and their children, completes his fourth year living and working in Eldoret. Their congregation in Indianapolis, Second Presbyterian Church, supports the Matthews' service in Kenya and raises funds to build four new surgical suites at Moi Teaching and Referral Hospital. Ed Liechty, IU's team leader, lays the groundwork for rapid growth of the Indiana-Moi collaboration in pediatrics and children's health.

The Gift That Made It Possible

Marty Moore's Gift That Changed Global Health

By Russ Pulliam

If Indianapolis philanthropist Marty Moore had been a stock market player, his $30,000 investment in Kenya in 1989 would be worth several million dollars today.

Instead his original $30,000 grant has multiplied in value in a different way, sparking a renowned Indiana University medical school partnership with an emerging school in Kenya. The program has spurred about $15 million a year in medical care in Kenya, along with another $10 million in research in the East Africa region.

The IU global health program grew up in time to play a big part in heading off millions of deaths from the African AIDs crisis.

Moore has been a quiet philanthropist in Indy and Africa, not seeking credit for his good deeds by putting his name on buildings. Suffering from serious lung cancer now, he will join Indiana University Medical School leaders to receive the Celebrating American Ideas award presented by Sagamore Institute.

The award offers a nice way to honor Moore's mix of helping those in need from a humanitarian and Christian impulse, yet with a business-like emphasis on results and accountability. He had quietly supported inner city missions in Indy for many years, especially summer camp opportunities.

His interest in Africa was sparked as a history teacher at North Central High School in the 1980s, as he read a research paper about Dr. Ellen Einterz, a medical missionary in the developing world. Moore met with her and her brother, Dr. Robert Einterz, an Indianapolis doctor who wanted to do more than the traditional volunteer medical work he had already pursued in Haiti.

Moore offered the $30,000 to send Einterz and three other doctors to explore partnerships with emerging

medical schools in Africa and Asia.

They wound up partnering with a brand new medical school in Kenya, Moi University, and kicked off with just 40 students the first year. Moore and wife Sue made frequent trips to Kenya to track the effort, and Moore wound up teaching in schools there as well. When the AIDs crisis hit around 2000 AMPATH (Academic Model Providing Access to Healthcare) grew into a life-saver for millions.

Marty Moore and his doctor friends never expected this kind of return on their original investment.

"You try ten different things, and a lot of it doesn't work out," said Dr. Robert Einterz, now the IU Associate Dean for Global Health. "None of us would have predicted that we would have accomplished so much through this initiative. It is like a mustard seed, and it grew and you didn't know how tall it could be."

Russ Pulliam is an Associate Editor of the Indianapolis Star and Director of Pulliam Fellowship Program. He has also served as a reporter for the New York Times, Washington Post, and other newspapers. A version of this column on Marty Moore was recently published in the Indianapolis Star.

retroviral treatment which has been proven effective in the U.S. and the western world in response to even advanced cases of AIDS. The treatment is too expensive and too complicated to provide in sub-Saharan Africa, a top U.S. official tells Congress. An unnamed global health official tells the Washington Post in mid-2001, "It is so politically incorrect to say, but we may just have to sit by and watch these (millions of HIV-infected Africans) die."

Yet, this same year, fifth-year Moi University School of Medicine student Daniel Ochieng recovers from near-death from AIDS due to anti-retroviral treatment provided by the Indiana

University School of Medicine's infectious disease department and Dr. Joe Wheat, and administered in Kenya by IU team leader Dr. Joe Mamlin. Ochieng's dramatic response to the treatment leads to a commitment to provide the same care for as many other Kenyans as possible, and he becomes the Academic Model for the Prevention and Treatment of HIV/AIDS (AMPATH) patient #1.

Daniel's Story

By Fran Quigley

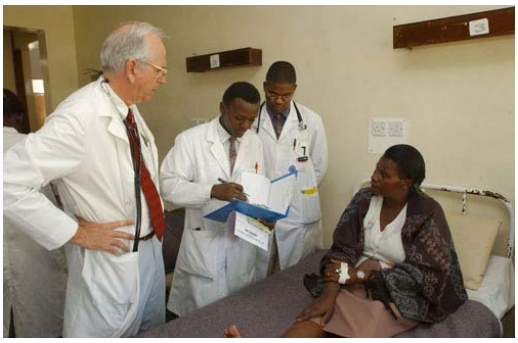
It was after dark on the evening in September of 2000 when Joe Mamlin was making after-hours visits to some of his patients at Moi Teaching and Referral Hospital in Eldoret, Kenya. The wards he walked through were made up of several open rooms with a half-dozen small cot-like beds, most of which contained two patients lying head-to-feet of their bed partners. Except for the dimly lit central corridor, the wards were completely dark. Mosquitoes and flies swarmed on the patients in the equatorial night.

Wards at Moi Hospital were organized into three bays on each side of the corridor, with six to eight beds in each bay. Bay 3 is farthest from the nursing station and closest to the stench from the clogged and broken flush toilets. This was where the hospital put all its HIV patients. Like an identical area in the women's wards, Bay 3's patients were mostly young people, ages 18 to 35. Most were parents of young children. All were expected to die within a few weeks.

This grim scene in the western highlands of Kenya was being replicated throughout Africa. By this time, the African AIDS crisis was already in full force. According to United Nations estimates, 23 million people in sub-Saharan Africa were infected with HIV/AIDS. During the year 2000, 2.4 million Africans died from the disease and nearly 4 million were newly infected with it. In many parts of Africa, entire villages had been so ravaged by AIDS that they were populated almost entirely by old people and orphaned children.

When Mamlin arrived in Kenya three months before, the 66-year-old physician was looking to put the finishing touches on a career that had made him something of a local legend in Indianapolis. As a professor of medicine at Indiana University and as chief of medicine at Indianapolis' Wishard Memorial Hospital, Mamlin had spearheaded the creation of a groundbreaking neighborhood-centered health care system for the poor. Before that, he had spent several years as a Peace Corps volunteer physician in Afghanistan with his wife Sarah Ellen and their three children, bringing up a new medical school in Jalalabad and treating patients in brutal conditions. White-haired, well over six feet tall and a life-long student of philosophy, Mamlin is described by his colleague Dr. Bob Einterz as an "LBJ-type" figure. "Joe has had this mystique about him from the time he was chief resident at Wishard," Einterz says. "It comes from his combination of insatiable optimism, an enormous capacity to believe he is right, and the quintessential silver tongue—a remarkable ability to persuade others that his vision is the correct one."

Mamlin was no stranger to Kenya. In 1992 and 1993, he had served a term as the field director of Indiana University's partnership with Moi University School of Medicine. In the summer of 2000, Mamlin retired from his Indiana duties and he and Sarah Ellen agreed that another year's term in Kenya would be the perfect

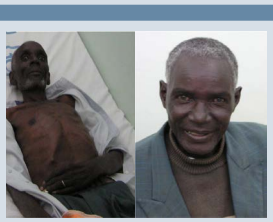


Dr. Joe Mamlin examining a patient with Kenyan medical students Photo by Karl Grobl

2002

Dr. Sylvester Kimaiyo returns from a year-long fellowship in Indiana to join Dr. Mamlin in the new HIV clinics at Moi Teaching and Referral Hospital. AMPATH receives its first large grant award, from the MTCT (Mother-to-Child Transmission of HIV/AIDS) – Plus Initiative. AMPATH leaders commit to the ambitious goal of growing to the point where they can treat 1,000 HIV-positive Kenyans.

