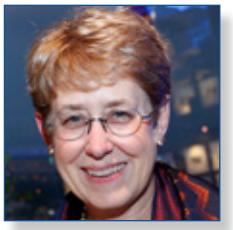
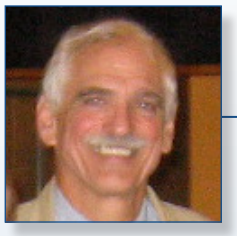
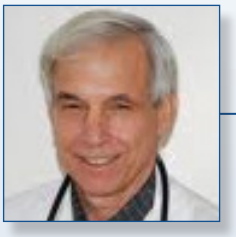
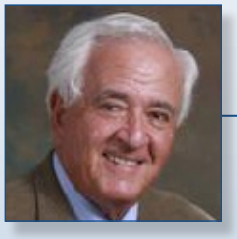
RHODE ISLAND
MEDICAL JOURNAL









The Brown Kenya Medical Exchange Program: Part 2

JANE CARTER, MD; CHARLES SHERMAN, MD, MPH
GUEST EDITORS

PHOTOS COURTESY OF JANE CARTER, MD

Dr. Jane Carter, at left, director of the Brown Kenya Program since it began 15 years ago, was in Kenya last month working with her colleagues at the TB clinic at Lodwar Hospital, Turkana, a TB Reach project site. Dr. Carter is president of the International Union Against Tuberculosis and Lung Disease.

Karibu. Welcome to Part 2 of the *Rhode Island Medical Journal's* focus on the Brown Kenya Program, which has been in existence for more than 15 years. The September issue of the Journal carried Part 1 and if you have not yet had a chance to read it, here is the link: http://www.rimed.org/rimedicaljournal/2013-09/2013-09.pdf

During the last 15 years what started as a learning opportunity for a few medical trainees has developed into a comprehensive care, education, and research effort by countless Brown and Kenyan physicians. A large number of medical specialties are represented including emergency medicine, internal medicine, neurology, obstetrics and gynecology, pediatrics, psychiatry, and public health. All projects involve cross-cultural collaborations in which both groups greatly benefit.

The accomplishments have been many. From a clinical

Safety considerations No. 1 priority when planning Kenya trips

JANE CARTER, MD
BROWN KENYA PROGRAM DIRECTOR
SEPTEMBER 29, 2013

On September 21, the terrorist group Al-Shabaab launched an attack on the Westgate mall in Nairobi, Kenya. This attack resulted in the deaths of 67, a hostage situation lasting 4 days, and a resulting – and likely long lasting – sense of insecurity.

The AMPATH consortium – and the Brown Kenya Program – does not approach safety concerns lightly. Since the bombing of the US embassy in Nairobi in July 1998 when the Moi University medical students and IU faculty Dr. John Sidle were standing on the steps of the embassy to apply for their visas for their US rotation, security assessments have become an integral part of the program. Evaluation of the US State Department updates – both internally in Kenya and from public information on the US State Department website – coupled with discussions with our Kenyan partners regarding their own knowledge and assessment of local political situations factor into the program recommendations.

During the last two presidential elections, the exchange program has been closed for rotations. In 2007 this decision was prescient. Post-election violence erupted four days after the election. The mechanisms put in place by the Brown Kenya Program allowed for contact to all individuals who had been slated to leave that week to be alerted and their travel plans placed on hold. The exchange program was closed for a total of three months that year. The same decision to close the program was put in place earlier this year for the most recent presidential election; that election was peacefully carried out.

For the last year, the program has recommended limiting time in Nairobi to transit only and no travel to the coastal areas based on reviewed security analysis. As time passed, and no incidents occurred, the temptation is to become complacent. Occasionally rotators will question why the program has set forth a certain set of rules/guidelines. It is unfortunate that in our world of today, there can be no role for complacency. Security and safety for all program participants remains our highest priority. The AMPATH Executive Committee communicates by phone monthly and security assessment are ongoing – before the last incident and moving forward. We will continue to make the best recommendations possible with safety of all participants paramount.

perspective, over 100,000 persons living with HIV/AIDS are now under supervised care. Approximately 70,000 symptomatic individuals have been screened for tuberculosis. And those with diabetes are much better managed with the creative use of cell phones and portable glucose monitors. Greater access and provision of care have ensured that HIV, TB, and diabetes are no longer death sentences for those living in Western Kenya.

In this issue, there are several articles written by Brown faculty members, illustrating the profound nature of living and working in Kenya. **DR. RAMI KANTOR** provides an overview of the extensive collaborative research efforts underway between Brown and Moi University in Eldoret.

The development of specialty care can be challenging, especially when done across two universities; **DRS. BUD KAHN**, **JAMES MYERS**, **GEOFF BERG**, and **NICK CALIFANO** write about the joys and frustrations of starting such efforts in a developing country.

And finally, **DRS. JANE KAMUREN** and **DENNIS O'YIENGO** share their unique perspective of being trained at both Brown and Moi University.

The Brown Kenya Program has become an integral part of who we are as physicians and as people. We hope you will consider joining us in this most worthy of life's adventures.

