

Chapter 4

Models for Infrastructure and Program Design

Speakers:

Senait Fisseha, University of Michigan (SPHMMC), Ethiopia

Josephat Byamugisha/Meg Autry, UCSF – Makerere, Uganda

Bernice Dahn/Lise Rehwaldt/John Mulbah, Mt. Sinai – Liberia College of Physicians & Surgeons, Liberia

Ron Mataya/Grace Chiudzu/Jeff Wilkinson, UNC – University of Malawi, Malawi

Sierra Washington – HRH, Rwanda

Irwin Merkatz; Albert Einstein, USA/Rwanda

Frank Anderson: Today is a great day to talk about infrastructure and program design. This morning we learned about partnerships and I appreciate everybody's comments. I've received a lot of feedback too, because I think that understand the partnerships, the barriers, and the need for honesty and transparency helps everybody develop better programs. So this is the 1000+ OBGYN program and we are here to figure out how to train new obstetricians in country in a sustainable way and perhaps in a new model, where the obstetricians are working clinically but they are also working as leaders in the country.

They are also working with midwives, they are working with health workers, and they are working with ministries, etc. We've heard a lot about the Ghana – Michigan model, but there are other programs with other designs that we are going to use this opportunity to talk about. So I encourage you to take notes, listen, and see what sounds interesting to you or what sounds challenging to you. In the worksheets, there is a physical infrastructure worksheet. The word physical probably doesn't need to be there. Infrastructure in terms of what you need for your department, what kind of things do you need to have a functioning obstetrics and gynecology department with large. These are some guiding questions. What you hear today during this session are some guiding ideas and then your job will be to come together, to pull some of those plans together, and to write them down in something very concrete that we can use later.

The panel today is incredibly interesting and diverse. We've also added Sierra Washington, who is going to discuss the Human Resources for Health model as well. Before we get started, I did want to recognize a couple of people. We have lot of academic partnerships here and we have professional societies here, but we also have some representatives from clinical professional societies or clinical professional support organizations. Doctor Alan Waxman, if you could stand up and just let everyone know where you are from.

Alan Waxman: I am from the American Society of Colposcopy and Cervical Pathology (ASCCP). One of the things that our organization does that could be very helpful to this process is that we have, "train the trainer," programs that have gone to a number of countries in Latin America and Africa working with medical schools to teach cervical cancer prevention. We've taught colposcopy courses here at the Korle Bu Teaching Hospital. We've taught them in Kenya; we have taught them in Rwanda. We work with the Ministry of Health in a consultative manner to help cervical cancer prevention in Botswana. I just want to make our services available to any of you as you get your partnerships together and working. If you would like some help in the cervical cancer prevention. Cervical cancer does not kill as many women in Africa as maternal mortality, but it still has a very high rate, which is unacceptable, and like maternal mortality, should be completely prevented. So I'll

be here for the whole conference. Please contact me if I can give any help. Thank you.

Frank Anderson: I would like to remind us all that tonight at the dinner, during dessert, there will be an open mic. So if people would like to say some things, introduce yourselves further, or talk to the group that will be an opportunity as well. If you have something you'd like to add to the agenda, please let me know and we would be happy to work with that in.

Okay, so now we are going to start with my dear colleague from the University of Michigan, Senait Fisseha. She is originally from Ethiopia and is head of the Reproductive Endocrinology department at the University of Michigan, and she has started a partnership with St. Paul in Ethiopia. She just got in today. Thanks you so much for coming. Senait has an incredible story to tell about what she has been doing with her partners in Ethiopia.

Ethiopia

Senait Fisseha: Good afternoon! I'm going to start my presentation. As Dr. Anderson introduced me, my name is Senait Fisseha. I am originally from Ethiopia. I did my training in the US. Most of my OBGYN fellowship and post-fellowship career has been at the University of Michigan that has an incredible passion and commitment for global women's health. Having had the opportunity and the fortune of working under Tim Johnson for so long, I have not only been infected with the virus to go out and do good, but I also have the internal drive to do this because I grew up in part of the world where maternal mortality continues to be a huge issue. As Dr. Waxman just talked about cervical cancer, for me family planning and safe abortion are pieces of that big puzzle that I think can be addressed to reduce maternal mortality in sub-Saharan African nations. With that, I will tell you a little bit about my partnership. The University of Michigan's new, robust, and ever-expanding partnership in Ethiopia. I'll be happy to take questions at the end.

So a little background. I see my Ethiopian colleagues here at the front who can expand further on this, but just to give you a little background for those of you who don't have the demographics. Ethiopia has an approximately, somewhere between the region, according to the literature, of 79 to 94 million people with an average life expectancy of 59 years. There is a decentralized health system. There are nine regions with two-city administrations, and my partnership at St. Paul is in the city of Addis Ababa. I also have a collaboration with Black Lion hospital, AAU, and as well as the Ministry of Health.

As most of you know the World Health Organization has designated Ethiopia has one of the countries that has a critical shortage of healthcare workers, not only in maternal health but in various areas. The numbers are critical for OBGYNs and surgeons where the ratio is 1 to 1.6 million for surgeons and 1 to 1.8 million for gynecologists. There's a little bit more data as you can see, I don't need to go through this, but the high maternal mortality, the low CPR and unmet need, as well as the large percentage of unwanted pregnancies. In response to this, one of the people that I admire and am inspired by busy former health minister of Ethiopia, Tedros Adhanom who, in 2012, Melinda Gates nominated as one of the 50 people who would likely change this world. Indeed, he is in Ethiopia. In his tenure as the health minister, he has done a lot of things, which included expanding the medical schools from three that serve 94 million people to adding a large number of medical schools, which, again, will have their own challenges that will not be discussed at this meeting. But again, massive expansion of medical schools; task shifting, whether we agree or not; as well as training very large number of community-based urban and rural health extension workers to address some of the needs, such as passing contraception, teaching hygiene, and so on.

In 2011, when Dr. Tedros was in the US ... I've been working in Ethiopia since my medical school and residency days with colleagues like Dr. Yirgu, but it was an individual effort. You could only go

so far to have a broad impact when it is an individual effort. My chair's passion and commitment and heart resides in Ghana, and I knew that was not going to change anytime in my lifetime. But in 2011 when I invited Dr. Tedros to come and visit the University of Michigan and see if we can explore partnership, the University was really persuaded by his commitment, by his passion, by his energy, and by his creativity. Tim said, "You know I've been working in Ghana for 25 years, and I think we've done a lot, so maybe this is time for us to look into a neighboring country. Not only to just build a program but also to facilitate south-south collaboration between Ghana and Ethiopia."

Tim and I followed with a visit in April. This is where Dr. Tedros asked us to work. This is an old hospital that is been there for about 47 years, but a new medical school. We just graduated our first batch in November. It is a five-and-a-half to six year integrated curriculum. The numbers need to be updated a little bit, but we started with about 1000 clinicians and 80 physicians. The number of physicians now is over 250 or so. They're building a maternal-child health hospital.

One of the things you asked us was if we could collaborate and really replicate what we did in Ghana. In terms of training OBGYNs as a whole, Ethiopia is quite ahead. The Ethiopian Society for OBGYN has been around for 27 years, there are about six residency programs throughout the country, close to 300 or more OBGYNs, but the challenge is in relation to the population. So it is not just having the number of OBGYNs, but having the number of OBGYNs in relation to the population, physician retention in public centers, and distribution to rural areas. Just like in most sub-Saharan African countries, we've had our challenges. This is where he asked us to put our effort.

