

LAB CULTURE

THE ASLM NEWSLETTER FOR
LABORATORY PROFESSIONALS
ACROSS AFRICA

May 2013, Issue 7

LABORATORY SERVICES

IN THE

WAKE OF CONFLICT

IN THIS ISSUE:

New Department in Senegal Brings Laboratories to the Forefront

AJLM to Offer SLMTA Manuscript Writing Course

Overcoming Obstacles in Paediatric Care

Lab Culture | Call for Submissions

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THE FUTURE OF ASLM: IMPLEMENTING THE *ASLM2020* VISION

In the months since our successful first international conference, we at ASLM have taken the time to regroup, assess our surroundings and prioritise the short- and long-term goals of the Society. From 17-18 April, I presented to ASLM Board Members and key partners at the ASLM Bi-Annual Board Meeting in Cape Town, South Africa, providing updates on ASLM programmes, new partnerships, upcoming meetings and key activities propelling the Society forward. From 18-20 April, in Cape Town, we co-hosted a meeting on "Viral Load Testing in African HIV Treatment Programmes," which provided an important forum for laboratory scientists, clinicians, industry leaders and policy makers to discuss the on-going development of viral load testing (VLT) for HIV monitoring and treatment.

In addition to convening the ASLM Board Meeting and HIV VLT meeting, ASLM has been busy coordinating activities relevant to the *ASLM2020* goals of advancing laboratory accreditation and workforce development. In March, the Society helped coordinate a Laboratory Quality Management System (LQMS) Training of Trainers Workshop in Abuja, Nigeria, with the aim of teaching future educators how to instruct laboratory staff on the proper use of LQMS components. ASLM also recently began offering Continuing Medical Laboratory Education (CMLE) credits for participation in educational activities. Participants in an upcoming special manuscript-writing course, to be hosted by the *African Journal of Laboratory Medicine* from 9-15 June in Gaborone, Botswana, will receive CMLE credits upon successful completion of the course.

The Society also continues to prioritise partnership in the service of strengthening laboratory medicine. We are happy to welcome new country Ambassadors, as well as to announce our entrance into collaborative relationships with

11 organisations with which we will create joint policies toward achieving shared goals.

In addition to covering the topics mentioned above, this issue of *Lab Culture* includes interviews with Dr. William Ampofo, virologist and ASLM Ambassador to Ghana, and Dr. Judy Orikiiriza Tatwangire, paediatrician and infectious disease researcher. This issue also includes a French-language insert on the impressive work of the newly-formed Department of Laboratories of Senegal. The Feature article, "In the Wake of Conflict: The Impact of War on Laboratory Services," available on page 8, explores the challenges to laboratory service provision during armed conflict, and provides important insights into redeveloping laboratory services post-conflict. I hope you enjoy issue 7 of *Lab Culture*. Thank you for reading.

Dr. Tsehaynesh Messele, CEO, ASLM

NEW COUNTRY AMBASSADORS JOIN ASLM

ASLM is pleased to welcome three new representatives to its Ambassador Programme. Dr. Matilu Mwau of Kenya, Mr. Reuben Mwenda of Malawi and Mr. Charles Kiyaga of Uganda join current ASLM Ambassadors Prof. El-Hadj Belabbès (Algeria), Prof. Jean Sakandé (Burkina Faso), Prof. Daniel Sess (Côte d'Ivoire), Dr. William Ampofo (Ghana), Prof. Dennis Agbonlahor (Nigeria), Dr. Adil Ismail (Sudan) and Dr. Mohamed Ally Mohamed (Tanzania). Ambassadors help promote Society membership within their regions, facilitate the dissemination of ASLM programmes, identify local training needs and advocate for ASLM among health authorities.



Dr. Matilu Mwau

Dr. Mwau joins ASLM as Ambassador to Kenya. He is the Chief Research Officer of the Centre for Infectious and Parasitic Diseases Control Research at the Kenya Medical Research Institute in Nairobi. Dr. Mwau earned his doctor of philosophy degree in clinical medicine from Oxford University, United Kingdom, and holds a master's degree in Tropical Medicine from Nagasaki University in Japan.



