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Global Health Fellows  
NORTHERN PACIFIC GLOBAL HEALTH RESEARCH  
FELLOWS TRAINING CONSORTIUM



## NPGH Fogarty Global Health Fellows Newsletter

### Mentor Spotlight: Elizabeth Bukusi

*Elizabeth Bukusi, MBChB, MMed, MPH, PhD, PGD is Co-Director of the Research Care and Treatment Program at the Kenya Medical Research Institute, and is co-PI of the Family AIDS Care and Education*



#### What motivated you to become a researcher?

I went to work on the border of Kenya and Uganda as a young doctor fresh from internship. This was a malaria prone area with a lot of STIs too. You were sure when on call to be paged for an emergency ruptured ectopic gestation or a child with severe anemia after malaria infection. Both conditions needed blood. In the two years I worked there I was concerned about the number of blood units we discarded. In those days, the HIV test kits were not as rapid as today. You first took the blood and then you tested it. If positive, you discarded it. I watched us discard from one or occasionally two units of blood to almost five units for every ten. When you have a desperate person needing blood and you cannot transfuse them the blood donated, it sets you thinking. This is what made me interested in finding out how to make a difference to HIV and also to STIs. The ectopic pregnancies were by and large due to previous STI. After many nights responding to obstructed labor and ruptured ectopic gestation, Ob-Gyn became a natural next step for me. I wanted to make a difference in STIs in general, particularly HIV, and specifically I wanted to influence women's health. *Continued on Page 2*

#### Upcoming Event

##### January 12-13

Bangkok HIV Mixed Methods and Sociobehavioral Research Workshop

##### January 15

Consortium Call: Global Health Funding and your Research Direction  
6am Seattle; 9am Lima; 2pm Ghana; 3pm Cameroon; 5pm Kenya/Uganda; 9pm Thailand; 10pm China

##### Link for Adobe Connect:

<http://uwmedical.adobeconnect.com/ghfellows>

(Login with your name)



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**Tell us about the Family AIDS Care and Education Services Program:**

Craig Cohen, now of UCSF, and I started working together 20 years ago now. As we worked on HIV prevention we were struck by those who we screened out of our research studies (who were HIV positive) as initially there was not much we could do for them. The PEPFAR program gave us what we needed to be able to provide care for those who were being screened off the first HIV discordant couple study we conducted in Kisumu. We had previously worked in Nairobi but we made a strategic move to relocate our work to the then Nyanza region of Kenya which was the heart of the Kenyan epidemic then. After our initial two small clinics, one in Nairobi and another in Kisumu, we expanded HIV care to the South Nyanza region, which had the highest HIV prevalence in Nyanza where infrastructure was not as well developed and people desperately needed access to critical care. The program grew in leaps and bounds and we are currently the second largest HIV care program in Kenya ([www.Faces-kenya.org](http://www.Faces-kenya.org)). It has been a great opportunity to make an impact on the lives of many people; not only on the patients, many of whom know they would not be alive today if care had not reached them, but also on the many health care workers we have had the opportunity to work with over the years. We have had a great team who are passionate and committed to what they do, who work in what are sometimes very challenging circumstances and go way beyond the call of duty to give care.

**Have you had any great experiences with being mentored or mentoring?**

I have been mentored by really great people, and the selfless non-competitive nature of my mentors has done a great deal to get me to where I am today. I want to particularly pay tribute to Joan Kriess who saw, not what I was, but what I could be, and to King Holmes, who patiently and carefully taught me how to not only work towards being a good researcher, but how to always try to bring out the best in everybody. Craig Cohen and I have peer-mentored each other and it has been a great partnership as we complement each other well. Craig, much like King, has been the person with great ideas, while I have been the more earth-bound practical and pragmatic person who works through the kinks to make it work, and it has been a very good experience. Jared Baeten is another of those who have impacted my life. We were in the same class for the Master and PhD programs at the University of Washington, and Jared helped me understand that it is not who but what that sometimes matters. Asking the right questions. Giving it your best shot.