Asante Sana. Thank you. ❖

Guest editors

Dr. Jane Carter, Associate Professor of Medicine at the Alpert Medical School, has been the Director of the Brown Kenya Program since its inception and is a pulmonologist affiliated with The Miriam Hospital.

Dr. Charles Sherman, Clinical Associate Professor of Medicine, the Alpert Medical School of Brown University, was the first Brown faculty member to travel to Eldoret in 1996. In 2013, Dr. Sherman was appointed as Director of Field Operations, East African Training Initiative, Ethiopian Pulmonary and Critical Care Medicine Training Program at the University of Addis Ababa in Ethiopia and Head of Global Pulmonary and Critical Care Medicine for the Brown University Global Health Initiative.

Research Components of the Brown Kenya Program: A Personal and Professional Perspective

RAMI KANTOR, MD

INTRODUCTION

Research, whether basic science, implementation, operational, clinical or other, supports and promotes clinical care.[1-4] It generates and addresses hypotheses, informs programs and provides data that can be translated to care. Research is not trivial or easy. It is time consuming, requires much planning, mandates a detail-oriented approach, involves availability of, or time and capability to create infrastructure, includes access to relevant resources and facilities and mandates complete and full dedication of experienced and motivated personnel.

The Academic Model Providing Access to Healthcare (AMPATH) in western Kenya leads with care. It has provided clinical services to >130,000 of the country's 1.6 million HIV-infected people, reducing morbidity, mortality and the very high burden of this pandemic on the country (http://www.unaids.org).

The Brown Kenya Program also leads with care. The medical exchange program of students, residents, post-doctoral fellows and faculty is the mainstay of the program. Both programs are intertwined with research. In this paper I discuss the conduction of research in the Brown program with the support of the AMPATH infrastructure, from a programmatic as well as from a personal perspective.

Dr. Rami Kantor and his team in Kenya.

The AMPATH Research Infrastructure

http://www.ampathkenya.org

Brown University is part of the AMPATH consortium, led by Indiana University and consisting of multiple North American universities, in addition to Moi University and Moi Teaching and Referral Hospital. The AMPATH Research Network has dedicated much effort towards a strong and sustainable infrastructure to allow research that can support clinical care. This infrastructure includes a research administration office in Kenya that oversees and coordinates research activities; a Research and Sponsored Programs Office (RSPO) that provides grants management and other financial and human resources services; an Institutional Review Ethics Committee (IREC) to ensure that proposed research is both ethical and culturally-appropriate; and advanced laboratory capacity to support research projects.

AMPATH's research program is organized into nine Working Groups (adult medicine, basic science, behavioral and social science, oncology, pediatrics, prevention of HIV mother-to-child transmission, public health and primary care, reproductive health, and tuberculosis) and seven Cores (operations, data management, biostatistics, clinical informatics, pharmacy, laboratory, and bioethics). Working Groups and Cores have frequent conference calls to discuss general operating procedure and specific projects. Each project, which must have both a North American and Kenyan principal investigator, is presented to and must be approved by the relevant research working group, with subsequent IREC approval. Prior to presentation or publication, abstract and papers are submitted to a publications committee, which has representatives from the various Working Groups and Cores, who review papers and provide input to authors.

A major infrastructure component of the research program is the use of an electronic medical record system throughout AMPATH.[5] This uniform system is used in a well- organized manner, that includes specific forms filled out by clinicians throughout the network; quality controlled data entry into a carefully designed database; and a computer system that allows

querying and efficient use of the electronic data. Such a system allows research diversity and flexibility such as patient identification for projects, provision and use of clinical data and storage of study data.

This excellent research infrastructure provides an engagement structure for efficient collaborations, maximizing capacity and expertise from all participants.

The Brown University – Kenya Program Research Scheme

http://brownmedicine.org/kenya

It all started with Dr. Jane Carter. Brown University was the first institution to join the Indiana University-led AMPATH consortium in 2001. Hence, tuberculosis, Dr. Carter's research focus, was the first to be incorporated into the research program. Over the years, Dr. Carter has mentored many students and faculty within the program, obtained various grants, overseen numerous research projects, collaborated with a variety of institutions and investigators and published abundant papers related to her research in Kenya (eg,[6]).

The infrastructure provided by the AMPATH consortium and Dr. Carter's vision allowed for the Brown-Kenya research program to flourish. Today, a growing number of Brown investigators and disciplines are actively involved with research in Kenya (*See Table*). Some examples include pulmonary medicine (eg, tuberculosis, household air pollution); HIV medicine (eg, HIV diversity and drug resistance); psychiatry (eg, mood disorders); nephrology (eg, genetic factors in disease); gynecology (eg, cervical cancer); pediatrics (eg, HIV and health in street kids); behavioral medicine (eg, alcohol effect on Kenyans); and biostatistics (eg, support to AMPATH's research and training a new generation of Kenyan biostatisticians).

These ongoing expansions allow involvement of students, staff and faculty in multidisciplinary areas of research, in a safe, productive and nurturing environment, supporting clinical care. This is how my personal research story in Kenya started.

