SCOLMA Annual Conference 2016



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Tuesday 6 September 2016

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The PROMETRA International Journey: Traditional Medicine in Africa



PROMETRA International

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The PROMETRA International Journey: Traditional Medicine in Africa

Erick Gbodossou¹, Kofi Kondwani², Theresa McGhee³, Virginia Floyd⁴ and Amad Diop⁵

Abstract: PROMETRA has spent the past three decades working with practitioners of traditional medicine, policy makers, academics and NGOs to assure that the indigenous knowledge of African traditional medicine is documented, validated, protected and appropriately shared. PROMETRA International and its 20 national African chapters work to preserve African traditional medicine through the use of scientific research for validation of traditional medicines; advocacy and policy for legal regulation of traditional medicine practice and intellectual property protection of indigenous knowledge; and education to build bridges between western and traditional medicine systems. This long and difficult journey has been met with the lack of understanding, disrespect and distrust of African traditional medicine and traditional knowledge systems by many sectors. PROMETRA International with support of UNDP conducted a review of the legal status of traditional medicine throughout the continent of Africa and presents model legislation for its incorporation into the national health care systems. Scientific research efforts supported by the Bill & Melinda Gates Foundation, Ford Foundation, European Commission and others allowed PROMETRA scientists to demonstrate safety and efficacy of African traditional medical products for HIV, Ebola, diabetes and dermatosis. Through its educational curriculum, FAPEG, PROMETRA International has trained more than 18,000 practitioners of traditional medicine with its scientifically based, culturally and linguistically competent curriculum in the areas of MCH, nutrition, natural family planning, oral rehydration of infants, HIV/AIDS, immunization and public health sanitation. Constructing traditional medicine huts next to public health dispensaries allowed the documentation of referral patterns between traditional healers and public health providers in Senegal, and more importantly expanded bridges of mutual respect for both health systems. Documenting the knowledge and recording the "voices of the keepers of this knowledge" for future generations is a critical component of its work which is a unique legacy to future generations and an addition of vital information to the academy realm.

Take this journey with us and better understand the traditional medicine system which as stated by WHO "provides health care and health education to approximately 80% of the population of sub-Saharan Africa". Meet these wise traditional elders, their apprentices, their academic partners and most importantly the communities that they serve.

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The PROMETRA International Journey: Traditional Medicine in Africa

We greet you in the light and love of our ancestors

African Traditional Medicine Introduction

The continent of Africa is the cradle of humankind, the birthplace of the first human being. "Traditional medicine is as old as humanity, as ancient as pain". This legacy is written throughout the timeline of history with clear demonstrations of facts that leave no doubt of Africa's role in the science of medicine.

The beginning of dynastic civilization in the African kingdom of ancient Kemit (Egypt) is about 4,300 B.C.

with the advent of the Old Kingdom. The originals of the oldest medical textbooks in the world, now known as the Ebers Papyrus and Edwin Smith Papyrus, date back to the Old Kingdom. Through these, and other documents on paper and carvings on temple walls, it is plainly evident that the essentials of anatomy, cardiovascular physiology, pharmacology, and surgery were already well advanced in Kemit 6,000 years ago. This level of knowledge and practice

continued down into Grecian times, prompting Homer in *The Odyssey* to say "In medicine Egypt leaves the rest of the world behind".



Surgical instruments and birthing chair carved on walls of the Kom Ombo Temple in Kemit 180-147 BC

After Egypt as a sovereign nation disappears from history (30 BC), advanced medical knowledge is discernible in other parts of Africa. The natural form of the antibiotic tetracycline was employed in the northern Sudan in the 4th century A.D. Cataract surgery is known in different parts of Africa from 1,000 A.D. on. The center of learning, Timbuktu from the 13th to 20th centuries, debunks the major

Timbuktu Manuscript 16th Century BC

misconception that there was no written language in early Africa. The manuscript (handwritten text) libraries of Timbuktu are significant repositories of scholarly production in West Africa and the Sahara. These documents covered topics including astronomy, medicine, mathematics, science, poetry, religion, commerce, law and social relationships created during the height of the Songhay Empire circa 16th century BC. There is a documented example of a

successful Cesarean section performed by traditional healers in Uganda in 1884. These examples of sophisticated medical knowledge

and practice could be multiplied with a careful and systematic examination

of the subject showing that, far from being a medical



Uganda Traditional C Section 1884

backwater as commonly assumed, medicine as we currently understand the term, begins in Africa.

