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# Native American Medicinal Plant Project: Chemical Analysis for Arginine and its Association with Nitric Oxide Production

Bette Bischoff SOM 2006
Clendening Fellowship 2003

## I. Specific Aims

Nitric oxide is critical in maintaining vascular endothelial health. Nitric oxide, which is produced from the metabolism of arginine, is competitively inhibited by asymmetric dimethyl arginine. Reversal of this abnormality has been found with the ingestion of L-arginine. During recent times, Native American people have had an alarming increase in the incidence of cardiovascular disease, hypertension, and diabetes as they have lost connection to traditional foods and plant medicines. It is known that traditional Native American plant medicines and native foods are rich in antioxidants. It is my **hypothesis** that Native American plant medicines and native foods are rich in arginine content hence aiding nitric oxide production.

To test the hypothesis, two **specific aims** have been identified:

1. To collect traditional plant medicine and native foods from Kelly Kindscher, PhD, University of Kansas Biological Survey – an ethnobotanist specialist in Native American traditional plant medicines and foods - and Dr. Jeanne Drisko, M.D. Both Dr Drisko and Dr Kindscher are currently working with Haskell Indian Nations University on a related project around indigenous diets and native foods.
2. To determine if arginine levels are high in traditional plant medicines and native foods in relation to market available foods common to the American diet. This will be accomplished by chemical analysis by the principal investigator in the laboratory of Dr John P. Cooke. Dr Cooke is the director of the Vascular Biology Laboratory at Stanford University Medical Center.

I fully expect that traditional plant medicines will have higher arginine levels when compared to market available foods.

## II. Background:

High proportions of adults with cardiovascular disease, hypertension, and Type 2 Diabetes are from the under-served cultures in America. Native Americans (comprised of more than 500 tribal organizations) have a high prevalence of diabetes – estimated at 2.8 times the overall U.S. rate. The Pima tribe in Arizona has one of the highest rates of diabetes in the world (Krosncik 2000). The increased incidence of obesity, sedentary lifestyles and consumption of highly processed American foods has contributed to this escalated rate of chronic disease (Abbott, 1990; Edelstein, 1997; Gohdes, 1993; Grizzard, 2002).

Cardiovascular disease is a major complication of diabetes. Endothelium, a group of cells lining the blood vessels, is a major regulatory organ contributing a non-adhesive luminal surface, limiting smooth muscle proliferation and mediating immune and inflammatory processes in vessel walls. The loss of endothelial dependant vasodilatation is considered the first evidence of atherosclerosis in the affected vessel (Boger, 1998; Creagar, 1992; Vallance, 1994). Nitric oxide, a potent vasodilator of endothelium, is synthesized by the amino acid arginine via nitric oxide synthase.

The loss of traditional plant medicines and native foods by the Native Americans may reflect a loss of dietary arginine. It is estimated that arginine consumption was 6-12 grams per day in the general population and has dropped to 2 grams per day in recent years (Cooke 1998).

Insulin resistance, a contributing factor for type 2 diabetes, is closely associated with abdominal obesity, hypertension, hypertriglyceridemia, and low levels of high-density lipoprotein (HDL). In patients with reduced sensitivity to insulin, endothelial function is compromised and nitric oxide mediated endothelium dependant vasodilation is impaired. Researchers have demonstrated that a significant relationship exists between insulin resistance and increased concentrations of asymmetric dimethyl arginine (ADMA) (Asagami, 2002).

Although the pathways by which AMDA is synthesized and metabolized have yet to be fully elucidated, ADMA has been associated with endothelial dysfunction. For example, ADMA decreases nitric oxide synthase (NOS) activity, thereby increasing endothelial oxidative stress and monocyte adhesiveness (Stuhlinger, 2001). These processes are important in the development of coronary arteriosclerosis and its equivalent in other vascular beds (Ito, 1999; Nash, 2002; Abbasi, 2001). Recent evidence shows a direct correlation of ADMA concentrations with plasma glucose. Studies indicate that arginine levels at therapeutic doses can combat this by increasing levels of nitric oxide (Suzuki, 2002; Tangphao, 1999; Tsao, 1994; Wolf 1997).

It is my belief that prior to the adoption of processed American foods, Native Americans consumed an arginine rich diet. This potentially conferred a protective effect on vascular beds – especially in light of the genetic susceptibility to insulin resistance and potential of elevated levels of AMDA. The transition to a westernized American diet has decreased levels of dietary arginine and subsequent NO production.

As Native Americans are empowered to manage their health, valid information regarding health benefits conferred from their past medicines and foods is imperative to achieving lasting lifestyle change. Scientific knowledge of the benefits of traditional plant medicines and native foods has power to restore dignity and wisdom to a culture that has suffered the loss thereof. These ingredients are the essence to raising self-esteem and producing lasting improved health outcomes (Receveur, 1997).

## III. Research Design and Methods

### A. Specific Aim 1:

Under the supervision of Dr. Kelly Kindscher and Jeanne Drisko M.D., I will collect 6 species of traditional plants and foods commonly used by the Native Americans. Examples of these are: Nettles species, Milk thistle, Lambquarters species, and Pigweed species. The species are currently available and have been identified and tagged by Dr Kindscher. Dr Kindscher is an experienced ethnobotanist at the University of Kansas in the Biological Survey. Dr Drisko and Dr Kindscher are currently collaborating with a team of researchers at Haskell Indian Nations University and Health Center in a project to improve the Native American diet. These plant species will also be grown in a demonstration project at Haskell Cultural Center in the spring of 2003.

**B. Specific Aim 2:**

In the lab of and under the supervision of Dr. John P. Cooke, I will assess the above collected items for arginine content. As a comparison, I will also assess market available foods commonly eaten in today's culture by the Plains Indians. These types of commonly available foods will include lettuce, potatoes, corn, and/or apples.

Address: Dr. John P Cooke
Vascular Biology Laboratory
Stanford, California, 94305-5406

It is expected that the arginine content of the traditional Native American foods and plant medicines will have richer arginine content when compared to commonly available market food. Evaluation by statistical analysis is planned.

**C. Timeline:**

April 2003-May 2003
Collect specimens

June 2003-July 2003

1. Plant product analysis for arginine levels at Stanford under supervision by Dr. John Cooke. June 1 to July 15th.

2. Data Analysis – July 15 to 23rd.

August 2003 - September 2003
Paper preparation

## IV. Budget

| | |
|---|---|
| Round trip air fare - | $450.00 |
| Room and board – student housing | $1000.00 |
| Cost for arginine analysis` | $750.00 |
| Total cost: | $2200.00 |

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Clendening Fellowship Proposal
Dr. Martha Montello
January 13, 2003

Larry Burchett
"Willingness To Be Stuck After Miraculous Surgeries"

Introduction

A correlation exists between money and health. To state it oversimplistically: the more money one has, the better one's health is. In statistical terms, there exists a correlation between the Gross Domestic Product per capita of a country and the life expectancy of those born within: the higher the GDP, the longer one is expected to live. A woman born in Luxembourg, the world's richest nation by GDP ($ 47,057) is expected to live 81.8 years[1]. A woman in Mozambique, the correspondingly poorest county (GDP per person: $80), is expected to live 45.9 years, a fraction of her European counterpart[1]. Where one finds money, one finds the opportunity for better health.

While the South American country of Ecuador has a modest GDP ($3,210), one-tenth that of the United States ($34,637), a woman born in the US is expected to live only 6.3 years longer than her South American amiga (73.2 years v. 79.5) [1]. That is to say, the health care system of Ecuador is doing well on a small budget. However, between the Amazon Jungle and the Andean Mountains, the health care of many is neglected[2]. With regard to health care, the poor, then, become those not only with financial barriers restricting access, but with physical barriers as well: rivers, mountains, jungle.