Mr. Reuben Mwenda

Mr. Mwenda joins ASLM as Ambassador to Malawi. He currently serves as Deputy Director of Health Technical Support Services of the Ministry of Health of Malawi. Mr. Mwenda earned his master's degree in medical microbiology from the University of Liverpool, United Kingdom. He has been serving the Malawi Ministry of Health in various capacities for over thirty years.



Mr. Charles Kiyaga

Mr. Kiyaga joins ASLM as Ambassador to Uganda. He is a biomedical scientist and National Coordinator for the country's Early Infant Diagnosis Programme. Mr. Kiyaga earned his bachelor's degree in biomedical laboratory technology and his master's degree in biomedical laboratory technology and management from Makerere University in Kampala. Recently, he received his second bachelor's degree in health systems approach to HIV care and management from the University of Manchester, United Kingdom.

MAXIMISING LABORATORY ADVANCEMENT EFFORTS THROUGH COLLABORATION

From its inception in March 2011, ASLM has worked to develop and expand relationships with partners across Africa and throughout the world. These partnerships play a critical role in achieving broad advances in African laboratory medicine and networks, offering a unique perspective and bringing forth a wide range of scientific and programmatic expertise needed to realise the shared strategy of strengthening healthcare outcomes in Africa.

Since the ASLM international conference in December 2012, the Society has demonstrated its continued commitment to cooperation and partnerships, forging new alliances and reinforcing existing relationships by establishing Memoranda of Understanding (MoUs) with partners, organisations, agencies and educational institutions that share the Society's goals and vision. A Memorandum of Understanding is a document that describes an agreement between participating parties, expressing their intention to co-develop a shared policy. Using the MoUs as a guide, ASLM and its partners collaborate to support their common goal of improving African healthcare outcomes, focusing particularly on the *ASLM2020* strategic goals of laboratory workforce development, laboratory accreditation, diagnostic regulation and the

(continued on next page)

ASLM CO-HOSTS MEETING ON VIRAL LOAD TESTING IN AFRICAN HIV PROGRAMMES

From 18-20 April, in Cape Town, South Africa, ASLM co-hosted a meeting on the subject of "Viral Load Testing in African HIV Treatment Programmes," to discuss how best to design and implement effective and sustainable HIV viral load programmes across Africa. Also hosted by the World Health Organization Regional Office for Africa (WHO/AFRO), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the Society for AIDS in Africa and the Southern African HIV Clinicians Society, the meeting convened clinicians, policy makers, industry leaders and laboratory scientists to review the implementation of viral load testing throughout the continent. Attendees discussed strategies for scaling up programmes that employ HIV viral load tests, which measure the number of virus particles present in the bloodstream. Viral load tests make it possible to determine the severity of infections and inform treatment decisions and monitoring.

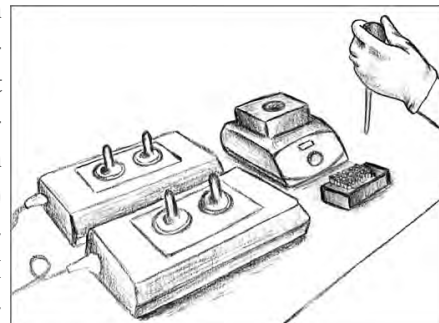
Viral load testing plays an important role in HIV treatment, providing information on patient response, adherence and resistance to antiretroviral drugs. Improving access to reasonably-priced, accurate viral load tests is essential to the long-term efficacy and quality of antiretroviral treatment, which plays a fundamental role in sustaining the HIV/AIDS response in Africa and globally.

The meeting built on discussions that began in Addis Ababa at the May 2012 consultation, "A Focus on Point-of-Care (POC) Diagnostics in Africa," at which ASLM convened key stakeholders to review and improve the state of POC diagnostic development and availability in low- and middle-income countries. (The POC meeting report is available [here](http://goo.gl/8YPvr): <http://goo.gl/8YPvr>.)

