

American International Health Alliance

Project Closeout Report

Strategic Health Partnership Initiative 2007-2010



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Preface

This closeout report provides a comprehensive overview of the programs and activities carried out through the Strategic Health Partnership Initiative (SHPI) between the years 2007-2010. A direct result of the 2005 Bratislava Initiatives, the SHPI was designed to harness US and Russian expertise to further bolster HIV/AIDS-related capacity in Russia, as well as in developing nations in Central Asia and Africa.

Made possible with the generous support of the American people thanks to funding from USAID through Cooperative Agreement 118-A-00-08-00002-00, the SHPI represented a unique collaboration among the Russian Ministry of Health and Social Development, leading Russian medical education institutions, USAID, and the American International Health Alliance, Inc. (AIHA). In September 2010, USAID awarded AIHA with a second cooperative agreement, which will fund SHPI follow-on activities over the course of the next five years.

This report describes the development and evolution of the SHPI, main programmatic components funded during this period, and key outcomes of these components. It also includes summary results and success stories that highlight specific activities and accomplishments, as well as a discussion of key challenges and lessons learned.

AIHA is a 501(c)(3) nonprofit corporation created by the US Agency for International Development (USAID) and leading representatives of the US healthcare sector in. AIHA's mission is to advance global health through volunteer-driven partnerships and initiatives that mobilize communities to better address healthcare priorities while improving productivity and quality of care. To date, AIHA has supported more than 150 capacity-building partnerships that link American volunteers with communities, institutions, and colleagues in 33 countries in a concerted effort to improve healthcare services and delivery.

Operating with funding from USAID; the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services; the US Library of Congress; the Global Fund to Fight AIDS, Tuberculosis and Malaria; and other donors, AIHA's partnerships and programs represent one of the US health sector's most coordinated responses to global health concerns.

AIHA wishes to express its sincerest gratitude to the countless professionals in the Russian Federation and the United States, as well as those in recipient countries in Africa and Central Asia, who gave so generously of themselves to the SHPI. AIHA's programs have been so successful because these individuals demonstrated the courage and commitment to change; the patience, dedication, and hard work to gain new knowledge and skills; and a generous spirit of trust and collaboration. Together they made significant contributions to improving healthcare services and delivery for people not only in Russia, but also in developing nations in sub-Saharan Africa and Central Asia.

AIHA also thanks USAID and the Russian Ministry of Health and Social Development for the opportunity and privilege of working so closely with them and for their steadfast support of this unique multilateral initiative.

Finally, AIHA gratefully acknowledges the contributions of our dedicated staff in Washington, DC, as well as our regional offices in Russia, Ethiopia, South Africa, and Tanzania whose work assured the successful management and implementation of the SHPI program and preparation of this closeout report.

The contents are the responsibility of AIHA and do not necessarily reflect the views of USAID, the United States Government, the Russian Ministry of Health and Social Development, or the Government of the Russian Federation.



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I. Background

Launched in October 2007, the Strategic Health Partnership Initiative (SHPI) has its roots in the 2005 Bratislava Initiatives, a joint Russian-American presidential agreement designed to strengthen cooperation on a number of cross-cutting issues, including the global fight against HIV/AIDS.

With support from USAID, AIHA worked closely with Russia's Ministry of Health and Social Development to implement this innovative three-year program, which was designed to facilitate Russia's changing role within the global assistance environment through the development of a new Russian overseas healthcare assistance agency that would enable more effective coordination with other international donor assistance efforts; rebuild connections with the countries of the developing world, primarily in Africa; and coordinate new assistance to CIS countries within the context of regional and national efforts to address HIV/AIDS and other infectious diseases. A second component of SHPI focused on continuing efforts to strengthen Russian medical educational institutions, so that they can better fulfill their responsibilities to effectively train healthcare providers from Russia and many third countries that rely heavily on Russia for medical education.

With unparalleled organizational strength and experience working not only in Russia and the CIS region, but also in sub-Saharan Africa, AIHA was able to leverage relationships and development models that have been honed over the past 18 years of successfully implementing health-related partnerships and programs. These include serving as the implementing partner for USAID's longstanding health partnerships programs in more than 20 countries spanning Central and Eastern Europe and Eurasia; the WHO Regional Knowledge Hub for Care and Treatment of HIV/AIDS in Eurasia; and the DHHS/PEPFAR-supported HIV/AIDS Twinning Center Program.

AIHA staff have extensive experience supporting the Russian health services and education sectors; in the prevention, care, and treatment of HIV, tuberculosis, and other infectious diseases; and in working in partnership with Russia's Ministry of Health and Social Development, as well as key Russian health and educational institutions. This wealth of experience proved invaluable to SHPI's mandate to strengthen Russia's capacity to address HIV/AIDS and other

"This Russian-American cooperation on healthcare projects is based on previous longstanding cooperation between our countries. Beginning with the Bratislava Accords, we've expanded our collaboration to include providing technical assistance to developing countries in Africa, the CIS, and other regions of the world.

The joint efforts of our two great nations are helping to solve critical healthcare problems that exist in these countries today and our experience shows that educating staff, as well as providing technical support, should be a priority for our work in the future."

— *Dr. Eugeniy I. Slastnykh, Head of International Cooperation in Healthcare, Department of International Cooperation, Russian Ministry of Health and Social Development*

Key Accomplishments Achieved through the Strategic Health Partnership Initiative: 2007-2010

Number of laboratory curricula developed and approved	7
Number of person-days for Africa-based assignments	1,000
Number of laboratory specialists trained through Lab-TEC	225+
Number of organizations represented and/or targeted through the ATEC council and network	140+
Number of faculty (trainers) trained through regional and local initiatives	167
Number of healthcare workers trained to deliver HIV/AIDS care and treatment services, according to national and/or international standards by ATEC-supported medical schools	2,869
Number of course curricula integrated into undergraduate and postgraduate academic programs	5
Number of abstracts and articles developed and published	19
Number of unique site visitors using EAKN resources	58,000
Number of evidence-based HIV/AIDS-related articles provided by Medmir for inclusion in EAKN's online resource library	204

infectious diseases at home and abroad, as did AIHA's extensive network of collateral capacity-building relationships and programs that were highly synergistic with the project.

SHPI harnessed the expertise of US and Russian medical communities to bolster HIV/AIDS capacity in Russia by developing postgraduate level curricula and establishing AIDS Training and Education Centers, and to strengthen Russia's capacity to provide professional assistance to developing and transitioning nations around the globe, particularly as relates to laboratory services for HIV, tuberculosis, and other infectious diseases.

AIHA brought together key stakeholders, including decision-makers from Russia's Ministry of Health and Social Development, Ministry of Foreign Affairs, the Central Research Institute of Epidemiology, the I.M. Sechenov First Moscow State Medical University, Moscow State University of Medicine and Dentistry, USAID, and other strategic partners, to form an SHPI advisory board. Two working groups — one to provide direction for the Russian postgraduate training component and another to provide direction for the third country laboratory component — were also established to help guide and monitor all SHPI activities.

Accomplishments achieved through SHPI in 2007-2010 have laid a substantial foundation for the programs currently being carried out under the follow-on award, which was granted to AIHA by USAID/Russia in September 2010. Through this new cooperative agreement, AIHA

will continue to facilitate the deployment of Russian health and allied professionals in third countries, work to further modify and enhance medical education programs in Russia, and help introduce innovative approaches to TB and HIV care in Russia.

II. Third Country Capacity Building

The goal of this component was to strengthen laboratory capacity in selected developing countries in Africa (Botswana, Ethiopia, Namibia, and Tanzania) and Central Asia (Uzbekistan) to improve treatment, care, identification, monitoring, and surveillance of HIV and other infectious diseases. Activities were managed by AIHA and carried out in close collaboration with key Russian laboratory institutions identified by the Ministry of Health and Social Development and the US Centers for Disease Control and Prevention (CDC).

At the outset of the project, AIHA, along with designated USAID and Ministry of Health and Social Development personnel, conducted a needs assessment to determine infectious disease-related needs and priorities for Russian expert participation in key African countries that were previously identified by the US and Russian governments.

With the concurrence of the Ministry of Health and Social Development, AIHA identified MedBusinessConsulting (MBC), a private company that was contracted to support recruitment and deployment of Russian laboratory experts in African and Central Asian countries. AIHA then worked with the Ministry to develop recruitment and placement procedures designed to facilitate screening and selection of Russian laboratory experts who would provide technical assistance at selected institutions in Africa and Central Asia.

Based on feedback from the Ministry, CDC, and Russian laboratory experts who participated in CDC-initiated consultations in Africa prior to the launch of the SHPI, AIHA developed in-country policies and procedures to assure well-developed scopes of work, as well as appropriate, safe, and secure living and local transportation arrangements for laboratory experts deployed in each country. Through arrangements with MBC and with support from AIHA's PEPFAR-funded HIV/AIDS Twinning Center field offices in Ethiopia, South Africa, and Tanzania, AIHA successfully organized and managed a total of 17 deployments of Russian laboratory experts through the SHPI. These deployments in Africa ranged from two to four months in duration, while those in Uzbekistan lasted two weeks, for a combined contribution of some 30 months of expert-level assistance in the target countries of Botswana, Ethiopia, Namibia, Tanzania, and Uzbekistan.

Throughout Africa and many other developing regions of the world, inefficient, poorly equipped or maintained, and inadequately staffed medical laboratories represent a major barrier to the provision of high quality healthcare services.

The World Health Organization's Regional Office for Africa reports that most laboratories on that continent lack the institutional, material, and human resource capacity required to achieve WHO accreditation and operate as an effective component of healthcare systems in these nations.

Russian laboratory scientists possess a wealth of knowledge and technical expertise that can be shared with the developing world to help strengthen lab — and therefore health system — capacity.

"I am very impressed with the potential this program has to mobilize Russia's considerable expertise in the health sector and put it to use helping African countries facing the strains of growing HIV and TB epidemics."

— Leon Waskin, Mission Director, USAID/Russia

Country Overview: Botswana

Botswana's Ministry of Health and the Ministry of Local Government have joint responsibility for the provision of quality laboratory testing services in the country, with most related activities being overseen by the Ministry of Health's Department of Clinical Services. Although the Ministry of Health's medical laboratory services were established decades ago, documented guidance and performance standards for lab staff were not introduced until 2003, one year after the government launched Africa's first national ART program in an effort to provide free HIV treatment to its citizens.

The country has a healthcare referral system that starts from the health post, clinic, and primary levels up through district hospitals then to national referral hospitals. For lab services, however, referrals are more often governed by the availability of supplies and functionality of lab equipment at neighboring sites. For example, ART tests, which primary and district hospitals cannot do, are frequently referred to the Botswana Harvard HIV Reference Laboratory (BHHRL) in Gaborone for facilities in the South or the Nyangagbwe HIV Reference Laboratory in Francistown for the facilities in the North. The most referred tests are mainly CD4, viral load and infant diagnostic DNA polymerase chain reaction (PCR). DNA PCR testing facilities are only available at the Nyangagbwe and BHHRL.

Human resource capacity for medical laboratories is a serious problem throughout Botswana, with existing staff spread thin among various departments. Opportunities for additional training and education that would support staff seeking to upgrade their skills or even to specialize in areas where the need is most evident are not readily available. Other challenges within the current laboratory system include inadequate logistics systems necessary to support the flow of reagents or other supplies; poor maintenance and service plans, which results in prolonged periods when equipment is not in use; lack of documented standard operating procedures to better ensure proper work flow, as well as quality of outcomes; and inadequate coordination among testing facilities of all levels.



The five Russian lab mentors stationed in Botswana provided technical assistance to the National Health Laboratory and Princess Marina Hospital Microbiology Laboratory in Gaborone and the Nyangagbwe Hospital Health Laboratory in Francistown.

Collectively, they contributed 284 days of professional service providing technical assistance and mentoring local lab staff.