Mentoring has been one of the highlights of research for me. I am limited in what I can do as a person. I only have so much I can understand and I have only 24 hours in a day. I have had the opportunity to work with brilliant young researchers who continue to teach me so many things. I only need to nudge them in the direction of their dreams, provide a platform for support and watch them soar. I learned from King to always want your mentees to be even better than you have been and to help them do more than what you have done, because you have paved the way and made it easier for them. I hope everyone I have come across and crossed paths with leaves different and takes away something that will impact their lives positively.

**What are some of the most effective measures for preventing the spread of HIV?**

HIV has taught me many things. The first being that it will never be a one size fits all. It will be effective ways not way. I think unless people know their status it is very difficult for them to make decisions that can impact their lives positively. But with the stigma that still exists, it makes it hard for people to get tested and if they do, to disclose their status. How do we make it safe enough for people to stop being afraid of getting tested?

Particularly in Kenya, how do we help young women reduce their risk of getting infected? As a gynecologist, it cannot escape my deep concern that the face of HIV remains a young African woman for SSA. Elimination of pediatric HIV remains a challenge because so long as we have women of reproductive age getting infected we continue to struggle for an HIV-free generation in Africa.

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### **What is a challenging ethical dilemma you've encountered?**

There have been many challenging ethical opportunities, but perhaps one that stands out for me is from my early days in research when an HIV positive woman was not willing to disclose her status to her husband. There was no treatment for HIV. There was no prep. Microbicides were still a novel discussion and Nonoxynol 9 was yet to be tested. What was my responsibility? She was concerned that she would likely be homeless, or that she would be told she was promiscuous. She was determined to use condoms to protect her spouse, but she would not tell him. She did not think she could get him to come and get tested. The sad reality is that this is a scenario still repeated today. Now we have other mechanisms and improved options for HIV prevention, but some dilemmas still remain in the light of the social and economic situations that many women find themselves in.

### **What gives you hope in the face of a terrible disease like HIV/AIDS?**

I think my hope is a lesson from the current Ebola outbreak. We live in a global village. What affects one part of the world affects all of us. We cannot afford to ignore any issue that is of global health concern in the connected world we live in. We have the momentum from the biomedical research side to really make a difference, but we need to push for the political and economic will to follow through. We know some of the things that definitely work; treatment as prevention, prep etc., we just need to act. We should not let perfect be the enemy of good. We know enough to turn the tide of the epidemic and we must do it. History will judge us all harshly if we do not make a difference. Just like for the Ebola epidemic: we cannot wait and watch, we must act now.



NPGH Trainees Michael Mahero (left) and Juliana Anyanwu (second from right) meet with Fogarty trainees from the GloCal consortium in Uganda.



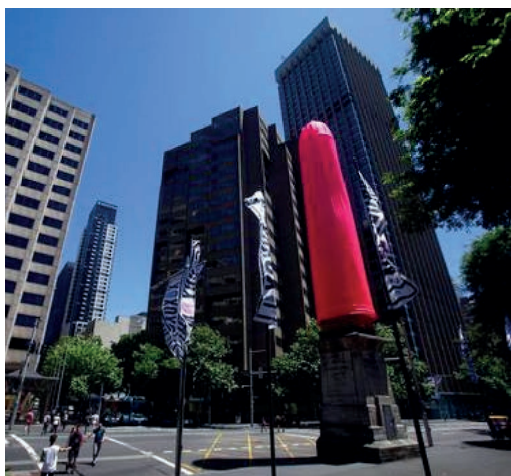
## In case you missed it...