The Cape Town meeting provided opportunities for strengthening existing partnerships to support the scale-up of viral load testing programmes. By the conclusion of the meeting, partners had developed consensus strategies, including technical considerations, for the improvement and expansion of HIV viral load testing capacity.

Presentations from the meeting are available at the ASLM website: <http://goo.gl/fcm0k>.

By: Jessica Fried, MPH (Editorial Team) and Rachel Crane (Editorial Team);



Laboratory equipment for HIV viral load monitoring. Illustration by Rachel Crane.

(continued from page 3) strengthening of laboratory networks. The MoUs allow ASLM and its partners to maximise the use of limited resources, establish best practices and avoid duplicative efforts.

ASLM is honoured to have strong partnerships throughout Africa and the world.

L'ASLM Crée une Liste de Diffusion Francophone

L'ASLM a pour but de servir l'ensemble de la communauté africaine des sciences de biologie médicale. Dans les mois qui viennent, l'ASLM produira des publications en français afin de mieux servir nos collègues francophones. Pour recevoir nos bulletins d'informations en français, veuillez rejoindre notre liste de diffusion en vous inscrivant ici: <http://www.aslm.org/french/>.

To date, ASLM has signed MoUs with 11 different African and international organisations dedicated to global health, laboratory accreditation, medical research and laboratory diagnosis. These partners include the Amsterdam Institute of

Global Health and Development; the Clinton Health Access Foundation; the Clinical and Laboratory Standards Institute; CRESAC (Centre Régional d'Evaluation en Santé et d'Accréditation des Etablissements Sanitaires en Afrique); the East, Central and Southern Africa Health Community; the International Federation of Clinical Chemistry and Laboratory Medicine; Pangaea Global AIDS Foundation; the Southern African Development Community Accreditation Service; SofTech; UNITAID; and the US Centers for Disease Control and Prevention. ASLM looks forward to continued collaborations with these existing partners and hopes to foster new relationships with other organisations to strengthen laboratory medicine in Africa.

By: Rachel Crane (Editorial Team); Contributor: Corey White, MPA (Editorial Team)

ASLM BOARD SPRINGS INTO A NEW YEAR OF ACTIVITIES

From 17-18 April, members of the ASLM Board of Directors and key partners of the Society convened in Cape Town, South Africa, for the ASLM Spring Board Meeting. The Board convenes biannually to receive updates from the leadership team and direct the development of the Society. The objectives of the spring meeting were to share and discuss the Society's accomplishments, updates, action items, *ASLM2020* goals and strategic implementation thereof.

During the Board meeting, Dr. Tsehaynesh Messele, ASLM CEO, and Dr. Trevor Peter, Chair of the ASLM Board of Directors, co-presented the Society's draft strategic plan, the Ministerial Call for Action (signed by African Ministers of Health at *ASLM2012*), and the *ASLM2020* Strategy document outlining the Society's strategic direction and key targets for the year 2020 (more information at <http://goo.gl/BVolR>).

By adhering to the strategic direction established in its 2020 goals, ASLM will help medical and public health laboratories improve their capacity for disease diagnosis, surveillance and monitoring throughout the continent. The

2020 goals allow ASLM to look towards the future while maintaining its mission of advancing laboratory services needed to support preventive medicine, quality patient care and disease control.

ASLM will "carry the political weight and advocate and operate as the umbrella organisation to implement, support and advance partner efforts," Dr. Fausta Mosha, ASLM Board Secretary, said in a discussion at the Board meeting.

ASLM will "carry the political weight and advocate and operate as the umbrella organisation to implement, support and advance partner efforts"

ASLM has made impressive achievements since its launch in 2011, training over 120 laboratory auditors from eight different organisations, developing a Ministerial Call for Action (<http://goo.gl/CbqBg>) signed by seven African countries, auditing and certifying four laboratories in Tanzania, and hosting an international conference attended by representatives and healthcare professionals from 64 countries. Through ad-

herence to its strategic plan, the Society will remain at the forefront of medical laboratory advancement in Africa.