The Context of African Traditional Medicine

It is estimated by the World Health Organization (WHO) that between 70% and 85% of the populations

of sub-Saharan Africa utilize traditional medicine and traditional health practitioners for their health care and health education. Allow us to put the size and population of Africa into clear context. Africa is a huge continent with a land mass of 30,221,532 km², the size of which allows the continents of Europe, China and the United States to be contained within as demonstrated by this illustrative map prepared by Boston University's African Studies Program. The population of Africa in 1500 is estimated to have been minimally 700 million persons, maximally 1 billion, which was decimated to 100 million by 1890 through the deportation and killings that occurred through the slave trade. In 400 years, Africa lost



approximately 86% of its population. The United Nations estimates a current African population of 1.2 billion. A system of traditional medicine and traditional practitioners has sustained the populations living throughout this huge continent since time in memorial.

The World Health Organization (WHO) defines traditional medicine as "the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness". Margaret Chan, MD, WHO Director General states, "..traditional medicines, of proven quality, safety and efficacy, contribute to the goal of ensuring that all people have access to care. For many millions of people, herbal medicines, traditional practitioners are the main source of health care, and sometimes the only source of care..". WHO's Traditional Medicine Strategic Plan for 2014-2023 has the major goal of promoting the safe and effective use of Traditional Medicine by regulating, research and integrating TM products, practitioners and practice into health systems.

What accounts for such a high usage of traditional medicine throughout Africa and the world? The commonly held reason of a lack of modern health providers is often given. However, it has been demonstrated that in many instances a traditional healer is the provider of choice in instances where both systems are present. Africa traditional healers are revered, respected community leaders. They are culturally competent being part of the communities they serve. Traditional healers are geographically well located at the village level, are found in much greater numbers than physicians or nurses, and culturally understood and highly respected. Ratios of traditional healers to patients range from 1:200 to 1:400, while physician ratios are in the thousands highlighting the lack of allopathic physician and nurse manpower. Traditional healers are the very first front line worker and the largest health manpower profession throughout Africa. Traditional healers oversee and direct the major life events of an individual and family – births, puberty rites, marriages, divorces, deaths and the moderation of family and village governance issues.

This indigenous African traditional medicine system has encountered many roadblocks to its continued development in recent history including the impact of slavery, laws imposed by colonialist rulers which

prohibited traditional medicine and made it illegal to practice, the negative impact of western systems of religion and education, apartheid and exploitation of traditional knowledge intellectual property. WHO recommends to UN member states that traditional medicine be legal, taught, and an official part of the national health care system – only four nations meet those criteria, none in Africa. It is within this system of African traditional medicine that PROMETRA International was established and works to preserve and protect these traditional knowledge systems.

PROMETRA International Overview

Recognizing that Africa was losing its traditional knowledge systems in face of increasing diseases, health inequities and social disarray that were devastating Africa, Dr. Erick Gbodossou created PROMETRA International in 1971. At this time African traditional medicine continued to be disrespected, maligned, misunderstood and sidelined by practitioners of modern medicine, health ministries and international organizations. Significant intervention would be required to halt the loss of these traditional knowledge systems and their practitioners.

Dr. Gbodossou is both trained in western medicine and initiated into Africa traditional medicine allowing him to walk credibly in both worlds. A physician trained in OB-GYN and psychiatry, he began his

traditional medicine training as a child and was initiated into the traditional knowledge system of Benin (Tado civilization). He went village to village throughout Senegal over many years to identify authentic traditional healers and then crisscrossed the continent identifying traditional healers and indigenous scientists to build the PROMETRA network.

PROMETRA is an international NGO headquartered in Dakar, Senegal, whose purpose is to preserve African traditional medicine, culture and indigenous science through research, education, advocacy and practice. It works to improve the health and wellbeing of global communities through the use of quality

PROMETRA African Chapter Network



traditional medicine and indigenous science, and building bridges between modern and traditional systems of health care. PROMETRA International has twenty-eight (28) chapters in Africa, Europe, the Caribbean and USA. Twenty (20) of those chapters are located throughout the continent of Africa. All chapters are officially recognized by their governments and maintain a national and regional partnership network that includes government ministries, academic partners, civil society organizations and grass roots organizations. PROMETRA International conducts scientific research, hosts international conferences and cultural exchanges, publishes a quarterly bilingual journal entitled *Medecin Verte*, and coordinates a diaspora wide network. PROMETRA International partners with academic institutions



throughout Africa, USA, Asia and Europe. It is a grantee of the Bill & Melinda Gates Foundation, the Ford Foundation, UNDP, European Union and other international funders.