Ghana mentor George Oduro teaches the “Learners and Learning” module in a Coursera class on “Foundations of Teaching for Learning” starting Jan. 3 If you haven’t heard of Coursera, it’s a great site that offers free e-learning courses from top institutions on science, medicine, the arts, and more. <https://www.coursera.org/course/teach3>

The Centers for Disease Control and Prevention have an overwhelming amount of information and resources on HIV/AIDS. Find inspiration with some of the success stories, or useful materials for training and prevention:

<http://bit.ly/SuccessStoryUganda>  
<http://bit.ly/CDCResources>



Of course, it wouldn’t be World AIDS Day (Dec. 1<sup>st</sup>) if someone didn’t put a giant condom on a statue somewhere. This year it hit [Australia](#), but in the past Paris and Buenos Aires have been covered. Are your patients still reluctant to use protection? Maybe they’ll find some of the winning designs from the Gates Foundation condom challenge more appealing: <http://bit.ly/GatesCondoms>



Celebrations of World AIDS Day (L-R): Statue in Buenos Aires, “Condom Claus,” and Statue in Paris



# ALUMNI SPOTLIGHT: SEGUNDO LEON

*Segundo Leon was a Fogarty Fellow from 2012-2014 and is now a professor of Microbiology and Immunology at the Universidad Nacional Mayor de San Marcos in Lima, Peru.*

## How do you go about recruiting subjects that, due to stigma, maybe don't want to be found? (Such as MSM or HIV+ subjects)

Recruitment for these studies is being performed at two STI clinics. The main characteristic of this clinic is that they cater to MSM/Trans and other vulnerable populations, so the stigma is not an issue when the healthcare personnel that work at these clinics has the right training and predisposition to work with these key populations. Also HIV+ subjects attend these clinics because they receive good service there. Some participants were recruited in the field-- some of them don't want to be recognized, and are afraid to go to health centers. They prefer to go into a hair salon and be attended, interviewed, and tested there: they feel more comfortable in this way. Recruiting is really an issue in a country where stigma and discrimination are still major barriers to good healthcare provision.

**UCLA** **Epicentro** **Missed Opportunities for HIV Diagnosis When Using 3rd Generation Rapid Point-of-Care HIV Antibody Testing**

Segundo R Leon<sup>1,2</sup>, Lourdes B Ramos<sup>1</sup>, Keilika A Konde<sup>1,2</sup>, Juan A Flores<sup>1</sup>, Lottie Romero<sup>3</sup>, Hector J Salvatierra<sup>3</sup>, Brandon J Brown<sup>4</sup>, Jeffrey D Klausner<sup>2</sup> and Carlos F Caceres<sup>1,5</sup>

1. Universidad Peruana Cayetano Heredia, 2. University of California Los Angeles, 3. Alberto Barton Health Center, 4. University of California Irvine, 5. University of Washington

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**BACKGROUND**

- Rapid point of care testing (R-POC) has been widely implemented and accepted by healthcare workers and populations at high-risk for HIV infection
- R-POC are affordable and easy-to-perform tests with reported high sensitivity and specificity
- Most screening programs are based on 3<sup>rd</sup> generation R-POC technology, with an unknown amount of false negatives
- High-risk populations in Lima are requested to be regularly tested using rapid tests but these are not always available
- 4<sup>th</sup> generation EIA assays available could diminish the HIV infection window period

**METHODS**

- We are conducting an observational cohort study to understand the syphilis and HIV epidemic among men who have sex with men (MSM) in Lima, Peru
- Recruited participants (N=400) included MSM and TW who are 18 years old or older, live in Lima or Callao and have at least three of the following inclusion criteria:
  - have had syphilis in the past 2 years, are HIV positive, have been sexually active for 5 or more years, have had 5 or more sex partners in the past 3 months, have been had an STI diagnosis in the past 6 months, have current STI symptoms, or have had 5 unprotected sex acts in the past 6 months.
- Blood samples were collected and tested for HIV infection using the following algorithm:
  - Initial 3<sup>rd</sup> generation HIV R-POC (Determine, Alere Medical Co, Japan)
  - All samples were re-screened using a 4<sup>th</sup> generation Ag/Ab HIV EIA serum test (GenScreen ULTRA HIV Ag-Ab, Bio Rad, Redmond, WA)
  - Any R-POC or EIA positive results were confirmed using Western Blot (WB) (Genetic Systems HIV-1 Western Blot, Bio Rad, Redmond, WA)
- Participants are returning every 3 months for 2-years follow-up testing
- R-POC results were provided to participants along with post-test counseling and referral the same day of testing, and EIA screening and WB confirmatory results were delivered after two weeks.