By: Rachel Crane (Editorial Team); Contributors: Jhosetta Goudelock (ASLM) and Corey White, MPA (Editorial Team)

AJLM – Call for Papers



The African Journal of Laboratory Medicine is currently accepting submissions.

AJLM serves as a forum for perspectives on the role of laboratories in public health and clinical care. It also fosters communication among laboratory staff, clinicians, scientists, the medical community, public health officials and policy makers.

AJLM is published on a rolling basis, and is available for free online. Article topics of particular interest include: the conversion of laboratory expertise, procedures and technology into clinical care, the intersection of laboratory and medical science, laboratory-based epidemiology, and laboratory investigations and their real-world application and effectiveness. Submissions accepted in English.

For more information on AJLM or to submit manuscripts, please visit www.ajlmonline.org or contact editor@ajlmonline.org.

SENEGAL : UNE DIRECTION DES LABORATOIRES POUR COURONNER LE TRAVAIL DU RESEAU NATIONAL DE LABORATOIRES

En 1998, sous l'égide de l'Organisation mondiale de la Santé la mise en place de Réseaux Nationaux des Laboratoires (RNL) a été préconisée pour relever le plateau technique des laboratoires. Le RNL du Sénégal est né en 2000, puis a été formalisé en 2005 par un arrêté ministériel, mais depuis plusieurs années, les professionnels du Laboratoire réclamaient la séparation du Laboratoire et du Médicament, par la mise en place d'une Direction des Laboratoires.

Le Réseau National de Laboratoires a organisé l'appui technique de tous les laboratoires, publics comme privés, sans s'occuper de la réglementation qui était logée à la Direction de la Pharmacie.

C'est à la faveur du changement de régime et de gouvernement en Mars 2012 que le nouveau Ministre de la Santé a décidé de relever le niveau institutionnel des Laboratoires pour mettre en place la nouvelle Direction.

MISSION DE LA DIRECTION DES LABORATOIRES

La Direction des Laboratoires a pour mission principale d'élaborer et de mettre en œuvre une politique des laboratoires au Sénégal ; elle doit aussi appliquer les textes réglementaires, tout en continuant à s'occuper des aspects



Figure 1: Formation des personnels.

techniques comme la formation des personnels, la supervision des laboratoires, l'évaluation externe de la qualité des analyses, etc. La mise en place de la Direction va donc permettre une meilleure harmonisation de la politique en matière de Laboratoires et de donner plus de moyens institutionnels au secteur.

Pour remplir ces missions, la Direction des Laboratoires est structurée en cinq divisions : la Division de la réglementation et du contentieux, la Division du réseau national de laboratoires, la Division des laboratoires publics, la Division des laboratoires privés et la Division des études et de la documentation.

ACTIVITES ACTUELLES ET PERSPECTIVES

A l'heure actuelle, les activités de la Direction vont dans trois directions principales :

La poursuite des activités du Réseau National de Laboratoires

Il s'agit d'activités de formation des personnels de laboratoires selon un format intégrant les différentes disciplines biologiques, et associant exposés théoriques et travaux pratiques (figure 1). Les laboratoires font aussi l'objet de supervision formative permettant aux biologistes de vérifier sur site la bonne réalisation des analyses et d'accompagner le personnel au travail (figure 2) Pour vérifier et améliorer la qualité des analyses, des sessions d'évaluation externe de la Qualité sont organisées avec l'envoi d'échantillons et de lames à analyser dans les mêmes conditions que les spécimens biologiques.



Figure 2: Supervision de laboratoires.

La mise en œuvre des nouveaux textes réglementaires qui datent de 2009 et qui concernent l'installation de LABM privés, l'agrément des sociétés de distribution de réactifs, les autorisations de mise sur le marché des réactifs. Ces textes sont disponibles sur le site de la Direction des laboratoires : www.dirlabosn.org.

L'instauration de la démarche Qualité dans la Direction et dans les laboratoires :

La Direction des Laboratoires s'est en effet engagée dans la démarche Qualité selon les exigences de la norme ISO 9001 pour son système de management, avec un engagement ferme de son Directeur et une forte implication de son personnel.