HIV Drug Resistance and Patient Monitoring Research

In January of 2005, when I arrived at Brown, HIV drug resistance research was already my passion, particularly in international settings, and I wanted to continue this line of investigation. During my prior post-doctoral fellowship at Stanford I had already worked in Zimbabwe, South Africa, Thailand and India, where diverse HIV variants and resistance patterns exist, different than in the United States.[7] A few weeks after my arrival, I learned about the Brown Kenya Program and was advised to set up a meeting with Dr. Carter, the program's director. Our meeting went extremely well and I was very quickly introduced to the Indiana University and AMPATH leadership and to my Kenyan collaborators, and now friends, Dr. Lameck Diero, the Moi University chief of medicine, and Dr. Nathan Buziba, the AMPATH Reference Laboratory director. By April 2005 I submitted and was awarded my first Kenya grant, a Brown/Lifespan/Tufts Center for AIDS Research (CFAR) Developmental Award. This rapid turnaround, from idea to fact, opened the door of opportunity for me and would not have been possible without the amazing relationships and infrastructure that were already in place in Kenya.

In this first project, we conducted a feasibility study to investigate diversity and drug resistance in antiretroviral treatment naïve and experienced HIV-infected patients. Such research had never been done at AMPATH; circulating HIV subtypes were unknown and none of the 80,000 HIV infected patients enrolled at that time at AMPATH had ever undergone HIV drug resistance testing. We were able to enroll 120 patients and obtain blood samples using various novel analytes. We examined cheaper and simpler options for HIV viral load and resistance testing in resource limited settings. We conducted CD4 and viral load testing at the AMPATH laboratory. Further, we shipped samples of all analytes to my Brown laboratory for drug resistance testing. Study results of diversity (subtypes A, C, D and many recombinants) and low-transmitted and high-acquired drug resistance were original for the region and provided abundant data for continued research.

During this first project, an important thing happened. To examine HIV drug resistance, we first had to identify patients who were failing antiretroviral treatment. To do this, we used the World Health Organization (WHO) patient monitoring guidelines, practiced at AMPATH and in Kenya

Brown Investigators	Kenyan Investigators	Research Theme
J Carter, C Sherman, A Gardner	W Injera, N Buziba, D Menya, R Kosgei, N Kirui, L Diero, D Oyieng'o, A Siika, R Karwa, S Kimaiyo, F Ogaro	Pulmonary Medicine; Tuberculosis, Cookstove Household Air Pollution and Lung Disease
M Keller	Atwoli, E Omolo, R Songole	Psychiatry; Mood Disorders
S Winston	A Chirchir, D Ayuku	Pediatrics; Sexual Health Risks and HIV Prevalence in Street-Involved Youth
R Papas	B Gakinya, J Baliddawa	Behavioral Medicine, Alcohol research
L Brown	D Ayuku	Adolescent risk behavior research
T Montague	M Owiti	Nephrology; APOL1 as a Kidney Disease Risk Genetic Locus
S Cu-Uvin	H Mabeya, O Orangu, D Chumba, P Itsura, D Patel	Obstetrics-gynecology; Cervical Cancer in HIV-Infected Women
J Hogan	A Mwangi	Biostatistics
R Kantor	L Diero, N Buziba, S Kimaiyo	HIV Diversity, Drug Resistance and Treatment Monitoring in Adults and Children; Laboratory Assays Development

for clinical care. These guidelines are significantly different than those used in Western settings. The latter utilize HIV viral load testing every few months, whereas in resource limited settings CD4 and clinical criteria are used. Study viral load testing of enrolled patients who fit the WHO failure criteria quickly revealed that most patients actually had non-detectable HIV and thus were not failing their treatment regimens. Though it made our lives more difficult and patient enrollment much longer than anticipated, this research finding[8] was important. With the existing AMPATH infrastructure it quickly led to clinical care change, and mandatory HIV viral load testing upon suspicion of treatment failure. Such change would avoid unnecessary switches to more advanced and costly antiretroviral therapy.

Dr. Rami Kantor and Kenyan medical trainee Millicent Orido, who spent six months in Dr. Kantor's lab to learn techniques in diagnosing HIV resistance mechanisms.

A second resistance project followed the 2007–2008 Kenya post-election violence. During this crisis multiple HIV-infected patients were displaced from their homes and had unplanned interruptions in their antiretroviral treatment. Having the collaborations and methods in place, we obtained funding to examine long-term outcomes of such treatment interruptions.[9] Our findings, that patients with crisis-induced treatment interruptions were more likely to fail treatment compared to those with no interruption,[10] are important for Kenya as well as for other resource-limited settings, where HIV prevalence is high and the likelihood for future political and other conflicts are unfortunately high as well.

In a third project we are examining treatment failure and drug resistance upon HIV second-line antiretroviral therapy, the last resort in such settings. As AMPATH, Kenya and other similar settings are programmatically preparing for third-line antiretroviral options, such data are essential. As this article is being written, results from this ongoing project, unique in Kenya, are being made available to the AMPATH leadership, and through them to the Kenya National AIDS and STI Control Program (http://nascop.or.ke) to plan for purchasing third-line medications and save the lives of patients who develop resistance to second-line medications.