This is our first class that just graduated in November. When we started exploring – I'm trying to provide some context because Frank has asked me to talk about program design and infrastructure. I'll try to weave in some of that story. One of the things when I went to visit St. Paul was that there was one OBGYN, who was MFM trained in the former Yugoslavia, I believe, and 18 nurse midwives. So, it was going to be a challenge to start in a new medical school. The second OBGYN was in a leadership position. She is this brilliant and amazing – who has become a dear friend and a sister to me – young OBGYN, but she has become the CEO and Vice-Provost for Academics, so she was extremely busy. So we asked what are our opportunities? If we want to build an OBGYN robust residency partnership, we do not necessarily have to fall into a mold. Let's look at where our interests lie and where our opportunities lie for a partnership.

Prior to Tim's commitment to work in Ethiopia, I would always say to him, "Tim, I want to work in Ethiopia can you help me?" He would say in response, "I'll give you the financial resources but I cannot personally commit." Anytime he sees someone who has an interest in Ethiopia – I see Dr. Irvin Merkatz in the crowd – he will say, "Go talk to Irwin; go to Albert Einstein. I'll support you; we'll pay 50% of your effort." Or Laurel Rice from Wisconsin would have an interest in Ethiopia and he would say, "Go work with Laurel. How can we support you?" He is that incredible person who has a big vision and does not see partnership as just Michigan or Ghana, but instead with a broad scope. We went to Ethiopia and visited, and we said that one of the things that we wanted to take into the partnership was what we have learned from Ghana.

Frank, Tim, and his colleagues in Ghana have taken a long time that I've gone through a very thoughtful process about partnership and I adapted the *Charter Document for Collaboration*, which you may have seen. That collaboration is based on these values: mutual trust, mutual respect, mutual benefit. One of the things that gets to me as a person was a product of Africa living in the US is when I see partners who will say to me, "How can we go help?" And yes you are helping but you are getting as much out of it in terms of opportunity for our residents, opportunity for our research, and opportunity for convergent science and collaborative teamwork. So how about this mutual benefit? Transparency, accountability, as well as communication in developing sustainability was the piece. We asked, "How can we develop this?"

The solo individual person, who was a department chair himself but was the only OBGYN along with myself, sat and said, “Okay, we know the problem.” I said to him, “This is the opportunity I see – my passion is family planning and safe abortion; I want to design a program that is very different from the typical OBGYN residency program both in the US and in Ethiopia, that sort of marginalizes and puts on the side family planning.

Let's develop a training program that has safe abortion and family planning as an integral piece of the training, instead of something that we put on the side.” Part of the challenge for me, working in the US, is that I will have people who will say, “I'll go help you, but it has to be about fistula,” or, “I'll go help you but it has to be about abortion,” or, “I'll will go help you but it has to be about PMTCT.” So how can we design a program that integrates all of these things? For me abortion was important, because places that I've been to as a resident in Korle-Bu, Accra, or even in the US, family planning resides outside of teaching hospitals, it is usually the corner clinic; it is usually understaffed and underequipped. So I asked, “Can we look at this?” That not only gave us opportunities to teach our OBGYN residents and medical students, strengthen capacity, but also funding opportunity.

Using the model of using family planning to reduce maternal mortality as well as do faculty development, we developed a competency-based OBGYN residency program. We had colleagues and experts like Dr. Yirgu, who came on board as a consultant to help us see through this; we borrowed curriculums from ACOG and the Royal College; and Vanessa Dalton, who is one of my colleagues in the crowd, has done a fabulous job with the international family planning fellowship that she runs both in Accra and Kumasi. We sat down and jointly wrote the curriculum and went through a national workshop so that we could get feedback from our colleagues in Ethiopia to ensure what works and what doesn't work, as well as work towards a standardized curriculum that could be potentially be adapted. We jointly wrote the grant to a foundation that supported our initiative.

The first year of a partnership was focused on faculty development. We started our collaboration in April 2011 to July 2012. When you are in a hurry and you see that kind of maternal mortality, the urge is to go form something and run. But then you look back and you ask why am I failing? We asked ourselves, “What we would do to make this sustainable, what would make this successful?” We recruited my superstar faculty – Dr. Balkachew sitting in the crowd. Just like most of the countries in which you work at, it's not just the shortage of OBGYNs, but it's a shortage of OBGYNs in the public sector. The pay difference is vast; the incentives to stay in public institutions are hard – you don't have enough equipment or enough supplies; and you get paid a lot less do not have housing. For me, it is a struggle to ask my colleagues to come work in a public institution when I know what hurdles they face. At St. Paul, we are somewhat fortunate. It is an interesting dynamic and one that I find very fascinating, in most countries, the Ministry of Education oversees education and the Ministry of Health is in charge of the health of the community. The former minister has started opening medical schools under the Ministry of Health. For me that makes perfect sense because you can align the health of the community with the priority of the people that you are training. We had tremendous support from the ministry, so we started building capacity. One of the things that we did was we recruited; we went from two faculty to seven.

What were the things that were bringing faculty to St. Paul? Right, because they are going to be paid little. We cannot change their housing, shortage of cars, or what have you. What brought them was the opportunity to have an academic career. There are a lot of faculty that sacrifice so much. Every time I go to Ethiopia – and I've been going to Ethiopia for almost 15 years – I see Yirgu everyday going into and out of Addis Ababa University, Blackline Hospital. I really get filled with this emotion that, how can you get up everyday despite the hardship? Most of us would just get up and leave, but they have this greater purpose, the burden of taking care of an entire community. And

being part of this community, part of this global community, where you have the opportunity to write together, to do research together, and to work on their skills is really what is bringing them. Balkachew came from private practice; I had colleagues who left JHPIEGO, who left ICAP Columbia. People were giving up high salaries in search of an academic partnership.

I cannot stress enough how much you guys, especially our colleagues from the north, bring to the table. Part of challenge ... you know when I meet with Dr. Merkatz we usually sit and ask where we get the money, because we have such a vast resource looking at our faculty, looking at our SIM centers, and looking at our fetal diagnostic units where they can come and observe, where they can come and develop their skills, and build friendships, and do research. So that is what we did. We built a very robust faculty exchange. All of them have been to Ann Arbor.

We built an advanced training, an advanced laparoscopy, and an advanced ultrasound - although they have women dying from post-partum hemorrhage, they also have women who would like to know before they have the baby if they have a child with a severe anomaly. The challenge for us is how do we balance that need to provide the basic service and yet support our colleagues in their quest to give evidence-based, high standard care.

So we were able to put these things in place as well as work on infrastructure, improving equipment and supplies. The hospital was able to get us five ultrasound machines. We were able to order a laparoscopy machine. We were able to get donations from industry to upgrade our laparoscopy training units. We are strengthening skills as well as building a robust learning resource center. In fact, I have folks from Michigan right now who are connecting us with tele-medicine, including tele-pathology and tele-radiology. So it is really not only developing a piece of just the faculty, but also upgrading the facility to allow for continual communication when we are not physically there.

After a year of faculty development, we inaugurated our first class in 2012. We were also able to get support from the CDC through the American International Health Alliance; we have a grant for the training program. We launched our residency program a year ago. We accepted in the first year seven residents, in the second year fourteen. We are in the process of adding a few more faculty, so our goal is to not just increase numbers but to also maintain a high-caliber, quality program.

Just to summarize, our model for partnership is specialized clinics. Maternal mortality is high but there is a need for family planning, there is a need for higher-risk obstetrics, there is a need for fertility, and there is a need for minimally invasive surgery. We are supporting our colleagues at Blackline. We launched a fellowship in OBGYN oncology. So really being able to do not just kind of funder-driven, vertical partnership but expanding and trying to bring capacity and quality, just as we are trying to strive for ourselves a model for our partnership. An education beyond of the OBGYN faculty, spreading family planning training and integrating it in medical education has been high for us. Advocacy, leadership. As well as creating this culture of collaboration.