Par ailleurs, quatorze évaluateurs qualité ont été formés à l'audit avec la check-list SLIPTA (figure 3) et ont démarré au début du mois de Mai 2013 une évaluation qualité des laboratoires publics et privés du Sénégal. Ceux-ci seront ensuite classés selon leur performance en vue d'un accompagnement.

(suite page suivante)

(suite de la page 6)

SENEGAL: NEW DEPARTMENT BRINGS FOCUS TOWARD RAISING LABORATORY STANDARDS

Over the past few years, the Republic of Senegal has taken impressive measures to advance and harmonise laboratory medicine in the country. In 2005, the Senegalese government formally created the National Network of Laboratories, a national service linked to the Cabinet of the Ministry of Health, Prevention and Sanitation and consisting of medical and public health laboratories at various levels of the laboratory network. In 2012, the Ministry of Health of Senegal decided to further raise the institutional standard of laboratory medicine in the country by setting up the new Department of Laboratories.

The mission of Senegal's Department of Laboratories is to develop and implement country-wide laboratory policies, regulatory texts and procedures, as well as attend to technical aspects of laboratory medicine such as personnel training, site monitoring and external evaluation. The department consists of the following sectors: the Division of Regulations and Litigation, the Division of the National Network of Laboratories, the Division of Public Laboratories, the Division of Private Laboratories and the Division of Education and Research. The Department of Laboratories will harmonise laboratory policies and provide greater institutional support to the country's laboratory sector.

Current and upcoming activities of the Department of Laboratories include implementing regulatory texts, establishing a quality laboratory programme according to the requirements of the ISO 9001 standard for quality management systems, rolling out laboratory management software, and co-implementing operational research projects with partnering organisations.

ASLM applauds the efforts the Senegal Department of Laboratories and looks forward to collaborating in the future, forming a mutually beneficial relationship through which each institution can share information, exchange learning outcomes and expand laboratory networks for the benefit of laboratory medicine professionals and patient populations in Africa.

For more information about the Department of Laboratories of Senegal, please visit: <http://dirlabosn.org/>.

D'autres activités sont en préparation ou en cours d'exécution:

Le déploiement du logiciel de gestion de laboratoires acquis grâce au projet RESAOLAB est en phase de test dans quinze laboratoires après formation des utilisateurs qui ont



Figure 3 : formation d'évaluateurs SLIPTA.

reçu du matériel informatique (figure 4).

Le manuel de procédures techniques du Réseau de Laboratoires décrivant les techniques d'analyses du paquet minimum d'activités est en cours de révision. Un système de surveillance nationale des résistances bactériennes est en train d'être instauré au sein du RNL. Le Laboratoire national de santé publique est en construction (figure 5).

Comme perspective à terme, la Direction des laboratoires envisage l'accompagnement des laboratoires à la démarche Qualité et, éventuellement, vers l'accréditation.

Au Sénégal, nous avons salué la naissance de l'ASLM et pensons qu'elle peut beaucoup apporter



Figure 4: Formation à l'utilisation du logiciel de gestion des laboratoires.

aux laboratoires africains, et nous souhaitons une collaboration renforcée entre l'ASLM et les Directions de laboratoires ou Réseaux nationaux de laboratoires (RNL) des pays.



Figure 5: Chantier du Laboratoire national de santé publique.

Les Directions de laboratoires et les RNL disposent d'une organisation intéressante permettant la mise en œuvre de programmes de développement des laboratoires qui ont longtemps été laissés

en rade. Ces institutions peuvent avantageusement être les interlocuteurs de l'ASLM, et au Sénégal, nous sommes disposés à examiner toute forme de collaboration.

Par: Professeur Ahmad Iyane Sow (Directeur des Laboratoires du Sénégal)

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IN THE WAKE OF CONFLICT

THE IMPACT OF WAR ON LABORATORY SERVICES



During armed conflict, laboratory professionals face even greater challenges in carrying out healthcare than they do in peacetime. Maintaining health services is rarely a priority for the government; beleaguered civilian populations avoid routine healthcare; and conditions deteriorate.