In response, AIHA placed its first two Russian laboratory experts in Botswana during the summer of 2009. These scientists focused on improving capacity in HIV and TB diagnostics at the National Health Laboratory and Princess Marina Hospital Microbiology Lab in Gaborone. In the fall of 2009, a Russian histology and cytology expert spent two months at the National Health Laboratory mentoring staff and improving procedures. Finally, in January 2010, a

Lab Mentor Placements and Key Outcomes: Botswana

Lab Mentor / Placement Details	Key Accomplishments
Vladimir Puzanov Date: 16 July – 31 August 2009 Sites: National Health Laboratory and Princess Marina Microbiology Laboratory, Gaborone	<ul style="list-style-type: none"> Trained all laboratory staff at both sites in Gaborone on TB diagnosis
Igor Olkhovskiy Date: 16 July – 09 September 2009 Sites: National Health Laboratory and Princess Marina Microbiology Laboratory, Gaborone	<ul style="list-style-type: none"> Trained all laboratory staff at both sites in Gaborone on rapid HIV diagnostic tests methodology Trained all laboratory staff at both sites in Gaborone on Western blot in laboratory practice Trained all laboratory staff at both sites in Gaborone on Quality Assurance Lab (NQAL) Trained all laboratory staff at both sites in Gaborone on ELISA methodology Trained all laboratory staff at both sites in Gaborone on electronic records of Shewhart charts
Ekaterina Tarasova Date: 17 September – 13 November 2009 Sites: National Health Laboratory, Gaborone	<ul style="list-style-type: none"> Reviewed surgical and biopsy samples and provide recommendations on histologic samples Trained and mentored all staff of the Histopathology and Cytology Department
Olga Shurpitskaya Date: 19 January – 19 March 2010 Sites: National Health Laboratory, Gaborone	<ul style="list-style-type: none"> Trained two laboratory scientists and one laboratory technician on mycology practice to support the development of new mycology specialization within the existing lab Led reorganization of lab work areas to ensure the space is in keeping with international standards to the greatest extent possible
Alexander Semenov Date: 19 January – 19 March 2010 Sites: Nyangabgwe Hospital Health Laboratory, Francistown	<ul style="list-style-type: none"> Trained all laboratory staff on lab safety Trained all laboratory staff on internal quality control (IQC) Trained all laboratory staff on inventory policy



"The medical professionals I've met in Botswana have been very interested in taking part in this program to improve diagnostic capacity. They want to move the health system forward. For me, it has been an interesting experience, too, because it is my first international experience and I've had a chance to work with specimens that I don't routinely see in Russia."

— *Dr. Olga Shurpitskaya,*
Medical Mycologist, St. Petersburg Medical Academy
for Postgraduate Education, Russia

"Some of our procedures are outdated and, with regard to mycology, very much neglected because of the general lack of capacity in that area, so we've been eager to learn the new methods and techniques that Dr. Shurpitskaya has been sharing with us."

— *Irene Tsimako, Lab Technician, National Health*
Laboratory, Gaborone, Botswana

Russian mycology expert spent two months working with staff at the National Health Laboratory to reorganize the tiny mycology department, develop procedures and quality standards, and strengthen their knowledge of fungal infections and related diagnostic techniques. At that same time, a fifth Russian lab expert traveled to the Nyangabgwe Hospital Health Laboratory in Francistown to train and mentor staff on lab safety, inventory policy, and internal quality control measures. Together, these highly qualified Russian specialists provided more than 284 professional days of service (the equivalent of 9.5 months), contributing greatly toward efforts to improve the quality and scope of laboratory services available in Botswana.

"This is a very important program through which we can partner with Russian scientists and public health professionals working in other countries, especially in Africa. We are particularly proud that the program has supported a number of Russian scientists and medical science managers. We are very thankful to the Russian Ministry of Health and Social Development for its continuous support for the Strategic Health Partnership Initiative. From the US Government perspective, we think that this activity has been a huge success and we hope to continue this partnership."

— *William Slater, Director, Office of Health, USAID/Russia*



Country Overview: Ethiopia

In Ethiopia, the Ethiopian Health and Nutrition Research Institute (EHNRI) oversees all medical laboratories in this East African nation of 74 million people. The Institute has developed the country's integrated national laboratory master plan (2009-2013) and has been mandated to coordinate efforts to strengthen the national lab systems.

The existing tiered laboratory structure has the national reference laboratories at the top, followed by regional/referral or specialized hospital laboratories, then district/zonal laboratories, and lastly health center laboratories.

Most of the laboratory technologists and technicians have been trained at state universities. Private colleges also contribute to the training of laboratory specialists. EHNRI-coordinated training programs — which include quality systems, ART monitoring, TB microscopy, laboratory management and leadership, HIV rapid testing, early infant diagnosis, SLMTA, accreditation preparedness, BED capture IgG assay, HIV-1 genotyping assay, and biosafety — occur throughout the year.

Rabies, although it is a preventable disease, represents a significant public health threat in Ethiopia for many reasons. The country has no framework for effective surveillance, data monitoring, or guidance. In addition, there is no census to ascertain canine population dynamics, nor any household survey data to determine the ratio of owned versus stray dogs in the country. Animal control is also an issue. This lack of data has long translated into rabies being relatively low on the agenda of health policymakers given their many competing priorities.

"The Ethiopian Government recognizes that rabies is a serious problem and it is one of the strategic focus areas that emerged from the recent business process reengineering undertaken by the Ministry of Health. Our goal is to build the capacity to manufacture 10 vaccines and we're starting with rabies. It is critical that we develop this vaccine ... its impact will spread beyond rabies because the process can be applied to other vaccines.

We've invested a huge amount of money and the knowledge and skills the Russian mentors have transferred to staff at the Ethiopian Health and Nutrition Research Institute rabies lab is simply invaluable."

— Dr. Medhin Zewdu Tsehau, Director General at the Office of the Minister of Health of Ethiopia

As a result, Ethiopia is one of just a handful of countries in the world that still use the outdated Fermi-type phenolized sheep brain tissue vaccine, which is very dangerous and, according to the World Health Organization, should not be used on humans. Known side effects include severe allergic reactions, encephalitis, partial paralysis, and even death. The treatment is also very painful — a course of 17 5-mililiter injections administered in the stomach area.

The SHPI afforded Ethiopia with a unique opportunity to develop a modern national anti-rabies program, including local production of rabies vaccine derived from cell cultures of seed rabies virus strains obtained from CDC/Atlanta. This local production of a rabies vaccine would, in turn, lay the groundwork for in-country manufacture of other much-needed vaccines as well.

In June 2009, AIHA placed a Russian rabies expert at EHNRI for a four-month technical assistance assignment. During this time, the Russian specialist put into place key elements necessary for Ethiopia to begin implementing a national rabies control program and launch production of a vaccine. This specialist returned in January 2010 for a two-month assignment. He was accompanied by a Russian rabies vaccine expert, who spent three months training and mentoring lab staff as the team developed the vaccine. Through the efforts of these two Russian rabies experts, the lab was renovated and the first batch of inactivated cell culture rabies formalin was produced. Mice trials were successfully conducted on February 15, 2010, and both Russian experts returned to Ethiopia to continue their work in January 2011.

Lab Mentor Placements and Key Outcomes: Ethiopia

Lab Mentor / Placement Details	Key Accomplishments
Artem Metlin Dates: 18 June – 14 October 2009 14 January – 14 March 2010 Site: Ethiopian Health and Nutrition Research Institute, Addis Ababa	<ul style="list-style-type: none"> • Prepared draft rabies legislation • Tested and calibrated lab equipment in preparation for vaccine production • Introduced roller bottle technique for vaccine production in cell cultures • Trained rabies lab staff in key rabies research and vaccine production techniques and procedures • Developed detailed SOPs and lab manual for vaccine production • Propagated seed rabies virus (strains ERA, PV, and CVS-11 provided by CDC/Atlanta) in cells to obtain and deposit master seeds and produce experimental batch of vaccine • Obtained and successfully tested the experimental formalin inactivated cell culture rabies vaccine • Discussed recommendations for further work and possible collaboration between Ethiopian veterinary and health services to develop a national rabies control program with directors of EHNRI and Debre Zeit Veterinary Institute
Denis Bankovskiy Date: 14 January – 11 April 2010 Site: Ethiopian Health and Nutrition Research Institute, Addis Ababa	



"The lab staff have experience working with cells and are young and not set in their ways. They learn quickly and are eager to make changes here... there has been a lot of progress."

— *Dr. Denis Bankovskiy, a vaccine expert from the JSC Pokrov Biologics Plant in Volginskiy, Russia*

"At first, we didn't have the virus, the equipment, or even the knowledge how to put them to use. Now, our hopes for the future are without limit."

— *Mr. Birhanu Hurisa, Assistant Researcher, Ethiopian Health and Nutrition Research Institute, Addis Ababa, Ethiopia*

Country Overview: Namibia

AIDS is the leading cause of death in Namibia, where an estimated 21 percent of the 2 million inhabitants are living with HIV. The country's response to the epidemic is impeded by a lack of qualified medical technologists, including lab specialists. These allied health professionals play a crucial role in informing decisions related to ART, as well as the diagnosis and treatment of opportunistic infections, by providing CD4 counts, basic metabolic profiles, CBCs, cultures, and other important laboratory test results.

Currently, there are only around 160 medical technologists in Namibia; half are from Zimbabwe and another 30 percent are nearing retirement. The infrastructure and expertise necessary to train additional lab professionals does not exist.

Since December 2007, an AIHA HIV/AIDS Twinning Center partnership that links the Polytechnic of Namibia with the University of Arkansas for Medical Sciences has been working together to address this gap in education and training by establishing an undergraduate medical technology program, along with in-service continuing education programs for



In May 2010, two Russian lab experts were stationed at the Polytechnic of Namibia in Windhoek. There, they provided practical, skills-based training to faculty and staff of the Biomedical Science Department.

Collectively, they contributed 80 days of professional service providing technical assistance and mentoring local laboratory and teaching staff.

Lab Mentor Placements and Key Outcomes: Namibia

Lab Mentor / Placement Details	Key Accomplishments
Alexander Semenov Date: 26 May – 21 July 2010 Site: Polytechnic of Namibia, Windhoek Vladimir Zinkin Date: 26 May – 21 July 2010 Site: Polytechnic of Namibia, Windhoek	<ul style="list-style-type: none"> • Trained and mentored all faculty of the Polytechnic of Namibia's Biomedical Science Department • Conducted nine training workshops on topics such as "Modern Principles in Design of University Research and Study Facilities;" "Principles of Research Work Organization;" "and Molecular Biology Techniques and HIV Infection: Diagnostics, Monitoring, and ART" • Conducted assessments of hematology, biochemistry, microbiology, immunology, and molecular biology labs • Reviewed curriculum and made recommendations for improvement of courses and related training materials for the following programs or courses: BSc of biomedical sciences; immunology; molecular and cell biology; clinical biochemistry; and fundamental endocrinology

existing lab specialists. The Polytechnic accepted its first cohort of students enrolled in the BSc program in medical technology in January 2008 and has conducted five continuing education short courses or lectures.

AIHA placed two Russian lab experts at the Polytechnic in May 2010. These experienced professionals worked with the institute's leadership and faculty to review and revise curricula and training materials for undergraduate and postgraduate education of lab specialists. The programs they focused on included the BSc in biomedical science and key courses in molecular and cell biology, HIV laboratory diagnostics, CD4 testing, immunology, clinical biochemistry, and fundamental endocrinology.

The Russian mentors also assisted faculty of the Biomedical Science Department with the development of a research program, conducting seminars on topics such as how to indentify a topic, write a proposal, conduct research, and write a report suitable for publication.

"We truly appreciate the input and assistance provided by the Russian experts. They provided expert insight and developed excellent slides and educational materials. Their expertise has greatly benefitted our new program and we are motivated by the knowledge that we can always turn to them with questions as we move forward."

— Mrs. Elzabe van der Colf, Deputy Head, Department of Biomedical Sciences,
Polytechnic of Namibia, Windhoek, Namibia

"I think it is very exciting to be able to offer opportunities to public health managers and scientists not only to work in other countries, but also to bring the knowledge and skills they gain overseas back home to benefit the people of Russia."

— William Slater, Director, Office of Health, USAID/Russia

Country Overview: Tanzania



In the spring and summer of 2009, AIHA placed a total of four Russian lab experts in Tanzania. Three — two stationed in Dar es Salaam and one in Mwanza — focused on improving overall quality of laboratory services, with a particular emphasis on HIV diagnostics. The fourth, who was stationed in Mwanza, focused on pathology, forensic medicine, and overall laboratory quality improvement.

Collectively, they contributed 226 days of professional service providing technical assistance and mentoring local laboratory staff.

The quality of laboratory services in Tanzania has decreased dramatically over the past 20 years due, in large part, to the transition from a centralized to decentralized model. Two other factors that have contributed greatly to this deterioration in quality are the overall reduction in funding specifically allocated for laboratory services and limited availability of ongoing professional training and continuing education programs.