The first important task of PROMETRA International was to build independent, effective, sustainable organizations that could be combined into a global network. Recognizing that scale, in addition to credibility, was crucial to moving African traditional medicine forward, PROMETRA's first chapter was formed in

1971 and it most recent, PROMETRA Zimbabwe, in 2016.

Facing the first obstacle of a complete misunderstanding of the system of African traditional medicine by western medicine, PROMETRA set out to clarify, document and share information on scope, components, values, and utilization of the system. Traditional African medicine is not equal to or comparable to western medicine in many ways. It is a holistic system based on a different set of logic and scientific principles. Unlike western medicine which defines man and diseases is a narrow pathophysiological structure, African traditional medicine, as most indigenous systems, defines health in the context of the patient, his family, community, ancestors and nature, and the equilibrium of that entire system. Faced with this difficult task of "translation", PROMETRA began to build bridges to academic, political and NGO institutions to share information in respectable formats. Building a communication system that has the range of being able to touch and influence the lives of villagers as they sit under the tree, and also impact the international scientific academy was the goal. PROMETRA International realized that it had to be become the advocacy voice for traditional practitioners across the continent – as their voices were not being heard, recognized, respected or understood. Its most recent communication initiative is the establishment of METRAF FM community radio station which has a Dakar broadcasting footprint. Each PROMETRA chapter maintains a network of journalists (REJOMETRA) which has been trained in the basics of African traditional medicine to improve the quality of accurate reporting. PROMETRA continually works to "tell the correct story" and often "rewrite" the misnomers and false information that is frequently spread regarding African traditional medicine.

But there were many additional obstacles along our PROMETRA International journey. Wide ranging acts of charlatanism were, and remain, a major obstacle to the work of PROMETRA International. Each PROMETRA national chapter is required to have an active and functioning anti-charlatanism committee which oversees professional behavior of traditional healing organizational partners. We address this issue through conducting quality scientific research that meets international western standards. This validation allows PROMETRA International to equally stand and work in modern academic circles. Each PROMETRA national chapter is required to have an academic university or research center partner. Major scientific research has been supported by the Ford Foundation, UNDP, European Commission, Andrew Young Foundation and the Bill & Melinda Gates Foundation.

Regional Research Centers

PROMETRA International maintains two major research and training centers: The Center for Experimental Traditional Medicine (CEMETRA) in Fatick, Senegal which was established in and the PROMETRA Uganda Forest Teaching School in the Buyiija Forest in Mpigi District, Uganda. Each center is staffed by organized traditional healers – Malango Traditional Healers Association of Senegal (550 members) and Buyiija Traditional Healers Group (240 members) under the



CEMETRA Research Center - Senegal

supervision of PROMETRA chapters. CEMETRA is located on 60 hectares of land and contains health offices, modern laboratory,

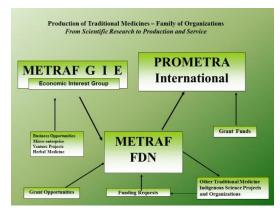
medicinal plant pharmacy, library, conference room, botanical garden and traditional healer consulting huts. A western trained physician is available for research purposes only, as traditional medicines are the only services provided in the centers. Referrals are made to appropriate health centers if necessary.

An analysis of pre and post matched patient data sets utilizing laboratory and physical findings revealed a 65% percent return to normal laboratory values post traditional medicine intervention [Ford Foundation & Morehouse School of Medicine]. In the past decade, CEMETRA has served over 30,000 patients.

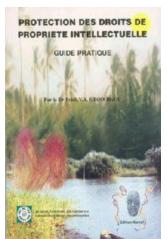
PROMETRA Uganda maintains a second PROMETRA research center at our Forest Teaching School where traditional healers, spiritualists, students of pharmacy and medicine, and student interns are trained. The forest school curriculum is divided into 3 years: The first year of the curriculum is dedicated to the study, identification, cultivation and preparation of 320 medicinal plants, as well as environmental conservation topics. In the second year the trainees study human anatomy and learn how to identify 40 common diseases such as diarrhea, different tropical fevers, infections and how to treat them with herbal medicine. They also learn to identify severe cases and how to refer patients to hospitals for further testing, for example in the case of cancer or HIV/Aids testing. In the third year the healers specialize into different areas such as herbal medicine, traditional birth attendance or bone setting. In addition to the forest school PROMETRA operates a community clinic where free treatment is provided for over 1,000 patients annually.