But even some of the AMPATH patients who are treated with anti-retroviral therapy struggle to recover their health. Kimaiyo and Mamlin discover that many patients, often already widowed and too weakened by the disease to work their small farms, lack access to adequate food. AMPATH begins a partnership with the United Nations World Food Programme and launches its own farms, eventually feeding 30,000 HIV-affected people each week.



In response to the needs of patients who are without either land or employment, a program of craft manufacturing and job training is launched, soon to be known as the Imani Workshops and the Family Preservation Initiative. "We are in the business of reconstituting lives, not just immune systems," Joe Mamlin says.

spring-board to full-time retirement.

But things had changed since Mamlin was last in Africa. Eight years before, Mamlin would see about 80 patients die on these hospital wards each year, most of them elderly. That many were dying each month now, and the dead patients were much younger. Mamlin's immediate predecessor as Indiana team leader in Eldoret was young pediatrician and internist John Sidle, who had arrived in Kenya two years earlier full of enthusiasm for his African experience. Like the iconic figure of the worn-out Father Time at the end of each year, Sidle departed Kenya in bad shape. Devastated by the daily ordeal of watching his AIDS patients die untreated, Sidle was depressed and struggling with alcohol addiction. He left as Mamlin arrived, and vowed never to return to Africa.

After just a few weeks back in Kenya, Mamlin knew how Sidle felt. "I find this to be the most difficult task of my entire career," he admitted. "It is easy to sit in a conference room and say it is not wise to provide treatment here. But it's a lot harder to be here and look into these people's eyes and not be doing anything." Einterz recalls those days as the only ones he ever knew Mamlin as being without optimism. The leader of Indiana's medical community was "in anguish," Einterz says.

That evening, Mamlin turned out of the lit corridor and into the darkened Bay 3. As his eyes adjusted, he recognized Moi University medical student Bernard Olayo sitting by one of the patient's beds, spoon-feeding a gaunt young man who Mamlin did not recognize. It was long past the hour when medical students usually left the hospital, so Mamlin asked why Olayo was there. Olayo gestured toward the patient he was feeding, and introduced Joe Mamlin to his friend and classmate, fifth-year medical student Daniel Ochieng.

* * *

Daniel Ochieng grew up in the western Kenya village of Siaya, in Luhya tribe territory near the city of Kisumu. His father, a schoolteacher, died when Daniel was just five years old, so his mother Leonida raised Daniel and his younger sister alone on their small farm.

"When I was in primary school, I wanted to be a teacher, because in the village, the teachers were revered and were the only ones with a consistent income," Ochieng said. But when he began attending secondary school, Ochieng discovered he had a talent for sciences. During his final year of secondary school, he scored well enough on the nationwide medicine exam, a challenging combination of sciences, math and language, to earn one of the coveted 150 spots in medical school open to Kenyan students each year. Ochieng became the first person in his family to attend university.

His classmate Caroline Kosgei remembered Ochieng as a politically active university student. "I was a social person, vocal in advocacy for student rights," Ochieng said. But during his fourth year as a medical student, Ochieng's political advocacy and plans to become a surgeon began to be affected by his deteriorating health. He started having chest pains and losing weight. He struggled to fight off repeated infections, including painful oral thrush, which coated his mouth and throat with a white cottony substance. Ultimately he was diagnosed with tuberculosis and hospitalized, where a test confirmed that he was HIV-positive.

As a medical student, Ocheing knew enough about HIV to be scared. "When we were doing rounds at the hospital, if one of the patients was HIV-positive, you knew they were definitely going to die," he said. Ocheing did not tell his family about his diagnosis, but he realized his professors and fellow medical students could likely guess his disease from his marked weight loss, constant diarrhea and inability to fight off infections. Caroline Kosgei remembered seeing Ocheing brought out of the student hostel in a wheelchair on his way to be admitted to the hospital across the street. "He was so wasted, it was horrible," she said. "We all went back to our rooms to cry."

2003

The availability of treatment for HIV, and the community education efforts led by Daniel Ochieng and fellow AMPATH patients like Rose Birgen begin to chip away at the stigma associated with HIV/AIDS. By early 2003, more than 80% of new mothers treated at Moi Teaching and Referral Hospital are agreeing to be tested for HIV. "We show ourselves to the community that we are HIV-positive yet we are living, and we reduce the stigma," Birgen says. "When we go to barazas (community meetings) today, they go to be tested tomorrow."

As the prospect for widespread treatment for HIV achieves momentum in the wake of President George W. Bush's announcement of the President's Emergency Plan for AIDS Relief (PEPFAR), AMPATH's

model begins to attract wide notice. "This is a program that is reversing the tide of skepticism regarding providing treatment," Dr. Tim Evans, director of health equity for the Rockefeller Foundation, told an Indianapolis newspaper in 2003. "The people working on this program are public health heroes. They are doing things many people thought could never be done, and it is going to have a huge multiplier effect."

A "Bridge of Hope" grant from the Toronto-based Purpleville Foundation allows AMPATH to continue to provide anti-retroviral therapy while waiting for the promise of government-supported HIV treatment.

Mamlin later described the Ochieng he saw that night, who had lost a third of his body weight on his way down to a mere 72 pounds, as a "breathing skeleton." Physicians consider HIV to have progressed to full-blown AIDS when a patient's CD4 count, a measure of the white blood cells per microliter of blood, drops to less than 200. Ochieng's CD4 count was 34. Ochieng's worried mother rushed to Eldoret to stay at his bedside. He still did not tell her he was HIV-positive, but Ochieng knew enough about the medical reality to make any optimism difficult. "I knew I would die if I did not get help," he said.

But even four years of African medical school did not give Ocheing much of a clue about what that help could be. Since there had never been a patient on the wards of Moi Teaching and Referral Hospital ever treated with anti-retroviral drugs, Ocheing's clinical training had never involved the regimen that was proven to save the lives of HIV-positive patients.

In the fall of 2000, anti-retroviral therapy for HIV/AIDS was working wonders in the U.S. and the western world. But the conventional wisdom shared by global health agencies, funders and governments was that treatment in Africa was impossible. The $500-plus per month cost of the drugs was prohibitive for patients and governments in poor countries, not to mention the challenge of administering an exacting daily drug regimen for life in communities with little or no functioning health system.

In 2001, Andrew Natsios, the Bush administration's chief of the U.S. Agency for International Development (USAID), would tell the House International Relations Committee that it was impossible to provide antiretroviral drug treatment to the millions of Africans infected with HIV. Although Natsios was widely criticized for his statement that African's inability to tell "Western time" prevented them from being able to adhere to the antiretroviral regimen, more carefully worded concerns justified the fact that virtually no Africans infected with HIV were being administered antiretroviral drugs.