The University of Michigan is just an immense institute. Our collaborations are in women's studies, in the law school, in the medical school, in bioengineering. So creating that kind of partnership and creating that culture very early in our residents - the concept of team science and the concept of implementation science that Bert Peterson passionately goes around and talks about. We are trying to integrate those things early on in the training. Our collaboration was in the country involves the Ministry of Health. Our colleagues from Blackline AAU work with us very closely. We reach out to Makele and reach out to Hawassa. Outside of the country, we collaborate with Wisconsin was now graciously is helping to host an institution in the South, Hawassa. We collaborate with Jefferson. Jefferson has been an amazing site; the chair there is Bill Schlaff, a former Michigan alum who is committed to sending maternal and fetal medicine faculty to come teach as we launched our fellowship. We have a continual visit from Jefferson faculty, we have Wisconsin faculty, and we are

creating that we do not have to be tunneled. It doesn't just have to be you and I, but kind of opening up this partnership broadly.

Our colleagues in Ghana have been tremendous. Richard Adanu comes every three months when his schedule allows it to do faculty development. Because Michigan has such a rich history with Ghana, and they are farther ahead in the training. They are reaching from the simple, everyday clinical research into translation – how we can import that? They have developed their strategy for research capacity under limited resources, which is a lot more applicable to Ethiopia than to Michigan. Really fostering that south-south partnership has been tremendous.

Here is a team visiting us from the University of Michigan for our international family planning meeting last year. Currently our program has expanded in just a year and a half. It has expanded beyond the postgraduate training in OBGYN in Family Planning. We launched a MFM fellowship in the fall. When I started a year and a half ago, the medical school was in fourth year with no postgraduate training program. In a year and a half now, we have a postgraduate training program in internal medicine, that the University of Michigan Internal Medicine Department supports; we have a general surgery residency program; we are looking into starting anesthesia and radiology this summer; we have a very strong enabling technology, medical education ICT team that our dean for global collaboration, Joe Kolars, oversees; and we are exploring ophthalmology as well as a fellowship under internal medicine.

This is a visit to our program by the former Minister as well as Dr. Messman who is the former Provost. As well, on the right is Joe Kolars who is our Senior Associate Dean for Medical Education and Global Partnership, as well as Roger Glass from Fogarty. So it has really been just an incredible opportunity for us at Michigan as well as for our colleagues in Ethiopia.

Internally again, the University of Michigan has this rich culture of internal funding so we don't always have to be limited by that, and the Provost's office put out an announcement for a 50 million dollar internal funding that is phased. We successfully were able to receive \$300,000 in the first phase pilot grant and we hope to apply for another three million dollars in November. But, that is to broaden the collaboration outside of the medical school and include biomedical engineering, include the business school that has been helping us in supply-chain and training our students in health systems. It is going to include the School of Natural Sciences and Environment, so we are trying to push it outside of the medical school. Sort of like our Michigan partnership, we call it, "Michi-Ghana." So we are trying to come up with the phrase for an Ethiopia-Michigan partnership.

My eternal gratitude to Tim Johnson, who is a true inspiration for me. If I get up and am in doubt about what to do, I'll just ask myself, "What would Tim do?" He is that type of person who has value and integrity and he looks at every human being with that same eye. So I have tremendously benefited from his leadership and mentoring as well as our funding from the CDC and anonymous foundations. Thank you for the opportunity.

Frank Anderson: Folks, that's how you do it. Isn't that amazing? So that is one model that Senait has been able to achieve and really mobilize in so many other departments in our University. She has been able to take the lessons learned and apply them in a very short period of time. I think it is an example for all of us in universities. This idea of academic partnerships and university partnerships and how those make sense given these partnership ideas we are talking about.

Uganda

Frank Anderson: I'd like to call Josephat and Meg up to tell us about their experience in Uganda at Makerere and UCSF.

Josephat Byamugisha: We are two presenters. I'm Josephat Byamugisha. I am Chair of the Department of Obstetrics and Gynecology at Makerere University, which is located in Kampala, Uganda.

Meg Autry: I'm Meg Autry. I am Director of GME education at UCSF and the upcoming APGO President.

Josephat Byamugisha: Okay, good. So we are talking about Makerere University-UCSF OBGYN collaborative educational exchange, capacity building, and clinical research. We had a vision for the academic partnership and we were looking at a number of factors: that is should be collaborative, sustainable in training and education, should build capacity in various areas, strengthen health systems, should be clinically relevant, and also provide collaborative research. We should have an exchange of faculty and also we were looking to have supervised bilateral learning exchanges.

A bit of background goes straight to what we want to discuss. This is a bit of the complex from an aerial view. Where you see a number of buildings that is where we have the national teaching hospital. For us both Makerere University and Mulago National Referral Teaching Hospital sit in the same complex because we teach from patients. That complex has got very many other departments and institutions that collaborate. We are located within the hospital. Some of you who have visited us have seen our Department of Obstetrics and Gynecology.

Now one of the important things to consider as we talk about partnerships in collaboration is that the institutions we are looking at collaboration have got a vision and mission statements that they look at. For example, ours is to be a center of excellence in reproductive health in Africa. There are three main areas of interest: treating patients, that is service delivery; training, we are looking at undergraduates and residents, but we are focusing on residents; and also research that is clinically relevant and talked about when we had the vision for the partnership. This is just a little bit of what happens in our set up.

We have a number of deliveries ranging from 30-34,000 by year. Our C-Section rate has ranged between 20-26%, for example. We have also lots of preeclamptic patients as well. One of the areas here is that when you look at the two - like the University of California, San Francisco and Makerere University - there are lots of issues that come up that we can share in terms of the number of patients but also in terms of the conditions that they present that the other group can share. For example when we go to San Francisco, California we can look at issues through technology and culture of care in terms of patient management.

For maternal mortality, this is our target. We want to reduce this. The main causes are induced abortions; postpartum hemorrhage, which is the biggest; periparturient sepsis one of the initial infections that is still killing a number of our patients, preeclampsia, and especially, eclampsia - we still get a number of patients who are presented with this. We still have obstructed labor - you get various figures ranging from this.

The other issue we are beginning to look at now that is killing a number of our patients is AIDS related conditions and complications. They are killing quite a number of our patients. These are all issues that are preventable. That is what is really disturbing us, is that all of these conditions could be prevented through a number of factors. Also presented here is the maternal mortality ratio for Uganda is at 348 per 100,000 live births. That is the latest one from our Demographic Health Survey from 2011. It is going down, but very slowly. Our target for the Millennium Development Goal 5 is about 131 per 100,000 live births. In other words, our meeting and collaboration falls exactly in what

we are trying to do.

Somebody talked about sub-specialties and their success. In 2008, for us, we just decided to move into some types of specialties. The staff we had, we said let's group ourselves because we were having firms: firm A, firm B, firm C, on the same floor all doing the same work. So it was a move from within that if we moved into these subspecialties like reproductive medicine and family planning, maternal and fetal medicine, gynecological oncology, uro-gynecology, and general gynecology, we could do better. Some members had different interests and we just went in without having trained fast. We also thought that just being in a hospital may not be enough, so an aspect of community reproductive health is critical and we will have that as well.