The piracy of indigenous traditional knowledge is longstanding. Many pharmaceutical medications are originally sourced from plants. It is known that 69% of all antibacterial agents originate from natural products. FDA estimates that botanicals are the most successful source of drug leads, yet it is estimated that less than 10% of the world's biodiversity has been scientifically evaluated for potential biological

activity. The majority of this knowledge resides on the continent of Africa, yet the majority of financial benefit obtained does not benefit the African population. It is estimated that future expenditures for the complementary and alternative medicine market will exceed \$83 billion dollars in China and \$34 billion dollars in USA. It is the goal of PROMETRA International that Africa's traditional knowledge and the profits received from it be returned to Africa for its benefit and development – not to major pharmaceutical companies outside of the continent of Africa. Recognizing the



importance of organizational sustainability, PROMETRA International established a for profit arm,



METRAF – Medicines and Traditions of Africa. METRAF is the holder of PROMETRA's intellectual property and by statue transfers all profit to its philanthropic arm METRAF Foundation. Recognizing that traditional knowledge is communal knowledge, funds are dispersed through a community benefit sharing plan to communities and holders of the original traditional knowledge.

In addition to its ethnopharmacology losses, Africa continues to fight for its cultural and folk lore intellectual property rights. UNESCO is working in the area of intellectual protection of traditional knowledge, genetic resources, folklore and intangible cultural heritage, and PROMETRA International serves as an expert consultant to UNESCO. To address the lack of understanding with the western intellectual property system and how to

protect traditional knowledge, PROMETRA International wrote a manual for NGOs entitled Guide to Intellectual Property Rights Protection. This manual is published in both French and English and provides a step by step process of how to protect traditional knowledge and cultural heritage. Utilizing this information, PROMETRA International has obtained over 11 PCT patents to protect the knowledge of traditional medicine practitioners.

Training and Education

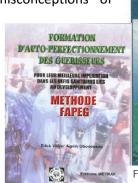
It is obvious that if three quarters of the African population utilize traditional healers, clearly they are the "right messengers". It is the work of PROMETRA International to assure that these "right messengers" have the "right messages" to share with their patients and communities and to fulfill their front line role as Information, Education and Communication (IEC) agents. To provide the right messages, PROMETRA developed FAPEG - Traditional Healers' Self-Proficiency Training - a scientifically based, culturally specific, participatory curriculum for non-readers.

Since 1999, PROMETRA has trained approximately 18,000 traditional healers and community leaders in HIV/AIDS, natural family planning, MCH, oral rehydration of infants, nutrition and community public health in over 14 countries.

These curricula have been endorsed by WHO-AFRO and presented at international conferences. FAPEG is a scientifically based and well evaluated training pedagogy developed specifically for traditional healers, community based leaders and frontline workers. Its natural family planning curriculum was supported by a subcontract from a Tulane and Morehouse School of Medicine award from the Senegal

USAID mission. The Ford Foundation supported the HIV/AIDS and MCH curriculum components. The Bill & Melinda Gates Foundation supported PROMETRA International to address the myths and misconceptions of

immunization usage in Senegal, Benin and Nigeria (Borno State). The standard FAPEG training kit (contained in a backpack) includes a written curriculum - currently available in French, English, Twi and Mina-and a set of related pictorial graphics for use with non-readers. The average 10day training course includes a KAP study review and a pre & post testing component. PROMETRA International has trained over 18,000 community trainers who have communicated this *right message* information to hundreds of thousands of Africans through community education sessions in places where individuals live, work, gather water, play,





FAPEG Curriculum in Twi Language (Ghana)

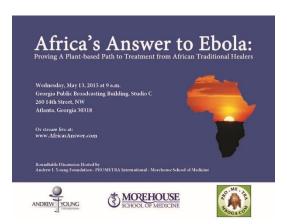
Examples of Current Scientific Research

pray and access health care.