Research projects like the three outlined above have many advantageous aspects in addition to their impact on clinical care. They allow me to mentor students and involve them in research; train, collaborate and develop friendships with Kenyan investigators; host them at Brown; incorporate Kenya into grants; increase research infrastructure; conduct resistance testing in my lab for AMPATH patients; work towards setting up a much-needed drug resistance laboratory at AMPATH; and develop multidisciplinary research collaborations at Brown (eg, Center for Statistical Sciences, Center for Computational Molecular Biology and School of Engineering). Every second of time spent in all these endeavors is worthwhile.

CHALLENGES

Conducting research in resource-limited settings can be different and challenging. Following is a short Swahili lesson to explain such potential differences. Anyone who has studied Swahili, whether with Wycliffe at the IU House in Eldoret or with anyone else, knows that the number 1 in Swahili is 'moja.' However, if you want to meet someone for dinner at 7 p.m., you tell them to meet you at 'moja', even though the number '7' is 'saba.' One reason for this, as Wycliffe carefully explains, is the history of time relatedness to sunrise (6 a.m.). So '7' becomes **one** (or 'moja') hour after 6, '8' becomes **two**, and so on. Google 'Swahili clock' and see for yourself.

This (perhaps confusing) example conveys the concept that details are sometimes not the same in different settings, affecting the ways things are processed, performed, executed and discussed. Issues like language, the concept of time, available resources, verbal and non-verbal communication, cultural norms and prior experience and exposures are key to essential parts of research. Typical research milestones like writing a grant, designing a protocol, executing a study, obtaining a consent form, enrolling patients, explaining an intervention or a laboratory test, quality controlling data, conducting data analyses and writing a paper collaboratively – all key for research, can be new experiences in new settings. Limited funding, long flight hours, price of phone bills and dusty shoes can all add to the burden. Addressing such challenges and learning from the experiences that this program provides offer endless opportunities.

CONCLUSIONS

Everyone who is involved with the Brown Kenya Program has their own story to tell and their own journey to travel. When people hear that I work in Kenya, their questions indicate that they're sure there is nothing there. After all, it's a developing country, with limited resources; what can possibly be accomplished there? In this article I tried to paint the picture, describe the grounds, and provide information on how far from the truth this notion is. I tried, partly though my own experience, to show what great work that answers important questions can be done through the Brown Kenya Program. I attempted to show that research helps build infrastructure and capacity to address important questions that can be translated to patient care.

This wonderful journey started with a quick meeting with Dr. Carter. It continued with the support of my superb research group including Leeann Schreier, Dr. Mia Coetzer and Dr. Austin Huang; the Brown/Lifespan/Tufts CFAR, the Brown Infectious Disease Division, and the Department of Medicine. Such an adventure is only possible due to the outstanding infrastructure that is in place though the Brown Kenya Program, which is a great testimony for the opportunities that lie ahead. ❖

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Dr. Rami Kantor is Director of Research for the Brown Kenya Program and an Associate Professor of Medicine at the Alpert Medical School at Brown University. He is an infectious disease specialist.

Challenges of Developing a Formal Subspecialty Pulmonary Training Program in Kenya

JAMES MYERS, MD

PHOTO: COURTESY OF DR. JIM MYERS

Dr. James Myers with a patient in Kenya.

Global medicine is now focused on non-communicable diseases such as hypertension, COPD, and diabetes. Unfortunately, there is little infrastructure in many low-income countries to properly diagnose and treat these diseases. In addition, the clinical expertise to care for patients may also be lacking. For example, in all of East Africa, there are only eight formally trained pulmonologists.

In 2009 Moi University School of Medicine (MUSOM) was awarded a grant from the National Heart Lung Blood Institute as one of 13 sites worldwide to develop a Center of Excellence (COE) in cardiopulmonary research. In parallel with that research initiative, the AMPATH consortium with Brown as the lead sought to develop clinical pulmonary training at Moi as well.

For the last 10 years, an informal pulmonary consultation service had existed. Dr. Lameck Diero, now the chair of medicine at MUSOM, had been trained in fiberoptic bronchoscopy parallel to the development of the HIV Care program. Bronchoscopy was focused at that time on the opportunistic infections that followed on the heels of untreated HIV. With advancing HIV treatment, the incidence of these diseases fell. Dr. Diero remained interested in pulmonary medicine as the head of the chest clinic but his departmental responsibilities, coupled with the lack of trained pulmonary colleagues, has limited expansion of pulmonary services.

The first pulmonary clinical research fellow matriculated in 2009. Coincident with his research training, we developed a clinical training curriculum. Faculty consisted of the pulmonary faculty from consortium schools who were already rotating to MUSOM as part of the exchange program. A curriculum of pathophysiology and disease-specific lectures was developed. When US faculty was on site, mentored clinical time in the chest clinic, ward consultation and ICU rounds, and fiberoptic bronchoscopy were conducted in addition to the pulmonary lecture series.