We have some specialties listed out with staff in these different areas managing patients, but not trained as well. Now we look at our partners in San Francisco, California, they have all of these subspecialties. So it was actually fitting in quite well. Our indicators are quite difficult to really talk about because the figure still very. The doctor to population ratio is about 1 to 24,000; we keep getting different figures. Midwives are about 1 to 9000, but what we can say for example is that we think we have a deficiency of about 2500 midwives. That is also an issue. The number of obstetricians and gynecologists that we have should be ranging between 150 and 200 and a number of them are in active clinical practice. As he said, a number of them are concentrated mainly in the urban areas and that is an issue that is really critical for us. Staffing - we have 47 faculty; we are looking at both University and Ministry Of Health staff. For us in our set up, we work together as one unit and actually sit in the same department. We have 246 midwives with only 42 being in area labor and deliveries take place. We have about 120 medical students or undergraduates per year go through our department in different smaller groups. We have 50 residents. We also have a number of staff for PhD training, 8 of them. We also get about 29 intern doctors; some people call them junior health officers. Allow my colleague to say something here.

Meg Autry: UCSF and Makerere University have had a long-standing relationship of over 20 years, primarily in HIV and malaria research. More recently with us in medicine and surgery has been a more clinical approach. About five years ago a group of faculty from our department went and met with Josephat and his colleagues and did an extensive needs assessment, primarily with faculty but also including SHOs. Basically the three goals that we came up with together were surgical skills (skills transfer), faculty development, and research collaboration. The highlight of our collaboration today, is a long-standing MOU between UCSF and Makerere. In terms of skill building for their residents, we have laparoscopy simulation training and remote teaching. We are working on clinical teaching and evidence-based medicine. We are also working on collaborative research and protocol development as well as research mentoring. And for faculty development we have a senior scholars program, which I'll talk about in a second. Training to competency is something we are working on as well as subspecialty training, which I will talk about in a minute. Lastly, we have faculty training, minimally invasive surgery, as well research collaboration and grant writing.

After we started this endeavor, or soon after we started this endeavor we actually hired our first global health faculty, and I'm sure for some of our North American colleagues this is interesting to some, it was the first person who is actually funded with some monetary commitment by our department. The initial plan was through grants to be economically viable within two years with external support for the first two years. Basically, the model, which I hope is talk about later, is that this faculty member (some of you may know her - she did a family planning fellowship in global health at Harvard) works very hard to make the money so she can spend 50% of her time on the ground. She's actually generating her own support but she spends about 50% of her time in Uganda and at meetings. Her other jobs, as well as clinical support and faculty development, are curriculum development and research.

We collaborate with a 501(c) called Global Partners in Anesthesia and Surgery and they started a successful anesthesia residency in Uganda. Their subsequent project was actually funding junior faculty for one year, not only to help them with faculty development but also to hopefully include them in being hired by the Ministry of Health. Currently, GPAS has five senior scholars: one in anesthesia, one in surgery, one in OBGYN, and one in orthopedics ... so four. They are recent grads; we pay their salary for a year, they work on education projects, clinical faculty, protocol development, and research collaboration. They are primarily working with Ugandan residence on their research protocols, etc.

We do have a UCSF resident experience where we basically have a UCSF resident on-site the whole year. As many of you agree, we think that this needs to be supervised. The other 50% of the time that our one Global Health faculty isn't there, the rest of us rotate out through that. We have a pre-departure curriculum, and the resident salary, housing, etc., is supported by our department.

Other accomplishments - we work very hard initially on a remote teaching and surgical skills video which was very successful and published. Our 21 official reintegration grant, we were grant challenge finalists. Another topic that will be discussed more today is that we recently received sponsorships so that we can hopefully (and I know that our Moi colleagues are here) send a Ugandan faculty member to be trained at Moi for an oncology fellowship. More of that African-to-African partnership would be great to discuss and further explore. I'll leave it to Josephat to discuss challenges.

Josephat Byamugisha: Some of the challenges we have had, the issue of funding come up, especially in bilateral exchange, supporting the initiative, supporting faculty as has been highlighted, and issues over research seed money. We realized that for every research, however small it may be, usually need some form of support. We've had other issues, like infrastructure at times in the training, you get someone who is coming over from UCSF and comes to a theater, looks at the theater, and thinks what I manage here. Then something may not flow very well, equipment may come in there as well. These are the issues that we have been looking at.

What I would like to say that is that even if somebody comes over, they should not be discouraged by the infrastructure that we have because it can be improved at times by just putting in ideas and talking here and there. That issues over territorial interests - during the morning session, somebody brought in this, politics was in there and a bit of medical tourism. However we are looking to have these coordinated, well coordinated. If you come in, what are your interests? How can you improve the department?

Now, issues over US and Ugandan faculty financial support. It may be easier, but some people assume that in the US somebody may find it easier to come over, but at time someone may have saved money for quite some time. But it is usually difficult when we say the same number of faculty should move from Uganda to UCSF. We may find that financing there becomes a real issue and something to look at.

Bilateral Exchange. We have observed that if we have the staff - senior faculty - coming in, some of the programs succeed more than if you only have some of the students. Because in terms of decision-making and influence, the senior staff and the senior faculty seem to do well.

Now another issue that is coming up and quite critically that we must emphasize here is the issue of observership versus hands on. It is coming up at a number of universities in that whenever people come from Africa and go to the USA, they are not allowed to touch patients. And when you come from the US and come to our theatre, we don't have a lot of problems. You have a number of them

doing cesarean sections and so on.

This issue needs to be tackled and from our university I know almost every group is being told that we need to see how people can go, have hands-on, and also have a short time. If it is just observership then we would want that time to be limited.

Subspecialty training is coming up quite a lot. The focus in Africa has been on maternal mortality reduction, but this is going down and we are beginning to see that cancer cervix is being completely neglected and is killing so many people on the gynecological side. How can this be worked on as well?

Fistula. Just recently there have been a ton of people focusing on fistula.

Technology access is an issue. Though it is improving in Africa, I must say, in terms of mobile Internet and so. With electronic medical records, some of our departments had multiple copies. For example, you may find that a woman who was pregnant four times has got four different files. So that retrieving the previous information is an issue. So all of these are areas where we have met challenges and also there are possible areas for research and possible improvement. And the issue of databases for information, it is no longer a challenge and which must be very critically talked about concerning this meeting. In our department of obstetrics and gynecology at Makerere University, we have observed that for a long time we worked on getting American partners. Gynecology services have done well, so this is coming in very handy. So now we have numbers coming in and it is making us become optimistic that we will possibly start improving quite markedly. It brings us back to what we were talking at the beginning and it shows that all issues were highlighted here. These are the points that we think can be very critical. Always remember the mission and vision of the institution that is being looked at. Thank you for your attention.

Liberia

Kwabena Danso: Thank you, we will move on to the next presentation. We have the next presentation from Dr. Bernice Dahn, Dr. Lise Rehwaltdt, and Dr. John Mulbah. Dr. Bernice Dahl is the Deputy Minister of Health for Liberia, so let's give her a welcome.

Bernice Dahn: Good afternoon to all. We are looking at postgraduate medical training in Liberia. Liberia, like many other countries here, of course was for very long time including today, lacking specialists in country. I believe we can count the number we have who are Liberians on her two hands currently for all specialties. The country and the Ministry of Health knowing the problem decided to mobilize resources to support young doctors to go out for training and to bridge the specialist gap. We realized that there were problems with some of the funding we mobilized. We get funding and the donor ties the duration to the funding to the years that you have to spend the funding. Most of the support that we get can train up to two years or less, and we all know that medical training - especially specialist training - is longer than two years. Also, there were challenges in even identifying universities and placing people, especially with the national health plan, which is very ambitious. We have fifteen county health hospitals in a country with regional hospitals. The plan is that by 2021, at least all of those hospitals should have the basic four specialties.