**RESULTS**

- Of 400 participants tested for HIV, 124 (31%) were positive using the 3<sup>rd</sup> generation R-POC HIV test and 129 (32%) were positive using the 4<sup>th</sup> generation EIA test.
- There were five discordant results between the R-POC and the HIV-EIA during the baseline assessment. All 5 were EIA positive and R-POC negative.
  - 1 indeterminate for WB, the remaining four were WB negative.
- HIV EIA testing increases HIV case detection by 3.9% when used as a

	EA+	EA-
R-POC+	118	0
R-POC-	5	290
	(94.1%)	
Sensitivity	94%	(94.1 - 98.5)
Specificity	100%	(98.1 - 100.0)

\*Gold standard: 4th generation HIV EISA

- In longitudinal follow-up: Among the 13 individuals who were EIA positive and WB negative or indeterminate at baseline:
  - 4 retained EIA positive and WB positive
  - 2 were EIA negative at subsequent testing
  - 5 have not yet returned for follow-up (not shown in tables)
- There were fewer discrepancies between the R-POC and the EIA (n=5) compared to the EIA and WB (n=11).

HIV positive at follow-up visit	R-POC	EIA1	WB1	R-POC2	EA2	WB2
1	-	+	-	+	+	+
2	+	+	-	+	+	+
3	-	+	Indet	+	+	+
4	+	+	Indet	+	+	+

Revert to EIA negative at follow-up visit

Participant	R-POC1	EIA1	WB1	R-POC2	EA2	WB2
5	-	+	-	-	-	NA
6	-	+	-	-	-	NA

**DISCUSSION**

- In subsequent study visits, there were an additional 4 discordances between R-POC and EIA.
  - Among these:
    - 1 reverted to EIA negative,
    - 3 have not returned for additional follow-up, 1 of whom was WB indeterminate.
  - The majority of WB discrepancies with EIA from the baseline go on to be HIV positive in later visits

**ACKNOWLEDGEMENTS**

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- We would also like to thank:
  - Picasso program staff
  - Picasso participants

Contact: Segundo Leon: sleon2@gmail.com

*Segundo presented this poster last June at the 2014 STD Prevention Conference in Atlanta, GA.*

*Click here to view the poster full size*

### What are you working on right now?

Now, I am working on a syphilis project called Picasso. This is an interesting study where the goal is to understand why this infection, syphilis, has high rates of infection among MSM/Trans. We are approaching this epidemic using technology transfer from major institutions such as UW, UCLA and Stanford for studying the molecular epidemiology of *T. pallidum*, PET scans and Cytokine measurements for understanding all the possible factors involved in the high rates of syphilis in Peru. Also, I am working on a small study with Jaime Soria from the Hospital Segundo de Mayo for assessing ART resistance in HIV+ people using OLA technology.

# Photo Spotlight: Anya Romanoff



As part of her research, Anya Romanoff has participated in Breast Cancer prevention and screening events all across Peru.



1. Cancer Screening in Pacasmayo
2. Cancer Prevention in Puno
3. Cancer Prevention in Cusco
4. Cancer Screening in Pacasmayo



## ALUMNI SPOTLIGHT: FRANKLINE ONCHIRI

*Frankline Onchiri grew up in Kenya, and has a background in biostatistics. He finished his PhD in epidemiology at the University of Washington last spring, and researches infectious diseases and HIV/AIDS. He was a Fogarty International Clinical Research Scholar from 2008-2009 and an NPGH fellow from 2012-2014.*