For example, Julian Lambert, senior Africa AIDS specialist with Britain's Department for International Development, wrote in late 2000 in praise of the success of ARV's in the West. "However," Lambert wrote, "The treatment is currently much too expensive to be made widely available in developing countries, and would also require more effective health systems to support patients in following the drug regimes in order to prevent the development of resistance and mutation of the virus."

Lambert's view reflected the global health consensus that treatment in Africa would be so haphazard that it would actually worsen the pandemic by creating drug-resistant strains of HIV. As the 20th century came to a close, the word had come down in no uncertain terms: In Africa, it was better to focus anti-AIDS efforts on prevention alone.

* * *

Joe Mamlin had already seen dozens of young Kenyan men and women infected with AIDS waste away and die. He realized that it shouldn't have mattered that this particular patient, too weak to raise his arms to feed himself, was a medical student. But it did matter. Something about Daniel Ochieng laying next to another patient in the same bed, waiting for death in the dark of Bay 3, challenged all of the well-settled reasons why HIV/AIDS was not being treated in Africa.

Shaken by his encounter in Bay 3, Mamlin left the hospital that night and walked slowly to the house Indiana University rented a half-mile away. By the time he reached his computer and logged into the glacially slow dial-up connection to the internet, Mamlin had made up his mind. He began to compose an email to Einterz, the Indianapolis-based director of the Indiana-

2004

Indiana University and Regenstrief Institute physicians, who first developed an electronic medical records system for the rural Mosoriot clinic back in 2001, team with Harvard-based Partners in Health to expand their model into Open MRS, a free open-source electronic medical record system. By September 2010, the AMPATH MRS has stored over 77 million observations from over 2.4 million patient encounters in Kenya, and OpenMRS has been downloaded in over 140 countries.

2006

Chancellor Prof. Bethwell Ogot of Moi University and IUPUI Chancellor Charles Bantz announce the IUPUI-Moi Strategic Partnership to create alliances in disciplines including Liberal Arts, Law, Informatics, Tourism, Nursing, and Dentistry. At the Eldoret ceremony honoring the agreement, U.S. Ambassador to Kenya Michael Ranneberger says the IU-Moi medical partnership should be renamed from the Academic Model for the Prevention and Treatment of HIV/AIDS to "the Academic Miracle in response to HIV/AIDS."

AMPATH and Dr. Joe Mamlin are nominated for the first time for the Nobel Peace

Moi partnership.

By nearly any measure, that partnership was already a remarkable success story. Since 1989, hundreds of Indiana medical students, residents and faculty members had come to Eldoret as part of the program, with at least one full-time Indiana faculty member always on-site for at least a one-year term. Dozens of Kenyan faculty members and students, most on full fellowships or scholarships, had traveled to Indianapolis or to one of the other academic medical institutions like Brown and University of Utah that followed Indiana's lead into the project. Praise for the program flowed in from faculty, students and international relations experts from both countries. Impoverished Kenyans had been treated, technical and cultural information had been exchanged. Collaborative research had been conducted. Current and future generations of U.S. and Kenyan doctors had forged cross-cultural relationships that have enriched both communities.

Mamlin noted all that in his message to Einterz. But he also wrote that it may be time to put an end to the program. With Kenyans like Ochieng dying by the hundreds each week, the partnership simply could not continue on as before. Indiana University must fully engage in the struggle against HIV/AIDS, Mamlin insisted, or it should fold its tents and go home. Personally, he had no intention of standing by and watching an entire generation of Kenyans die, even from a disease that was considered too expensive and difficult to treat in Africa.

Copies remain of some of Mamlin's email messages from that time, in particular one September exchange that began with a message to Dr. Joe Wheat, the head of the division of infectious diseases at Indiana University School of Medicine. "Joe, I would like for you to consider helping me with a tough problem," Mamlin began, and then explained Daniel Ochieng's situation.

"I have seen more HIV in these three months I have been here than all the docs in Indiana combined," Mamlin wrote. "Yet I have seen no one treated for HIV—we treat the TB, typhoid, pneumonias, etc. and let the retrovirus do its thing—which it does relentlessly." Mamlin wanted to make Ochieng the first Kenyan HIV patient to be treated with antiretrovirals in the history of the Indiana-Moi partnership and the public wards of Moi Hospital. He asked for Wheat's help in guiding the regimen and finding the money to do it.

Mamlin shared this request with several of his Indiana colleagues. The reaction was mixed. John Sidle had helped Ochieng with food and medicine while Sidle was in Kenya. "I like Daniel and I would like to help him," Sidle wrote in reply to Mamlin's message, offering to try to find some donated medicines for Ocheing. But Sidle, fresh from Africa, also pointed out the obvious challenges in treating a single patient in a community and country where millions were dying untreated. "The reality is that he (Daniel) is only one of what will probably be many cases among the faculty and medical students over the next few years. Where do we draw the line and how do we presume to choose who does or does not get the few medicines we have? (Also),

The common scene of AIDS death in the Moi Teaching and Referral Hospital

2007

The United States Agency for International Development (USAID) announces in Nairobi that AMPATH is the recipient of a five-year $60 million grant to fund its work across western Kenya. With the support of PEPFAR and the global business community, AMPATH begins going door-to-door across western Kenya providing counseling and testing for HIV, reaching villagers before their HIV has progressed or before they are infected at all. Over 94% of eligible persons accept AMPATH's invitation to be tested in their homes.

Prize, with several other nominations to follow. Professors Scott Pegg and David Mason tell the Nobel Committee in their nominating letter that "AMPATH has proven that partnerships between academic medical centers in the North and South are uniquely capable of fulfilling the tripartite needs of care, training and research required to address global public health crises in the developing world . . . Awarding the Nobel Peace Prize to AMPATH would demonstrate to the world that North-South partnerships are essential for the promotion of peace between nations and for confronting the global inequalities of health and wealth that form such an imposing barrier to peace."

compliance is so important that unless we can get a steady supply this is going to be difficult."

As the administrator of the program back in Indiana, Einterz might have been expected to raise a red flag in front of Mamlin's impulse. Even if successful, treating Daniel Ochieng was a lifetime financial commitment for a program that had no revenue to draw from to meet that commitment, and there was no way to answer the question of how Indiana-Moi would respond to the next student—or physician—who began fading from AIDS. If unsuccessful, the program's prestige within the U.S. and Kenya would be damaged for a foolish effort to defy the accepted protocol for responding to AIDS in Africa. But less than an hour after Sidle expressed his concerns, Einterz responded with an argument for treating Daniel Ochieng. "The anguish of watching a colleague die of a treatable illness makes us try to do something—to do nothing forsakes hope," he wrote. "Yes, the question is where do we draw the line but perhaps, in our asking, we will find that we should never draw it."

Einterz empathized with his colleagues' difficulty in watching Kenyans die from AIDS while their similar patients in the U.S. were almost always successfully treated. When Einterz served as the program's first Kenya-based team leader in 1991, a meningitis epidemic broke out. "Fifteen people would come into the hospital during the day with meningitis, and all would be dead the next morning," he says. "They could be treated with simple penicillin, but the hospital had run out and no one could afford to buy more." A life-saving daily dose of penicillin was about $2.