In addition, most Tanzanian medical laboratories today are operating with broken, outdated, or poorly maintained diagnostic equipment coupled with inadequate supplies of reagents and other necessary consumables. They also lack effective quality control and assurance programs, which greatly hinders their capacity to perform accurate clinical tests in a timely manner.

Against this backdrop, AIHA placed four Russian lab experts at medical laboratories in Dar es Salaam and Mwanza in the spring of 2009. Three of these specialists focused primarily on key aspects of quality control in HIV diagnostics at their respective placement sites, while the fourth provided technical assistance and mentoring on forensic medicine, pathomorphology, and lab quality improvement.

The Russian lab experts spent a great deal of time on specific tasks related to lab organization.

These ranged from developing an organizational chart and drafting an official Laboratory Quality Policy to appointing a Lab Quality Officer and conducting sensitization meetings to inform hospital staff of the changes being implemented in the lab. Their efforts to build human capacity started with developing job descriptions for each position and conducting competency assessments for every procedure performed by members of the lab teams. This lengthy process revealed key training needs, which included biosafety, data management, sample

Lab Mentor Placements and Key Outcomes: Tanzania

Lab Mentor / Placement Details	Key Accomplishments
Irina Nikolaeva Date: 14 May – 7 August 2009 Site: Mwananyamala Municipal Hospital Laboratory, Dar es Salaam	<ul style="list-style-type: none"> • Trained all laboratory staff on key issues of quality management • Trained all laboratory staff on malaria rapid diagnostic testing • Trained all laboratory staff on using rapid immunochromatographic tests to detect HIV antibodies in blood samples as per the algorithm approved by MoHSW Tanzania • Trained all laboratory staff on blood group tests (AB0Rh system) • Trained all laboratory staff on the Widal test (febrile agglutination) for the detection of anti-Salmonella antigen specific antibodies • Trained all laboratory staff on Levey-Jennings graphs for laboratory staff
Alexander Semenov Date: 14 May – 7 August 2009 Site: Temeke Municipal Hospital Laboratory, Dar es Salaam	<ul style="list-style-type: none"> • Trained all laboratory staff on organization of laboratory services in a multidisciplinary hospital • Conducted workshops and practical training classes on a wide range of topics, including the pre-test stage of laboratory diagnostic procedures; biological safety and biological material disposal rules; lab documentation management; proper recording of test results; inter-laboratory cooperation; quality control of sputum microscopy for TB; CD4+ counting and troubleshooting; programming fully biochemical analyzers; and quarantine precautions related to the initiation of the FACS calibre analyzer
Vladimir Zinkin Date: 14 May – 7 August 2009 Site: Sekou Toure Regional Hospital Laboratory, Mwanza	<ul style="list-style-type: none"> • Conducted training courses on various quality control topics, such as mathematical tools; biochemical tests; hematological tests; QC planning; and collection and storage of biological material for laboratory tests
Alexander Kanibolotskiy Date: 4 June – 7 August 2009 Site: Weill Bugando Medical Center, Mwanza	<ul style="list-style-type: none"> • Trained 20 Weill Bugando University students on various types of injuries as part of the Anatomical Pathology and Forensic Medicine course • Trained 2 Bugando Medical Center pathologists and 2 lab technicians on pathology practices • Provided consultations ob-gyn, oncology, and surgery to 10 Sekou Toure Regional Hospital physicians • Provided consultations to Sekou Toure Regional Hospital biomedical engineer and quality officer



"Patients were lined up in the courtyard outside the lab waiting to be called in for various tests. Phlebotomists were inside a tiny room drawing blood from patients who stood outside and stuck their arms through an open service window. And shelves that should have been filled with manuals, SOPs, and other resources were stark and bare."

— Dr. Alexander Semenov, Associate Professor, St. Petersburg Medical Academy for Postgraduate Studies, Department of Clinical Laboratory Diagnostics, St. Petersburg, Russia

"During his short time here, Dr. Alex has helped us move forward immeasurably. The work he has done developing SOPs and teaching us how to use the system ... the changes he has helped us make to our collection processes ... the lab reporting forms he created ... he even showed us how to work more effectively with patients ... all this has contributed to remarkable improvements in the quality of work we do."

— Dr. Meinrad Nguyu, Laboratory Quality Officer, Tememke Municipal Hospital, Dar es Salaam, Tanzania

handling, equipment maintenance, computer skills, basic mathematical statistics, and quality control.

Additionally, the Russian specialists ensured that existing equipment was inventoried and a planned preventive maintenance schedule was developed. Temperature monitoring charts were created and placed on all appropriate apparatus. Broken machines were labeled and reported to hospital management. And equipment logs were implemented to track every procedure performed.

In July 2009, the three mentors whose assignments focused on quality improvement in HIV diagnostics collaborated to organize a training for laboratory technicians and attendants from similar facilities, which was hosted by Temeke Municipal Hospital. An important goal of this event was to build a sense of professional community in Africa — a peer-to-peer network that can provide a sense of team for lab professionals, particularly mid-to-lower level staff.

Country Overview: Uzbekistan

Uzbekistan is home to one of the youngest HIV epidemics in the world, with more than 90 percent of new infections reported between 2001 and mid-2003, according to World Bank reports. These infections are driven largely by injecting drug use, with men accounting for some 85 percent of all people living with HIV.

The Uzbek Parliament is working to stem the spread of HIV and passed a law in 2000 to ensure people have access to counseling centers where they can get advice from specialists and be tested, as well as receive free syringes, condoms, and information.

At the request of the Ministry of Health of Uzbekistan, AIHA organized two national training workshops on Polymerase Chain Reaction (PCR) equipment and testing for diagnosis of HIV and other infectious diseases. These were conducted by a Russian laboratory expert in December 2009 and April-May 2010.

Each 10-day course brought together experienced laboratory technicians and clinicians who participate in the provision of care for people living with HIV or AIDS. More than 80 specialists from Uzbekistan received advanced training through these courses.



A Russian lab expert traveled to Tashkent, Uzbekistan, in the winter of 2009 and again in the spring of 2010 to conduct lectures and training in clinical laboratory diagnosis of HIV using PCR equipment.

This specialist contributed 20 days of professional service providing technical assistance and mentoring local laboratory staff and clinicians who provide HIV/AIDS-related treatment and care services.

Lab Mentor Placements and Key Outcomes: Uzbekistan

Lab Mentor / Placement Details	Key Accomplishments
<p>Alexander Semenov</p> <p>Dates: 8 – 20 December 2009 28 April – 7 May 2010</p> <p>Site: Virology Research Institute, Tashkent</p>	<ul style="list-style-type: none"> Conducted in December 2009 a training workshop on PCR equipment for experts in clinical laboratory diagnostics, which was attended by more than 40 laboratory staff and clinicians Conducted hands-on practical classes using diagnostic kits and expendables permitted for clinical use in Uzbekistan and Russia for 10 participants in the December 2009 workshop Conducted a workshop on clinical laboratory diagnostics using PCR equipment for 43 laboratory staff and clinicians from all over Uzbekistan in April-May 2010



"The Ministry of Health and other stakeholders in Uzbekistan, such as Ministry's Reference Lab and the Virology Research Institute, were highly supportive of these trainings. Everyone involved, including training participants, said that similar workshops should be organized in the future."

— Dr. Alexander Semenov, Associate Professor, St. Petersburg Medical Academy for Postgraduate Studies, Department of Clinical Laboratory Diagnostics, St. Petersburg, Russia

Best Practices and Lessons Learned

While the deployment of Russian lab experts under the SHPI project was very successful in meeting important needs in each of the placement sites, certain implementation challenges, as well as best practices, were identified throughout the course of project activities. Whenever possible, policies and procedures were adjusted accordingly to help maximize program efficacy and efficiency. AIHA and MBC presented these best practices and lessons learned to the Ministry of Health and Social Welfare and USAID at the SHPI project closeout event, which took place November 5, 2010 in Moscow.

Many of the challenges that emerged were associated with the process of identifying and placing Russian experts for long-term assignments of two-to-four months in duration. Out of 100 CVs received after posting advertisements in several key Russian medical journals and conducting a lengthy and proactive campaign through the Ministry of Health and Social Welfare, only 11 candidates met established criteria for participating in the program and nine ultimately took part.

English fluency was found to be a major challenge in identifying candidates. It was also found that Russia's cadre of laboratory scientists is rapidly aging and the percentage of laboratory experts in their 30s, which is the group most likely to speak English and be interested in overseas assignments, is very small. Despite this fact, the quality of final candidates was generally very high and

"In the future, I think it would be very helpful if the Russian experts were provided more detailed information about their placement sites before being deployed. If, for example, I realized that mycology is such a new discipline in Botswana, I would have been better able to coordinate my efforts to prepare for my trip in advance, including knowing what supplies and equipment I should bring."

— Dr. Olga Shurpitskaya, Medical Mycologist, St. Petersburg Medical Academy for Postgraduate Education, Russia

additional training and familiarization in the United States before deployment as originally envisioned was found to be unnecessary.

Identifying appropriate assignments overseas consumed much more time and resources than was expected. Developing sufficiently detailed and realistic scopes of work proved to be a challenge in many instances and many of the Russian candidates were reluctant to accept an assignment without substantial clarity on what they would be doing, the equipment and supplies at their disposal, roles and responsibilities, etc. Still, recipient countries were often unable to clearly define scopes of work and were interested in candidates who could “self define” or flexibly adjust their roles once they arrived at their placement site.

Assignment duration was also a problem, largely because leave requests for more than two months were difficult and, in some cases, impossible for Russian lab experts to obtain from their home institutions.

Despite receiving official letters of support from the Ministry, several good candidates were not able to get permission to leave. In fact, the majority of experts had to use their vacation time, rather than authorized leave without pay, to participate in the project.

At the same time, host country ministries expressed preference for candidates who could spend at least four-to-six months in country and were initially reluctant to accept shorter term candidates.

The shorter terms of stay were also a disincentive for country officials and placement site officials who were not always willing or able to meet the unanticipated burden of developing detailed scopes of work.

Logistics and administrative arrangements for the experts were also more time and resource intensive than initially expected and required a much higher resource commitment from the AIHA offices in Ethiopia, South Africa (which handled assignments in Botswana and Namibia), and Tanzania.

Initial logistical arrangements in the hosting countries were challenging because the Russian candidates' lodging expectations were of a higher standard than expected from US “short-to-medium” term “volunteers.” Apartments or houses meeting these standards were not easy to



“It is not just about obtaining expensive equipment for the lab. Often, minor changes make a really big difference. For example, lab work requires clear, legible labeling of test tubes, containers, slides, and the like. To achieve this, lab workers need to have fine-point, water resistant lab markers — a very low-cost item that can have a big impact.”

— Dr. Irina Nikolaeva, Senior Researcher,
Department of AIDS Immunology, National Research
Center for Immunology, Russian Federal Biomedical
Agency, Moscow, Russia



"The seminar I organized jointly with Drs. Nikolaeva and Semenov for Tanzanian lab staff was an incredibly important result of our work there. The event played a crucial role in motivating staff and building a sense of teamwork and professional camaraderie and was an important step toward strengthening the laboratory system as a whole because it opened a dialogue and provided an initial framework for subsequent follow-up on these topics at the individual labs.

On a personal level, my colleagues and I were inspired by the interest and desire to obtain new knowledge and skills that we saw in the lab workers who attended the workshop. Each person clearly aspired to improve themselves so they could make changes for the better in their daily work."

— Dr. Vladimir Zinkin, Head,
Clinical Immunology and AIDS Diagnostics Laboratory,
Sklifosovsky Research Institute for Emergency Medicine,
Moscow, Russia

find at reasonable prices for short term stays. In addition to incurring significant increases in staff resources, budgets had to be adjusted to accommodate the increased costs. Once satisfactory accommodations were found, subsequent deployments to these same locations were much easier to facilitate.

The registration process for Russian experts to provide hands-on clinical and laboratory work in the African countries proved to sometimes be more complex, lengthy, and costly than expected. In addition to issues of translation, the medical education and related credentialing process for Russian professionals is not well understood in Africa. This resulted in lengthy and burdensome certification processes, which in some instances delayed or even prevented placements from going through. To meet this challenge, AIHA often worked with both the Russian experts and in-country laboratory leadership to change scopes of work to reflect mentoring or teaching functions rather than hands-on activities.