With this initiative, pulmonary expertise on site has improved, although there remains much to be done. Pulmonary certification standards within Kenya have not yet been established; thus, trainees of the MUSOM pulmonary track can be considered only pulmonary-interest physicians at this point. Basic pulmonary function diagnostic testing is available, although there is not a formal pulmonary function lab established to date. Dr. David Lagat, the first COE research trainee, has submitted his manuscript from his work on isolated right heart failure and exposure to indoor air pollution in women. This research has now raised awareness of pulmonary disease and exposures at MUSOM and sparked interest in the field of pulmonary medicine. Lessons learned from these early training experiences, such as the need for consistent rather than intermittent on-the-ground mentoring, are being used to improve and develop better training experiences.

Four years ago, Dennis Oyiengo, a Kenyan medical officer, came to Brown from Eldoret for additional training. He has since completed his internship and residency in internal medicine. He is currently a pulmonary and critical care fellow in the Brown program. Dennis is doing very well in his fellowship training. It is his hope and ours that he will return to Kenya in the future to become involved in helping to lead the pulmonary efforts at Moi.

Despite some missteps in training, over the years pulmonary care has improved at Moi. Under the direction of Dr. Jane Carter, tuberculosis management has lessened the burden of disease across all of western Kenya. As the AIDS epidemic has peaked and started to decline with the availability of better drugs, cases of pneumocystis and AIDS-related pneumonias are less prevalent. The greater availability of chest x-rays and chest CT scans has made more specific diagnoses possible.

Younger Kenyan physicians are becoming increasingly aware of their need to lead the way in program development, not just in pulmonary but in all areas of medicine. This change in focus will certainly help make control of non-communicable diseases more likely in Kenya. ❖

Author

Dr. James Myers is Clinical Associate Professor of Medicine at the Alpert Medical School of Brown University. He is one of the founders of the Brown Kenya Program and is a pulmonologist at Coastal Medical of Rhode Island.

Gastroenterology in Eldoret: Make the Journey; Share the Knowledge

NICHOLAS A. CALIFANO, MD

In 2006, my daughter Sophia, then a 4th year medical student at Brown, jumped for joy when there was a sudden opening and she was accepted to go to Kenya with Dr. Jane Carter, our program director. "I'm going to Kenya," she exclaimed, jumping up and down. "Not without me," said I. And so we went together on a life's journey into another world and culture that changed us forever. We spent a month there on that first trip and ended it on safari.

Since then I have returned several times. Our last trip was canceled because of political unrest regarding presidential elections there.

What does the Kenya Program offer in gastroenterology?

Moi University Teaching and Referral Hospital represents a huge medical facility located in Eldoret, Kenya, in the middle of the Great Rift Valley. It is a sprawling, beautifully landscaped assortment of specialty buildings connected by covered walkways surrounded by flowers and filled with the broad smiling faces of the always friendly Kenyans, patients, workers, nurses and physicians in motion.

PHOTOS: BROWN KENYA PROGRAM

Dr. Nicholas Califano and daughter, Sophia, at far right, and other Brown medical students upon their arrival in Kenya, where they spent a month working at the Moi Teaching and Referral Hospital.

Each specialty of medicine has its own building complex: surgery, gynecology, obstetrics, psychiatry, urology, medicine, and others. So it is easy to interact with colleagues and share in their experiences. The medical wards are a separate, large complex of beds with men and women separated into two wards of 48 beds each. This number does not reflect the number of patients as there are often two in each bed lying head to foot, side by side.

Each 48-bed ward is divided into open eight-bed rooms, three on each side, with large open windows giving ample light and ventilation. The beds now have curtains and some privacy. Three sets of eight-bed rooms are called a "Firm" and that is the teaching unit. When I first appeared at Moi, I was assigned to Ward 1, Firm 1, as an attending and consultant; which meant that I had the women's side (Ward 1) and three rooms of eight beds each (Firm 1).

DAILY ROUTINE

We began medical rounds daily at the very civilized hour of 9 a.m. with the Kenyan registrars and medical students, the U.S. residents and students, pharmacy and nursing students and nurses – at times a crowd! We rounded, going from bed to bed, until 11:30 a.m., when the ward doors flew open and hoards of visiting family and friends bringing food and clean bedclothes would inundate the space. That ended the serious rounding. We would go back to the IU House for lunch at noon, always an exciting gathering of stimulating people sharing world experiences. I would return to the wards in the early afternoon to discuss GI cases of particular interest, see new GI consultations from there or from other specialty

wards, or give a core lecture to Kenyan medical students on various subjects.

When they learned that a GI consultant was available and ready to work, then the requests came in. Most of what we did was based on clinical presentation and our physical examinations. We could get basic lab tests (often with delays) but most of the testing that we so depend upon here was just not available. We did have ultrasound and CT scanning and these services are improving.

However, even though this is a government hospital, all patients are charged something for their daily stay and for every test or procedure ordered (a colonoscopy or EGD cost 1,000 KS then, about $14). This was paid to the hospital; doctors' services were gratis; they are paid by the state. These fees could be onerous for the Kenyans. If they could not pay up front then the test or procedure would be delayed and they would have a family member go back to their village to try to raise funds. And patients were kept in the hospital and not allowed to leave until fees were paid. So we had to severely limit requests for testing and rely on clinical skills.