The Cinterandes Foundation was created in 1994 to meet this need. Dr. Edgar Rodas designed a mobile surgery unit, an operating room on wheels, to bring surgical health care to the underserved areas of Ecuador. In almost 10 years of existence, 3000 surgical procedures have been performed.

This paper proposes research to focus on an interesting public health result of the surgical success of Dr. Rodas' Mobile Surgical. From the program's information:

> ... we realized that surgery, in spite of its great accomplishments, has only a small impact in the overall health of a country. Nevertheless, its fast, objective and sometimes spectacular results, make of it an excellent mean to gain credibility, confidence and acceptance of a community. People from rural areas, who are usually very distrustful after usually not fulfilled promises of politicians, change their attitude rapidly in view of surgical results, making it easier to organize other health-impacting programs such as, nutrition, immunization, child and maternal health, etc. For this reason, we decided to organize programs in "integral health" following our surgical activities.[3]

This paper proposes to research this claimed change in perception as a result of Mobile Surgery. The prevailing question to be answered is: What can health care do now as a result of Mobile Surgery that it could not do before?

Methods

In order to focus, "integral health programs" will be limited to vaccines. Thus, the proposed project would contrast public perception of vaccines now with that before Mobile Surgery. Perceptions would be expanded to include trust, beliefs, willingness, etc. In terms of investigating public sentiment toward vaccines, personal interview and surveys will be employed. A possible series of questions could be:

> How many immunizations have you had in your life? Your children? When?
> How do you feel about needles and going to doctors?
> Have you always felt this way?
> What do you think about the surgeries?
> Would you say the surgeries have affected your willingness to get vaccinations?

Desired community participants in the data collection include people who go to clinics, those who do not, surgical patients, primary care health care providers, surgical health care providers and Dr. Rodas. In addition, a history of Mobile Surgery and the related Ecuadorian health care situation would be obtained from Dr. Rodas to the extent relevant to the aforementioned question. The assumption in the addressed question, that surgeries actually cause this change in perception, will be examined throughout.

Personal Meaning

On a personal note, this opportunity seems to be an appropriate next step in the story of my career development. After working at a homeless shelter ('98), I became interested in poor people. Living in El Salvador for 2 months on a service project ('99) pushed me in the direction of serving poor, Spanish speaking peoples. Translating Spanish at the Douglas Community Health Center here in Kansas City, KS ('00), was the natural progression of this desire here at home. Now I am ready for the next chapter—integrating Spanish and medicine internationally. Ultimately, I want to be a Spanish-speaking doctor both at home and abroad.

In a very practical sense, I will not have an opportunity to be immersed in medicine in a Spanish-speaking country until after graduation at least, more likely after residency, six and one-half years down the line. This is a crucial summer. I look at this trip as a test to see if this is really what I want to do, with the added bonus of taking a look at surgery as well.

While I am confident I can survive and even excel in this foreign land, I must admit it will be challenging. I've translated Spanish in a medical setting in the US, but interacting with patients and doctors in a native Spanish-speaking land will certainly be a step up. At the same time, there is much to be learned in terms of personal skills and cultural competencies during my interviews to collect research data. I imagine myself knocking on the front door of a stranger—do I smile, do I not smile? Do they shake hands here? Should I maintain eye contact? —all of this, and I'm not even in the door and past the introduction. Again, this will be hard and there is much for me to learn, but I'm sure I can do it, and come back a more well-rounded individual, knowing more about myself and better equipped to interact with others as a physician.

So I see this summer as an opportunity for personal growth and to progress in finding out exactly what I want to do with my life. But I would be lying if I didn't admit to being attracted to the travel opportunities that Ecuador offers, and I'd be an idiot not to take advantage of them. From Pacific beaches to the Amazon Jungle and the Andean Mountains, there is much to enjoy. It would be great to work them in at the same time as I research, and return for the second year of medical school refreshed and motivated for more study. I imagine I will want to know what parasites I was infected with at the very least.

Logistics

I would participate in the Cinterandes Foundation program for medical students, which includes working with Mobile Surgery, the University hospital, and rural clinics. The program would last about a month, either June or July. In Cuenca, Ecuador, I would live with a family, covering room, food and laundry, in addition to affording language and cultural experiences. I understand that there would be sufficient time to acquire my research information. My contact is Dr. Edgar Rodas (erodas@az.pro.ec). In preparation, I would get a yellow fever vaccine, and bring anti-malaria pills. My estimated budget is slightly over $3000 (see *Budget*); a Clendening would cover most of this, while I would be willing to come up with the rest.

Conclusion

For all I would hope to get out of this summer, I will not be able to do it without the financial support of a Clendening fellowship. Right about now, I'm awfully glad someone wanted to graciously give their money so that medical students like me can have the chance to pursue their dreams and do some good for the world in the process.

Budget

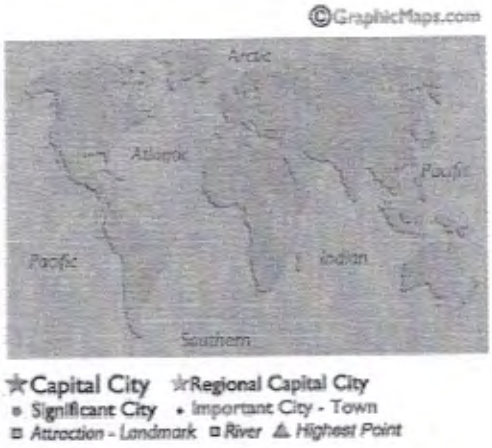
| | | |
|---|---|---|
| Room, 3 meals, laundry: | $10/day x 30 days | $ 300 |
| Tuition: | $190/week x 4 weeks | $ 760 |
| Flight (see attached flight info): | | $ 1370 |
| Subtotal | | $ 2430 |
| More Food | | $ 150 |
| Additional Transportation | | $ 100 |
| Miscellaneous/Personal Expenditures | | $ 500 |
| Total | | $ 3150 |

A Clendening grant would cover most of the necessary expenditures (i.e., $2430) for this project. I would be able to cover the rest.

South America


Ecuador


The World




The Mobile Surgical Unit

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# The Effectiveness of Traditional Healing in HIV/AIDS Patients in Zimbabwe

Clendening Summer Research Fellowship

~~January 6, 2003~~

Revised 6/10/03

Megan Frost

**BACKGROUND:**

It is evident that HIV/AIDS is one of the most serious epidemics that our world has faced. My generation was growing up as society realized what a deadly and unforgiving disease it is. We have watched it begin as a homosexual disease, then we became more educated and understood that it does not discriminate as easily as humans do. It will attack anyone. Unlike cancer, the horror of HIV is that we can pass it from one person to another. This disease has the capabilities to take over our population, and so far we have found nothing that can stop it.

At the end of December 2000, UNAIDS released some terrifying statistics: 36.1 million people have been infected with HIV worldwide, and 25.3 million of those people are in Sub-Saharan Africa. Although this is a worldwide problem, it is concentrated in Africa. There are many reasons contributing to this growing problem in Africa that must be addressed, but the main problem is that African's do not have access to the kind of health care that is needed to attend to such a colossal pandemic. UNAIDS concurrently released with the above statistics, that less than 25,000 of the 25.3 million people that are infected actually receive medical treatment. It should be equally noted that depending on the country within Africa, anywhere from 80-95% of the population uses a traditional healer for dealing with their ailments.

Although those practicing western medicine often scoff at alternative medicine techniques, traditional healers are highly respected in Africa. Traditional healers are considered herbalists or spiritualists and use anything from tree buck roots, leaves, plant bulbs, fish bones, shells, and animal skins in their methods to treat a number of illnesses. They have been quite successful in treating tuberculosis, malaria, gonorrhea, syphilis, and diarrhea. They have also been successful in alleviating many of the horrible symptoms of AIDS patients.