While most challenges were related to recruitment and placement, other problems occurred during assignments as well. Two experts contracted a highly resistant form of tropical malaria that proved to be problematic to treat upon their return to Russia and one of the experts who worked in Ethiopia contracted typhoid.

In addition, a lack of tools and equipment to carry out the scopes of work

often proved to be a significant challenge. The work of several lab experts was impeded by a lack of adequate protective equipment and supplies required for them to carry out their designated functions. In Tanzania, for example, the Russian pathology expert found that appropriate infection control barriers and supplies were not available and it took several weeks to acquire the needed supplies from the Tanzanian Ministry of Health and Social Welfare.

Many of the lessons learned related to logistics and program administration have already been fully incorporated into SHPI procedures and staff experience in AIHA's Russia and Africa-based offices is currently being utilized in the implementation of the follow-on program awarded to AIHA in September 2010.

In addition, based on the experience of the past three years, it was proposed to the SHPI Advisory Board that the following changes be incorporated into the follow-on program:

- A broader target group that includes health experts in HIV, tuberculosis, and other infectious diseases be considered for deployment in the future, rather than the narrow group of experts in HIV laboratory diagnostics;
- Greater flexibility be given to the duration of each mission allowing for multiple shorter duration deployments by the same expert over a period of time;
- Consideration be given to identifying key Russian institutions that can provide several experts, including teaching faculty, within the context of an institution-to-institution system strengthening or "twinning" relationship with the possibility of exchanges of African personnel to the Russian Federation;
- Increased deployment of experts to CIS countries where English language fluency, acculturation, and system "learning curve" is not an issue and experts can be deployed effectively for shorter technical assistance missions.

For additional information on the activities of Russian lab experts placed in Africa, please refer to Appendix I on page 30.

III. Medical Education and Training

The goal of this component of the SHPI program was to continue strengthening Russian medical educational institutions to help ensure that they can better fulfill their responsibilities to effectively train healthcare providers from Russia, as well as from many third countries that rely heavily on Russia for medical education.

AIHA cooperated closely with the Russian Ministry of Health and Social Development, USAID, and strategic partner institutions throughout the Russian Federation and CIS to achieve this objective through replication of the successful AIDS Training and Education Center (ATEC)

"Currently, there are only two hours dedicated to HIV education in Russia's undergraduate medical program. The elective course we developed, although initially designed for foreign students, supports our overall medical education curriculum by greatly expanding information on HIV infection. When designing this course, we consulted with more than 50 educational institutions throughout Russia and the CIS. It is easily adaptable to national specifics and I highly recommend it as a basic-level course on HIV/AIDS for medical universities in the region."

— *Dr. Nikolai I. Briko, Head, Epidemiology Department, I.M. Sechenov First Moscow State Medical University, Moscow, Russia, speaking about the course: "HIV Elective for International Medical Students," which was approved by the Russian Ministry of Health and Social Development in December 2009.*

Locations of AIDS Training and Education Centers in Russia



Through SHPI, AIDS Training and Education Centers (ATECs) have been established at Pavlov State Medical University and the St. Petersburg City AIDS Center (2008); the Orenburg Medical Academy for Postgraduate Studies (2007); and the Epidemiology Chair at the I.M. Sechenov First Moscow State Medical University (2008), which focuses on HIV-related education and training for international students. The model ATEC at the St. Petersburg Medical Academy for Postgraduate Studies has also been supported through SHPI. Collectively and with SHPI support, the ATECs have conducted 67 workshops, trained 167 faculty trainers, and trained 1,342 health and allied caregivers who provide treatment and support to people living with HIV in Russia and the CIS.

model developed in St. Petersburg, as well through ongoing curricula development in selected fundamental topics related to HIV/AIDS treatment and care and their dissemination to Russian and CIS medical schools.

AIDS Training and Education Centers

Based on the St. Petersburg ATEC established with AIHA and USAID support in 2006 at the St. Petersburg Medical Academy for Postgraduate Studies, three similar centers were created as part of the SHPI's capacity-building efforts in Russia. Support was also provided for the original ATEC through the program and, with financial support from the World Bank and the Central Asia AIDS Control Project, AIHA has — and will continue to — provide technical assistance to the newly established Regional Training Center on HIV/AIDS Care and Treatment in Tashkent, Uzbekistan. This new center is based on the St. Petersburg ATEC model and will benefit immeasurably from the strong education and practical, skills-based training foundation

Medical Education Courses Developed through SHPI: 2007-2010

Course Title	Date Approved	Education Level
HIV Elective Course for International Medical Students	December 2009	undergraduate
HIV and HIV-associated Diseases	December 2009	postgraduate
Issues in Specialized Medical Care to Patients with HIV and Hepatitis B & C	December 2009	postgraduate
HIV Prevention in Dentistry	December 2009	postgraduate
Palliative Care for PLWHIV	December 2010	postgraduate

developed in Russia through SHPI and previous USAID-supported AIHA projects in the region.

The ATECs currently offer more than 40 courses on the following key topical areas:

- HIV Medicine
- Adult Care and Treatment
- Pediatric Care and Treatment
- HIV/AIDS Nursing
- HIV/AIDS Palliative Care
- Treatment of Patients Co-infected with HIV, TB, and Hepatitis B and/or C
- ART for Injecting Drug Users
- Prevention of Mother-to-Child Transmission (PMTCT)
- Case Management
- Organization of Care
- HIV/AIDS Laboratory Services
- Faculty Development & Training-of-Trainers

Through its affiliation with WHO/Europe's GTZ-supported Regional Knowledge Hub for the Care and Treatment of HIV/AIDS in Eurasia, the Baltic ATEC in St. Petersburg and its strategic partners are playing a pivotal role in providing HIV/AIDS training to health and allied professionals in Russia and elsewhere in the CIS. Several courses offered at this particular ATEC —

"We began using the AIHA-developed courses in 2009, training more than 500 students from our pediatric, treatment, and prophylaxis departments annually. The courses provide all necessary information, are well illustrated, and use the latest methodological approaches to HIV education. Our students rate them very highly."

— Dr. Lyudmila I. Ratnikova, PhD, Professor, Head of Infectious Disease Department,
Chelyabinsk Medical Academy, Chelyabinsk, Russia

including a new continuing education course titled “HIV Medicine,” which features 20 modules covering all aspects of HIV prevention, treatment, care, and support — qualify as certified continuing education credits for health professionals through the Pavlov State Medical University.

Curricula Development

With concurrence from the Ministry of Health and Social Development, AIHA selected in 2007 two key medical schools as Russian partner institutions for the development of Ministry-certified training programs for under- and postgraduate education on HIV/AIDS:

- I.M. Sechenov First Moscow State Medical University (MSMU); and
- Moscow State University of Medicine and Dentistry (MSMSU).

In addition, AIHA also collaborated with the St. Petersburg Medical Academy for Postgraduate Studies and the Pavlov State Medical Academy in St. Petersburg to carry out this aspect of the medical education component of the SHPI project.

“The first step in developing a good program is knowing what is already in place. Through our analysis, we realized that the amount of time scheduled for HIV education in our postgraduate curricula was inadequate. Our analysis also revealed which topics would best serve the needs of today’s postgraduate medical students. While these topics are very specific and applicable to targeted audiences, such as dentists and social workers, much of the information would also be useful to general practitioners as well.”

— Dr. Yuri V. Martynov, PhD, Professor of Epidemiology and Infectious Diseases, Moscow State University of Medicine and Dentistry, Moscow, Russia, speaking about the courses: “HIV and HIV-associated Diseases,” “Issues in Specialized Medical Care to Patients with HIV and Hepatitis B and C,” and “HIV Prevention in Dentistry,” which were approved by the Russian Ministry of Health and Social Development in December 2009; and “Palliative Care for PLWHIV,” which was approved by the Ministry December 17, 2010.

Successful contract arrangements were made with these institutions and their respective faculties and, as a result of these partnerships, a total of five new courses and related training materials — along with requisite faculty development through training-of-trainers workshops conducted in Moscow, Astrakhan, and Ufa for 41 representatives of 35 of the most prominent medical schools in the Russian Federation — were successfully developed, certified, and piloted by the conclusion of this award in October 2010.

Courses were disseminated and promoted at key professional meetings and conferences in the Russian Federation, including the Eastern European and Central Asia AIDS Conference 2009 and the Second All-Russia Congress of Infectious Disease Specialists. In addition, the courses were adapted, translated into national languages, and disseminated to 12 selected medical schools in CIS countries.

In particular — through cooperation with the Regional Training Center on HIV Care and

Dissemination of Medical Education Courses as of October 2010

Course	Number of Russian Schools Officially Implementing Course	Number of Schools Using Course Materials as an Educative Resource	Adapted, Approved, and Translated for Use in Central Asia
HIV Elective Course for International Medical Students	2	18	4**
HIV and HIV-associated Diseases	3	19	4**
Issues in Specialized Medical Care to Patients with HIV and Hepatitis B & C	No Data	No Data	3***
HIV Prevention in Dentistry	11	26*	3***
Palliative Care for PLWHIV	0	0	0



* Although this was developed as an undergraduate course, many schools are also using it to teach physicians and residents.

** Kyrgyzstan, Tajikistan, and Uzbekistan.

*** Kazakhstan, Kyrgyzstan, and Uzbekistan.



"The elective course in HIV medicine for foreign students is slated for adoption at the Kyrgyz International University's Higher Medical School in February 2011 and all of our faculty have already been trained as trainers."

— Dr. Ainura Kutmanova, Head, Infectious Disease Chair, Kyrgyz State Medical Academy, and Professor of Special Disciplines, Kyrgyz International University, Bishkek, Kyrgyzstan

Treatment funded by the World Bank Central Asia AIDS Control Project — the courses were provided to the Kazakh Postgraduate State Medical Institute and Kazakh State Medical University in Kazakhstan; the Kyrgyz Postgraduate State Medical Institute and Kyrgyz State Medical Academy in Kyrgyzstan; the Tajik Ministry of Health and Tajik Postgraduate Medical School in Tajikistan; and the Tashkent Medical Academy and Tashkent Postgraduate Medical Institute in Uzbekistan.

In 2009, MSMU faculty developed the "Student Manual for the Elective Course on HIV for International Students." This manual — available in both Russian and English — is provided to all students who enroll in the course. It includes an overview of the epidemiological situation in the most HIV-affected countries and a review of evidence-based materials. The manual also covers topics such as regional analyses of the global HIV pandemic and information on HIV care and treatment, as well as management of common opportunistic infections.

Best Practices and Lessons Learned

As with any effective partnership, it takes quite some time to build a solid foundation for collaborative endeavors, particularly when working to establish new professional relations with well-established institutions, such as MSMSU. The curriculum approval process at the Ministry level also proved to be time-consuming.

AIHA's long history of successful partnerships and initiatives in the Russian Federation, as well as its strong working relationships with the Ministry of Health and Social Development and USAID/Russia, were invaluable to the ensuing negotiations and went a long way toward forging the kind of working alliances needed to make the complex medical education and curriculum development process work. Indeed, the Ministry's collaboration ensured the best possible selections of collaborating medical institutions were made thus facilitating the process.

Developing courses in accordance with the recommendations provided in Russia's standard program of complementary professional education in HIV/AIDS was critical to these efforts. Additionally, AIHA's previous experience developing curricula through the Regional Knowledge Hub and ATEC St. Petersburg demonstrated that concurrent development of related slides, presentations, tests, case studies, and other materials is a crucial element of success.

Russian Experts Share Priorities for Future Course Development

“Moving forward, future topics for course development should include one on HIV and Sexually Transmitted Infections. This is an important topic, particularly for postgraduate education.”

— Dr. Yuri V. Martynov, PhD, Professor of Epidemiology and Infectious Diseases, Moscow State University of Medicine and Dentistry, Moscow, Russia

“Tuberculosis is the leading cause of death among people living with HIV in our country, as well as many others in the world. For that reason, a course on HIV and TB co-morbidity should be a priority for future development.”

— Dr. Nikolai I. Briko, Head, Epidemiology Department, I.M. Sechenov First Moscow State Medical University, Moscow, Russia

IV. Web-based Professional Medical Education Resources

The goal of this component was to support continuous Web-based education for medical professionals in Russia and the CIS countries through the EurasiaHealth AIDS Knowledge Network (EAKN). With the goal of further developing HIV/AIDS treatment, care, and support capacity through increased opportunities for online distance learning opportunities, AIHA worked to expand related tools and resources, including guidelines, protocols, textbooks, clinical case libraries, training slide-sets, active forums on clinical case discussions, Web-based consultations, module-based distance learning and testing, and monthly Russian-language summaries of clinical study reports published in major international medical journals.