### **Bacteremia in HIV-Infected African children in the Era of HAART**

The population of HIV infected children continues to grow substantially in Africa. This is because of the increased survival owing to increased access to Highly Active Antiretroviral Therapy (HAART) and the high number of new infections that outnumber HIV deaths. A majority of HIV-infected African children live in unsanitary resource poor settings, and are at increased risk of infection with life-threatening bacterial bloodstream infections (bacteremia). These infections complicate the clinical course of HIV-infection leading to severe illness, increased hospitalizations and immediate deaths of the affected children. Rates of bacteremia infection are several-fold higher among HIV-infected children than in the general pediatric population, and are as high as 40%. The spectrum of bacteria that cause bacteremia in HIV-infected children include *Streptococcus pneumoniae*, *Mycobacterium tuberculosis*, Non-typhoidal Salmonella (NTS), *Staphylococcus aureus*, and *Escherichia coli* among others. These pathogens have high rates of resistance to commonly used antibiotics. Most importantly, HIV-infected children with bacteremia experience increased mortality compared to similarly aged children without bacteremia. Up to 43% of hospitalized HIV-infected African children with bacteremia die. A majority of these deaths occur within the first two days of hospital admission.

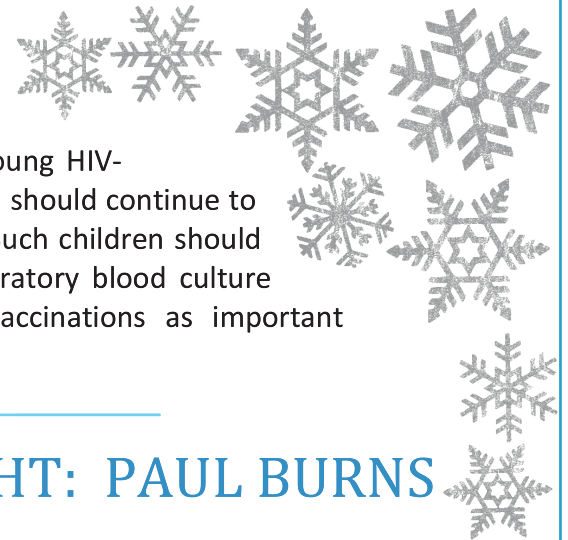
During the pre-HAART era, serious bacterial infections were the most commonly diagnosed infections in HIV-infected African children. However, studies of bacteremia in HIV-infected African children before and after the widespread use of HAART in resource-poor settings reveal that increased availability of HAART and concurrent use of co-trimoxazole prophylaxis have substantially reduced rates of bacteremia infection and associated mortality. Does this then mean that in the era of HAART, HIV-infected African children are no longer unusually susceptible, and therefore should not be systematically targeted for prevention and treatment of bacteremia? The answer is an emphatic no. New bacteremia infections associated with increased morbidity and mortality still occur at high rates in HIV-infected African children, even after initiating HAART. This is particularly so among young (< 3 years) HIV-infected children with advanced immunosuppression, malnutrition, chronic diarrhea, and anemia. This may not be surprising because HIV-infected children are at increased risk of serious bacterial infections during the early years of life, and in these children the risk of invasive bacterial infections is magnified synergistically by the direct effects of HIV on the body's immune system.

Emerging evidence from Africa also suggests that new strains of invasive bacteria, including previously unrecognized animal-associated bacterial bloodstream infections like leptospirosis, brucellosis, rickettsioses have recently emerged as common causes of febrile illness among children with fatal consequences. This highlights the need for expanded laboratory evaluations of febrile HIV-infected children in order to maximize care and minimize mortality. Unfortunately, most health facilities in Africa do not have microbiology laboratory capacity to diagnose causes of fever. Even where such laboratories exist, they lack the capacity to identify specific bacterial causing BSIs, or perform antibiotic susceptibility testing. It takes two days to identify bacteremia in a lab, by which time many children with bacteremia have died. The short interval between hospitalization and death, and the limited diagnostic ability make it essential to identify demographic and clinical predictors as well as simple laboratory markers that are highly sensitive and specific for bacteremia. These may enable health-care providers in resource-poor settings to institute combinations of targeted treatments at first medical contact in order to potentially improve outcomes in HIV-infected children with bacteremia.