In Zimbabwe, traditional healing is gaining respect and healers are playing a large role in looking for a cure for AIDS. From 1992-1998, the Zimbabwean health budget declined by 40%, which resulted in less doctors in an already ailing country. By 1998, there was an estimated one doctor to every 85,000 patients. On the other hand, there was one traditional healer for every 20 people in Zimbabwe. Recognizing the imbalance and the ongoing problem with HIV/AIDS, the Zimbabwean government passed the Traditional Medical Practitioner's Act in 1989, which was the first time an African government had legalized and endorsed traditional healers as professional medical practitioners. Earlier, in 1980, the Zimbabwe National Traditional Healer's Association, or ZINATHA, was formed to unite healers and to bring recognition to traditional healing. In 1998, ZINATHA had 50,000 members from within the country.

ZINATHA has begun attacking some of the foremost problems dealing with HIV/AIDS in Zimbabwe because currently more than 20% of the Zimbabwe population is infected. A major problem that must be dealt with before we even consider a cure, is the lack of education. ZINATHA has classes for its traditional healers so they can learn to teach their patients effectively about HIV and how it is spread. Conventionally, healers have used methods that include biting and cutting with razor blades, and ZINATHA is teaching them alternatives so they are not transmitting the disease themselves. ZINATHA acknowledges that doctors are scarce in Africa and makes traditional healers readily available to everyone and cheap enough to afford. They have at least nine offices in each of Zimbabwe's eleven provinces. Because western medicines must be put through

rigorous research and testing, the medicines are quite expensive, but traditional healers often will barter for second hand clothes and animals. Lastly, ZINATHA has formed Zinatha Enterprises, which is a registered company that has begun manufacturing, packaging, and selling traditional medicines that have been approved by the regional Drug Authority and the World Health Organization (WHO).

Recently, the world has begun respecting traditional healers more and realizing that they may be just as important in finding a cure for AIDS as western doctors are. A plant that traditional healers have used for hundreds of years called Sutherlandia Frutescens, is now being researched as a possible cure for AIDS. It grows wild in Africa and was vital in the 1918 influenza pandemic, has helped with many sexually transmitted diseases, cancer, diabetes, and schizophrenia. It is an antiretroviral agent that is promising in the fight against AIDS. Traditional healers have used it on AIDS patients that have progressed to the final stages of the disease, and have noticed that their patients have gained weight and regained energy and their appetite, and live much longer than expected. Currently in Africa, people can get a month's supply of this plant in pill form for $2.50.

**MOTIVATIONS AND GOALS:**

I have wanted to be a doctor since I took Human Anatomy my sophomore year in high school. I have worked very hard over the years to get where I am, but just recently have I felt a real pull towards a certain area. A few years ago, I read about the Smile Train, which is a group of volunteers consisting of doctors and nurses and other health care professionals that travel to third world countries and fix cleft palates for children that would otherwise live with the deformity. Since then, I have read about other such groups, like Doctors Without Borders, and I am continually impressed that people volunteer their time and expertise to such a cause. Over these last few years, I have developed a yearning to do something similar and although I haven't picked my actual subspecialty, I know that I would like to do some volunteer work in other countries.

I have traveled twice to foreign countries and both experiences have been quite rewarding. In both Italy and Australia, I learned a lot about myself and other cultures, but I am aware that both of these countries are Westernized and really did not offer that much of a culture shock. When I began medical school, I decided that somewhere in my schooling I would go to Africa and volunteer to make sure I was ready for the commitment later on in my career. I understand that the difference in culture, the poverty, and the overly rampant disease make it hard for a person brought up in middle class Kansas to adjust. I do not want to make the commitment to volunteer in a third world country without knowing that I am cut out for it, because it would not be fair to myself nor the people I committed to help. I decided that I would find a way to travel to Africa this summer to do some volunteer work, and figure out whether I really wanted to commit my career to this.

Another thing that I have been quite sure about my future career is that I want to incorporate alternative medicine into my practice. It bothers me that so many Western doctors so easily dismiss alternative medicine as a joke. Just because Western medicine has the science to back up its validity does not make it more valid than other medicines. There are many eastern methods, Native American methods, and tribal methods of Africa

that have worked for hundreds of years, but we discount them simply because we can not find scientific evidence to back them up. Western doctors need to change though because Western society is changing. Americans make more visits to nonconventional healers than to regular medical doctors and have to pay more out of their own pockets according to a recent Newsweek headlining article. This indicates that we should take a more holistic approach to medicine.

My desire to go to Africa and my desire to incorporate traditional healing into my practice came together naturally when I heard about the Clendening Summer Research Fellowship. I knew that traditional healing was widespread in Africa and becoming more and more important in the search for a cure for AIDS, and I realized that I could go volunteer in Africa and research their traditional healing techniques at the same time. So I came up with some goals for myself.

1. Go to Africa and figure out whether volunteering is a commitment I want to make.
2. Go to Africa and learn to integrate Western medicine and traditional healing.
3. Go to Zimbabwe and find how effective traditional healing can be in people with AIDS.

**METHODS:**

The first thing I knew that I needed was a place that I could go in Africa to conduct my research and to do some volunteering. I didn't know anyone with contacts in Africa and I quickly began to realize that making a contact on a whole other continent was not going to be easy. I began writing and having meetings with anyone whom might have been able to help me. I emailed countless people in Africa that were affiliated with clinics and different research projects. I contacted the World Health Organization because I knew that they are working on making traditional healers equal to medical doctors in the fight against AIDS. I talked to anybody that I knew that had any ties to Africa and I was constantly getting disappointing results. Finally, I was explaining my project to an uncle of mine who said that he had a client that went every year to volunteer at a Christian mission in Zimbabwe that was associated with a 60 bed hospital. My uncle contacted him and he gave me Dr. Steve Lemons' name who is a family practice doctor in Wichita, Kansas.

Dr. Lemons has help to set up this 60 bed hospital in Zimbabwe which is run completely by Zimbabweans, but often has American doctors and medical students volunteer. I contacted Dr. Lemons and he was excited to have me come this summer to volunteer, and he thought it would be a wonderful place to conduct my research. Zimbabwe was the first country to legalize traditional healing and recognize it as a professional medical practice. At the beginning of June, he and about eleven other doctors are traveling over there themselves on a medical mission and he offered that I come along with them. They will only be there for two weeks, but they will be able to introduce me to the area, the hospital, and the people. Dr. Lemons told me that once I am there that I will be able to deliver babies, stand in on surgeries and see diseases that have been eradicated in the United States. Hopefully, working at this hospital will help me to answer goal number one, whether I am ready to commit myself to this volunteer work.

Here I would like to introduce the fact that part of my method to making this research project sound is that there will be another research project occurring that will make mine

more significant. Casana Siebert is proposing a separate, independent research project on problems with access to Western health care in Zimbabwe. Although, these two projects are separate, we believe that the results of one will make the results of the other more meaningful. The role that traditional healing is playing in people with AIDS in Zimbabwe cannot truly be understood without understanding first the problems that Zimbabweans have with access to health care. I know that this is an important variable in the research, but I also know that I would not have the time nor the resources to conduct both projects on my own. My project could be performed without Casana's project making it an independent project, but the results would not be adequately appreciated. Therefore, I wanted to introduce Casana's research here.

The method that I would like to employ for my research project, is to interview at least ten patients that receive traditional healing and are HIV positive and to interview at least ten traditional healers. As stated above, Zimbabwe has instituted ZINATHA which has nine offices in each of Zimbabwe's eleven provinces, so finding both patients and healers should not be difficult. I know that I will have the means to travel within the country and the clinic is just outside of Harare, Zimbabwe's capital, so this task should not be difficult. I have prepared a list of preliminary questions to ask both patients and healers. English is the official language in Zimbabwe and 85% is literate so there should be no language barriers. Here are some of the questions that I would like to ask the patients:

1. When were you diagnosed with HIV?
2. Do you know how you contracted HIV?
3. What has been the general progression of your disease?
4. How educated were you about HIV and how to contract HIV before and now?
5. What treatments have you used thus far?
6. What factors helped you choose your treatments?
7. How close do you live to a Western doctor?
8. How close do you live to a traditional healer?
9. How much money do you make?
10. How much money do you spend on treatment?