HIV/AIDS - The HIV/AIDS epidemic continues to unnecessarily take the lives of Africans across the continent. PROMETRA International has undertaken a comprehensive program to address this epidemic including research, training, advocacy and health professional education. PROMETRA International held the First International Traditional Medicine Conference on HIV/AIDS in Dakar, Senegal in 1999. With support from the Ford Foundation PROMETRA International conducted small clinical observational studies (cohort of 68 patients living with HIV) using African herbal medicines that demonstrated significant decrease in viral loads and augmentation of CD4 counts. These results were presented at the International AIDS Conference in Barcelona (2002). These herbal extracts have been additionally tested

in-vitro by Morehouse School of Medicine (USA) and demonstrated both safety and efficacy against HIV cell lines. PROMETRA International disseminates its work in HIV/AIDS through participation in over 14 International AIDS Conferences. PROMETRA International hosted a Global Village Indigenous Networking Zone at the 2016 International AIDS Conference in Durban, South Africa.

<u>EBOLA</u> -Working with Morehouse School of Medicine and the United States Army Medical Research Institute of Infectious Diseases (USAMRIID), herbal extracts have been tested in an in-vitro EBOV infection assay. Results demonstrated the ability of the extracts to inhibit infection of culture cells of Ebola/Zaire virus. Mouse system studies are currently being planned as the next phase of this scientific research. These finding were released in a globally streamed press conference and Ebola Roundtable in May 2015, and presented to the UNESCO Merck African Research (MARS) Summit in Geneva, Switzerland October 2015.



Immunization Research and Advocacy - Inadequate immunization coverage continues to hamper the health of the children of Africa and remains the cause of millions of preventable deaths. PROMETRA International with support of the Bill & Melinda Gates Foundation conduced a three year research, education and advocacy campaign in three West African nations focusing on childhood vaccine preventable diseases. The involved nations included Benin, Nigeria and Senegal. This health specific education and advocacy campaign directed by PROMETRA International and executed by its regional

network of chapters and national partners targeted organized traditional medicine associations, traditional medicine practitioners, community NGOs and the populations that they serve. The polio outbreak in northern Nigeria (Borno State) was the impetus to reach out to trusted traditional healers and faith leaders to assess the "why" of under-immunization rates



and the major demonstration of distrust of the modern medical system. Project findings revealed that traditional healers maintain a much broader and holistic definition of immunization, as opposed to simple vaccine administration which was/is the standard public health offering. This project demonstrated the importance of bringing a unique group of influential, respected, yet underutilized traditional medicine actors into the immunization campaign. These results were published in *Global Health Communications* January 2016.

Social Science Research

PROMETRA's research is not merely proving that herbal medicine works by utilizing western laboratory standards. In addition to plant medicine protection and natural science research, PROMETRA International is working to assure the preservation of African languages, sites, rituals and ceremonies.

Our social science, culturally specific research is a key component of our research [catalog]. Fearing the loss of these time honored ceremonies and rituals, PROMETRA is working with UNESCO to obtain cultural heritage designations. The first such UNESCO designation was granted to the annual Seerer annual public voyance ceremony, the XOY. This ceremony conducted by traditional medicine saltigues, grand seers, who have the ability to commune with transcendence, obtains knowledge from the ancestor spirits and shares that knowledge publically with the community at large.



An annual N'depp cultural ceremony of the West African Lebu culture is Coumba Lamba – a communal cleansing and healing ceremony conducted in honor of the ancient spirit of the water, Coumba Lamba. In 1996 PROMETRA International, in partnership with Native American and African American traditional organizations (Worldwide Indigenous Science Network & Cosaan

Foundation), executed this eight day ceremony, *The Healing Voices from Africa* and *America* in South Carolina, USA as part of its bridge building and cultural understanding work. PROMETRA works to assure the ancient African traditional

Saltigue Traditional Healer - Senegal



Coumba Lamba USA

ceremonies are not lost as elders transition and large number of the African population migrates to urban centers. Research is being conducted into the traditional medicine therapies of divination, prayer, trance, spirituaity and sacrifice. Documenting these ceremonies and traditional therapies through research and in print, social media and film, in addition to facilitating their occurrence, is a priority of PROMETRA International's work. It is said, that when an elder dies, a library is lost. That is especially true in the oral traditional knowledge systems of Africa.

Realizing that the world is indeed a village, PROMETRA International maintains active partnerships with indigenous organizations throughout the world including Asia (China, Korea, Bali), Polynesia, Native Americans in South, Central and North America.