At times we would have a morning report about an interesting GI case (we had excellent computer services so all info was right at hand). In the afternoons we could relax, study, jog, wander about the town or travel.

The Moi hospital in Kenya is a sprawling and interconnected complex of general and specialty wards and labs.

DAY 1 DIARY

From my own diary during my very first day of my first visit to Moi in 2006 I saw:

1. Tb meningitis
2. Bacterial meningitis
3. DVT in calf of a man failing HIV therapy
4. Renal Cell CA with IVC invasion and edema
5. AML?
6. Hepoatomegaly w. huge nodular liver and no ascites
7. PCP pneumonia
8. Active pulmonary Tb
9. Malaria, Tb, and ? toxoplasmosis
10. Advanced rheumatic heart disease, multiple murmurs, huge globular heart
11. Peritonitis of pelvis
12 Cachexia, wgt. loss, anemia
13. Megaloblastic anemia, Hgb 4
14. DKA Type I diabetes
15. Tb, malaria, hypotension…

ESTABLISHING AN ENDOSCOPY CENTER

As a gastroenterologist I was able to help establish an active Endoscopy Center and, on subsequent trips, was able to bring over good scopes and equipment. But, as in all Third World countries, when they are not fixed, they eventually stay broken and get discarded; and there follows a frantic quest to re-equip. There is no sustainability as of yet.

We worked side-by-side with trained surgeons and GIs there and they certainly appreciated the teaching. On the mornings that we had cases booked, we would start in the "Operating Theatre" at 8 or 9 a.m., then break for tea (chai, the real thing) and continue till finished. We gave the anesthesia and used only diazepam. The Kenyan patients are very stoic and they tried to smile and never complained. We set a record there of 10 cases done in one day, very unusual as scheduling was spotty. Some patients travelled for days from very faraway villages to be seen.

Colonoscopies were rare; they don't seem to have much colon CA nor polyps and there is no screening. There is no diverticulosis but the young Kenyans do get serious sigmoid volvuli that present emergently and usually need surgery. Most cases were EGDs – there was no capability to do ERCPs. We saw lots of esophageal CA, strictures, GERD, H. Pylori gastritis and ulcers, gastric CA, varices due to the usual things but also due to Schistosomiasis and Kala-Azar (Leishmaniasias). We saw many undiagnosed diseases, a lot of toxicities (gastritis and bleeding and death) from herbal remedies, leptospirosis, aflatoxin toxicity and liver diseases, and complications of Tb and HIV – these will be seen much less now with the excellent care provided by AMPATH. We also started a GI clinic to see outpatients and prisoners; I am not sure if and how it is working now.

So our basic activities were divided on a very irregular

Pediatric patient at Moi Teaching and Referral Hospital.

basis and included consultations, rounding on the medical wards (always with lots of help and back-up), endoscopy service, and GI clinic. I also gave core and other lectures on GI subjects as requested. I did bring some Power Point slides and prior talks with me.

The Department of Gastroenterology is growing and there is some great news. Dr. Fatma Some is the chief of GI and is an excellent endoscopist and physician, and other medical and surgical colleagues contribute. We will be greatly aided there by the addition of an onsite, superbly trained (Duke) gastroenterologist and medical informatics expert, Thomas Carr, MD, who is just readying to leave. He will bring his family and will stay there; his support will be from Duke, and there are wonderful opportunities for the program to favorably explode with his onsite supervision and continuity of care.

We are working in a resource-constrained country that is developing. There is a huge ability to help upgrade their services, their endoscopy equipment, their disinfection/sterilization of scopes, and computerizing it all and making it all sustainable. We can offer what we do here routinely and apply it there as something new. So please join us in Kenya on a mission that will help change their lives and will certainly change yours. It will be a mind-expanding experience of a lifetime. And bring along a friend, partner, or family member while you're at it. ❖

Author

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Return to Kenya After 37 Years: Cultural and Medical Observations

GEOFFREY BERG, MD

In 1975, I spent my last three months of medical school working at a mission hospital in Kenya. It was a wonderful experience and I had always planned to go back but life got in the way. Finally, time and finances worked out so I could take part in the Brown Kenya Program in January 2012. The interval gave me the opportunity to see what had changed and what had remained the same.

The first thing that struck me was that despite a more than doubling of the population and an AIDS epidemic, modernization marched on. As an example, whereas in 1975, 90 percent of the roads were unpaved and the roofs were thatched, those ratios were reversed when I returned. And of course everyone has a cell phone.

The population explosion was evident in the towns. Eldoret was a sleepy little town in 1975 and is now a burgeoning metropolis of more than 200,000. However, progress has not come without a cost. As people acquire western amenities they also are acquiring western diseases. Over three months in 1975, I rarely saw diabetes and never saw a case of coronary artery disease. The former is becoming prevalent and the latter is not far behind.

The AMPATH program of which Brown is a part has made miraculous progress dealing with HIV. They are expanding into chronic diseases like diabetes screening. One would hope that progress in that area is taken a step further with education programs so that Kenya can move into the future without taking on the health problems associated with western progress.