Here are some questions that I would like to ask some of the traditional healers?

1. What percentage of your patients are HIV positive?
2. What are you concerns related to treating patients that are HIV positive?
3. How effective do you feel you treatments are?
4. Do you feel like there is a cure in sight for AIDS?
5. How do you feel about Western medicine?
6. How has ZINATHA educated you and helped you to educate others on HIV?

These are all very open ended questions and I hope that after I have been able to do some more research before I leave for Africa that I will be able to come up with some more detailed questions. I am confident that the answers to the questions will also lead to more questions.

Casana will be asking similar questions to patients of Western medicine and Western doctors.

**CLINIC BACKGROUND:**

Dr. Steve Lemons, a family practice doctor out of Wichita, Kansas, has been affiliated with the Nhowe Christian Mission for some time. The mission was established in the 1930's. The hospital has about 100 employees, which includes 15 nurses, a pharmacist, a physical therapist, an x-ray technician, one full time doctor, and a preacher. Currently, the hospital sees about 1500 patients weekly.

Among other programs that work to educate people about AIDS, there is a program that has just been implemented at the clinic called PIVAT which stands for Prevent Infant Vertical AIDS Transmission. About one-third of pregnant women in Zimbabwe are infected with HIV, and one out of every two babies born to an infected mother get HIV through transmission. PIVAT is a program that provides pre-natal counseling, nutrition information, and a drug that is given during labor that reduces the risk of transmission from mother to child.

**TIME FRAME:**

4-6 weeks

**BUDGET:**

Round trip flight from Kansas City to New York: $300
Round trip flight from New York to Zimbabwe: $1500-$2000
Lodging: $50/week ($200-300)
Food: $50/week ($200-300)
Traveling within country: $200
Extra spending money: $200-300

Total: $2600-3400

**PROBLEMS AND BOUNDARIES:**

I have conquered many of the problems that I was faced with when I began this project. I knew what I wanted to do and that I wanted to go to Africa, but I really didn't know anyone there. Dr. Steve Lemons is an amazingly kind man that is excited for our help and our research to be performed at the Nhowe hospital. English is the official language in Zimbabwe, so I should not have any language barriers.

I was also worried that I may not be able to put together a sound research project since I have never conducted my own qualitative research project, but I have enlisted the help of Dr. Delwyn Catley, who has much research experience and has kindly accepted to be my mentor for the research.

The main problem that I foresee is the lack of time and resources to do this project on the scale that I would like it to be done. Although, I believe our placement in Zimbabwe, home of ZINATHA, at the medical clinic will give me access to both traditional healers and medical doctors, I know the number of people that I will be able to sample will be quite small. I understand for a good research project, the sample should be much larger. Theoretically, the project would be much more interesting if it could be carried out on a larger scale, but I cannot employ people help with the research. Hopefully, I can

somewhat overcome this problem by using the time before I leave to contact ZINATHA and have appointments set up with healers and patients before I get there.

**FINAL PRODUCTS:**

When I return from Zimbabwe, I hope to have accomplished many things. First, I hope that the volunteer work that I do at the Nhowe hospital serves the people of Zimbabwe by helping them medically and educating them about HIV/AIDS. I expect to have figured out whether or not volunteer work abroad is something that I would be willing to make a commitment to once I am finished with school. I also hope that I will learn about some of the traditional healing techniques that are used in Africa so I can integrate that knowledge into my own practice, and have an open mind to learn about other culture's traditional healing practices. I would like to be an advocate and a teacher of alternative medicine amongst my colleagues because Western physicians need to open their minds to other useful methods. Lastly, I hope that I have finished a sound research project on traditional healing in Zimbabwe. I would like to know how effective the traditional healers are in dealing with AIDS patients and what factors contribute to a person's decision to use traditional healers in Zimbabwe. I want to learn how traditional healers view AIDS, and whether they foresee a cure in the near future.

Although all of these results will be interesting and gratifying, they will be made much more significant in my eyes with the results of Casana Siebert's project on access to Western health care in Zimbabwe. When the results of our projects are brought together and compared, they will be more meaningful. First, I would like to compare the effectiveness of Western health care and traditional healing in Zimbabwean AIDS patients and how patients choose their caregivers. I want to see how traditional healers and Western health care workers are working together to combat this problem. Africa may be one of the first places where these two subsets are cooperating to find a cure for AIDS. Also, I would like to see how Western health care workers view the AIDS pandemic compared to traditional healers and which, if either, is more optimistic and why. Finally, Casana's project will explain the need for my project. In the United States, unlike in Zimbabwe, we don't need to rely on traditional healers if we choose not to because most of us have access to medical care.

When I leave Africa, I believe my eyes will have been opened to the gravity of the AIDS problem amongst many other problems that Zimbabweans face. I know this will be a culture shock for me, but I think it is necessary. Hopefully, after my four to six weeks in Zimbabwe, I will have helped people there and I will be a better doctor, but more importantly, a better person.

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2003 Clendening Fellowship

# The Foundations of Research; A Spanish Experience

A Proposal for Scientific Study and Self-Reflection

Asma Latif

**Summary of Objectives:**

As a medical student I understand the importance of not only keeping current with but truly understanding the research that stands behind medical knowledge and breakthroughs.
This summer I hope to travel to Valencia, Spain to participate in a research lab conducting basic science research, in hopes of contributing to my personal and intellectual growth as a pupil of medicine.

**Background:**

As the field of medicine changes constantly in response to new research findings, it is clear that one must be aware of these scientific findings but must be additionally conscious of the social arenas from within which the research is developed. Basic science research provides avenues to test hypotheses in efforts to create new understandings regarding the world in which we live and the standards that govern our bodies. As a medical student exposed to much information and many papers that provide the foundation for my education and training, it is important to become familiar with the base of knowledge that contributes to my chosen field of study. At the same time, a valuable experience in terms of scientific study cannot be separated from the learning opportunities gained in the social and environmental contexts in which study is conducted. It is the combined effort of intellectual and academic growth with personal development and understanding that lead to the greatest of understandings.

As a medical student preparing to embark on my second year of basic science coursework, I feel as though I am laying the foundations that will be gradually built upon in my future clinical years. As I strive to learn and understand the fundamental principles involved in the normal functioning of the human body, I realize that I must also learn to apply my knowledge and relate it to my observations and experiences. While I will draw upon my basic science background in my later years as a basis for my understanding of illness and disease, I feel that just as important will be my ability to comprehend scientific reports, analyze current research and make my own conclusions regarding credible findings.

As a current first year medical student, I have little experience with lab research and technique. While I try to keep current by reviewing medical journals in my spare time, I lack the firsthand knowledge regarding the background work and skills necessary to scientifically test hypotheses in efforts to shed light on one's specific area of expertise. I have spent time in labs during my undergraduate years and have been exposed to most basic lab techniques but realize that I have much to learn about in this field that is so important to medical advances. As the basis for our medical knowledge, it seems only logical that heightened understanding of the research that contributes to the field of medicine will lead to

greater personal development of a physician who relies on external observations to carry out his or her role.