Home to more than 700 HIV/AIDS-related documents and resources, the EAKN site offers free access to a wealth of up-to-date and newly translated educational materials, including reviews of leading publications, journals, textbooks, and guidelines. Under the auspices of EAKN, AIHA staff have offered a number of distance education courses on topics such as evidence-based medicine and how to prepare effective patient education materials. Based on Russian- and English-language sources, these annual courses are provided free of charge to healthcare professionals.

The site also offers interactive forums and clinical case studies developed by Russian healthcare providers. All registered users may participate in online discussions and submit their own case studies. The discussions feature input from Russian and international faculty, experts, and patients. As of December 2010, 285 individuals participated in EAKN's Russian listserv. Working with Medmir, AIHA published 72 evidenced-based articles on EAKN in 2008, 72 in 2009, and 60 in 2010.

Since its launch, EAKN has been visited by more than 58,000 individual users, most from

Russia, Ukraine, Uzbekistan, Kazakhstan, and Moldova. Using funding from SHPI and other ongoing projects, AIHA continued its efforts to translate, provide electronic access to, and in some cases to print several major HIV/AIDS textbooks. Documents most frequently downloaded by users are *Medical Management of HIV Infection 2007*, *Medical Management of HIV Infection 2009-2010*, *The Pocket Guide to Adult HIV/AIDS Treatment 2008-2009*, *HIV Medicine 2009*, and the *Textbook of Pediatric HIV Care*. These texts were translated with support from WHO, ViiV Healthcare (formerly GlaxoSmithKline), and other donors.

In cooperation with the US Web site www.hivdent.org, AIHA and MSMSU staff developed a Russian HIV Dentistry site. This Web site, www.HIVDent.ru, has a number of translated materials as well as resources developed by Russian specialists from MSMSU. Although AIHA is paying for the initial year of site hosting, www.HIVDent.ru is owned by MSMSU staff, who were properly trained to manage the site.

A key challenge of implementing the Web-based component of SHPI was the difficulty finding a well-established medical educational institution that would be ready to “adopt” our Web sites and continue site maintenance and updates. Two possible host organizations, MSMU and Pavlov State Medical University were interested, but most of the non-communicable disease resources and other relevant information on our site was outdated because funding for routine updating of materials ended when AIHA’s previous region-wide cooperative agreement with USAID concluded in 2008. Since then, most updating efforts have focused on HIV resources. AIHA is currently looking to identify another organization that would agree to support the site.

Another challenge that emerged during implementation of this component was the fact that a significant proportion of Russian medical professionals demonstrated a lack of preparedness to participate in online activities such as distance education courses and forum discussions. In some cases, this may be due to lack of hardware, internet connectivity issues, or low comfort level with the training vehicle. Though the situation is improving, there remains a core lack of active participants who would support a more prominent role of online education for EAKN users.

V. Conclusions

Activities undertaken through the USAID SHPI cooperative agreement between 2007 and 2010 have laid a solid foundation for the activities that are now being carried out under the SHPI follow-on program awarded to AIHA by USAID/Russia in fall 2010.

The technical assistance provided by the Russian experts under the initial SHPI award has been commended by the respective ministries of health, CDC, and host institutions in all five

“Health is the most important thing for every person. The exchange of knowledge and information, as well as new approaches to treatment, is important for Russia, the United States, and every other country in the world. Particularly in the field of infectious disease, this collaboration is beneficial to everyone.”

— Dr. Eugeniy I. Slastnykh, Head of International Cooperation in Healthcare, Department of International Cooperation, Russian Ministry of Health and Social Development

recipient countries. In addition, the SHPI project, its organization, and initiatives have been endorsed by the Russian Ministry of Health and Social Development as crucial in the Russian-American international healthcare collaboration and the Ministry has officially supported follow-on activities to the program.

These follow-on activities will facilitate Russia's expanding role within the global assistance framework by:

- Further strengthening Russia's capacity to provide technical assistance related to infectious disease control and prevention in third countries;
- Improving the level of professionalism of Russian experts in TB, HIV, and other infectious diseases, along with their ability to work more effectively in generalized and concentrated HIV epidemics;
- Modernizing postgraduate, and potentially undergraduate, medical education in the area of TB and other infectious diseases through the development of curricula and training materials based on international standards and innovative methodologies; and
- Improving national capacity to detect, diagnose, treat, and monitor TB, HIV, and other infectious diseases in the Russian Federation and other countries.

Building on the institutional arrangements, policies, procedures, and successes of the initial SHPI program, AIHA is committed to using all its resources and capabilities to implement USAID's 2010-2015 follow-on program in a manner that fully realizes the stated project objectives and is in keeping with the "spirit" of the Russian-American Partnership.

AIHA is continuing its program of strengthening professional medical education by developing the Russian Federation's capacity to train students and healthcare providers — both in Russia and in third countries — on topics related to TB and HIV/AIDS. AIHA is also striving to strengthen and expand its collaboration with the Ministry of Health and Social Development, leading medical universities and academies for postgraduate education, and ATECs, as well as TB Centers of Excellence (COEs) and other partners to better facilitate training and education under the new program.

This component builds on the ongoing postgraduate HIV/AIDS training initiative for Russian specialists and health professionals from Russia and CIS countries that began in 2005 and was continued in 2008-2010 under SHPI, as well as the successful USAID-supported effort to establish COEs in Orel (management of TB and MDR TB) and Vladimir (TB infection control). Together, these initiatives have resulted in the updating of existing courses, development of new courses, and introduction of innovative approaches to TB and HIV care in Russia.

AIHA has worked closely with the Ministry of Health and Social Development's Department of Science and Education and key schools of the health professions identified by the Ministry to establish a successful process for developing, piloting, and certifying courses to meet Russian priorities for health professions education. Now that SHPI Follow-on activities are under way, AIHA has continued the certification process with Russia's Ministry of Health and Social Development for previously developed and piloted courses currently in the pipeline. On December 17, 2010, the Ministry officially approved the course "Palliative Care for PLWHIV." In addition, AIHA is now working with the Ministry of Health and Social Development on the integration of curricula and supporting material into the postgraduate medical education system. All curricula on HIV and associated diseases will be in compliance with the master curriculum on HIV/AIDS, "Standard Program on HIV Infection for Postgraduate Training," which has already been approved by the Ministry.

VI. Appendix I

This section contains a selection of articles highlighting the efforts of Russian lab experts who provided targeted technical assistance in Botswana, Ethiopia, and Tanzania. Included are:

- I. “Russian-American Cooperation Strengthens Capacity in Tanzanian Medical Laboratories, Improves HIV Diagnostics” (October 2009)
- II. “Russian Experts Help Ethiopia Establish Cell-based Rabies Vaccine Production” (May 2010)
- III. “Faced with Rising Numbers of Fungal Infections, Botswana Receives Technical Support through Russian-American Partnership” (May 2010)

Russian-American Cooperation Strengthens Capacity in Tanzanian Medical Laboratories, Improves HIV Diagnostics

USAID-supported Strategic Health Partnership Initiative Enables Russian Experts to Train and Mentor Lab Workers in Dar es Salaam and Mwanza

Throughout Africa and many other developing regions of the world, inefficient, poorly equipped or maintained, and inadequately staffed medical laboratories represent a major barrier to the provision of high quality healthcare services. The World Health Organization's Regional Office for Africa (WHO/AFRO) reports that most laboratories on that continent lack the institutional, material, and human resource capacity required to achieve WHO accreditation and operate as an effective component of healthcare systems in these nations.

Russian laboratory scientists possess a wealth of knowledge and technical expertise, which can be shared with the developing world to help strengthen lab — and therefore health system — capacity. They are doing just that through the Strategic Health Partnership Initiative, a unique multilateral project spearheaded by Russia's Ministry of Health and Social Development, the US Agency for International Development (USAID), and the American International Health Alliance (AIHA).

Launched in late 2007, the Strategic Health Partnership Initiative is a direct result of the 2005 Bratislava Initiatives, a joint Russian-American presidential agreement designed to strengthen cooperation on a number of cross-cutting issues, including the global fight against HIV/AIDS. Designed to bolster Russia's capacity to provide technical and professional assistance to developing nations around the globe, the project exemplifies successful Russian-American cooperation within the global public health arena.

AIHA's HIV/AIDS Twinning Center program — which supports PEPFAR's capacity building efforts in Africa — and the Regional Knowledge Hub for the Care and Treatment of HIV/AIDS in Eurasia play a important role in strengthening Russia's international technical assistance strategy. Leveraging relationships established through Twinning Center partnerships in Africa and the AIDS Training and Education Centers established in Russia with support from the Regional Knowledge Hub, AIHA is helping deploy a cohort of highly qualified Russian experts who share their knowledge and technical skills with colleagues in other countries in the region and around the globe, starting with Botswana, Ethiopia, Namibia, and Tanzania. These experts



Properly functioning laboratories are considered the backbone of any health system. They arm clinicians with correct diagnoses and inform decisions on treatment needs and efficacy thereby improving patient care and helping to ensure the most rational use of scarce resources. Most labs in Africa — such as this histopathology laboratory at Bugando Medical Center in Mwanza, Tanzania — lack the resources and trained staff needed to make them a full partner in the provision of quality care.

work closely with the ministries of health and CDC staff in targeted nations to help strengthen critical laboratory services. Among the first of this cohort to be deployed with the objective of improving local laboratory capacity to diagnose and monitor HIV and other infectious diseases were Drs. Alexander Kanibolotskiy, Irina Nikolaeva, Alexander Semenov, and Vladimir Zinkin, who were stationed in Tanzania in May 2009.

Three other Russian experts commenced their mentorship assignments during the summer of 2009 — one in Ethiopia and two in Botswana — and four more are expected to be placed by the end of the year, according to Dr. Inna Jurkevich, Director of AIHA's programs in Russia. "In addition, Drs. Semenov and Zinkin have each agreed to another two-month mentorship placement in Botswana, which will focus on lab quality assurance and commence in January 2010. Dr. Artem Metlin — a noted rabies expert with the Russian National Research Institute for Animal Health who spent four months this summer working with staff at the Ethiopian Health and Nutrition Research Institute in Addis Ababa — will also return in January for a second mentorship during which he will continue his work assisting with the development of a national rabies prevention program and rabies vaccine," Jurkevich explains.

"I am very impressed with the potential this program has to mobilize Russia's considerable expertise in the health sector and put it to use helping African countries facing the strains of growing HIV and TB epidemics," says USAID/Russia Mission Director Leon Waskin.

Sharing Knowledge and Expertise Leads to Increased Capacity, Improved Quality

When Russian lab expert Dr. Alexander Semenov first stepped through the doors of the Temeke Municipal Hospital Laboratory in May 2009, he immediately realized he had his work cut out for him. "Patients were lined up in the courtyard outside the lab waiting to be called in for various tests. Phlebotomists were inside a tiny room drawing blood from patients who stood outside and stuck their arms through an open service window. And shelves that should have been filled with manuals, SOPs, and other resources were stark and bare," recalls the Associate Professor at the St. Petersburg Medical Academy for Postgraduate Studies, Department of Clinical Laboratory Diagnostics.

The 180-bed hospital is situated in one of Dar es Salaam's poorest, most populous districts and serves a catchment area that includes some 1.2 million men, women, and children. HIV, tuberculosis, and malaria are among the most prevalent diseases that fuel the steady stream of patients who seek treatment at Temeke Municipal Hospital each day. Some 15,000 people receive antiretroviral therapy at the facility, where the need is as great as the resources are scant.

Far from daunted, Semenov quickly recognized the enormous potential for improvement and got to work. The fact that he was greeted by a 14-member staff that



When Dr. Alexander Semenov arrived at Temeke Municipal Hospital Lab, he learned that patients often stood outside the office pictured above and reached through the grated window on the left to have blood drawn. He worked with lab staff to implement new policies in accordance with international best practices and quality standards.



In May 2009, shelves that should have contained policies, procedural manuals, and other resources in the Temeke Lab were largely bare. Three months later, those same shelves housed more than 20 binders containing critical forms, quality assurance documents, and SOPs that Dr. Semenov created in close cooperation with local staff.