Einterz remembers walking to the Eldoret post office to make a phone call back to Mamlin and fellow Indiana-Moi founder Dr. Charlie Kelly. "When we went to Kenya, we committed that we were going to work within the Kenyan system and only do what we could do within the system," Einterz recalls now. "We were not going to inject money into the system. The clash is between relief and development, of course. We knew that paying for a bunch of things could be detrimental for development because we were providing the fish rather than teaching the Kenyans to fish. The first test of that theory was the meningitis epidemic, and we immediately realized that at some point, we could not confine ourselves to working within the existing system."

Einterz used his own money to purchase the penicillin. "When he wanted to treat Daniel, Joe was breaking all of our rules," Einterz says. "But I did the same thing. I just couldn't stand by and watch all those people dying needless deaths."

Nearly a decade later and in the face of an epidemic like no other the world has ever seen, Mamlin had the same response. He continued writing long messages back to Indiana, making his case for treating Ochieng. "This medical faculty (in Kenya) needs to see an example of something other than doom and gloom—which is all around us. It is also important that they see one of their peers taking his "head out of the sand" and facing reality with this plague. This stigma thing is overwhelming here. This young man is a step in the right direction toward seeing this as a disease with a treatment rather than a "curse" which is to be shunned.

"We may be opening Pandora's box—but no less so than when we decided to come here in the first place." Mamlin's message closed with a quote from theologian Reinhold Niebuhr: 'Nothing worth doing is completed in our lifetime, we must be saved by hope."

Within two weeks of these cross-continental discussions, the infectious disease department of Indiana agreed to send $10,000 to Kenya to provide for a year and a half of treatment for Ochieng. Eventually, Mamlin would stretch that donation by using pills that were left over

AMPATH continues its efforts to prevent mother-to-child transmission of HIV/AIDS, eventually reducing the rate of transmission of HIV from mother to baby from 30-40% without treatment to less than 3% of treated mothers and children. By 2010, over 30,000 HIV-affected children are supported by AMPATH's Orphans and Vulnerable Children program through services like assistance with school fees, school uniforms, food assistance, and shelter renovations.

2008

Kenya temporarily reels from the effects of violence following the disputed presidential election of late 2007. The IU House in Eldoret serves as a multi-ethnic safe haven for families fleeing the violence, and AMPATH creates a 24-hour hotline and media campaign to ensure that patients get access to necessary medicine. AMPATH clinics quickly recover to full strength and emergency donations from U.S. friends of AMPATH help dozens of families re-settle.

in containers used by Indiana HIV patients when they changed to new drug regimens.

Mamlin immediately started Ochieng on the drugs. For a month, Ochieng, who was nearly 50 pounds underweight, was still too weak to leave his bed. Every morning, he would wake to the sound of a rickety aluminum hospital cart taking away the body of one of his fellow Bay 3 patients. But soon the anti-retrovirals' nearly magical power—so potent it is widely described as the "Lazarus effect"—took hold in Ochieng. Mamlin remembers walking between hospital wards one day and noticing that the patient sitting on the grass soaking in the sun was Ochieng. It was then, Mamlin said, that he knew Ochieng would survive. In one of the most miraculous recoveries that Mamlin had ever witnessed in over forty years of practicing medicine, Daniel Ochieng walked out of Moi Teaching and Referral Hospital six weeks after receiving his first dose of antiretroviral medicine. Ochieng is certain he was the only patient from his time in Bay 3 to leave the hospital alive.

For a year, Ochieng remained the only Indiana-Moi patient receiving antiretrovirals. But his dramatic recovery made it even more difficult for Mamlin and other Indiana-Moi physicians to stand by and watch other AIDS patients die without treatment. "Daniel's recovery was the first hope that any of us saw in Kenya," Einterz says. The cross-continental calls, emails and visits continued, evoking Ochieng's successful treatment and questioning the idea that HIV/AIDS could not be treated in sub-Saharan Africa.

As Ocheing continued to regain strength, Mamlin wrote back to Indiana. "At the end of the day, IU will, to a large extent, be judged by the energy and wisdom we bring into the "unappreciated" chaos thrust upon us by AIDS . . . Without the magic bullet of a vaccine, one is left with the unbelievable complexity of prevention

Daniel Ochieng

strategies, education, and unaffordable (and probably unmanageable) treatment efforts. What does one do? Just fold our hands and walk away? Continue the cover-up conspiracy and just "do" the wards and shut up? Or, is there really something we can do--regardless of how small--that is aimed in the right direction? Something that gives evidence by our role model that we SEE this damn thing and we mean to fight back?"

Widespread HIV/AIDS treatment was still being described, even by the optimistic Mamlin, as "unaffordable" and "probably unmanageable." But a small academic partnership was already being transformed into a program that would become a globally acclaimed success story and one of the models for confronting history's most deadly pandemic.

Fran Quigley is a law professor at Indiana University. In his former capacity as Director of Operations and Development for AMPATH at the Indiana University School of Medicine, Quigley wrote a book called Walking Together, Walking Far. Proceeds from all book sales benefit the ongoing work of AMPATH in Kenya.

Later in the year, AMPATH's research team has two dozen abstracts accepted for presentation at the International Aids Society's bi-annual international conference in Mexico City. By 2010, AMPATH's multidisciplinary research program has 23 active research grants totaling over $26.5 million in direct costs.

2009

AMPATH enrolls its 100,000th HIV-positive patient and ultimately expands to 25 main clinical sites and over 30 satellite clinics across western Kenya. Supported by the same combination of private and faith-based philanthropy that has so often helped build the AMPATH program.

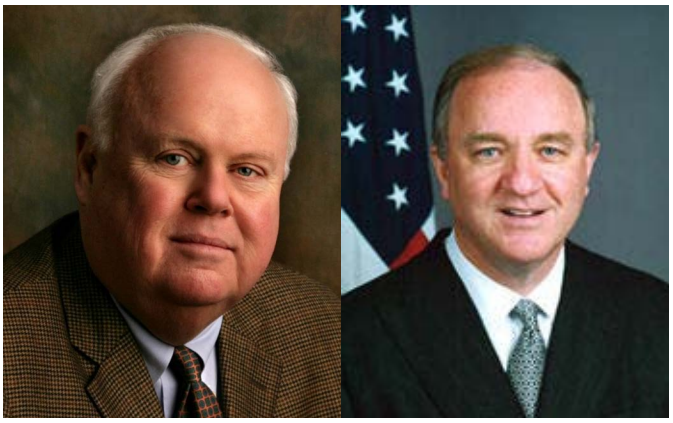
2010

USAID, Eli Lilly and Company, Abbott Laboratories and Pfizer, Inc. partner with AMPATH to integrate primary care and chronic disease management services into the existing HIV/AIDS system of care. In recognition of its return to its roots of primary care, AMPATH has retained its acronym but

Indiana University Classmates … Global Health Diplomats

The Story of Jim Morris and Randy Tobias in Healing Africa

By Jay Hein



"To whom much is given, much is required." This simple but powerful biblical precept is the answer George W. Bush gives when asked why an American president would create the largest international health initiative dedicated to a single disease in the history of the world.