In addition to becoming familiar with the process of basic science research, it is also important to understand just what it takes to publish this research. As a student interested in literature and writing, I feel somewhat compelled to become familiar with scientific publications. Working in a lab, one is surrounded by distinguished researchers, graduate students and other workers that can be used as wonderful resources and advisors. The expertise they can provide as mentors is of the sort that is hard to come by without making personal connections with people in the field. It is in this environment that medical students have the greatest opportunities for learning about the nature of the format of published research, steps necessary in submitting a paper for publication and the process of peer review. Although not all work by students in research labs results in publication, it does usually result in personal advancement that often can ease the process of co-authoring a paper in the future. This skill is one that can be quite valuable for anyone, but especially for physicians who are interested in conducting research and/or presenting their expertise in the form of written or oral papers.

Skills learned during the course of any training are useful in most future careers. But it is not solely the skills that one learns in the classroom or in lab that further one's education. The resources one has available to him or her often play a major role in personal development and growth. These resources go far beyond what is learnt in the classroom or lab setting to encompass the people one meets, the literature one reads and the places one has access to. A researcher in a lab in one city has different experiences and observations than a researcher in a different city, just as a researchers in different countries are impacted uniquely by their surrounding environments. As a student hoping to travel abroad to work in a lab in Spain, I feel that I will have the opportunity to talk with colleagues and researchers that have had different experiences than those in Kansas City. These differing experiences lead to diverse viewpoints, perspectives and opinions and I feel that exposure to these ideas will only add to the wealth of knowledge and creativity available to me in my pursuit to become a well rounded physician who is able to make the most of her environment.

In a similar thought, as exchanges occur between people of differing environments, an exchange of thoughts and ideas is bound to be made. As physicians are becoming increasingly involved in the lives of their patients and in all aspects of their communities, it has become quite clear that good communication between oneself and the people one encounters is key to being successful not only in personal pursuits but in carrying out duties and responsibilities for society. As a student with a chance to immerse myself in another culture and another people, I look forward to heightening my abilities to communicate with and relate to a people that I may not be currently familiar with. In the future, I expect to encounter patients, colleagues, professionals and

supervisors from all walks of life and so currently hope to add a bit of cultural understanding to my persona in hopes to be able to make the most of these future experiences. In addition, as an American traveling abroad, I also feel that I will undoubtedly be a representative for my country, region and school and hope to impress upon the people I come in contact with the positive upbringing I've had here in Kansas City and at KUMC. In these times when so often miscommunication, or lack of communication completely, leads to trouble and conflict, I feel that nothing but good can come from someone's attempt to reach out and deal with humanity on a personal level, aside from work and school.

On the same note, my specific desire to travel to Spain stems not solely from an interest in the area and people but even more so from a desire to develop a greater fluency in Spanish. Just from my volunteer work at area clinics such as Silver City and Duchesne Free Clinic, I have come upon an extraordinary number of patients that speak Spanish as their primary language. In the U.S. there are currently 22.5 million people that speak Spanish; this is second only to Spain in regards to numbers of people fluent in Spanish. As a physician, communication is the key to good treatment, and often times when the physician is unable to speak to the patient in the patient's native tongue this communication is compromised. It just follows that, in the same manner, the health care provided may also be compromised. Judging by the need for physicians to become fluent in languages other than English, I am excited to be able to immerse myself in a locality where I will have the opportunity to gain greater fluency in Spanish and develop my communication skills with a Spanish speaking population.

## Objectives:

### Primary Objective:

This summer I hope to work with Dr. Erwin Knecht, PhD at the Valencia Institute of Sciences. There, I will be joining his research team on their project entitled "Effects of Carbamylation on the Stability of Insulin". As a protein that produces a variety of effects in target cells of the body, insulin is one of the main pharmacological focuses in the treatment for diabetics. With the increasing presence of diabetes in our society, the greater understanding of insulin and it's actions will play a vital role in the development of more successful treatments for diabetics.

As a student researcher, I will be expected to put to use my current and applied knowledge of biochemistry and perform cell cultures in lab. I will be in charge of carbamylating the insulin and testing this modified insulin against non-carbamylated insulin in cultured cells for any possible effects on protein degradation. In this way, I will assume an important role in the lab under the guidance of Dr. Knecht and the other researchers.

**Secondary Objectives:**

-In addition to the lab experience I will gain this summer, which I feel will positively affect the remainder of my time in medical school and beyond, I also hope to spend time with Dr. Knecht and the other distinguished members of his lab and those at the institute in efforts to learn more about the research side in the field of medicine and gain experience in dealing with scientific publications.
-I hope to make the most of the resources available to me, not only at the institute but at the University of Valencia, as I understand that the people and literature available to me there may not be accessible to me again in the future.
-As a representative of KUMC, Kansas and the United States, I hope to make a positive impact on the people I meet and relate to them on a personal level. The impressions I make will follow me back to Kansas City and will affect the dealings of future students and faculty members at KU Med with those at the institute, and I feel that I will be able to continue KU's respected name in Valencia.
-Last but not least, I certainly plan on making every attempt to communicate in Spanish while I am abroad and feel that spending an entire summer in Spain will greatly increase the ease at which I communicate.

As I have the chance to meet all of the above objectives, I feel that I will solidify my foundation as a medical student and will be able to develop my role as a future physician with grace. In order to maximize my learning opportunity abroad I plan to keep a series of 8-10 journal entries that can be used personally for future introspection and by others with similar aspirations as a resource. I plan to begin these entries prior to departing for Spain and conclude them upon my arrival back in Kansas City. As I travel abroad and experience something that few people have the chance to do, I will surely grow as not only a student but a person as well and hope to be able to record this growth in the best way I know how; my writing. In addition, I will complete a paper to be submitted to the Clendening committee and present a talk regarding my experiences over the summer and my project. I will also present my research at the 2004 annual Student Research Forum. As medical students strive to make the most of their education, I feel that my intended summer plans will provide me with the experiences necessary to develop as a professional.

**Overview of Plan**

Contact: Dr. Erwin Knecht, PhD., Valencia Institute of Science
Arranged by Dr. Bast, KUMC and the Summer Research Training Program

Time Frame:
April-May: Background readings/research about specific project.
Complete first of journal entries

June 2-July 31: Complete 8 weeks of research in Valencia, Spain. Compile further journal entries.

August: Prepare Clendening presentation/paper about summer research. Complete last of journal entries. Compile summer research and prepare SRF presentation.

**Budget:**

| | |
|---|---|
| Rent(Apartment Lease) | $960 |
| Roundtrip Airfare | $1100 |
| Accommodations in Valencia | $1300* |
| Local Transportation | $300 |
| Food | $600 |
| Total | $4260 |

*Estimate of my obligations for rent of a two-bedroom apartment for two months in Valencia.

I understand that the budget exceeds the amount offered with the Clendening Award. I have secured funding for my rent expenses in Valencia as well as approximately $500 toward my airline ticket. This is approximately $1800. The difference in funding that I receive and my actual expenses will be paid for out-of-pocket, as I am working through medical school and can potentially direct some money to this project.

# Women's Perspectives on Sexual Education Between Two Social Classes in Bolivia

By: Mayra E. Sanchez
University of Kansas Medical Center

**Clendening Fellowship Proposal**
**06 January 2003**
**Faculty Advisor: Martha Montello, PhD**

## Introduction

Although completely avoidable, unplanned pregnancies are a result of several factors, such as lack of sexual/contraceptive education, lack of resources, social unacceptance of talking about sex, and social class. However, the weight that each factor bears on the frequency of unplanned pregnancies differs between environments. It is of no surprise that in a poor country, such as Bolivia, the prevalence of unplanned pregnancies is even greater than in developed countries. The responsibility of sexual education has three primary sources: the family, the school, and the doctor. My objective for my research will be to analyze the latter two. Specifically, the purpose of my project will be to assess the level of sexual/contraceptive education of female high school seniors in two different schools: the affluent *Liceo Anglo-Americano* in Cochabamba, and the rural high school *Liceo 12 de 25 de Mayo* in Vinto, Bolivia. To further my analysis of this issue, I will also assess women's perspectives on their sexual education provided by their doctors via interviews conducted at *Hospital Obrero de La Paz*, a hospital which primarily serves the indigenous population of the area. Additionally, I will also interview doctors and question their role in sexual education. I will explore what social factors impede women from acquiring or utilizing the necessary information to avoid unplanned pregnancies, and what women feel is lacking in their education of sex and contraception.