From the beginning we decided to be a little bit more innovative and so we decided that we are going to explore the possibility of training our own. While we were in the process of this discussion we had the opportunity to host the West African College of Physicians for the conference at the first of the year around three years ago and then subsequently the West African College of Surgeons. They both encouraged us to establish our training program and so we decided to put a team together for a study. We took all of the stakeholders: the dean of the medical school, the chairperson of the Liberia Medical and Dental Council, the president of the Liberian Medical and Dental Association, the

Ministry of Health that lead the delegation, and the teaching hospital head. We decided to do a study of three countries: Ghana, Nigeria, and one of the universities in South Africa.

We first came to Ghana. When we came to Ghana we met the Ghana College. There were very encouraging and they give us all the support they could in thinking through how we could design a program and how we can move forward. They also provided the needed resources that could help us to move forward. And from there we felt that we wanted to design our program based on the Ghana model and there was no need to visit the other countries.

So we went back home. We found a technical working team. That technical working team first drafted the act. The act was pushed to our Parliament by the Liberian Medical And Dental Council and was passed. The technical working team also drafted a strategic plan. We did a lot of advocate cases around this, because you first wanted to know whether the physicians in Liberia would be willing to attend a postgraduate training program in Liberia. We did a survey, and one concern that they had was if the design was fashioned around the West African College model and we do the training with quality, then they will attend. And so, we took that seriously.

We use every opportunity we have for doctors to meet, to brief on where we were, and to get their inputs on the design. We agreed that we are going to start with the four basic specialties that are OBGYN, pediatrics, general surgery, and internal medicine. We also organized the specialists we had amongst us to form teams to develop the curriculum. So they designed the curriculum. We had the West African College curriculum, the Ghana College, and they designed and helped adapt the model. Some of our partners also helped to edit. We knew that we needed to first of all prepare young doctors for the entry exam. A good number of these people have been in other academic settings, they work in county hospitals and things like that. And so, the preclinical faculty volunteered to do the refresher training for them and then an entry exam was administered. Eighteen candidates were admitted into the program with five in OBGYN. The program was officially launched by our vice president on September 30, 2013.

We have a lot of partners mobilized around this. We have 10 United States universities as a consortium to help provide faculty and then some others that are also helping along with the West African College Of Physicians And Surgeons. And of course, we have the Clinton Health Access Initiative who is working along with the Ministry of Health looking at the big picture, the strategies, the policies and things like that. I will turn over to my colleague John Mulbah. He will give you the details of where we are in the challenges and opportunities. Thank you.

John Mulbah: Thank you very much. Our challenges are not different from the challenges mentioned since this morning, like Ghana and other countries. So we have just decided to summarize the main challenges into clean categories. The first group of challenges is academic challenges. And under this we have difficulty funding faculty and establishing partnerships. Before the start of this program, Liberia had only three obstetricians for 3.5 million people. Of these three obstetricians, only one was an academic. As you can imagine, with one professor for the medical school and to now establish a postgraduate, we have to have faculty. The next was how do we establish the buy-in from local faculties? That was another challenge. And the third was how to integrate our academic centers with established residency training programs? This was another problematic issue. And, with the only existing faculty of medicine in Liberia, establishing a new residency program, the other challenge was how can we link the residency program with the undergraduate training?

And last but not least, changing existing policies in the Constitution to accommodate the program; this was a serious challenge. Our largest medical training institutions in Liberia, which is the John F. Kennedy Medical Center, had a policy or an act that created it and permitted it to not be a training

institution because the chief medical officer and the internal leadership was appointed by the president, not by the Ministry of Education. Carrying on a residency program in such institutions can be very difficult. How can we change that to suit our goal? Of course with the challenges, we don't have to just sit and cross our legs. We try to see what we can do to overcome this. We establish partnerships. As I told you, with only three obstetricians we needed faculties and we established partnerships with universities in the US. I am pleased to introduce to you Dr. Yvonne Butler. Two years ago we were able to get her from the Baylor University. Can you stand up please? We have here Dr. Lise from Mount Sinai University. And we are pleased that Dr. Lisa is the co-chair of the department, and she is the clinical coordinator for the department.

Besides other universities in there, we did not forget about our sub-region. We came to Ghana. Dr. Wilson who was here this morning - he was my mentor. He visited Liberia many times as an external examiner. The minister has instructed me not to leave me here; he will be on the plane with us. And we also proposed a change in legislation by challenging the parliament regarding rules in government existing institutions. This was very important for us.

The next group of challenges is that infrastructure challenges. It is controversial, but we selected seven institutions for the residency program in Liberia because we want our residents at the end of the program to already recognize situations in the rural area. Although institutions prepared for the residency program, we also needed to prepare them for the residency program. Identifying in one way for national residency program is another critical issue. Upgrading a facility for teaching and building an academic program. And lastly, a lot of support services, equipment, and drugs to meet the demand as mentioned by previous colleague.

Again, we try to overcome those challenges by doing the following: establishing partnerships to provide low-cost drugs and equipment and by establishing partnerships with the Liberian Dental and Medical Council to increase quality services. In our country, we have a medical council that regulates medical practice in Liberia, and this council is working closely in collaboration with the postgraduates to ensure that the training program in Liberia will meet the national and international standards. Also, establishing partnerships with financial institutions to assist with upgrading of infrastructure and adopting a rotational model for the program. Above this, we have been able to establish partnership with local partners and international partners to see how best they can help us upgrade our institution to be able to cope with the training program.

The last, I know, with all that we have said, is funding. Establishing funds to put into place and implement a residency training program and obtaining government financial support for the program; it could only help in financing the budget. You know and I know that when it comes to budgeting in Africa, to including a training program, even if the budget has passed, we do not know how long it will take to pass this budget. If it has passed, we do not know how long it is going to take to make this money available. We did this to overcome these challenges within a loan application to secure a grant to assist with the funding. And, we also went to private foundations for grants and sought government funding. Initially what we did was to take a loan from the World Bank and this loan gradually will meet the requirement and grow a grant. And at the same time, trying to see how the government will do this.

Despite all of these challenges, five residents have started the OBGYN residency and the basic sciences training was completed and first competency examination was administered with 100% passing. Phase II of our training is currently ongoing. Public health, immunology, research methodology, are being taught now to our residents, and Phase III schedule is to begin April 1st. And for this Phase III, that will include the teaching of the clinical obstetric, whether normal or abnormal obstetric. Dr. Lise will be playing a very important role in that, and as I said earlier, Dr. Yvonne while the basic sciences were taught, she's doing the coordinating of the clinical aspect, the

core schedules, this and that. Dr. Lise was appointed co-chair of the Liberia residency program and she is currently on the faculty of the Mt. Sinai Medical Center in New York, where she serves as director of the residency program before accepting this assignment. She is a member of the global health region of the Mt. Sinai Medical Center, and she is coming to speak to you on how we were able to build partnership with Mt. Sinai University.

Lise Rehwaldt: Thank you very much and thank you Dr. John Mulbah and Dr. Bernice Dahn. I'm very honored to be part of this team and partnership. I am going to talk a little bit about the Mount Sinai and the Liberian partnership. I'll first talk a little bit about the initiation some of the challenges and where we go from here. The initial Sinai partnership arose out of the Clinton Global Initiative in 2007. At that meeting President Ellen Johnson Sirleaf was there as well as board of trustee members from Mount Sinai. Out of that meeting arose the first inaugural mission of the Mount Sinai partnership.

I was very honored to be a member of the first inaugural mission as was Dr. Anne-Marie Beddoe, who was our new Director of Global Health for the Mount Sinai OBGYN systems. I can honestly say that that mission changed drastically and dramatically the course of my life. Since that time, multiple faculty members and residents have been coming to Liberia on a consistent basis and have been spending time in Phebe, in Bong County, and in Monrovia. This past January will be my 15th time to Liberia.