“One of the first things I noticed was that when physicians requested a test from the lab, they used a paper form. This form was returned to the clinician with the results, leaving no record of the results — or that the test had even been done — in the laboratory,” he says, explaining that he created a new recording system so each test conducted there is easily traceable onsite.

Existing equipment was inventoried and a planned preventive maintenance schedule was developed. Temperature monitoring charts were created and placed on all appropriate apparatus. Broken machines were labeled and reported to hospital management. And equipment logs were implemented to track every procedure performed.

In July, the Russian mentors organized a training for laboratory technicians and attendants from similar facilities, which was hosted by Temeke Municipal Hospital. “I was struck by the lack of professional community here in Africa ... there is a vertical structure in place and it works, but there is no peer-to-peer network that can provide any sense of team for lab professionals, particularly mid-to-lower level staff,” Semenov says. “I hope this is something the Tanzanians will support in the future because even if they remain informal, these types of horizontal systems really work.”

was both eager to learn and enthusiastic about implementing change fortified his optimism. Over the course of his three-month assignment at Temeke, Semenov and his Tanzanian counterparts racked up an impressive list of accomplishments.

After a thorough assessment of existing capacity — both material and human — areas targeted for improvement included lab organization, staff education and training, equipment, process control, documentation and record-keeping, assessment, occurrence management, and facility space and safety issues.

Specific tasks related to lab organization ranged from developing an organizational chart and drafting an official Laboratory Quality Policy to appointing a Lab Quality Officer and conducting sensitization meetings to inform hospital staff of the changes being implemented in the lab, Semenov explains. Building human capacity started with developing job descriptions for each position and conducting competency assessments for every procedure performed by members of the lab team. This lengthy process revealed key training needs, which included bio-safety, data management, sample handling, equipment maintenance, computer skills, basic mathematical statistics, and quality control.

Temeke District is home to more than a million people, but the main municipal hospital has no database for managing patient records, tracking outcomes, and driving policies accordingly, Semenov explains, expressing the hope that a new lab currently being built on the hospital campus with support from the Abbott Fund will have digital capabilities from the start. “Even the simplest Lab Information System can eliminate many human errors,” he points out, before moving on to a related — possibly sensitive — subject.

“International donors are contributing greatly to developing lab capacity in Africa. The Abbott Fund, for example, is building around 23 new laboratories in Tanzania alone. The problem I see overall is that each donor seems to work in isolation, often with too much focus on very expensive equipment,” Semenov says. “The reality, though, is that staff is not always trained to use it properly or the hospital cannot afford to purchase the necessary reagents and supplies.” So, he explains, huge investments can easily turn into wasted capacity as a \$200,000 machine sits unused while basic necessities are in short supply.

What is not in short supply, is praise for what Semenov has accomplished at Temeke. Hospital Director Dr. Asha Mahita says, “As a regional hospital, we face many challenges managing the huge number of patients we serve. Many people travel long distances to get lab tests, and Dr. Semenov has been so helpful in helping us improve the quality and speed of our laboratory.”

Temeke Hospital Laboratory Quality Officer Dr. Meinrad Nguyu agrees wholeheartedly. “During his short time here, Dr. Alex has helped us move forward immeasurably,” he says. “The work he has done developing SOPs and teaching us how to use the system ... the changes he has helped us make our collection processes ... the lab reporting forms he created ... he even showed us how to work more effectively with patients ... all this has contributed to remarkable improvements in the quality of work we do,” Nguyu reports, stressing that the new operations and procedures have become second nature to the staff.

“Because Alex is such a strong mentor who involved us in every step along the way, I feel that I myself became a better teacher,” says Laboratory Manager Dr. Anastella Lugayana.

In addition to procuring an electronic Lab Information System, Dr. Semenov’s final recommendations for ongoing capacity building at Temeke include arranging for an adequate alternative source, computer training for lab staff and managers, and replacing outdated or non-functional equipment.

At the same time all these changes were taking place in Temeke, similar efforts were being carried out by Semenov’s colleagues at other labs spanning Tanzania.

Dr. Irina Nikolaeva — Senior Researcher at the Department of AIDS Immunology at the National Research Center for Immunology, Russian Federal Biomedical Agency in Moscow —



Lab workers attend a July training organized by the Russian lab mentors and conducted at Temeke Municipal Hospital.

was stationed at Mwananyamala Hospital in Dar es Salaam's Kinondoni District. Although largely a maternity hospital, Mwananyamala also provides general clinical services to a catchment area populated by some 700,000 people. Some 8,000 individuals receive antiretroviral treatment and related care there each month.

"It's a high-volume lab, where about 3,000 malaria tests, 500 TB tests, and 4,500 HIV tests are performed each month," Nikolaeva reports.

She discovered that the quality management system implemented at Mwananyamala was further along than the one in Temeke. "A number of SOPs were already in place, and these



Dr. Irina Nikolaeva spent three months at Mwananyamala Hospital in Dar es Salaam's Kinondoni District during 2009. While there, she mentored lab staff, conducted training workshops, and worked closely with local colleagues to improve quality and efficiency standards.

were well-prepared. I only needed to introduce a handful of new ones — for hemoglobin and glucose quantitative determination tests, for example," she says. Still, there were issues with reporting and documentation to be addressed, as well as improvements in quality control and assurance and staff training. "I developed an improved organizational chart and worksheets for lab tests, which also serve as register forms that help with keeping accurate records of test results," Nikolaeva continues.

"One of the biggest challenges this lab faces is lack of equipment and supplies," Nikolaeva notes, explaining that glucose test kits — critical for pregnant women and other patients — were unavailable for two of the three months she was at Mwananyamala. "Rapid tests for malaria were also sometimes unavailable, so tests had to be done using a microscope, which is a very slow process given the number of tests done each day. Results can also be unreliable because they are dependent on the technicians level of skill and training," she acknowledges.

The lab also houses the hospital's blood bank and, as part of the "Quality System Essentials" plan Nikolaeva implemented, staff began to monitor the refrigerator and record the internal temperature on a daily basis. "This

revealed that the unit wasn't working properly, which meant the quality of the blood and blood products was being compromised, so we began to bombard the administration with requests to fix it on a daily basis. I am pleased to say this happened before I left Mwananyamala on August 6, but I do hope that the hospital follows my recommendation to procure a backup unit in the near future," she stressed.

Despite these challenges, though, Nikolaeva was struck by the dedication and enthusiasm of Mwananyamala's laboratory staff. "They were very eager to learn and willing to accept recommendations for changes. Both the Lab Director and the Lab Quality Officer are good mentors — not just on technical issues, but also on how to treat patients kindly and with respect," she says.

Like Semenov, Nikolaeva recommends that broken or outdated equipment — particularly the

centrifuge and a backup refrigeration system for the blood bank — be procured. Additional attention to staff training and development would greatly benefit the lab, as follow up on data management and maintenance policies. “It is also critical to ensure a continuous supply of reagents and supplies, such as EDTA tubes and other specimen containers,” she stresses.

“It is not just about obtaining expensive equipment for the lab,” Nikolaeva underscores. “Often, minor changes make a really big difference. For example, lab work requires clear, legible labeling of test tubes, containers, slides, and the like. To achieve this, lab workers need to have fine-point, water resistant lab markers — a very low-cost item that can have a big impact,” she points out. “Also, AIHA had already provided the lab with a laptop computer as part of a partnership supported by PEPFAR and CDC/Tanzania. I requested a printer and paper, which was provided. This allowed us to prepare worksheets, lab reporting forms,



During her mentorship at Mwananyamala Hospital, Dr. Nikolaeva introduced critical quality controls into a range of lab assays and procedures. “We started using Levey-Jennings Charts to improve monitoring of quality control data and I worked closely with the Lab Manager and Lab Quality Officer to create a draft Laboratory Safety Manual,” she says. “I also created binders for the equipment and supplies, which includes available operation manuals and instructions.”

SOPs, and other paperwork, which greatly improved the lab’s documentation system,” she explains.

Mwananyamala Laboratory Manager Said Mwamba reports that the changes Nikolaeva helped implement have had a big impact on the quality of work done by the lab. “She developed or customized SOPs, developed laboratory worksheets and standards for turn around times, and helped establish biosafety measures — she even provided us with a biosafety manual from Harvard School of Medicine,” Mwamba says. “We need her back, too, because we’ve got more work to do,” he says.

Across the country on the shores of Lake Victoria, Dr. Vladimir Zinkin was implementing equivalent changes at Sekou Toure Regional Hospital

Laboratory in Mwanza. Sekou Toure is a 180-bed regional referral hospital that serves a catchment area with a population of 1.3 million people. Zinkin’s experience as Head of the Clinical Immunology and AIDS Diagnostics Laboratory at Sklifosovsky Research Institute for Emergency Medicine in Moscow prepared him well for his mentorship in Mwanza.

Infrastructure problems are a major challenge at Sekou Toure — power, water, and sewer facilities are all sub-par and require renovation, Zinkin reports. “Cold chain maintenance and regular delivery of needed supplies and reagents need to be addressed. Hiring a Quality Control Officer and providing staff with computer training are also high on my list of recommendations,” he continues.

“By the end of my mentorship assignment, lab staff in Mwanza had a greater confidence in their understanding of basic principles throughout every stage of entire lab cycle, from pre-analytical, analytical, to post-analytical,” he says, noting that the Sekou Toure lab workers also gained a better understanding of the significance of using appropriate quality control tools in their routine practice.

“I think the seminar I organized jointly with Drs. Nikolaeva and Semenov for Tanzanian lab staff was an incredibly important result of our work there,” Zinkin says. In addition to the lab topics that were explained — Dr. Nikolaeva presented on the essentials of lab quality; Dr. Semenov presented on quality control tools and using a statistical approach to quality control; and Zinkin himself lectured on sample handling and the basic principles of flow cytometry and CD4 troubleshooting — the event played a crucial role in motivating staff and building a sense of teamwork and professional camaraderie, he says.



At Sekou Toure Regional Hospital in Mwanza, Dr. Vladimir Zinkin — Head of the Clinical Immunology and AIDS Diagnostics Laboratory at Moscow's Sklifosovsky Research Institute for Emergency Medicine — focused on improving HIV/AIDS diagnostic services by assessing existing capacity and practice, providing training and mentoring for lab staff, and implementing or updating standard operating procedures and quality assurance practices.

“This was an important step toward strengthening the laboratory system as a whole because it opened a dialogue and provided an initial framework for subsequent follow-up on these topics at the individual labs. On a personal level, my colleagues and I were inspired by the interest and desire to obtain new knowledge and skills that we saw in the lab workers who attended the workshop. Each person clearly aspired to improve themselves so they could make changes for the better in their daily work,” Zinkin notes.

Dr. Alexander Kanibolotskiy's mentorship assignment differed from that of his three colleagues in Tanzania. His placement with the Histopathology Department at Bugando Medical Center in Mwanza reflects his extensive expertise in forensic medicine and pathology, as well as his position

as Head of Pathology at Moscow Municipal Clinical Hospital No. 70.

“Bugando is a large referral hospital in Tanzania's Lake Zone and the space allotted to the Histopathology Department cannot sufficiently accommodate the equipment and personnel required for its large volume of work,” Kanibolotskiy explains, noting that the operation will move to larger quarters in the latter part of 2009.

The work of lab staff is varied, ranging from advising patients to conducting histological, cytological, and hematological research, as well as performing autopsies, according to Kanibolotskiy. It's an extremely busy department, he reports, and although the basic standards

needed for histological investigation are functional, the equipment should be updated and pieces that no longer work properly need to be cleared out.

The department's library is also outdated and most of the specialized literature is very old. "One of my first recommendations was to acquire resources that would enable staff to use modern classifications of tumors and provide histological conclusions in accordance with international standards," Kanibolotskiy notes, explaining that he supplied the lab with PDF versions of WHO's Lyon classifications of tumors of the skin, digestive system, soft tissues, bones, and urogenital system.

Another problem he encountered was even more alarming. "In its current location, the basic rules of laboratory safety are not observed. There is no active ventilation system; bactericidal lamps are not used; chemical reagents, formalin, and archive are located in the workrooms; and critical safety equipment such as chainmail gloves, protective goggles, and non-permanent aprons are unavailable," Kanibolotskiy points out.

He worked closely with his counterparts in Mwanza to update existing SOPs, revising protocols and providing training and mentoring on current methods of obtaining tissue and other samples, as well as processing, staining, and embedding procedures.