In conflict zones, “no one frequents health facilities any more, other than the war wounded,” says Dr. Guy-Michel Gershy-Damet, World Health Organization (WHO) Regional Advisor for HIV laboratories who works in Burkina Faso. Because of the threat to their safety, civilians flee the area or hide at home, avoiding medical treatment. Meanwhile, emergency needs such as injuries sustained during combat are often addressed in makeshift facilities by overwhelmed staff.

“In times of conflict, the services provided are very basic,” says Major Elizabeth Wanja of the US Army Medical Research Unit in Nairobi, Kenya, who has been deployed to war zones (see page 11). A reduction in services is caused in part by disruptions to the workforce. Like the rest of the population, healthcare workers in conflict zones are at risk of displacement, hostage taking, injury and death; many flee. The laboratory and hospital professionals who remain are at risk of harm, may have difficulty obtaining food, clean water and other basic commodities, and often

face a reduction or loss of salary. In the difficult economic circumstances surrounding prolonged conflict, healthcare workers have been known to strike or demand unofficial reimbursement from patients who are rarely able to pay.¹

Just as the supply of funds is often interrupted, the physical supply chain to laboratories and hospitals is at risk. The laboratory supply chain may be affected by (1) redistribution of funds to the war effort, (2) lack of personnel due to diaspora, (3) increased likelihood of criminal activities such as looting (especially during transit) and (4) inaccessibility of some areas due to destruction of transport infrastructure. When roads are mined or bombed, bridges destroyed, and safe passage impossible, reagents and consumables necessary for carrying out laboratory-based medicine cannot be ordered reliably. If supplies can be procured, they may fall below peacetime standards; some suppliers withdraw service in times of conflict due to higher financial risk while others are unable to provide products and services as a result of international trade regulations. When conflicts occur in remote areas, communication with central laboratories may break down; it becomes impossible to transport patient samples for referral testing, and broken equipment that could present a temporary setback under normal circumstances is unlikely to be serviced at all. Worse yet, health centres may be considered a target for looters, forcing staff to abandon them.

¹ PEPFAR. “Democratic Republic of the Congo: Operational Plan Report, FY2010.” Accessed at <http://www.pepfar.gov/documents/organization/145717.pdf>.

In addition to the major contributing factors previously outlined, shifting of government priorities to focus on conflict-related emergency needs and humanitarian crises combine to create a “lack of health service delivery when and where it is needed most,” says Dr. Edward Mberu Kamau, technical officer for the special programme for research and training in tropical diseases at WHO, Geneva. Meanwhile, when immediate safety is a priority, “ailments that would normally require seeking medical consultation are ignored or postponed.” As a result, routine medical treatments such as vaccinations, diagnostic tests, and multi-visit treatment regimens fall by the wayside, and disease burden increases. For example, a measles epidemic is raging in the Orientale province of the Democratic Republic of Congo because of years-long instability and difficulty in providing vaccinations.²

In recognition of the drastic interruptions to normal infrastructure, the United Nations and non-governmental organisations (NGOs) with healthcare missions increase their funding to and physical presence in conflict zones. However, foreign healthcare providers are not immune to the disruptions that local laboratory and hospital networks face.

In conflict zones, “no one frequents health facilities any more, other than the war wounded.”

Even if the quality of supplies is assured, their transport is not. Major Elizabeth Wanja was deployed to Iraq in 2007 and 2008, where she found that as a member of the coalition forces, her work was frequently interrupted due to the challenge of transporting laboratory supplies. Her team was sometimes forced to send patient samples as far away as Germany for diagnostic testing. Laboratory professionals can take steps to buffer against the worst effects of conflict. Major Wanja, Dr. Kamau and Dr. Gershy-Damet all highlight the importance of mobile laboratory units, stocked with durable key reagents, for outreach in times or places of conflict. Drs. Wanja and Kamau also suggest:

- ◇ Establishing a contingency plan that includes preparedness in times of conflict;
- ◇ Encouraging “One Laboratory” diagnostic awareness, e.g., combining veterinary and medical knowledge to diagnose zoonotic infections;
- ◇ Stocking pre-packaged reagents with a longer shelf life, combined with careful attention to use rates in order to plan reordering well in advance;
- ◇ When possible, keeping supplies posted in areas near the conflict zone, but outside of immediate danger, so as to get supplies in country quickly and easily.