During my time as Program Director, with the visionary support from the chair Dr. Michael Broadman, we formally integrated of global health block into the residency core curriculum within the PGY3 year. This was presented to and approved by the residency review committee. Residents are required to participate in a global health corp prior to coming. As of this time 15 residents have spent time in Liberia. This opportunity has changed their relationship with the global world, allowing them to experience and share healthcare practices in a low-resource setting and develop awareness of the culture community there practicing. Many residents have returned within the PGY4 year and have continued to participate after graduation. Our mission then as it is now his capacity building.

The need for this residency program is clear. With the aim of producing OBGYN specialist to respond to specific needs of the country's health care delivery system. Prior to this year there was no opportunity for formalized residency training in Liberia. Upon completion of an internship at JFK, the residents then spent 6 months in an intensive emergency obstetrics and surgical training program. This was actually, I think, a wonderful idea that Dr. Bernice Dahn was instrumental in, which really solved some of the short term problems for providing quality care in some of the outer communities in Liberia.

As we move forward with the development of this residency program, I think it is essential that we incorporate these house officers within the training program and focus on an expansion of the focus core curriculum. They will be an essential part of the short-term solution to providing improved quality care to the outer posts as a residents will require 3 to 5 years of OBGYN specialty training before they return to the workforce, ultimately becoming the leaders in their own residency program. While John spoke about some of the challenges faced in establishing the Liberian residency program, I want to share with you some of the challenges we now face as we bridge the newly established OBGYN residency training partnership.

The follow-up on this morning's discussion, I really want to stress the importance of transparency of the partnership in initial discussions. The establishment of a primary academic partnership in no way precludes collaborations. Partnership by definition will embrace collaboration and look at how best the needs of Liberia are served. We are very fortunate looking to the success of this academic partnership that this whole process is happening right now and there'll be very open discussions.

One of the challenges has been taking faculty and resources from a large center such as Mount Sinai that offers expertise ranging from genomics to robotics and prioritizing these resources to fulfill the needs that are driven and defined by Liberia. In a country that has limited full-time faculty, we need to rely on volunteering faculty from academic partnerships and collaborators. Targeted faculty members have been enlisted for the development of core curriculum modules that will subsequently be given by visiting faculty over defined periods of time. Delivery of these modules will be combined with clinically related activities. As we move forward we will develop subspecialists will become part of this exciting collaboration and will be willing to spend short periods of time on a repetitive basis to establish continuity and development of meaningful curriculum modules. For example, in the gyn-oncology division, Dr. Ann Marie Beddoe and Peter Detino have been to Liberia many times and have expanded the services offered in Liberia, including the initiation of a pilot cervical cancer screening program. These screening programs will now be integrated into the residency training program, preparing these newly trained physicians to disseminate such programs throughout the country. These two individuals will be instrumental in the creative development of the overall programs to ensure sustainability and capacity building.

Our residents will continue to participate in the Liberian program during their senior year as part of the restructuring of the global health experience. Now with more full-time faculty on the ground, the amount of time the residents will be able to stay will be increased. Senior residents are excellent teachers and this collaboration exchange will benefit both Liberian residents as well as Mount Sinai residents. Consistent presence will also yield opportunities for collaborative meaningful research and patient safety initiatives. Liberian residents will also have the opportunity to rotate through Mount Sinai during their third year and will be participating in patient care under direct supervision, and this will be direct patient care. There will be a formal didactic curriculum design for that period of time, focusing in part in those areas that they were otherwise not exposed to.

Future plans – we want to focus on real-time MFM collaboration, participation in GYN tumor board, collaborative journal clubs, Mt. Sinai didactics will be available online, and consortium building with other institutions. But we need to keep in mind is that this is a very fluid project built on many moving parts. We know that much of what we will do will vary as circumstances change. Flexibility in program design is essential. We has an institution are 100% committed to see this partnership succeed and will encourage collaboration at all levels. Personally I'm committed to this process. People who know me very well concede that I am more at home in Liberia that I am in New York. Liberia makes my heart soar. This is truly an extraordinary time and we are truly blessed to be here with you all.

Malawi

Kwabena Danso: So, now we invite University of Malawi and University of North Carolina: Ron Mataya, Grace Chiudzu, and Jeff Wilkinson.

Ron Mataya: I think the Malawi partnership was probably the easiest one to work with because I came when everything else was done. I am Malawian but American at the same time. I work at Loma Linda University at the School of Public Health. Loma Linda is east of Los Angeles. I was seconded to the University of Malawi three years ago when we had the PEPFAR grant to help the Malawi government with lab services as well as clinical services. So I spend my time between Malawi and Loma Linda. I account it quite a privilege to be able to have two places that you would call home. I do feel at home in Malawi as much as I feel at home in Southern California. But truthfully speaking our partnership has been, from what I'm hearing here or from what I've heard, has been the easiest one to work with. Dr. Grace Chiudzu is the head of obstetrics and gynecology at the Kamuzu Central Hospital in Lilongwe, the capital of Malawi. Susan Raine is from Baylor University. Jeff Wilkinson who is euro gynecologist from UNC. We also have the Ministry of Health represented

here in Dr. Titha Dzewela, he is with the Ministry of Health.

The reason why I'm saying that it has been easy was because the curriculum of the program has been developed in 2006 and approved by the Senate, the University Senate. What was lacking was the wherewithal to put together the faculty to do the training. It's always good to have movers and shakers in every organization so Grace and Jeff took it upon themselves for us, while I'd already started working and helping in the teaching in the department. I didn't know that I would end up being the department chair, which was the last thing I wanted on my plate, but Grace and Jeff approached CDC and said, "You know, it is about time that you funded something that is going to be more tangible and long-lasting, so go ahead and find the money." The CDC was very interested in funding without actually writing a proposal. We actually wrote the proposal after the fact. But the money was there and the CDC ended up giving us \$1 million for the next four years for the first cohort of residents. That was Grace and Jeff who really pushed CDC.

Our first meeting - which was quite confrontational in a way; friendly, but confrontational - was when we were discussing how we would run the program, whether the funding would go through the College of Medicine or whether it would go through another third party. They decided to give it through iTech. iTech, which is out of the University of Washington, manages the grant and they sub-grant to us. CDC gives the money to them. Last night I got an email and they are apparently thinking that they will give the money directly to us in the second cycle, which is in a couple of months.

Besides having had the curriculum already approved by the Senate, we had commitment from our partners UNC and Baylor, who have had presence in Malawi for a long time. UNC started one of the earliest HIV maternal child health research centers in Malawi 22 to 24 years ago now. They have a state-of-the-art research center, which is used for training various people from birth, the Malawi government as well as the US. Baylor has the Childhood HIV and AIDS Center next to the teaching hospital in Lilongwe. And with the funding, we were able to gather ourselves together and say, "Well, we have the money, what are we going to do next?"

Coupled with that was another fortuitous funding source, the Norwegian government has given us \$1.2 million to equip the teaching facilities, both in Blantyre and as well as in Lilongwe. What was the outcome of all of the negotiation was the fact that we have two campuses where we run the program, one is in Lilongwe and one is in Blantyre. We inaugurated the program in November of last year; the Ministry of Health inaugurated the program, and currently we have six residents who have started the training. We believe that our curriculum is strong. We are working very closely with the University of Cape Town. We have just been on my way here. They will support us with the first part exams. The reason for that is that the majority of our residents or specialists who were working in the country ever since we started sending people out to train have been trained either at the University of Cape Town or any other university in South Africa.