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In conclusion, bacteremia still remains an important cause of illness and death among HIV-infected patients even while on HAART. Young HIV-infected children, especially those with severe immunosuppression, should continue to be prioritized in the management and prevention of bacteremia. Such children should be closely monitored and targeted to receive earlier clinical laboratory blood culture evaluations, and/or empiric therapy with antibiotics, and/or vaccinations as important preventive strategies to ameliorate the high mortality they suffer.



## RESEARCH SPOTLIGHT: PAUL BURNS

*Paul Burns is a Fogarty Fellow based in Nairobi, Kenya at the Kenya Medical Research Institute (KEMRI). His research interests include Youth and HIV Vulnerability, HIV and Water and Sanitation and Infrastructure (WASH) and Maternal and Child Health (MCH). His mentor is Dr. Judd Walsh, Professor in the Department of Global Health at the University of Washington.*



### HIV/AIDS, Youth and Urban Informal Settlements in Kenya

According to the World Health Organization (WHO), the majority of new HIV infections occur in sub-Saharan Africa with an estimated 2 million people infected with HIV/AIDS annually.<sup>1</sup> Forty-five percent of these new HIV infections occur among people under 25 years old, and the majority of them live in urban informal settlements.<sup>2</sup>

Despite a recent surveillance survey conducted between 2007 and 2013 that shows the HIV prevalence rate declined from 7.2% to 5.6%, Kenya still has the fourth-largest HIV epidemic in the world. Out of a population of 40 million, an estimated 1.6 million people are living with HIV and there were approximately 98,000 new infections.<sup>3,4</sup>

Kenya is a youthful and rapidly urbanizing nation. Forty-five percent of Kenyans are under the age of 15 and 60% of the urban population live in slums with no or limited access to basic services such as clean water, sanitation, housing, education and healthcare.<sup>5</sup> Urban slum dwellers and youth are disproportionately affected by HIV/AIDS. Young women (aged 15-24) are three times more likely to be living with HIV than their male counterparts of the same age (3% and 1.1% respectively).<sup>6,7</sup> Also, a recent study conducted in urban informal settlements in Nairobi showed that the overall HIV prevalence (12.6%) was almost twice the national average.<sup>8</sup> And estimates show there are currently 1.1 million orphans.<sup>9</sup>

While Kenya has made significant strides in its efforts to reduce HIV prevalence rates that are consistent with the Millennium Development Goals, and the government's long term development plan, the prevailing HIV prevalence rates for youth remains stubbornly high. Although these global and national commitments are relevant and have implications for young people, the emphasis has primarily been focused on infants and adults.<sup>9</sup>

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Dramatic increases in urbanization and urban inequality is creating a huge underclass with serious consequences for the nation's security. Many poor urban youth frustrated by debilitating poverty and lack of opportunity are increasingly engaging in unprotected sex and/or are vulnerable to sexual abuse and exploitation (e.g. commercial sex work), hindering HIV prevention efforts.

The elimination of HIV in Kenya, and in sub-Saharan Africa generally, is closely linked to the well-being of its young people. With more than one-third of the continent's total population between the ages of 10-24 years, governments and stakeholders must implement policies, programs and interventions to address the unique vulnerabilities and challenges of young people. Without strategic investments in the social, economic and material conditions of young people, governments will continue to struggle to eliminate the scourge of HIV. Ensuring the adoption of comprehensive interventions for preventions biomedical, behavioral and structural that target youth is critical to keeping the next generation free of HIV/AIDS.

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## Ask Globie

**What is your favorite holiday beverage?**

*Joe Zunt introduced me to the “Mocha Fantástica,” a spicy version of the traditional chocolate coffee drink. Here’s the recipe so you can try one at home!*

*Make a traditional mocha by combining espresso, milk, and chocolate syrup. Top it with whipped cream, a dash of cayenne pepper, and some cinnamon candies.*



**Have something to share?**

Email your submissions to Mallory Erickson  
emallory@uw.edu