Dr. Alexander Kanibolotskiy, Head of Moscow Municipal Clinical Hospital No. 70's Pathology Department, served as a technical expert and mentor to staff in the Histopathology Department at Bugando Medical Center in Mwanza.

"I was pleased to have this opportunity to exchange experiences with the staff at Bugando. I found them to be highly skilled professionals who were open to having a fresh set of eyes look at how things were operating in the department — and to my recommendations on possible ways to improve practices," Kanibolotskiy says. Chief among those were increasing both the lab space and the number of staff; improving safety assurance; standardizing postmortem examinations; coding all cases in accordance with ICD 10 protocols; periodic saving of archived information; and development of an annual plan for quality control and quality assurance.

The Russian experts have made significant and lasting contributions toward building laboratory capacity in Tanzania, just as their contemporaries working in Botswana and Ethiopia have done in those nations. Collectively, their efforts have been recognized by the ministries of health and US Centers for Disease Control and Prevention, along with their laboratory counterparts, in all three countries.

Russian Experts Help Ethiopia Establish Cell-based Rabies Vaccine Production

Scientists Provide Technical Assistance to Help Ethiopia Tackle Rabies Prevention and Treatment through the USAID-supported Strategic Health Partnership Initiative

Rabies is preventable, yet it remains a significant cause of both human and animal deaths in many parts of the world. The Alliance for Rabies Control reports that an estimated 55,000 people die each year from the virus — most in Africa and Asia — although they are quick to point out that this number is greatly underestimated because “reliable data indicating the true incidence of human rabies are scarce or non-existent.” This lack of data translates to rabies being relatively low on the agendas of many policymakers, particularly in cash-strapped developing nations. As a result, effective control and surveillance programs are not implemented.

Rabies has been present in Ethiopia for centuries, with various traditional treatments referenced in local medical books since the early 1800s, according to research conducted by the Ethiopian Health and Nutrition Research Institute (EHNRI) in Addis Ababa.

“Our retrospective data for the last four decades indicate that canine rabies is well established with no decline in the annual number of confirmed cases,” says Mr. Kelbesa Urga, Senior Researcher, Assistant Professor, and Director of the Vaccine and Diagnostics Production Directorate at EHNRI. “Some 80 percent of brain samples diagnosed at our laboratory are confirmed positive for rabies each year and an average of 1,500 people come to us annually for post-exposure treatment from Addis Ababa and nearby areas,” he reports.

As is true in much of the world, dogs are the primary vector for human infection with the rabies virus. “Dogs were responsible for 92 percent of the cases in which humans received post-exposure treatment for rabies at EHNRI and, of the 20 or 30 animals we quarantine here each week, 90 percent are dogs,” Mr. Urga explains.

There are a number of reasons rabies represents a significant public health concern in Ethiopia, many of them related to the fact that there is no framework for effective surveillance, data monitoring, and guidance. According to Mr. Urga, there is no census to ascertain the dynamics of the canine population, nor any household survey data to determine the ratio of owned versus stray dogs in the country. Animal control is also an issue.

“We have no legislation to certify dogs are vaccinated, which is needed to control animal movement in case of an outbreak and there is no mechanism for monitoring rabies among wildlife or strays ... in fact, there is no established surveillance system, so rabies cases are underestimated and underreported,” he points out. On the prevention side, there is no regular



In Ethiopia, where rabies is a serious public health concern, Dr. Artem Metlin (left) and Dr. Denis Bankovskiy have helped produce a rabies vaccine using cell cultures.

mass vaccination of dogs to maintain an 80 percent herd immunity, which is the standard for controlling rabies. “So far, we do not have a rabies control program in place and EHNRI is the sole institute in the country to provide rabies diagnosis, post-exposure treatment, consultation, and distribution of vaccine to the regions,” Mr. Urga says.

Russian Experts Help Usher in New Era of Rabies Prevention and Treatment

Ethiopia has long been one of only a handful of countries around the world that are still using the old Fermi-type phenolized sheep brain tissue vaccine. “This outdated vaccine is very dangerous and, according to the World Health Organization, should not be used on humans,” says Dr. Artem Metlin of Russia’s Federal Centre for Animal Health. “Known side effects include severe allergic reactions, encephalitis, partial paralysis, and even death,” he explains. It is also very painful. The course of treatment is 17 5-milliliter injections administered in the stomach area.

In June 2009, Dr. Metlin began a four-month technical assistance assignment at EHNRI at the request of the Ethiopian Ministry of Health. His mentorship there was sponsored through the Strategic Health Partnership Initiative, a unique multilateral project of the Russian Ministry of Health and Social Development, the US Agency for International Development (USAID), and the American International Health Alliance (AIHA).

“The Ethiopian Government recognizes that rabies is a serious problem and it is one of the strategic focus areas that emerged from the recent business process reengineering undertaken by the Ministry of Health,” explains Dr. Medhin Zewdu Tsehaiu, Director General at the Office of the Minister of Health. “Our goal is to build the capacity to manufacture 10 vaccines and we’re starting with rabies,” she says. That’s where Dr. Metlin comes in.



In August 2009, Dr. Metlin displays the Fermi-type rabies vaccine derived from phenolized sheep brains. According to WHO, this type of vaccine is not recommended for human use, but it is the standard of care available in Ethiopia.

“When I first arrived at EHNRI, I knew nothing of local conditions and it was a really challenging situation,” Dr. Metlin acknowledges. “A lot of equipment had been ordered, but no one could properly install and service it. There were no manuals or standard operating procedures (SOPs) and the literature that was available was outdated. The building itself would have to be torn down and rebuilt from scratch to truly qualify as biosafety level two. And, because the rabies lab was a new department, most of the staff — though experienced — needed basic training in rabies-specific diagnostics,” he says.

Another challenge was the lack of legislative framework for both rabies policy and practice. “Rabies is truly a neglected disease ... even a small fraction of the funding international groups provide for HIV/AIDS could eradicate it in Ethiopia,” Dr. Metlin maintains. Instead, he says, “EHNRI is the only place in the country where rabies can be diagnosed. For proper surveillance, there should be a lab in each region. There is no reporting system and no lab diagnosis for people who are suspected to have died from rabies, so data cannot be accurately tracked.”



Dogs brought to EHNRI for rabies testing are quarantined in a small compound near the rabies lab to see if they develop clinical signs of infection.

Even worse is the lack of care available for people who may have contracted rabies. “If someone is bitten, they bring the dog here for observation and are referred to a nearby hospital,” he explains. Without an effective vaccine, though, these people must endure the risky, painful prophylaxis therapy currently available. If they develop clinical signs of rabies, no cure is available.

From the scientists and lab professionals at EHNRI to the highest levels of the Ethiopian Government, there is a commitment to change this.

Explaining that EHNRI has heavily invested in upgrading the facilities required to produce a rabies vaccine in keeping with modern standards, Mr. Urga says that the renovation is nearly complete. “The Government’s commitment to rabies control is visible and serious. The Ministry of Health has allocated several million Birr each year to produce a sufficient amount of vaccine for both humans and dogs. Our goal is to be self-sufficient.”

In his role of technical advisor, Dr. Metlin’s key priorities during the summer of 2009 were to set the process in motion for onsite vaccine production, build capacity at the rabies lab by training staff and developing SOPs and other resource materials, and develop a process for rabies control and surveillance.

“We prepared draft legislation for a rabies control program and submitted them to the Ministry of Health for approval and developed several SOPs related to rabies virus concentration and the adaptation of the virus to cell cultures — a process that can take up to six months,” he explains, noting that ongoing renovations to the lab impeded his progress in the actual production of the vaccine itself during his first four months at EHNRI.

Once the EHNRI lab acquired seed rabies virus from the US Centers for Disease Control and Prevention in Atlanta, the vaccine production process entailed preparing cell cultures, infecting them with the virus and allowing the cultures to grow for two to three days before testing the procedure to determine the exact length of time required. At that point, the resulting virus is



Conditions in the EHNRI Rabies Lab in August 2009. Sheep brains were ground using a mortar and pestle before being processed in the Fermi-type phenolized vaccine. Severe allergic reactions, encephalitis, and partial paralysis were common side effects.

inactivated and purified from the cells using a centrifuge. The purified virus is mixed, analyzed for quality, and bottled or freeze dried for longer storage, according to Dr. Metlin.

Having Laid the Foundation, Russian Mentors Succeed in Introducing Cell-Culture Vaccine Production at EHNRI Lab

When Dr. Metlin left Ethiopia in October 2009, he had helped lay a strong foundation at the rabies lab, but there was still much work to be done. With the support of USAID, he returned to EHNRI in mid-January 2010 accompanied by Dr. Denis Bankovskiy, a vaccine expert from the JSC Pokrov Biologics Plant in Volginskiy, Russia. Together, the two Russian experts hit the ground running. By the middle of February, the transformation in the rabies lab was nothing less than stunning.

“I expected it to be in worse condition when I arrived, but Dr. Metlin provided a significant amount of technical support and the Ethiopians had done a great deal of work during the previous months,” Dr. Bankovskiy admits.

“I was really surprised at the high quality, modern equipment, even if some of it is not yet up and running. Also, the lab staff have experience working with cells and are young and not set in their ways. They learn quickly and are eager to make changes here... there has been a lot of progress in the past month,” he continues, explaining that the two mentors have conducted a series of trainings on topics such as cell concentration, infecting cells with vaccine rabies virus strains, inoculating mice for vaccine trials, titration, and dissection of mice for brain sampling to perform rabies diagnostics tests — all designed to prepare their counterparts to work independently once they return to Russia.

“Our work in the lab is done step by step, so we prepare SOPs accordingly to ensure vaccine production is in accordance with international standards,” Dr. Metlin says. “We developed four or

five the last time I was here and we've done two more this time, as well as completed a lab manual."

In February, they produced the first batch of rabies vaccine and conducted initial trials on mice before proceeding to trials using dogs and, finally, humans. "None of these mice should die of rabies, but if any do we will need to reevaluate the process and make the necessary adjustments... it is a painstaking process," according to Dr. Metlin.

"The goal is to eventually produce 20,000 doses or more per year, but they will need some additional equipment to do that and, even then they will require more vaccine. If they ramp up production they may be able to sell some to other countries... it's much better to produce it here and provide jobs to people who need them, as well as income from sales," he stresses.

Dr. Tsehaiu from the Ministry of Health agrees. "It is critical that we develop this vaccine; the impact will spread beyond rabies because the process can be applied to other vaccines. We've invested a huge amount of money and the knowledge and skills the Russian mentors have transferred to staff at the rabies lab is invaluable," she says.

In the lab, the researchers who have worked side by side with Drs. Metlin and Bankovskiy say they are proud to be part of the ground-breaking changes that are happening at EHNRI.

Assistant Researcher Mrs. Bethlehem Newayaselassie has worked at EHNRI for 11 years, but just joined the rabies lab in June 2009. "I have witnessed small children suffering terribly while getting the existing vaccine and the memories of that have pained me for years," she says, explaining why the work of the lab is so important for the people of Ethiopia.

"There have been drastic improvements here since I started," she continues. "From day to day, we witness new changes being implemented. It's not just the physical transformation of the lab, it's also the new skills we are learning and the hands-on experience we are gaining from working with Denis and Artem."

Echoing her comments, Mr. Birhanu Hurisa, also an Assistant Researcher, says, "At first, we didn't have the virus, the equipment, or even the knowledge how to put them to use, which is the biggest improvement. Now, our hopes for the



Dr. Denis Bankovskiy works side by side with EHNRI Research Assistant Birhanu Hurisa isolating cells at the newly renovated rabies lab.





On February 15, 2010, Dr. Metlin oversaw EHNRI staff as they conducted the first round of clinical tests on mice using the initial batch of rabies vaccine produced onsite.

future are without limit. We do have challenges. Supplies are limited and everything takes a long time, but we can overcome these issues and reach our goal,” he says with conviction.

For their part, Dr. Metlin concluded his assignment in mid-March and Bankovskiy finished his one month later. Both say they are eager to see the rabies control project through to completion.

“The mice trials were successful, so it would be very useful for us to return when they start production to evaluate procedures and work on quality control,” Dr. Metlin says. “To me, it’s very promising that staff are so enthusiastic and

eager to learn. They understand exactly how things need to change and want to work hard to make sure that happens.”