Fortunately, I must say that the majority of them have come back home to work, very few have stayed out of the country. Also there's been recognition on the part of the government in the Ministry of Health that there needs to be some incentives greater than just a salary to help our people come back home and settle.

If you speak to Dr. Dzewela here, he will tell you that that the government is really seriously revising their remuneration packages, particularly focusing on highly-trained, highly-qualified individuals i.e. physicians being some of those. The challenge of providing the kind of equipment - for instance laparoscopic surgery; we do have laparoscopic equipment in Malawi but only in two or three private facilities. For us to manage that at the Queen Elizabeth Hospital or the Lilong, Central Hospital in Lilongwe is quite expensive, not only to purchase but to continue maintaining that sort of

sophisticated equipment. So we would be looking at perhaps using the private hospitals to train our physicians and so on.

The challenge that I can say, for me personally, as the coordinator of the program is to be running between two institutions. I spend one week in Blantyre or spend two or three days. But I must say that it has been made much easier because, really at least I feel so, there has been really transparent communication between my colleagues. I can phone Grace any time of day, Susan or Jeff in Lilongwe and say, "When are we going to have the next meeting? Who is coming? Who is going to work?" I know who is coming, I am told who is coming to work, and we get them registered with the medical council.

I really honestly haven't felt that there has been any of the usual birthing pains of a partnership. It is a partnership that is sort of really morphed out of serendipity or whatever you might want to say, but we honestly didn't really go through the nitty-gritty of saying what are you going to be doing, what are you going to be doing, and you stay where you are and I'll stay here, and so on and so forth. It looks that so far we have started off very well.

And also the challenge of managing grants when you have such large amounts of money; I'm now spending more time honestly managing the money rather than sitting in a clinical setting. I sit in a meeting, I sit with the procurement committee, "How are you going to buy this, where are we going to buy it, how many coats are we going to get, and when are we deciding to buy what?" It is kind of a good problem to have, but I like clinical medicine and bedside teaching, but I'm really honestly spending much less time doing that than managing the grant itself.

We hope that as far as placing the trainees, we give that to the Ministry. The Ministry will tell us how many people they need for training. In the next few years, we hope that they will be the ones to tell us how many they need and how many they will accommodate. Seventy-five percent of health care in Malawi is provided by the Ministry of Health, and 25% by the Christian Health Association. The scholarships are available to every Malawian whether they are working for the Christian Health Association. The CDC funding funds tuition for our residents bearing in mind that the hospitals are not run by the College of Medicine. The hospitals are the Ministry of Health. So the college does need tuition for the residents to provide the training. That so far is going to work well at least for the next 4 to 5 years, when we have the obligated funding from the CDC. Thank you very much.

Rwanda

Kwabena Danso: We are running far behind time so we need to stick to time and get things sorted out. We will invite Sierra Washington to give a short presentation and after that a break.

Sierra Washington: Thank you for slotting us in. This is sort of an impromptu addition so I thank you very much. My name is Dr. Sierra Washington and I'm in the division of Global Health and Family Planning at Albert Einstein College of Medicine and I am also visiting faculty specialist for Rwanda Human Resources for Health. I stand here today before you really as a member of Human Resources for Health, Rwanda, because we have heard a lot today about primarily bilateral collaborations or at most trilateral collaborations between North American and African institutions. I was very impressed with the Minister from Liberia talking about what their needs are and hoping to engage multiple North American institutions.

I would like to take a moment just to highlight a different model that has not been mentioned as of yet today. As Kate Somers from the Gates Foundation said earlier this morning, including Gandhi or Martin Luther King, that essentially our collective action can often have a greater impact than the sum of her individual actions.

With this in mind, HRH, Rwanda, has taken this approach in terms of institutions and has said that we want to put academic institutions separate agendas and egos aside and do something that is led by Rwandans for Rwandans. It is really led by the Rwandan Ministry of Health and the National University of Rwanda. It comes from funding through PEPFAR and the CDC.

Basically the motivation came from the triple imperative of addressing health care disparities both the moral imperatives, the epidemiological imperative, and the economic imperative. I think that is what brings us all here today. The goal was clearly set out to train and retain a whole new generation of physician teachers and researchers across all disciplines in medicine. So not only OBGYN, but medicine, pediatrics, anesthesia, surgery, midwifery, nursing, health systems management, and I think this came about because Rwanda stood in a very unique situation. It had similar demographics to many of the countries that we heard from today, but it had the added suffering of the genocide 20 years ago. Many people fled or were killed and so there is an even greater shortage of doctors and specialists. So they basically said that we need a whole new generation of doctors.

So they set about to create a comprehensive human resources capacity building program for the entire nation. The model was really the establishment of an academic consortium led by the Ministry of Health, the National University of Rwanda, and sixteen US medical schools, six nursing schools, one school of public health, and two dental schools. So really, this was an invitation by Rwanda to come join us, help us accomplish our goals. It was funded by PEPFAR, CDC and Alma Foundation and facilitated through the Clinton Health Association. We have heard a lot this morning in a discussion about the idea of how do we create enduring partnerships. This had a slightly different goal, I don't think the goal of the Rwandan government was to necessarily create enduring partnerships with these 20 some odd schools, but rather the goal was to train and retain a whole new generation of doctors. The program would endure for seven years with the idea that there would be residents within each of these disciplines that would graduate with faculty from these schools for their entire training.

Basically, the program functions all over the nation. There are five main teaching hospitals in the nation and OBGYN functions in three of those hospitals: the University Teaching Hospital in Kigali, the University Teaching Hospital in Butare, and Muhima District Hospital, which is the highest volume maternity hospital, which has about 20,000 deliveries per year. In the coming years, there may be engagement and the other two teaching hospitals, which are Kinombe Military Hospital and King Faisal. In addition, though, HRH has sent nurses, midwives from the US public health schools and nursing schools across district hospitals nationwide.

So what does it mean? It means that they are full-time faculty from these twenty-some US institutions based in Rwanda. By full-time I mean that people come for a one-year contract, and their contracted through the Ministry of Health to teach and train the Rwandan postgraduates and undergraduates. The main partners are the Ministry of Health and the Rwandan National University. In OBGYN, we are here today many of us, but we comprise Albert Einstein College of Medicine, Brigham and Women's at Harvard University, Duke, University of Maryland, Yale, and also NYU. I stayed here as part of a team of seven plus OBGYNs who are full time in Rwanda at the request of the Ministry of Health and the National University. I stand here also as one of 150 US faculty who have been deployed by the Ministry of Health across the nation to serve the goals that they have set forth. We have six visiting generalists, two full-time maternal and fetal medicine faculty, one female pelvic medicine and reconstructive surgery faculty, and then superimposed upon these full-time US faculty are short-term rotating subspecialists from any of these lead institutions in the field of OBGYN. Again, I am merely speaking about the OBGYN part of the program but you can imagine that there is something similar happening in midwifery, and nursing, in an surgery, and in anesthesia whereby there are full-time faculty on the ground nationwide.

So I just wanted to take a moment to allow us to think bigger and potentially think collectively and dream large about what all of us could do together. Here in this room, we are about 20 North American institutions and 20 African institutions, and we are talking about largely one or two or three people doing something together. But perhaps we could dream larger about how 20 more academic institutions could help Liberia, for example, or could help another area and consider another form of HRH or another form of collaboration. Thank you.