The year Bush was elected at the dawn of a new millennium, 24 million Africans were infected with the HIV virus plus 11,000 new infections and 6,000 deaths were mounting every day. With one in ten schoolteachers expected to die within five years, this was not only human tragedy but a crisis that put the whole continent at risk. Experts concluded that without a medical miracle, more than 20 million AIDS sufferers would be dead by 2010.

The miracle came from the United States after President Bush challenged his global health team to develop a "game-changer" for AIDS in Africa. The first step was to stop the disease's rapid escalation. Without any intervention, up to five babies in ten can contract their mother's disease through the birth process. So Bush administration launched the $500 million International Mother and Child HIV Prevention Initiative to prevent mother-to-child transmission of HIV/AIDS in the hardest hit regions of Africa and the Caribbean. This trilateral action was the world's first full-scale assault on the deadly disease outside the borders of rich nations. However, it was simply a warm-up for what the president would announce six months later.

In his 2003 State of the Union Address, President Bush announced that President's Emergency Plan for AIDS Relief (PEPFAR) and later that year signed legislation authorizing the initial 5-year, $15 billion investment in defeating the pandemic. If the PEPFAR program was the largest health program ever aimed at the developing world, the task of building it on the ground presented one of the most demanding public administration tests in the modern era. To administer this break-the-mold global health program, Bush knew that it would require a leader who could manage complexity and achieve results. So, rather than predictably selecting a public health professional, the president looked to the private sector and tapped former Eli Lilly CEO Randall Tobias from Indiana. Named to his post at the rank of ambassador, Tobias was installed in George Marshall's old office at the State Department, where he eventually became the first-ever United States director of Foreign Assis-

its meaning has been broadened to indicate the Academic Model Providing Access to Healthcare.

2012 AMPATH's Revolving Fund Pharmacy expands and is selected as a runner-up for the Harvard Business School President's Challenge award. RFPs sell medicines at prices slightly higher than the government pharmacies, but far lower than other private outlets, to maintain a continuous supply of essential, affordable medications.

2011 Kenyan Ministry of Health and AMPATH launch community health services. Using community health workers to identify major health needs, educate and manage some conditions at household level and link to a health facility when necessary, taking basic reproductive health, child health, family planning options and chronic disease management to the homestead. Also, Group Integrated Savings for Empowerment (GISE), a community savings and loan program.

tance, with dual responsibility as administrator of the US Agency for International Development (USAID).

Serving first under Colin Powell and later under Condoleezza Rice, Tobias was charged with implementing the Bush administration's vision of transformational diplomacy. This model was rooted in partnerships rather than paternalism, along with a blurring of the lines between the three "Ds" of foreign policy: defense, diplomacy, and development. The post-Cold War era makes it impossible to draw neat, clear lines between security interests, development efforts, and democratic ideals. American diplomacy in the twenty-first century is required to advance them in unified fashion.

The PEPFAR administrators soon learned that the connection between AIDS and hunger is deadly. Dr. Peter Piot of the United Nations, one of the world's leading authorities on AIDS, told American policymakers that when he was in Malawi, he met with a group of women living with HIV. When he asked them what their highest priority was, their answer was clear and unanimous: food.

Women account for eight in ten African farmers, and AIDS sufferers are often too weak to maintain even their subsistence fields, thus perpetuating the food insecurity cycle. Hunger also makes these women vulnerable to opportunistic diseases such as TB and the exploitation of sexual predators. This vicious cycle perpetuates some of the world's greatest health crises.

The relationship between medicine and food is essential yet perilous. Many parents face the dilemma of deciding whether to feed their children today or pay for medicine to make themselves well for tomorrow. However, health can only be gained when food and medicine are consumed together. Jim Morris, director of the United Nations World Food Program, often invoked the Haitian saying, "Giving a TB medicine without food is like washing your hands and drying them with mud."

Morris and Tobias were classmates at Indiana University, and coincidently it was their alma mater's AIDS program in Eldoret, Kenya, that was one of the first to marry lifesaving drugs with food nutrition. Roger Thurow lauded this innovation in a *Wall Street Journal* editorial titled "In Kenya, AIDS Therapy Includes Fresh Vegetables" and credited IU-Kenya program director Joe Mamlin for teaching his patients how to farm. Two acres of the hospital grounds were made into a garden growing carrots, onions, cabbage, and fruit trees alongside a stream for drip irrigation. Says Mamlin, "In the US, I can sit in my office and write a prescription. But here, amid hunger and such poverty, I can't just write a script. There are no calories in the drugs."

During a 2007 conference in Indianapolis, Morris called for a movement comparable to a new civil rights campaign, saying it is no longer acceptable in this fruitful planet for children to die hungry. There is an abundance of food available, but war and inadequate agricultural practices cause too many places to go without. This former business executive and establishment Republican, with self-deprecating humor, then spoke of how the job has turned him into a radical feminist. As he traveled the developing world, he became in awe of the women who care for the children, work the fields and demand a better future.

Tobias and Morris brought Hoosier compassion and a results-oriented management focus to the global health diplomacy. As a result of PEPFAR and their efforts to unite health care and food security, life-saving treatment and prevention services were delivered to over ten million Africans by the end of the decade. The international community has now joined the fight full force and there is even talk of an AIDS-free Africa by the next generation.

Jay Hein is president of Sagamore Institute. You can read more about this remarkable global health story in his book, The Quiet Revolution.

2013 A ten bed cardiac care unit at Moi Teaching and Referral Hospital is opened – a culmination of a four year effort and funded primarily by the Hock Family Foundation and the Duke Hubert-Yeargan center for Global Health to bring better cardiac care to underserved populations in western Kenya.

2014 AMPATH is awarded a new USAID grant, called AMPATH PLUS. This new grant, with increased funding for a total of $74 million over 5 years, was given as part of a non-competitive renewal and the prime grantee was changed from a U.S. organization (Indiana University) to a Kenyan one (Moi Teaching and Referral Hospital).

AMPATH Oncology receives $3.3M from NIH to study cervical cancer in Kenyan women. In partnership with the National Hospital Insurance Fund, AMPATH launches a mobile-based insurance program called Zuri Health. AMPATH reaches their one-millionth person in their home-based counseling and testing programs.

2015 Opening of Chandaria Cancer and Chronic Diseases Centre.

Food Security in Our Lifetime

By Jeff Simmons

With courage and commitment, we can solve the world's number one health problem—hunger—and create a food secure future. A food secure 2050 is a world in which people can afford and access enough healthy, nutritious food. It's a healthier, more productive, more peaceful world.

Of course, the challenge to produce enough nutritious food keeps building as the world keeps growing. In 2012, the world's population shot past the 7-billion mark on its way to reaching 9 billion by the year 2050.[1] It's not an infinite problem—the rate of population growth will slow significantly by then. But the steepest part of the growth curve is happening now. And in the next seven years, we'll experience the fastest growth of the global middle class in history.

Of course, "middle class" means different things in different places. But, to put it simply, in the next few decades, billions more people will live a better life. And regardless of the specific income figure for a family or a particular country, one thing is consistent: as income grows, one of the first things most people do to improve their diets is by eating more meat, milk and eggs.