Kenya has come a long way since I was first there and still has a long way to go. Good clinicians, regardless of their knowledge base in tropical medicine, can help in that journey.

Despite my previous experience, as a practitioner of outpatient internal medicine in Providence, I experienced culture shock when thrust into the role of inpatient ward attending half a world away in Eldoret. I instantly became the presumptive leader of up to 15 house officers, students, pharmacist, nurses, etc., working within a system, language, and diseases that were all foreign to me.

Dr. Jane Carter, director of the Brown Kenya Program, was in Kenya in September and took these photos of medical workers (next page) and a new facility being built (left) at the Moi Teaching and Referral Hospital in Eldoret, which is the second largest referral facility in the country providing specialized care to patients from western Kenya and neighboring countries. The new building will increase Moi's capacity to address the challenge posed by Non-Communicable Diseases (NCDs).

JANE CARTER, MD

MAKING ROUNDS PATIENT-CENTERED

Once I got my bearings, I had to figure out how I could make a contribution to the care of patients and the education of students. For me this came when I tried to make the rounding process more patient-centered. This I tried to do in the following manner.

Rounds are conducted in English, which most patients don't speak, and they tend to emphasize teaching, since there are so many to be taught. For the most part, then, the patients are spoken about but almost never to. I made a point that each medical student has the responsibility after rounds of going back to their patient and explaining the treatment plan to the patient and give them the opportunity to have their questions answered.

Going from the classroom to the wards involves taking book learning and applying it to actual patients. This is a difficult transition in any situation but at Moi it is not really emphasized. As an example, we were rounding on a patient in renal failure with mental confusion and shortness of breath. The Kenyan attending had the students come up with a thorough list of all the problems that come with renal failure. I in turn had them look at the patient and look at the real-life manifestations that were there before them, pointing out that dialysis, cleaning the patient's blood and getting rid of extra fluid will go a long way to making the patient think and breath better.

Dr. Berg and Kenyan physicians and trainees during his visit in 2012.

ACCOUNTABILITY EXERCISE

Another area where I felt I could influence students and, in turn, be a service was in matters of accountability. Kenyan medical students are literally the brightest students in the country. That said, they have a reluctance to take responsibility and be accountable for their actions. I tried to address the issue with an experiment.

I had medical students on my team pledge to me that they would perform some task on a patient they were covering. The following day one of the students had said that he would perform a rectal exam and test for occult blood on a patient with anemia. He had not done it, so on rounds I went through an accountability exercise I had learned.

Did you make an agreement with me?
Yes.

Did you keep that agreement?
No.

What did you choose to do instead?
Not sure.

How did this affect others?
Loss of trust with me.
Don't know if the patient is bleeding.

How does this affect you?
Loss of learning opportunity.

How can you get back in accountability?
Do the stool guiac after rounds.

After rounds I showed the student how to do a rectal exam and rather reluctantly he did it himself. Then the problems started. There were no stool cards in the side lab. There were no stool cards in the main lab. There was a suggestion that we take it to a private office who knows where and pay who knows what. Finally, the main lab suggested we try the maternity lab. With each new problem I was getting more dejected.

However, with each new problem, the student was getting more and more animated with the challenge. By the time we figured we could do it in the maternity ward, he was practically dragging me there to fulfill the mission we had started but now was clearly his. In the maternity lab we experienced a few bureaucratic hurdles before we got our answer – guiac negative. Much more importantly, on the way to the maternity lab the student earned an "A" in accountability which showed up in his work throughout the remainder of his month on the wards.

Kenya has come a long way since I was first there and still has a long way to go. Good clinicians, regardless of their knowledge base in tropical medicine, can help in that journey. ❖

Author
Geoffrey Berg, MD is a Clinical Assistant Professor of Medicine at the Alpert Medical School of Brown University and practices internal medicine in Providence.

Building a Diabetes Educational and Clinical Program in Kenya

CHARLES 'BUD' KAHN, MD

My wife and I first traveled to Eldoret in February, 2005. I was the Brown faculty member for the month, primarily responsible for teaching on a general medical ward at Moi Teaching and Referral Hospital (MTRH). Aside from these duties, I began a series of lectures in diabetes and clinical endocrinology for the residents. What struck me the most was the inadequate care of the diabetic patients, particularly on the wards. Glucose values were sent to the lab as there was no bedside glucose monitoring. A1c testing was not available at MTRH or anywhere in western Kenya. Dietitians were present on the wards. However, diabetic education was very limited. There was an outpatient diabetes clinic but it was manned by one private physician, not trained as an endocrinologist, and a few residents.

COURTESY OF DR. BUD KAHN

From left are Drs. Charles 'Bud' Kahn, Nicholas Kirui, a Kenyan medical officer; Jemima Kamano, medical director of the AMPATH Primary Care Program, and Sonak Pastakia, PharmD and a long-term faculty member from Purdue.