Organisations like Médecins Sans Frontières/Doctors Without Borders are often the first to arrive and last to leave conflict zones.

The end to the conflict does not mean an automatic return to normalcy in affected laboratories and hospitals. Loss of infrastructure and expertise can lengthen the reach of even a brief crisis and make rebuilding a severe challenge. Dr. Gershy-Damet voices the frustration of a person working tirelessly to improve the healthcare system, saying, “The health system is already sick from different gaps; conflicts render the health system even more outdated, further unravelling the effort undertaken by governments and development partners in peacetime to strengthen healthcare services.”

Armed conflict entails a crisis of authority, and it takes time for the government to re-establish itself in peacetime. Especially when the government is being reorganised, questions of how to allocate funding for healthcare services, coordinate many donors and NGOs, and organise the healthcare system are addressed slowly. With limited funding, countries are forced to prioritise as they emerge from conflicts, and rebuilding laboratory capacity is often a lower priority than addressing humanitarian crises.

During the period immediately following a conflict, healthcare personnel are often faced with high demand for medical services, as people who were unable to access healthcare seek treatment for a variety of ailments. However, transportation infrastructure may remain compromised and funding delayed, resulting in continuing shortages of diagnostics, reagents and medication. Caring for large relocated populations is also a major health concern. In crowded refugee camps, diseases related to poor conditions of hygiene and malnutrition are often rampant. For example, cholera and dysentery outbreaks among Rwandan refugees in the Democratic Republic of Congo killed nearly 12 000 people in 1994.³ Camps may remain occupied long after the conflict has formally concluded, as displaced populations hesitate to move back into the conflict zone.

(continued on next page)

² Doctors without borders/Médecins Sans Frontières. “Measles Continues to Stalk the Democratic Republic of Congo.” February 27, 2013. <http://www.doctorswithoutborders.org/news/article.cfm?id=6660&cat=field-news&ref=news-index>.

³ Siddique et al. “Why treatment centres failed to prevent cholera deaths among Rwandan refugees in Goma, Zaire.” *The Lancet* 345(8946): 1995.

Dr. Kamau emphasises that movements of populations may also introduce naïve immune systems to new diseases, or new diseases to what were once “safe havens” where they were not endemic; these concerns can delay return.

Some patients avoid medical care following a conflict, especially “if health service provision is regarded as part of or remotely associated with the causes or consequences of the conflict,” says Dr. Kamau. Likewise, former fighters may avoid seeking medical care to evade recognition. Dr. Kamau suggests a proactive programme to rebuild trust with patients, augmenting the return to normal healthcare services by addressing the population’s concerns. “This may even involve replacing the health services staff, if for example they are assumed to have taken sides during the conflict.”

The need for a proactive campaign to renew patient trust highlights the difficulty of rebuilding the healthcare system when the workforce is compromised. In most countries, there are few laboratory personnel during non-conflict situations, and after conflicts the numbers are reduced even further. In the short term, governments can temporarily relocate remaining staff or recruit expatriates to cover the areas of greatest need. Over time, however, trying to address vast public health problems with limited resources and few personnel can result in low morale and high turnover among healthcare providers.⁴ Often, talented laboratory and healthcare professionals leave the public sector; for example, a 2008 study of Mozambican physicians found that a high proportion of doctors who graduated during that country’s civil war had left the public sector for jobs in NGOs, private companies, or abroad.⁵ Labour market problems, driven by limited compensation, lack of employee benefits and poor career-advancement opportunities, contribute to a shortage of professionals qualified to help re-

build the laboratory system. Countries can address this problem by increasing education and training programmes for the next generation of healthcare workers.