## Project Design

My primary method of gathering information will be via questionnaires and interviews with the students, patients and doctors. Additionally, using published data will also be a key method of gathering information. I will design an anonymous qualitative questionnaire asking the students about their perspectives on their sexual education, their knowledge of contraception, about their upbringing, who they perceive holds responsibility for contraception (male or female), and what resources they have to learn about contraception. I would like the responses to be open-ended, therefore, I will limit the amount of Yes/No questions. The same questionnaire will be given to the two groups of students. Additionally, I will interview individuals during their lunch recess and ask why they think there is such a high prevalence of unplanned pregnancies in Bolivia. The main variable that I will be accounting for is social class, as the two schools that I have chosen have vastly different economic resources. The *Liceo Anglo-Americano* is a private high school attended by female students of the richest families in Cochabamba. On the other hand, the *Liceo 12 de 25 de Mayo* is a small all girls high school in a small village a few miles from Cochabamba. By using these two schools as my sample, I will be able to assess the difference in sexual education between these vastly different social classes, and how each social class perceives their education on sex and contraception. Because the questionnaires will be handed out during a class, I will be able to obtain several responses. I hope my sample size to be at least 25 for each school. This part of my research will account for social class as a variable in sexual education. The other variable that could account for lack of sexual education is access to schools. Since I will be conducting research at the high school senior level, this variable will be controlled.

The second part of my research will be to assess the quality of sexual education provided by doctors. There will be two approaches: 1)interviewing female patients as they leave the doctor's office and 2) interviewing doctors and other clinicians on their role in sexual education. The questions I will ask both parties will pertain to the choices of birth control offered, whether or not patients would use birth control if offered, and the comfort level of talking to their health care providers/patients about sex and contraception. This research will be conducted in the *Hospital Obrero de La Paz*. I will aim to conduct enough interviews to gather 10-15 responses from patients as well as doctors. Once again, this will be a qualitative study, in which interviews will include open-ended questions, and the responses will be analyzed after all data has been gathered.

The problems that could arise will, I believe, be primarily due to the comfort level of subjects with this topic. In order to alleviate this, all questionnaires given to the students will be anonymous. Additionally, subjects at the hospital will be taken aside, where the interview will be conducted in privacy. Also, although I am fluent in Spanish, there may be some error in translation from Spanish to English when analyzing my work. I will also be relying on the honesty of the subjects that I interview.

If accepted for this project, I will need to acquire IRB approval in order to interview subjects in Bolivia. I am aware of this requirement and will comply if circumstance indicates its completion.

## Interest

My cousin in Bolivia recently gave birth to a beautiful, yet unplanned, baby girl. I am convinced that had she had the proper sexual education, she would have waited for this blessing until a more stable time in her life. This incidence, in addition to my experience working in a woman's health clinic upon graduating from college, had me question why unplanned pregnancies are so prevalent. Although it would be easy to say that not having sex is the most effective way to prevent unplanned pregnancies, in a country like Bolivia where 95% of the population is Catholic and supposedly does not believe in premarital sex, the incidence of unplanned pregnancy is much more than they care to admit. A study I read indicated that 17-24% of maternal mortalities in Bolivia are due to abortions, and in a recent HPDP lecture, Dr. Terry Hung stated that abortions account for the highest percentage of maternal mortality world-wide. For these reasons, I believe that it is crucial to develop a better approach to talking about sex and contraception. After speaking with two of my cousins from Bolivia, they both expressed that their education about sex and contraception is lacking, and they come from an educated family. If, at their social class in society, they do not have the proper education, then I believe that other women are less likely to have any education on this matter.

In addition to my past experience, my future goals have helped me develop my objective for this project. My ultimate goal is to make a difference in a primarily Spanish-speaking underserved community in the United States. At this point in my education, I see myself as a doctor in an OB/Gyn clinic, helping women empower themselves by providing non-judgemental, compassionate, efficient and effective care. I believe that doctors play a

huge role in a woman's sexual education. If given the opportunity, completing this project would give me a superb amount of knowledge about sexual education and how I could most effectively use my role as a health care provider to help women avoid unplanned pregnancies.

## Logistics

The Hospital Obrero de La Paz is located in La Paz Bolivia. So far, I have been in touch with Dr. Mauricio Araoz, who has enthusiastically accepted to help me with my research, and is a doctor at the Hospital Obrero de La Paz. This hospital receives monetary support from the government and has been well established for over 50 years. While in La Paz, I plan to stay with my cousin and his wife. They have graciously opened their doors to me and are not asking for monetary compensation for either room or board. Their home is a 15 minute bus ride away from the hospital.

I will conduct the second part of my research at the Liceo Anglo-Americano which is located in a safe neighborhood in the northern part of Cochabamba. The Liceo 12 de 25 de Mayo is located in Vinto, a 35 minute bus ride on the outskirts of Cochabamba. During this time, I will be staying in Cochabamba in a one bedroom flat that my family has used many years ago. The owners have assured me that it is vacant and welcome my return. Fortunately, there is also a "pension" two blocks down, where they prepare food specifically for foreign travelers staying in Bolivia, and each meal is about $3.

I have also spoken to several of my extended family and they have offered their support in my project. My objective is to conduct my research independently, and with integrity, so I will be using their resources only when necessary. However, if I run into any problems, or have any questions, they could serve as an excellent source of help.

## Proposed Budget

I will be conducting my research within 3 weeks. Half of the time, I will be in La Paz and the other in Cochabamba, therefore I will only need to pay for room and board for 1.5 weeks. Additionally, although my primary purpose is to conduct this research, I will be staying an extra 3-4 days to spend with my aunt. For this reason, I have subtracted $200 from the plane ticket. Once again, I reiterate, my primary purpose for being in Bolivia is to see my research project through.

| | |
|---|---|
| Food | $100 |
| Room | $250 |
| Transportation (airfare) | $1000 |
| Transportation (to work site) | $150 |
| Work Supplies (Photocopies, writing utensils for students, etc.) | $100 |
| ***Total*** | ***$1600*** |

## Conclusion

When I attended the first Clendening Fellowship lecture series, I instantly knew that this would be something I would love to do. With this project, I could learn about what is behind the large number of unplanned pregnancies in Bolivia, I could better understand why my cousin and so many other women find themselves pregnant when they are not in a stage in their lives to easily provide the resources necessary to raise a child. Additionally, such an experience would help me decide whether or not I want to pursue a Master in Public Health in the future. With my motivation to accomplish this research and learn about these issues, if given the opportunity, I will work hard to conduct this project to the best of my ability.

# The Accessibility and Effectiveness of Western Medicine in Treatment of HIV/AIDS in Zimbabwe

Clendening Summer Fellowship
Research Proposal
January 2003

Casana Siebert

Casana Siebert
Clendening Fellowship
Research Proposal
January 2003

## Background

There are an estimated 42 million people living with HIV or AIDS in the world today. In 2002, 3.1 million people died as a result of this disease. As HIV and AIDS spread around our globe, so does international aid to those countries that are being hit the hardest by these diseases. In 2002 alone, approximately $3 billion dollars were disbursed to low- and middle- income countries from private, national, and international sources (UNAIDS 2002). Africa, with only 10% of the world's resources, has 70% of the world's HIV/AIDS victims and is still struggling to control the spread of this disease among its citizens (Li Tao 2002).