Sustainability Challenges

The United Nations Food and Agriculture Organization (FAO) predicts a 60-percent increase in demand for meat, milk and eggs by 2050.[2] Based on today's production trends, we might not have enough. As hard as farmers are working to sustainably feed a growing world, a gap is beginning to emerge between what we'll need and what farmers can produce.

And, we need to produce more with less. At our current rate of consumption, it takes the Earth 1.5 years to regenerate the renewable resources we use in a single year.[3] If we stay on course, by 2030 we'll require double the planet's resources to meet our needs.[4] And if we don't start producing more with less, our impact will keep multiplying.

Three Solutions

The challenge is great but not insurmountable.

We have the tools to change this. The choices we make between now and 2020 will determine whether we'll make it there. To achieve a vision of a food secure 2050—a future where people have the means and opportunity to eat enough safe, nutritious food—we need to draw on three solutions:

- **Innovation**: The tools and techniques that help farmers produce more food more sustainably—innovations that, in many cases, are already available and proven.
- **Choice**: For societies, this includes sound, science-based policy choices. Farmers need to be able to choose among tools that help them produce successfully and sustainably, and shoppers need to be able to choose food that fits their cost, taste and nutritional needs. People feeding their families around the world can't be held hostage by small groups of powerful, ideologically driven consumers. We need the courage to stand up for choice against a highly vocal minority.
- **Trade**: The mechanism that allows us to produce food where resources permit and deliver it to people who need it.

We believe every person on earth deserves a minimum of a glass of milk and an egg a day. That's a modest—and achievable—goal, and it's just enough protein and complete nutrition to make the world healthier and happier. And, frankly, less than that is just not enough.

One step we're taking in this direction is the East Africa Dairy Development program, or EADD. This project, which will bring sustainable livelihoods to people across East Africa, is important because many of those living on close to $1 per day in sub-Saharan Africa depend on their livestock to provide nearly half of the family's income. So increasing milk production and improving access to markets is paramount to keeping families fed and thriving.

Elanco dairy experts have volunteered their time to travel with Heifer and EADD representatives to visit participant farmers and support organizations in Tanzania, Kenya, and Uganda in the days ahead. Our goal, together with the EADD teams, is to identify where we can have the greatest impact on the success of the program. Things like milking schedules, cow comfort, and care practices—all of this can result in each cow producing more quality milk for the farmers each day. By having this experienced team with us, we're able to more deeply engage these farmers and uncover critical details that should help increase success of the overall project.

As we began visiting farms and communities near Mbeya, one thing started to shine through with great clarity. These farmers and community leaders are passionate, talented, and committed people. They want to learn ways to grow their farms and create sustainable livelihoods for their families and their communities. One couple we spent time with used skills they learned to help them decide to switch from a coffee crop on part of their land to growing high-quality, nutrient-rich feed. This has ultimately helped them increase the production of their cows.

With Elanco's commitment to ensuring there will be enough food for our growing global population, organizations like Heifer and the EADD project are critical partners. It's in collaborations like this where we can directly use our talents to make a sustainable difference. The global population will grow to an estimated nine billion people by 2050. So the success of this project—and ultimately the farmers who will efficiently produce their food—is both urgent and important. It's also just a start in Elanco's commitment to global food security.

In the next five years, Elanco will use its resources to "break the cycle" of hunger in 100 communities. We will make food more secure for a sustainable period. By breaking the cycle of hunger we help create hope and opportunity for the hungry, while we experience hunger up close and personal. This builds on our past and present hunger initiatives in Indianapolis and other locations, along with Heifer projects. This initiative allows us to have more employees touch projects, include customers and to be even more global."

– Jeff Simmons

Breaking the Cycle of Hunger
Elanco supports diverse global projects through employee and customer engagement to fight hunger and food security. Through Elanco's innovations, volunteer efforts, customer engagement and financial support, we've already begun "breaking the cycle" in more than 20 communities, starting in 2013.

We're committed to make a difference in communities that:

- Impact a specific group of people with a hunger/food project;
- involve Elanco employees for support;
- Can be sustainable for at least one year;
- May connect with Elanco key stakeholders and customers.

Our efforts to break the cycle will impact the following:

- **100 communities**: "Break the Cycle" of hunger in 100 global communities by 2017 through local efforts and with customers.
- **100,000 families**: A strategic relationship with Heifer International will help bring 100,000 families out of hunger.
- **Half-day per quarter**: Providing all employees with an opportunity to use a half day per quarter to volunteer with a local hunger project.

Today's reality is that more people live without nutritious food. As the global population continues rising and demand for meat, milk and eggs increases, we must be able to produce more with less. We believe that by breaking the cycle we can help ensure appropriate nourishment, improving growth and education, and ultimately impacting families, communities and countries.

Jeff Simmons serves as president of Elanco, the animal health division of Eli Lilly and Company. Elanco provides comprehensive products and knowledge services to improve animal health and food-animal production in more than 70 countries through its 6,500 employees worldwide.

LEARN MORE
ABOUT THE ISSUE OF FOOD SECURITY AND WHAT ***YOU*** CAN DO TO ***JOIN*** THE FIGHT FOR *A FOOD-SECURE TOMORROW*
by visiting:
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From The Indiana State House to the Fields of Liberia

By Gina Sheets

I was deeply honored when Governor Mike Pence invited me to serve as direct or of the Indiana State Department of Agriculture. My husband Trav and I have been lifelong farmers in our hometown of Frankfort, Indiana and I was privileged to serve as the agriculture department's economic development director in a previous post. Yet, I had a different assignment in mind so I asked the Governor-elect if it would be okay to limit my state service to one more year. He graciously agreed, allowing Trav and me to pursue our dream of growing good things out of African soil and growing the skills of Africa's farmers.

Our story began in a think tank policy session exploring Indiana's agricultural ties to Africa. At the summit, I learned about the people, businesses, schools, and organizations from Indiana doing work in numerous African nations. With a background in farming and economic development, the conversation inspired me to consider how I could have an impact in an emerging market to change lives and change the way the world farms.

Sagamore fellow Donald Cassell is advancing many innovations in his native Liberia and he explained how our farming could tie to agriculture education. Much like the Indiana University story in Kenya described earlier in this magazine, we were excited to partner with an African university that was establishing a program on agribusiness. We met Dr. Seit Buor who is president of the Liberian International Christian College (LICC) located in the city of Ganta, 170 miles north of Liberia's capital city of Monrovia.

> "Truly successful agriculture requires not so much arduous labor as awareness, observation, connection, and persistence. Ultimately, it is not the growing technique which is the most important factor, but rather the state of mind of the farmer.
> -Masanobu Fukuoka

I combined my business background with my husband Trav's Purdue ag degree and his ten years of experience in diversified farming where he raised all natural pasture poultry, free range laying hens, pasture beef, rainbow trout, and a variety of fruits and vegetables for retail sale. In 2013 while I was serving as state agriculture department director, we established our nonprofit, sold most of our belongings and began our move to permanent residence in Liberia.

We began work at LICC's ag center and established a demonstration farm inlcuding vegetables, fruits, roll crops, fishery and rabbit husbandry. We are combining production with research and training, again in the model of IU's medical program in Kenya. The farm has emerged as a small scale agribusiness. I serve as Vice President of Administration at LICC and Trav university's Agriculture Program.