Frank Anderson: Wow, just incredible work, incredible partnerships, incredible models. I hope that everyone picked up on all of the important aspects of the different models and are ready to incorporate that into your worksheets. You'll now have an opportunity to get together with your groups to work on them. We are running a little bit behind. I'd like to make a proposal for a change in the agenda that we don't come back together at 5:30 today but we simply stay in our groups and once you finish your worksheet, you can eat dinner. Or 6 o'clock, whichever comes later. Until 6 o'clock, if you can work in your workgroups and then we can let you know when dinner is ready and then we will all meet down in the main lobby, outdoors, where we will have a nice dinner. We will also have an open mic and I encourage people to give us some other thoughts, some follow-up, further introductions, things you'd like to offer. I would also like to talk to anyone who has a monitoring and evaluation model that they may be interested in presenting tomorrow afternoon because we have some time for that as well. I'll turn it over to Madeleine and she will give us our logistical instructions.

Frank Anderson: Our next speaker is Dr. Irwin Merkatz from Albert Einstein University. Dr. Merkatz has been the chair of the OBGYN department longer than anyone else in the United States. He has a lot of experience and a lot of experience with Global Health as well. We are happy to have him here with us today.

Rwanda

Irwin Merkatz: Good morning everybody! Stand up and stretch after an hour! Thank you! Relax, take a deep breath. I was faced with a little choice this morning, which was whether to focus my comments on the partnerships part of the meeting or on the curriculum part of the meeting. With your approval, I have chosen to start with just the partnership. I have in reserve their curriculum piece and I have a fair representation of the faculty here to talk specifically about the curriculum.

I'm an obstetrician gynecologist, I'm a high-risk pregnancy expert, and I'm a regionalization expert. I've worked with development of innovations in maternal fetal medicine, screening tools, etc. So I've done a few things that are really at the sophisticated level of providing safe maternity care, but my overriding mission is this slide.

I come from the Bronx New York. New York has five boroughs and the one that is in the heart of it is Manhattan, which people equate with being New York. But Manhattan is only one of five boroughs in New York. The majority of people do not live in Manhattan. The majority of wealth exists in Manhattan. The majority of companies are headquartered in Manhattan. But the rest of us live in the boroughs. And in the boroughs of the Bronx, the working-class people - laborers, people who have middle-class incomes live in the Bronx. We have a number of hospitals in the Bronx. And in one of them the immigration from Central America and the immigration from Africa is clustered. Particularly the immigration from Ghana is in the community that we serve in the Bronx. So as you will hear and as I mentioned in my comments, I am interested in what I bring it back from this meeting to those partnerships in the Bronx.

I have a large department. Along with the school the overall mission is to promote the ideal of

health for everyone. Here is the department. The medical students are in the dean's center of the picture. In my center of the picture as the resident program director, the residents are in the center of my diagram. To train the residence, I have 120 clinical faculty, almost all of whom are board-certified and many of whom are subspecialty dually certified. The resources for the curriculum stem from the needs of the residents, the needs of the students, and the expertise of the faculty. Well, that expertise is shown in all of these subspecialties that we represent. We are unique as an OBGYN department to house the medical genetics subspecialty, which more often is in a department of pediatrics. But since medical genetics deals with two things; it deals with reproductive genetics involving mother and baby, and it deals with cancer genetics, which is focused on inheritable diseases affecting women: breast and pelvic cancers. We have the substrate to spend the rest of my life or many of your lives trying to transmit all of that that knowledge to our friends, our colleagues, our partners in Sub-Saharan Africa. I for one plan to do that. The goals and objectives are to encompass the domains of education, which we are going to learn from Elevate and from our partners across the ocean, the domains of research and service, which intersect in overlap in all of our actions. Service is at the heart of what we stand for.

Our story began about seven years ago. One of my residence at the time, Dr. Lisa Nathan was interested in providing service in sub-Saharan Africa. She got a grant from the Einstein Global Health Fund and a Fulbright Fellowship foundation to study what she was doing in Kyiv Agoura region of Rwanda. That is just across the lake from the Democratic Republic of Congo. Many of the physicians who serve in Rwanda, come across the water from the Congo. We have access both in Rwanda and in the Congo. This is to depict the geographic topography of that area of Rwanda - mountainous and hilly. Pregnant women have to make their way to the hospital across these hills to deliver their babies. Our major focus is how to surmount this transportation difficulty.

Rwanda has a populations of less than 10 million people. But 57% of them are less than 18 years of age. So this is a young population, which child rearing, childbirth, and sexuality are all consistent with a youth population. The per capita income in US terms is five dollars a year. The life expectancy at birth is only slightly above 50 years. And who serves these young women and men? There is only one doctor per 18,000 inhabitants. Worse yet, there is only one nurse for over 7,000 inhabitants. And by the term 'nurse' we are including nurse midwives. So there is a shortage of healthcare providers of all types.

We are here trying to train more obstetricians in Ghana. We are also going to try to do that and Rwanda. But we have a much more basic need, which is to train healthcare providers in general. This is a curve of the maternal mortality ratio trends in Rwanda. After much debate I included this little arrow, which stands for 1994, the year of the genocide. And you can see what that did to the more turnover mortality ratio in that country. The maternal mortality ratio in the year 2000 was over 1000 and it has progressively lowered since then. The data are here. But to get a healthcare provider in a referral hospital, the community health workers have to get progress of moving that pregnant woman through the system to a district hospital. We are focused on what happens in that movement in the district hospital.

There are three major delays in the model of healthcare delivery. The second delay is in reaching care, transportation. We have tried to limit that with the birthing center and with healthcare carriers. The Fulbright had us do three different models, one with a birthing centers, one with mobile teams, and a control group all a distance from the Kyiv Agoura District Hospital. We have employed all sorts of technology in the training of health workers. The have brought them to the Bronx. We have trained them clinically with simulation, because they cannot touch an American pregnant woman. But with simulation models and the training we are able to do that. So I have doctors in various countries who have volunteered their efforts in reducing maternal mortality, including Dr. Dimasio who works in the Ghana Ridge Hospital with an interdisciplinary group, trying to lower mortality in

Accra itself. But as I learned yesterday, planning for successful collaborations - and this is the courtesy of Ray de Vries, who taught me so much yesterday - employing technology, educational expertise, and experience for the on-site motivation and enlistment of competent developing physicians, good intentions are not enough. Respect, reflection, and the two variations on the golden rule are important.

Two years ago, the Clinton foundation started the HRH in Rwanda with a number of university OBGYN departments. I was aided to join that in the last minute because they do not have maternal fetal medicine components, so Einstein was the last participating member and we have based ourselves in partnership with academic director whom you've heard from, Dr. Stephen Rulisa. Stephen, can you stand up please? Would you come up and be here with me, side by side? So Frank, this is our partnership. We are brethren. We are getting to know each other. Please stay here because I want your input.

There are two sites. Stephen is at Kigali in my group is Butare. Dr. Lisa Nathan wanted us to go to Kyiv Agoura, so I've learned that geography.

Why are we in Butare? Because the medical school is there; it is the academic center; and because we have a commitment and dedication that the Einstein faculty brings. We have to be cognizant of the two sites as we staff for it. These are the physicians who have been there in the first two years. Sierra Washington, who we mentioned earlier and gave the previous presentation. Sierra is now at Einstein, and she is going to direct the program in Rwanda.

We focused on midwifery, on simulation, and training in various curricula modes. We have rented a house where we live while we work. And the subspecialist input is to sustain the curriculum. Shorter stays allow for contribution and overlap. Every two months I have had somebody, at least one or two, members of the Einstein faculty in Butare over the past two years and we had just made a commitment for year three to be together. We can bring the information back to the faculty has all with weekly emails that everybody can read as to what is happening. We play grand rounds, which keeps them up to date. Consultations with the global health activities group. This is our commitment, we come back to the community, which is full of the Ghanaians that we serve in the Bronx. When somebody asks, "Why don't you stay here? Why do you go to Ghana?" It is because we are all one world and we all work on one side. Thank you very much.