Upon my return to Brown, I began to investigate what could be done. I was able to secure the first A1c machine to be used at MTRH. In addition, I received a contribution to buy the cartridges for the A1c machine from The Miriam Hospital medical staff. To further build the diabetes program, I solicited the help of others living and working in Kenya. I was joined in this effort by Nicholas Kirui, a Kenyan medical officer; Jemima Kamano, medical director of the AMPATH Primary Care Program, and Sonak Pastakia, PharmD and a long-term faculty member from Purdue.

Through the hard work of this team, the program has grown substantially over the past several years. The emphasis remains on both inpatient and outpatient diabetic care. The primary clinic is at MTRH, but there are now three outpatient satellites in other parts of western Kenya served by AMPATH Clinics. Eli Lilly & Co. has supplied insulin and Abbott Pharmaceuticals has provided the bedside glucose monitoring, which is used for diabetics in both the hospital and in the clinics.

At Moi, a pilot project has started of lending out the home glucose monitors to insulin- and non-insulin dependent patients and having them test twice daily. Phone calls are then made to these patients and appropriate adjustments are made in their treatment regimen. Furthermore, diabetes education has been established both at MTRH and at the satellite clinics. Several publications have been written based on the work of the program. Additional A1c machines have been secured. More satellite clinics will hopefully be added soon.

I have continued to stay involved with the program as an advisor. My wife and I have returned three more times to Eldoret. I know that the future of diabetes medicine in western Kenya is much brighter now than it was during my first visit in 2005. ❖

Author

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Two Kenyan Physicians Studying at Brown Share Perspectives

DRS. JANE KAMUREN AND DENNIS O'YIENGO

BROWN KENYA PROGRAM

Drs. Jane Kamuren and Dennis O'yiengo and their children.

Jane Kamuren is completing her first year of internal medicine training at the Alpert Medical School at Brown University. She trained at Moi University and was working as a medical officer in casuality at Moi Teaching and Referral Hospital before coming to Brown. Her husband, Dennis O'yiengo, is completing his first year of pulmonary and critical care medicine fellowship at the Alpert Medical School. He also completed his residency in internal medicine at Brown. Prior to that he was a medical officer assigned to AMPATH. Jane and Dennis have a unique perspective on the medical systems in both Kenya and the United States. Here are their thoughts.

Training in the United States has been a great opportunity for us. We count ourselves fortunate to have had the privilege to train in two different healthcare systems.

Similar to many low-income countries, Kenya's medical training and healthcare system is resource constrained. A majority of Kenyans pay for their care out-of-pocket, as only a small proportion has health insurance. The Kenyan-trained physician is thus encouraged to take a detailed history and physical exam and limit investigations to those with the highest yield. Routine or daily labs are not done. A majority of the patients present late in their disease course. Often they have progressed to having classic symptoms and physical findings that allow treatment without requiring further investigations. For example, a patient presenting with several weeks of dyspnea, an S3 gallop, crackles, and peripheral edema will be treated with diuretics for congestive heart failure without obtaining a CXR or BNP.

However, at other times, a lack of an obvious diagnosis and an inability to order further testing makes empiric treatment necessary. Differentials are often limited to reduce the cost of the work-up. With a lack of subspecialists in Kenya, we are required to be much more hands on with procedures, even as medical students.

In contrast, we find that patients in the American system usually present early in their disease course so that work-ups tend to be comprehensive. For example, a patient presenting with two hours of chest pain may have several causes that will need to be investigated. In general, work-ups are not limited by cost or social status, but by the extent to which the evaluating physician can generate differential diagnoses. This makes the probability of missing pathology very low. Ordering tests without having to consider cost was thus challenging and difficult for us. We have also found that the system here is more patient-centered, with doctors/ healthcare workers making it a priority to involve patients in decision-making. It was striking to us the emphasis placed on research and evidence-based medicine, with protocols faithfully followed to the letter.

As we have stated, we have experienced obvious differences in the healthcare systems in Kenya and the United States. Yet in the same breath there are subtle similarities. Initially it seems that resources are bountiful; however, looking keenly, one appreciates that not all tests and treatments are available for all patients. There is great disparity in healthcare access influenced by socioeconomic status in the U.S. system. In both systems, patient compliance can be an issue. Both in Kenya and the United States, doctors are generally respected for the work they do and their value to society. Our greatest challenge yet will be going back to practice in Kenya. We will have to find a middle ground and strike a new balance between the two systems that will still be affordable and viable for the Kenyan people. ❖

Riley Mother & Baby Hospital, Eldoret

'…In this very special place no child shall cry unheard, and no mother or father shall be friendless'

— Entrance plaque

RILEY MOTHER BABY HOSPITAL

The Riley Mother & Baby Hospital in Eldoret, which opened several years ago, replaced a substandard space with no running water and where newborns were placed in hanging baskets. Over 8,000 babies a year are delivered at the hospital, which is run by Kenyan physicians and nurses. Through their efforts, the rate of transmission of HIV between mothers and babies has declined from 35 percent to less than 1 percent because of screening efforts by AMPATH and the IU School of Medicine and Moi University partnership at Riley. It also contains the first neo-natal intensive care unit (NICU) in East Africa.