We are sailing against some pretty strong headwinds. While agriculture is Africa's economic backbone—40% of all hard currency earnings come from the ag industry making it the largest contributor to African GDP—the sector is sorely underperforming. In all of Africa, only 7% of the arable farmland is irrigated and of the total land mass suitable for farming, 83% has limited soil fertility

accounting for billions of dollars lost every year.

Agricultural work makes up 60% of the African labor force yet the continent relies on external inputs to meet its food needs. In the year 2000 the continent received 2.8 million tons of food aid and the annual cost of imports is $50 billion. Liberia imports 75% of its grain, which is amongst the highest levels in Africa. Sadly, even with all this food aid, approximately 200 million people in Sub-Saharan Africa are malnourished.

The current food gap could be an opportunity to boost the domestic market economy and grow the independence of smallholder farmers by increasing their productivity. In Africa, agriculture is the mainstay of the rural economy and the main supporter of 70-80% of the total population. In a world facing food supply challenges as the population grows, Africa holds 60% of the world's uncultivated arable land.

These assets can only be realized with improved farming skills. In his book, *The New Harvest*, Harvard professor Calestous Juma highlights that China's recent agriculture success is linked to its focus on the needs of smallholder farmers. We are strategically located in Ganta County which has a high potential for agriculture development because of high population, high number of farmers, increased levels of poverty, and location along Liberia's economic development corridors.

Overall, Liberia's agricultural potential has yet to be

even partially realized. Though the majority of the population consists of farmers, production remains a significant challenge. Due to war, Liberia's GDP decreased by 66% from 1987- 2005. Counted as one of the world's poorest countries, Liberia is ranked 162 out of 169 countries in the 2010 UN development program. Poverty grips the population with about 64-84% living below the global poverty line of $1.25 a day and food insecurity is up to 42%. Nearly half of children under age five experience stunted growth, while 15% of children under age five are underweight.

Liberia's two highest yielding crops are rice and cassava—which are grown by 74% and 62% of the population respectively—and its primary export crops from trees are rubber, oil, palm and cocoa. Agricultural output is derived from three types of farms: traditional, commercial and concession. Traditional farming systems involve production of food for home consumption. Commercial farms are larger and usually owned by Liberians, and the concession farms are owned and operated by foreign firms.

Liberia has four large commercial farms. The rest of the farms in the country are smallholders' lot, no larger in size (100-400 square feet) than a backyard garden in the United States. In general these farmers have little education and training for long term expanded production and increase productivity.

With its abundance of arable soil, Liberia's agriculture should thrive. The wealth of a nation does not consist in its natural resources, but rather its people's labor and productivity. Since we've been on the ground there, we have found that lack of education has a direct correlation to low production rates. The average woman receives 1.6 years of education and the average man, 5.8 years. The civil strife has stunted academic development by many years for many people. To turn things around, we have assisted in the development of the curriculum for agriculture and other disciplines at LICC and Trav teaches ag practices at remote villages.

I am taking a more hands on approach by giving horticulture students experience with onion production research through greenhouse trials and documentation and teaching business practices to students who help run the rabbit farm in the agriculture center. I also prioritize educational

opportunities for food production for women, as Liberian women farmers produce about 60% of Liberia's agricultural products. For example, I started a pre-kindergarten program for children whose mothers are enrolled in agriculture training school, empowering women farmers and their children simultaneously.

To increase production and develop character, the Trav and I team-teach a curriculum called Foundations for Farming (FFF) to Liberian farmers. The FFF method places emphasis on farming practices with minimum waste, precise use of resources, and an attitude of generosity and joy. As a sustainable, holistic practice, FFF combats both poor resource management and corruption as a lifestyle. Mirroring the goals of Liberia, the FFF method includes crop rotation with no burning or plowing the ground. The Liberian farmers are used to cutting and burning trees down every season to clear land for plowed fields. This slash and burn practice leads to deforestation and denitrification of the soil.

Liberia is host to two out of the three remaining ancient rain forests in West Africa, which could be lost if deforestation continues. An integral technique to the FFF method is covering every area of tillable soil with organic matter mulch. The mulch blanket reduces the growth of competitive weeds and feeds nutrients to the soil as it decomposes. Poor soil quality in Liberia is one of the major barriers to production. After only one year of FFF practices, the color of the soil changes from gray to rich black. The rainy season, which produces 200 inches of rainfall annually, can easily strip a field of top soil through erosion. The mulch blanket effectively holds the soil in place even during downpours, and captures moisture to prevent premature evaporation from the hot sun. Though the heavy rainfall can be problematic, it is not without its usefulness.

The challenges we face in Liberia reverberates a tale of past conflict, political strife, violence and the intrigues of realpolitik in international affairs. Twenty-five years of civil disturbances have left the economy and the country in shambles, severely limiting public services. Liberia was established by freed American slaves in 1847 as Africa's first independent republic with a constitution and polity mirroring the United States. The country remained stable until 1980 when it suffered a violent military coup that disrupted a long and delicate process of Liberia's coalescence into a nation-state.

The coup led to a second violent upheaval in 1989 that turned into a fourteen year civil war. The war officially ended in 2003. The civil disturbances - including the war - robbed Liberia of any meaningful development efforts, leaving its people poor and devastated. Liberia is heavily dependent on foreign aid; US bilateral assistance alone was equivalent to two-thirds of the government's budget. Corruption and selfishness wreak havoc on Liberia's economy. Consumed with survival, the country had no energy for improving developmental resources, and so the nation regressed. Its infrastructure crumbled.

The Liberian agricultural sector was but one of many casualties of Liberia's civil disturbances. We hope to be a part of rebuilding the country by restoring Liberia's ag industry and investing in the next generation of leaders. It has been rightly said "the growth and development of people is the highest calling of leadership." We are already seeing the fruits of our labor.

One farmer named John was so impressed by the yield of his pepper plants from the FFF method that he committed to return to his village and share the value of the method. A young woman named Eran is obtaining an associate degree in agriculture from LICC so that she can provide for her family through farming. She's well on her way since she is paying for her schooling with money earned from employing her newly acquired agricultural knowledge and skills on her farm.

Much like Indiana University's program in Kenya, our ultimate goal is that the agriculture department will be taken over by capable Liberians teaching as professors and farming at the Agriculture Center. Beyond, we desire for Liberian-grown agricultural exports to provide income for Liberians and revenue for the nation's economic independence.

Commitment to a transcendent hope drives us in our work. Seeds, like souls, must be nurtured. We are committed to nurturing growth in people and agriculture by living alongside Liberians for years to come. We want to be there to see that seeds of excellence, knowledge and love blossom in both agriculture and in a new generation of Liberians ready to change themselves, the life of their country and the world.

George Srour

It seemed fitting that Building Tomorrow, an organization dedicated to building schools in Uganda, should have offices inside of the refurbished Clemens-Vonnegut School 9 building off of Fulton St. While this school may have been closed for years, Building Tomorrow uses the building as HQ for operations that, over the past decade, has opened nearly 40 schools in Eastern Africa. Giving the building's history and the organization's purpose a charming symbiotic vision: the education of youth.