Role of African Traditional Medicine in the Future Development of Africa

During the colonial period, Africa was described as the "gold coast" finding its riches in the minerals. Today, many of the African economies are based on oil, "black gold". It is the belief that the future of Africa will be determined by its "green gold" – its fauna, flora and forests. African traditional medicine has a huge role to play in the future positive development of Africa. PROMETRA International believes that system of African traditional knowledge is an untapped development resource for the continent of Africa. The components of positive development that are to be recognized through African traditional medicine and knowledge include:

- Improved health
- Job creation
- Poverty reduction
- Positive cultural recognition
- Biodiversity protection
- Increased global trade
- Business start-ups

We cannot begin to address the multiple health and social issues of our African continent without the full and meaningful involvement of the continent's largest health manpower population – traditional healers and indigenous scientists. Until they are brought into the equation as full and respected provider partners, the continent will continue to force patients to make unnecessary choices and fall short of its health equity potential . It is the goal of PROMETRA International that every person has access to and choice of two safe and effective health care systems – traditional and modern.

There is much work that is yet to be done as we move toward realizing the fulfillment of African traditional medicine's full potential of improving the health and wellbeing of the African population. Our recommendations address issues that need additional resources, political will and policy enactment:

- Formal recognition and legalization of African traditional medicine by all African governments
- Traditional medicine must become an official part of the national health care system of African nations
- Support of African traditional medicine research both natural and social science
- Intellectual property rights protection must be extended to African traditional medicine, indigenous science and cultural practices
- Capture of our African oral traditional knowledge with culturally appropriate translation for documentation and teaching purposes
- Respected bilateral dialogue, bridges, collaborations and partnerships between traditional and modern scientists
- Training of allopathic health providers in essential traditional medicine practices and herbal formularies
- Recognition of safe and effective natural medicine drug formularies
- Involve traditional healers in development of national health policies, education campaigns and access to care decisions
- Protection of our earth's biodiversity
- Increased support of WHO AFRO's Annual African Traditional Medicine Day August 31st
- Development of traditional medicine production as an economic development strategy for Africa

PROMETRA International SCOLMA Conference Presentors

Dr. Kofi Kondwani, PhD (psycho-physiology), Assistant Professor, Department of Community Health and Preventive Medicine, Morehouse School of Medicine, has always had an interest in global health and Traditional Medicine. He has taught thousands of people the process of Consciously Resting Meditation to reduce stress and improve health primarily in African American populations in the United States. He has investigated the use of meditation on sleep dysfunction, CVD and Metabolic Syndrome supported by the US National Institutes of Health and the US Department of Defense. Dr. Kondwani has conducted cardiovascular disease research in Nigeria using Ambulatory Blood Pressure Monitoring, completed a 5-year PEPFAR project supporting the retraining of focal persons responsible for monitoring and evaluation (M&E) of HIV and AIDS in Ghana. He has investigated the use of complementary and alternative medicine in Cuba and contributed to recommendations for US medical schools. Dr. Kondwani is currently the



principle investigator of a Fogarty Global Health Fellowship Program as part a consortium that includes Johns Hopkins, University of North Carolina at Chapel Hill and Tulane University. He serves as a member of the Board of Directors of PROMETRA USA.

Theresa McGhee, PA-C is a physician assistant, currently working as Director of Clinical Research at Absolute CARE Medical Center in Atlanta, GA USA procuring and managing clinical research trials. Theresa has a Bachelor of Science in Physician Assistant and a Certificate as Primary Care Physician Assistant from Howard University in Washington D.C. She is also certified as an AAHIVM HIV Specialist, by the American Academy of HIV Medicine. For over twenty years, she has worked as a HIV/AIDS clinical care specialist and has extensive experience in HIV/AIDS prevention, clinical research, case management and patient counseling and care. She founded and facilitated JEWELS, a support group for HIV-infected women. She served as the Director of Development for the Hydea L. Broadbent Foundation in Los Angeles, CA, and was responsible for creating and



implementing educational programs for youth on HIV/AIDS awareness and prevention. Theresa has significant experience working throughout Africa and currents serves as a board member of PROMETRA USA. She also serves on the board of FLOWIL Foundation, USA which works to sustain educational excellence, healthy communities and better quality of life for future generations of Liberia. She is a member of Zenzele USA working to expand access and delivery of specialized health care in South Africa.