Within Africa, the distribution of those infected with HIV/AIDS is uneven. According to the most recent estimations made by the World Health Organization, 8.8% of all Africans are infected with HIV or AIDS (WHO 2000). Only 7.8% of Tanzanians are infected with HIV or AIDS while neighboring countries have much higher prevalence rates (UNAIDS 2002) The effects of this disease are still felt in Tanzania, yet one must wonder why the infection rate in this country is so much lower.

Antiretroviral (ARV) drugs are the western treatment method of choice for control of HIV/AIDS. Without ARV treatment, on average, a person with HIV could survive for 9-11 years after infection. With treatment, productive years of life increase and survival time is substantially longer. The most commonly cited reason for limited access to antiretroviral drugs within Africa is unaffordable cost (UNAIDS/WHO 2002 and Ngalula 2002). Neviripine is also being used aroun d the world to prevent transmission of HIV/AIDS from infected, pregnant women to their unborn children

For much of the HIV/AIDS population in Africa, traditional healers provide more affordable and more accessible treatment options. While traditional herbs' effectiveness in altering the progression of HIV has yet to be proven, studies have shown that depression rates among HIV/AIDS patients using phycotherapy (traditional herbs) are lower than rates among those using ARV treatment and those not receiving treatment (Sebit 2002). Traditional healers are gaining respect in Tanzania as they assist in HIV/AIDS prevention, treatment, and research. There are multiple research centers in Tanzania that are currently looking into the effectiveness of traditional treatments. Two such centers are TAWD in northeastern Tanzania and another in the Hospitali Upanga.

Though accessibility and affordability seem to be serious barriers for those in need of treatment, UNAIDS has listed "stigma and discrimination" as "the major obstacles to effective HIV/AIDS prevention and care" (UNAIDS 2002-2003). People with HIV/AIDS may be denied health care services, housing, and/or employment. People with, or suspected of having, HIV/AIDS are often ostracized by their families, and some suffer the effects of physical violence. As a result of the stigma and discrimination attached to HIV/AIDS, many people will not be tested for the disease or if diagnosed,

will not seek needed treatment. Prevention efforts are also less effective, because many people refuse to talk about the disease, and some, due to fear of being diagnosed, spread it unknowingly. The UN's World AIDS Campaign of 2002-2003 is focusing on eliminating stigma and discrimination under the slogan "Live and let live" (UNAIDS 2002–2003).

Within Dar es Salaam, Tanzania, there is a university hospital, Hospitali ya Upanga. This hospital is somehow also affiliated with The Muhimbili Medical Centre. Contact has been made with Dr. C.S. Yongolo at this institution. He has agreed to help us in finding the resources necessary to complete our projects. The hospital not only provides care for HIV/AIDS patients, but also contains a research center focused on AIDS treatments, including both Western and traditional treatments. At this site I hope to volunteer while conducting informal research in order to determine:

1) What treatments for HIV/AIDS, based in western medicine, are available to the public sector of Dar es Salaam, Tanzania and at what cost?

2) What is the perceived effectiveness of each of these treatments?

3) What are the factors that contribute to the type of treatment chosen by an infected individual?

4) What are the factors that contribute to the accessibility of treatment?

5) What roll do stigma and discrimination play in accessing and providing treatment for HIV/AIDS?

I would also like to take the opportunity to talk with a number of Tanzanians about their perception of education efforts with relation to transmission of HIV/AIDS.

**Motivation and Goals**

I have had an interest in international medicine for many years, and I hope to one day incorporate this interest into my career. As I look ahead to which field of medicine I will choose to enter, it seems impossible to make an informed decision without experiencing first hand what each entails. Volunteering in a hospital in Tanzania this summer will allow me not only to witness international medicine as it is practiced (in one part of the world), but also to see what effect one individual is capable of having against a problem that from here seems insurmountable. I want the opportunity to understand the overwhelming emotional aspects for health care workers treating HIV/AIDS patients when there seems to be so little hope, so little money and so little help. I would like to contribute some of my time and energy to battling this epidemic. In addition, studying within a clinic where established traditional AIDS research is already going on would be an invaluable experience, yielding research skills and a better understanding of what some alternative treatments have to offer.

As I learn more about the current epidemic of HIV/AIDS, I wonder how this disease will ever be brought under control. I read about the growing numbers of those infected and the increasing financial aid being sent around the globe to help fight this disease, and many questions enter my mind. I want to see what the millions of dollars being spent are paying for: Are prevention efforts obvious and/or at all successful? Are a significant number of patients being treated effectively? I want to know what methods, both western and traditional, are currently being used to treat this disease. I want to know not only how effective these methods are proving, but also if patients receiving this care feel that their treatment is effective. I would be interested to see how care is distributed, and if distribution is need based how need is determined. I would be interested to learn how health care workers are responding to this epidemic, and what concerns they associate with providing care to those infected with HIV/AIDS. In response to the UNAIDS "Live and Let Live" campaign, I want to learn whether or not stigmatization is actually a significant barrier to receiving care when inability to pay for treatment seems to be such a prevalent obstacle.

Obviously, a single person cannot answer all of these questions in a summer. By observing practices in a Tanzanian hospital, though, I may be able to qualitatively formulate a number of ideas that will serve as answers, and thus a framework, allowing me to better sift through the data generated by other researchers. I have limited the number of questions that I will focus on within this project so that more complete, accurate results may be obtained. In addition, a colleague of mine, Megan Frost, is proposing an independent research project, which would provide answers to a further subset of questions dealing with traditional medicine use in Tanzania. Through her research, Megan hopes to learn about traditional methods used to treat patients with HIV/AIDS, how effective these methods are, and what they cost. She is also interested in determining what factors lead patients to traditional healers. By combining the results of these two research projects, a greater understanding of the coexistence of two forms of medicine may be gained and appreciated.

**Methods**

Four weeks will be spent volunteering and observing in the hospitali ya Upanga in Dar es Salaam, Tanzania under the supervision of Dr. C.S. Yongolo. During the first portion of this time, HIV/AIDS patients will be sought out who are willing to be informally interviewed, as will local health care providers who work directly with HIV/AIDS patients in a hospital or clinical setting where primarily western medicine is practiced.

Once willing participants have been identified, personal interviews will be conducted with each. Unless permission to tape the interview is granted by the participant, notes will be taken manually to record the responses given to the posed questions.

Questions that I would like to ask of the patients include:

- When were you diagnosed with HIV or AIDS?
- How did you contract this disease?
- In your own words, describe the progression of your disease since diagnosis.
- What treatment have you received for HIV/AIDS in the past?
- What treatment are you currently receiving for HIV/AIDS?
- How did you choose the current treatment option? What factors influenced your decision?
- What is the cost of your current treatment?
- What is your household income?
- How far do you live from the source of your chosen treatment?
- What are your feelings with relation to the care that you receive? Do you feel that it is adequate? Do you feel that it is helping you in some way? What do you wish could be different?
- Do you feel that you are discriminated against in the healthcare setting? In the community?
- Do you think that a cure for this disease will be found soon?
- What did you know about the transmission of HIV/AIDS before you contracted the disease?

Questions that I would like to ask of the healthcare providers include:

- What percentage of the patients that you care for have HIV or AIDS?
- What are your concerns with relation to treating patients with HIV/AIDS?
- What types of treatment for HIV/AIDS are offered at the clinic/hospital where you work?
- What are the costs of these treatments?
- What are your feelings with regards to the effectiveness of the care that you are able to provide?
- What factors influence which type of care is offered to a certain patient?
- Do you perceive discrimination in your community against those infected with HIV/AIDS?
- How does discrimination affect diagnosis and treatment?
- Do you think that a cure for this disease will be found soon?

Once all interviews have been conducted, gathered data will be compiled and used to answer the posed questions:

1) What treatments for HIV/AIDS, based in western medicine, are available to the public sector of Tanzania and at what cost?