More about the Strategic Health Partnership Initiative

Launched in late 2007, the Strategic Health Partnership Initiative is a direct result of the 2005 Bratislava Initiatives, a joint Russian-American presidential agreement designed to strengthen cooperation on a number of cross-cutting issues, including the global fight against HIV/AIDS. It represents a unique collaboration between Russia’s Ministry of Health and Social Development and the United States Government through USAID. Designed to bolster Russia’s capacity to provide technical assistance to developing nations around the globe, the project exemplifies successful Russian-American cooperation within the global public health arena.

AIHA’s HIV/AIDS Twinning Center program — which supports PEPFAR’s capacity building efforts in Africa — and the Regional Knowledge Hub for the Care and Treatment of HIV/AIDS in Eurasia play a important role in strengthening Russia’s international technical assistance strategy. Leveraging relationships established through Twinning Center partnerships in Africa and the AIDS Training and Education Centers established in Russia with support from the Regional Knowledge Hub, AIHA is helping deploy a cohort of highly qualified Russian experts who share their knowledge and technical skills with colleagues in other countries in the region and in Botswana, Ethiopia, Namibia, and Tanzania. These experts work closely with the ministries of health and CDC staff in targeted nations to help strengthen critical laboratory services.

Faced with Rising Numbers of Fungal Infections, Botswana Receives Technical Support through Russian-American Partnership

Russian Mycologist Provides Technical Assistance to the National Health Laboratory in Gaborone through the USAID-supported Strategic Health Partnership Initiative

Fungal infections have emerged as a significant public health concern in many countries spanning the globe, particularly in developing nations burdened by high prevalence of HIV and AIDS. Because HIV weakens the body's ability to fight off disease, infections that normally cause little or no concern for a healthy individual can quickly become disabling or even deadly. Candidiasis, pneumocystis pneumonia, cryptococcosus, and disseminated mycosis, for example, are some of the most common opportunistic fungal infections affecting people living with HIV.

"The introduction of medical breakthroughs such organ and tissue transplants, immunosuppressive therapy, and invasive diagnostic and treatment procedures, combined with the HIV/AIDS pandemic and achievements in the treatment of bacterial infections, have led to a significant increase in the number of immune-compromised individuals," explains Dr. Olga Shurpitskaya, a medical mycologist at the St. Petersburg Medical Academy for Postgraduate Studies in Russia.



Dr. Olga Shurpitskaya works with Lab Technician Irene Tsimako, providing training and mentoring on preparing mycological specimens.

"These people are very much at risk of developing fungal disease," Dr. Shurpitskaya continues, explaining that mycosis rates are increasing at an alarming pace, with invasive cases resulting in high mortality. "The spectrum of mycotic agents is also rapidly increasing and many types are resistant to antifungal medications," she says. "That is why early diagnosis and proper identification of the pathogen are paramount for successful treatment, as well as for preventing their spread."

In Botswana — where the latest data available from UNAIDS reveals an HIV prevalence rate of 23.9 percent among people between the ages of 15 and 49 — the ability of medical professionals to accurately diagnose and treat fungal infections is severely hampered by the country's lack of mycology experts.

At the request of Botswana's Ministry of Health, Dr. Shurpitskaya traveled to Gaborone in early 2010 to provide technical assistance at the National Health Laboratory's Microbiology Department. Her mentorship was sponsored through the Strategic Health Partnership Initiative, a unique multilateral project spearheaded by Russia's

Ministry of Health and Social Development, the US Agency for International Development (USAID), and the American International Health Alliance (AIHA).

Strengthening Existing Capacity, Nurturing a New Lab Specialty in Botswana

When Dr. Shurpitskaya arrived at the National Health Laboratory in late January, she was tasked with improving institutional and human capacity in three critical areas: biosafety; mycology, and quality control. Working hand in hand with National Health Laboratory Head Dr. Isaac Mtoni, Chief Scientific Microbiologist Margaret Bafana, and their staff at the Microbiology Department, she started by conducting a comprehensive assessment of the lab.

“Mycology is still in its early stages in Botswana and it will take some time to become fully established in the country, Dr. Shurpitskaya acknowledges. “Although no one is currently practicing in the field, based on the lab staff I have spoken to I have noticed that there is a great deal of interest in the specialty. It’s also important to note that establishing the Mycology Department at the National Health Laboratory is big step forward in the development of all diagnostic service capacity in the country,” she points out, underscoring the important role mycologists play in the fight against HIV and AIDS.



Working closely with management and staff, Dr. Shurpitskaya helped reorganize the Microbiology Department Lab, setting up a storage room for supplies, updating SOPs, and providing technical assistance on biosafety, mycology, and quality assurance.

“While all the Microbiology Department personnel involved with testing are able to conduct basic diagnostics related to fungal infections, they require additional training in the field of medical mycology in order to lay the foundation for establishing a separate Mycology Department,” says Dr. Shurpitskaya. Other elements of that foundation include procuring equipment, developing standard operating procedures (SOPs), and renovating and reorganizing the lab itself to ensure it meets biosafety standards. “There were so many issues that it was difficult to know where to start when I first arrived,” she says.

“The lab does have the equipment necessary for performing diagnostic procedures, but much of it — including the biosafety cabinet — is not in working order. Instead, this broken equipment is

occupying space and preventing the reorganization of lab in accordance with international biosafety standards,” she explains.

Biosafety is a significant problem, according to Dr. Shurpitskaya, because the lab is currently outfitted with wooden tables, bulletin boards, and shelving, as well as fabric curtains that cannot be disinfected.

“There are sufficient supplies of disinfectants and protective clothing and equipment for staff, but the existing air conditioning unit can blow spores around and the wooden furniture, cardboard boxes filled with research and documentation, and archived materials do not meet acceptable biosafety requirements,” she explains.

Air quality is also a problem, Dr. Shurpitskaya says. “We introduced sterility checks using sedimentation methods in six places throughout the lab and set up a corresponding register. The initial results were bad ... four areas were contaminated with cultures on the other two still pending.” She recommended repeating the air checks every two weeks to maintain safety levels.

As with air quality, some other problems are also procedural. “Work areas are disinfected at the beginning and end of each day and at other times as needed, but the freezers and incubators are not. Also, patient samples are collected right in the lab rather than in a separate room, which should not be done ... there are many other issues,” she says, some simple to fix and some not.

Dr. Shurpitskaya's assessment indicated that diagnostic procedures were being performed in accordance with the lab's draft SOPs, which are now undergoing an extensive review and updating process. It also revealed the need for additional training and continuing education opportunities for lab personnel.

“Some of our procedures are outdated and, with regard to mycology, very much neglected because of the general lack of capacity in that area, so we've been eager to learn the new methods and techniques that Dr. Shurpitskaya has been sharing with us,” says Lab Technician Irene Tsimako.

Human resource capacity for medical laboratories is a serious problem throughout Botswana, with existing staff spread thin among various departments. While most staff at the Microbiology Department have laboratory technician degrees from the Gaborone-based Institute of Health Sciences, there is a need for ongoing training to upgrade skills and perhaps even specialize on areas where the need is most evident.



“The medical professionals I've met in Botswana have been very interested in taking part in this program to improve diagnostic capacity.

They want to move the health system forward. For me, it has been an interesting experience, too, because it's my first international experience and I've had a chance to work with specimens that I don't routinely see in Russia.”

— Dr. Olga Shurpitskaya

For the fledgling Mycology Department to be effective, that training will have to extend beyond lab staff, according to Ms. Tsimako. “Doctors are often responsible for collecting specimens. If they are not doing it properly, the process is compromised,” she explains.

Dr. Shurpitskaya agrees. “In Russia, we have excellent physicians who are experts in clinical mycology, but here doctors don’t pay a lot of attention to mycological diseases. In fact, lab mycology should be much closer to clinical practice ... we need to work together, rather than fragment the services, to be most effective,” she maintains.

Planning for the Future

In April 2009, the Microbiology Lab was bifurcated, with skin, nail, hair, and tissue samples being handled onsite and the testing of sputum, broncho-alveolar lavage, bronchial washing, cerebrospinal fluid, blood, urine, urethral, and vaginal specimens processed at the nearby Princess Marina Hospital Laboratory. “The intention was for this lab to become a public health facility focused on mainly on research and surveillance, more so than diagnosis,” Dr. Shurpitskaya says.

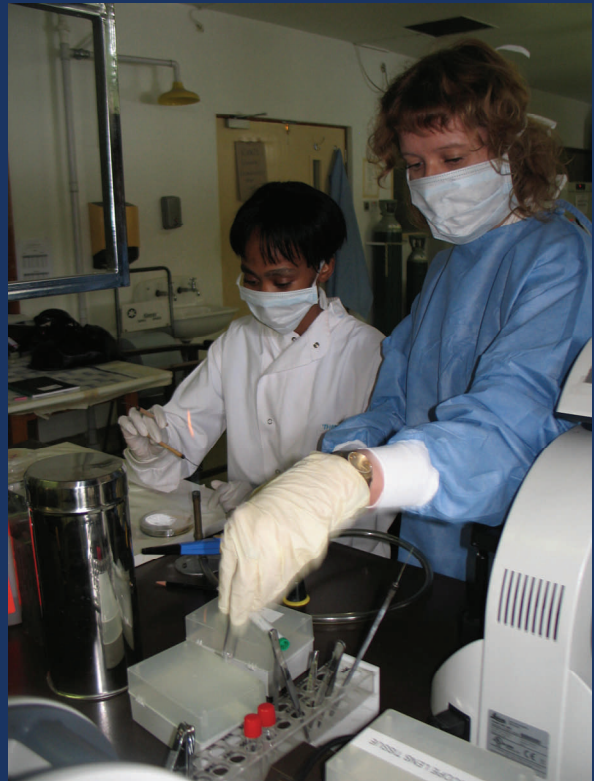
This is problematic for plans to make the National Health Laboratory a referral lab, she explains, because “a referral lab must have the capacity to handle all these activities, which includes housing a store of control samples.”

Obtaining control samples is necessary for the Mycology Lab’s success, as well, and Dr. Shurpitskaya helped staff place orders for control species of *Candida* and other fungi, along with bacterial samples from the American Microbiology Society.

There are also possible plans to renovate the lab premises in the future at which time conditions that inhibit compliance with biosafety guidelines can be more effectively addressed, according to Ms. Tsimako. “In the meantime, we’ve been doing everything we can to address whatever deficiencies we can,” she says. These steps include procurement and proper organization of necessary equipment and supplies; implementation of daily, weekly, and monthly cleaning, monitoring, and disinfection procedures; and updating of SOPs. “Infection control and housekeeping, for example, are two simple, inexpensive things that we can do right now to make tangible, positive improvements,” she continues.

“Implementing change depends on the lab’s management,” Dr. Shurpitskaya stresses. “All it takes is one person who understands the problems, has the knowledge and interest in making a difference, and makes the appropriate plans to do so. We have that here,” she stresses, noting that she has provided a comprehensive list of short, medium, and long-term steps staff need to take to bring the lab up to biosafety standards and improve quality.

“It all starts with awareness,” Ms. Tsimako concludes. “That is what Dr. Shurpitskaya is doing for us. She’s raising awareness about how we can do things better.”



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— Dr. Olga Shurpitskaya

More about the Strategic Health Partnership Initiative

Launched in late 2007, the Strategic Health Partnership Initiative is a direct result of the 2005 Bratislava Initiatives, a joint Russian-American presidential agreement designed to strengthen cooperation on a number of cross-cutting issues, including the global fight against HIV/AIDS. It represents a unique collaboration between Russia's Ministry of Health and Social Development and the United States Government through USAID. Designed to bolster Russia's capacity to provide technical assistance to developing nations around the globe, the project exemplifies successful Russian-American cooperation within the global public health arena.

AIHA's HIV/AIDS Twinning Center program — which supports PEPFAR's capacity building efforts in Africa — and the Regional Knowledge Hub for the Care and Treatment of HIV/AIDS in Eurasia play a important role in strengthening Russia's international technical assistance strategy. Leveraging relationships established through Twinning Center partnerships in Africa and the AIDS Training and Education Centers established in Russia with support from the Regional Knowledge Hub, AIHA is helping deploy a cohort of highly qualified Russian experts who share their knowledge and technical skills with colleagues in other countries in the region and in Botswana, Ethiopia, Namibia, and Tanzania. These experts work closely with the ministries of health and CDC staff in targeted nations to help strengthen critical laboratory services.

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