George and Building Tomorrow have received funding from the Clinton Global Initiative, the inaugural Simon Fellowship for Noble Purpose, as well as from countless universities and colleges. Building Tomorrow was named by Echoing Green as one of the top 20 up-and-coming social change organizations in 2007, and George himself was placed on the 2012 Forbes 30 under 30 list for Social Entrepreneurs.

Some might wonder why an organization such as Building Tomorrow would opt to reside in the Midwest rather than NYC, San Francisco, or D.C., cities considered the geographical flypaper of U.S. philanthropic organizations.

Initially, it was to conserve funds. After graduating from William & Mary, George moved back in with his parents in Indianapolis, IN to offset the costs behind founding an NGO. "I knew that I could make the little money I had last longer if I came back to Indiana. The low cost of living here, and my community ties were crucial."

As he was working to establish Building Tomorrow he came to realize something special about the state. "Indiana is a very philanthropic community. It wasn't easy to get this thing started. I was lucky to have a lot of people here that I could rely upon. They had their eyes and ears open, looking out for me and trying to help. Indy ended up being a really good place to begin in and become the home of Building Tomorrow."

What made you decide to stay here after getting started instead of moving to a place like D.C., San Francisco, or NYC?

In those places there is a lot of competition to be in the philanthropic space because so many groups are already there. From a business perspective, it [Indiana] was an easier place to do business. It is an easier place to call your office, to hire people, and pay your people well enough so they can provide for their needs. That was a big selling point for Indianapolis. I think there are challenges of being based here, but overall it has been very good to us.

What are some of the selling points of the city?

There is a great sense of community that exists here. Not to say that it doesn't exist elsewhere, but it's very prevalent here. Also, Indy has the amenities of a big city, while still being accessible. I was out in Washington D.C. earlier this week and felt tired of traffic, and the lack of green space. It felt suffocating. I think Indianapolis has a lot going for it. It's walk-able downtown, has great sports teams, and is an easy place to navigate.

Lastly, again, the low cost of living, especially since we have a limit to what we can afford to pay people. To be in a place where you can stretch your dollar a little bit more is critical. And we've been able to take care of our folks relatively well, in a way that we might not be able to afford in NYC, San Francisco, or D.C.

What made you think you could make a difference?

I was very fortunate growing up to have been involved in different organizations that focused on creating social change. Whether it was the Special Olympics, the U.S. fund for UNICEF, or the UN World Food Programme; many different things taught me the importance of social change.

From a skill set standpoint I realized that I liked creating and enjoyed the entrepreneurial spirit. I wanted to find a way to have that passion for creating change at the forefront of what I was doing. It was the intersection of my passions and skill-sets. I think there is a lot to be said about finding the meeting ground between your passion and your skill-set, and acting on it. Not just knowing it, but doing

something about it.

Why did you start your own organization?

My first line of thinking was not to go out and try to start my own thing, but rather to partner with an organization to galvanize young people to join in this work. I fell into this because I found no one that receptive to that call. I don't know that I would necessarily say that anyone should've believed in us, but I do think that it comes back to passion.

People could tell that I wanted to figure out how to make this thing work. Come hell or high water, I was going to do it. And that's what was fueling me. But if you were to take a step back and look at the beginning of all this and ask, "What does a twenty one year old know about building schools half a world away?" I would say, "absolutely nothing". That's a matter of fact. We were able to find a lot of really good people along the way that were willing to invest and see this happen all the way through. That's how Building Tomorrow began.

Were there ever moments when you thought of just dropping this idea?

There was one day when I opened up my bank account and all I had was about $38 in it and I just thought, "I don't know that this is worth it." And…you just keep whittling away at it. It's totally the realities of a startup and trying to go out and make something happen even though all you've got is a prayer and good intentions.

What impact has Building Tomorrow had over the past decade?

On a very surface level, there is a sense of excitement and pride communities have when a school is placed in their village. There's a sense of pride that comes with access to education. I think that's good. Creating a safe learning environment for thousands of kids makes a big difference in their lives. We have seen kids that have gone on to secondary school, which empowers them to lead healthier and more productive lives than they would've before. But, we are not satisfied with that. We continue to hit the drawing board and are trying to enhance our impact…It is an ongoing process of reiteration...

That's where our fellowship program came from. We wanted to provide leadership opportunities for students that have just finished their college studies in Uganda. Through the program we wanted to influence the way in which head teachers view themselves as leaders of schools. Without strong teachers, you won't have a strong school. We've always wanted to increase our impact and make it even stronger. And I think that's where we are at now.

Tell me more about your fellowship program.

Our fellowship program takes Ugandan students who have recently completed their studies and puts them in a twenty-eight month long program of working with us in the schools. They train with us, and are immersed in the communities in which we are serving. They teach for a month and then they serve for two years as a liaison to the community to help the school improve and invest in human capital.

We've realized in our theory of change that if you don't have a strong head teacher, you wont have strong results in the school. And so we are committed that not just the schools we construct but also the schools that are funded and looked after by the government are exposed to this fellowship program so that quality of teaching is increased across the board. We have a current class of ten fellows that work with 40 schools and are in the process of selecting our second class of ten who will take on another 40 schools, and then in the three years we will hire a total of 130 fellows who will be working with about 520 schools total throughout the country.

What does being a good community member or citizen me to you?

It's being a good steward of what you've been afforded. Finding a way to share that as widely as you can. So, in my case, I grew up here, I had amazing friends, amazing school, amazing family, and that's not the case everywhere. So, what's the little thing that I can do, what's the small movement that I can try to build to ensure that someone somewhere has access to remotely the same things?

I think some of the most interesting criticism I've gotten is why do you do this work when there are people in your backyard that don't have things as nice as they'd like? And its not to say that isn't true, but I think a good community member recognizes that it isn't an either or, especially today when we live in a world that is so small.

I was in a meeting yesterday and was asked what can we do about all of these Syrian refugees? And the truth is there have been refugees from Syria and other parts of the world for a long, long time. But now, it startles us because some of these people are going to be coming to the United States, and parts of Europe. Now that people realize that some one so far away is going to be in their own backyard, its too late to realize that a little bit of investment in some parts of the world, not all, but some, to help make sure that kids are educated can actually make a huge world of difference down the line. And I think that's a big thing. Making sure to be aware of your impact and what you have to offer.

Building Tomorrow is a vibrant organization eager to expand its influence to better the educational opportunities available to students in Uganda. Their most recent initiative is entitled "Educate51k"—it is a five year, $12 million dollar plan to provide a safe, local, permanent, quality and supportive learning environment for 50,980 out-of-school children in 300+ hard-to-reach communities across Uganda. Their goal is to construct 60 primary schools across the country, recruit and train 150 Ugandan college graduates to support and strengthen 450 school management teams whose work will impact the enrollment and retention of 50,980 out-of-school children. If you are interested in partnering with Building Tomorrow and the Educate51K initiative visit their website www.buildingtomorrow.org to learn more.

By Sally Mindrebo, Director of Communications, Sagamore Institute.