2) What is the perceived effectiveness of each of these treatments?

3) What are the factors that contribute to the type of treatment chosen by an infected individual?

4) What are the factors that contribute to the accessibility of treatment?

5) What roll do stigma and discrimination play in accessing and providing treatment for HIV/AIDS?

Answers to these questions can then be further compared and contrasted to answers to a similar set of questions posed by Megan in her proposed project, which would take place concurrently from the same hospital in Tanzania. When looked at individually, Megan's and my projects will offer data that may clarify the current state of health care use, accessibility, affordability, and effectiveness for an HIV/AIDS population. If these projects are considered together, we could also offer a picture of how separate, yet overlapping systems within a country are working to battle the same disease, and how each of these systems (Western and Traditional) is being received by those in need of HIV/AIDS treatment.

**Budget**

| | | |
|---|---|---|
| Roundtrip airfare: | $2000 | |
| Food: | $200 - $300 | |
| Lodging: | $200 - $300 | |
| Transportation: | $250 | (In country) |
| Total Estimated Cost: | $2,650 -$2,850 | |

-Expenses not covered by fellowship will be paid out of pocket-

**Timeframe**

4 weeks

**Problems and Boundaries**

One of the primary boundaries of this project is the timeframe within which I must work. As a result of the limited time and resources available for this project, the number of patients and providers that I will be able to interview is few. It is possible that finding patients and providers within two weeks who are willing to talk openly with me will be a challenge. Hopefully, conducting research within a medical setting will facilitate finding interviewees.

Culture shock is also an anticipated problem. Clearly the state of health in Tanzania is much more deprived than I have experienced before. Before leaving, a meeting will be conducted with Dr. John Janzen, who is a medical anthropologist at the University of Kansas. He has agreed to assist in preparing for the alternate culture and

people there within as well as discuss our proposed projects. Upon arrival in Dar es Salaam, Walter Bgoya, who is our contact in Tanzania, will meet us. He is a KU alumni and has offered to assist us in our endeavor.

Language may or may not present as a problem. The national language is Swahili, but English is also widely used. An effort to learn some Swahili before departure will be made.

**Final Products**

During my stay in Africa, I plan to gather the data necessary to answer the posed research questions. Working in a hospital with multiple research centers active will provide an opportunity to learn first hand about current research methods and skills being used to advance the fight against HIV/AIDS. Volunteering in the Hospitali ya Upanga will give me insight into the obstacles faced by health care providers and perspective on medical problems in third world countries. I will see how the uncontrolled spread of HIV/AIDS impacts a community, and, through volunteering, I will hopefully learn how one person can make a difference on the front of such a ravaging pandemic.

Upon returning, gathered data will be compiled and my posed questions will have answers. Megan's results will be considered and an understanding of the interaction between Western and traditional healing methods will be gained. I will have the experience necessary to determine what role international medicine will play in my future career, and I will be able to bring this experience back into the classroom to share with my fellow medical students.

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1. AIDS Epidemic Update 1999.
2. Fact Sheet 2002: Meeting the Need.
3. Piot P;PhD (UNAIDS Executive Director). World AIDS Day Message 2002.
4. UNAIDS/WHO – 2002.
5. UNAIDS World AIDS Campaign 2002-2003.

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United Press International (UPI). AIDS worsening Southern Africa famine. United Nations 2002.

World Health Organization (WHO) Online Resources:

1. Epidemiological Fact Sheet: Tanzania. 2000 Update.

*Found at www.who.ch/emc/diseases/hiv or www.unaids.org

**Contacts**

Dr. John Janzen
University of Kansas

Walter Bgoya

Dr. C.S. Yongolo
Tumaini Comprehensive Infirmary
Hospitali ya Upanga

Clendening Summer Fellowship Proposal

Submitted by: Mark Symns, SOM 2006
April 4, 2003

## Introduction

When I was a sophomore in high school I got the notion I wanted to be an orthopedic surgeon into my head. In pursuit of this goal, I began spending time with an orthopedist in my hometown of Longmont, Colorado. I shadowed him for a number of years, observing him during office visits and in the operating room. To fulfill a graduation requirement set by my undergraduate institutions, I initiated and completed a summer research project under his guidance and supervision. From these experiences I learned substantial amounts about myself and about various aspects of a career in medicine. Shortly after beginning my medical education at the University of Kansas Medical Center, I realized the advantages of having a similar role model here. Such a person is helpful when seeking advice concerning decisions related to my medical career, and the continued exposure to the area of medicine I have grown to love would provide the perfect source of motivation during my didactic training. Having a constant reminder of what I am working towards would be invaluable during my first two years of medical school.

I heard Dr. Kim Templeton speak at an American Medical Women's Association luncheon and was impressed by both her knowledge and overall presence. Afterwards, I briefly told her of my interest in orthopedics, my past experience working in the field, and my desire to establish a contact in the department here at KU. She graciously offered to let me join her on occasion in both the OR and clinic, and I enthusiastically accepted. Because she specializes in musculoskeletal cancers, some of the problems and clientele she works with are entirely different than those of my previous mentor who specialized in sports medicine. In fact, previous to my working with Dr. Templeton, I had no knowledge of the existence of this area of orthopedics. In the little time I have spent with her, I have learned much about this specific area of orthopedics, including the technical, ethical, interpersonal, and of course, medical components.

## My Project

Because both of our schedules are busy, my time with Dr. Templeton has been scarce, and our time to discuss some of her more interesting cases even more scarce. I have been able to accompany her at work a couple of times a month, and our only time for discussion has been the few minutes between each patient. For my Clendening Project, with the help of Dr. Templeton, I will completely immerse myself in the role of the orthopedist who treats musculoskeletal cancers. This will be done using a three-stage approach which includes 1) self-education and preparation 2) observation, participation, and reflection, and 3) experience analysis and write-up.

The first component of self-education and preparation will be done throughout the last week of May and will consist several things, one of which will be reviewing the musculoskeletal anatomy taught to us in gross anatomy this past year, with a particular emphasis on the extremities. Such anatomical knowledge is the groundwork for much in orthopedics and a solid understanding of it will assist greatly in understanding disease processes, rational behind physical exams, and surgical procedures in the field. I will also introduce myself to cancers of the musculoskeletal system by reviewing that section of material from the second year medical student curriculum. And thirdly, I will review the steps of the musculoskeletal examination and taking a focused history that were taught to us this year in Introduction to Clinical Medicine. Again, this would be beneficial for more fully understanding the medicine I observe during my time with Dr. Templeton, in addition to enabling me to participate in the examination and diagnosis of patients.

For the second component I will spend three weeks at the beginning of June working with Dr. Templeton in both the clinic and operating room. Patients are seen at KU on Monday and Thursday mornings and she has operative cases throughout the day on both Tuesday and Friday. I will observe and possibly participate in conducting patient histories and physical exams during office visits and will scrub in, observe, and participate in any way possible during surgical cases. During this time, I intend to pay particularly close attention to the similarities and differences between Dr. Templeton's orthopedic practice and the one I have worked with in the past, noting the unique cases and treatments involving musculoskeletal cancers. At the end of each day I will record a brief history of the day's activities and my thoughts relating to them in an attempt to organize and process what I am observing and learning. These entries will be handed in as part of my final written presentation.

The third and final component of the project will consist of compiling what I learned during my experience into a formal written and oral report. I anticipate it will consist of medical knowledge, how the treatment of cancers differs from sports medicine in orthopedics, what is involved in pursuing that area of medicine, and whether or not it is something I see myself doing.

**People Involved With This Project**

Clearly Dr.Templeton will be my main correspondent for the project and other questions related to the Clendening guidelines will be directed to Dr. Montello or Dr. Crenner.

**Approximate Timeline for Project**

May 26 through June 25.