In the longer term, redevelopment of the healthcare system must be integrated with plans for the redevelopment of the country as a whole. Redevelopment may involve restructuring of the healthcare system, or building a new system from scratch. Human resource specialists recommend that

Suggestions for laboratory professionals in conflict-prone regions:

- **Establish a contingency plan that includes preparedness in times of conflict**
- **Encourage “One Laboratory” diagnostic awareness (e.g. combine veterinary and medical knowledge to diagnose zoonotic infections)**
- **Stock pre-packaged reagents with a longer shelf life, and pay careful attention to use rates in order to plan reordering well in advance**
- **When possible, keep supplies posted in areas near the conflict zone, but outside of immediate danger**

ministries of health first take stock of their labour force (including numbers, abilities and geographic distribution), then set goals for the size and capacities of the workforce and develop training to meet these goals.⁶ South Sudan, the world’s newest country, has recently undertaken this process, crafting a health sector development plan that includes increasing access to care in rural areas and expansion of the medical laboratory workforce from approximately 300 in 2005 to 1020 by 2016.⁷

As countries emerge from conflict, healthcare systems have an important role to play, both in restoring the population to health, and in restoring a sense of trust in the social order. In the course of rebuilding, Rwanda has launched a community-based health insurance programme, the Mutuelle de Santé, to help fund curative healthcare.⁸ Rwanda’s Ministry of Health also took steps to coor-

dinate international aid, to make sure partnerships contribute to the government’s goals for 2020.⁹ Today, Rwanda is widely regarded as a role model for laboratory network development, and the country’s health indicators are among the best in the region.¹⁰

By: Laurel Oldach (Editorial Team); Editor: Paula Fernandes, MBA, PhD (Editorial Team); Contributors: Guy-Michel Gershy-Damet, PhD (WHO); MAJ Elizabeth Wanja, PhD (USAMRU-K); Edward Mberu Kamau, PhD (WHO)

⁴ Perry. “Empowering primary care workers to improve health services: results from Mozambique’s leadership and management development program.” *Human Resources for Health* 6(14): 2008.

⁵ Sherr et al. “Brain drain and health workforce distortions in Mozambique.” *PLoS One* 7(4): 2012.

⁶ Management Sciences for Health, Occasional Paper #3. “Establishing Human Resource Systems for Health during Postconflict Reconstruction.”

⁷ Republic of South Sudan Ministry of Health. “Health Sector Development Plan 2012-2016.” January 2012.

⁸ Twahirwa. “Sharing the burden of sickness: mutual health insurance in Rwanda.” *Bull. World Health Org.* 86(11): 2008.

⁹ Logie et al. “Innovations in Rwanda’s health system: looking to the future.” *The Lancet* 372: 2008.

¹⁰ Kebede et al. “Strengthening systems for communicable disease surveillance: creating a laboratory network in Rwanda.” *Health Research Policy and Systems* 9(27): 2011.

PROFILE: MAJOR ELIZABETH WANJA AND USE OF MOBILE LABORATORIES IN CONFLICT ZONES

Major Elizabeth Wanja, PhD, of the U.S. Army Medical Research Unit in Kenya (USAMRU-K) deployed to Iraq from July 2007 to October 2008. Whilst there, she and her team participated in malaria prevention and diagnosis activities with military and coalition forces “inside the wire.” Dr. Wanja in particular put her malaria expertise to work, encouraging soldiers to use protective and preventative measures.

Despite having the support of the coalition infrastructure, Dr. Wanja and her team still found supply chain challenges to be an obstacle to their work. She stated simply that in a war zone, “it’s not always possible to use the roads. Sometimes there [were] IED bombs...oftentimes, you lose materials during transport or they can’t get sent at all, so [we had] to wait” multiple weeks for equipment and supplies. This prevented her from carrying out her work most efficiently; she says, “If you want to do infection testing but don’t have the right reagents, it’s not going to work. Sometimes in Iraq we would have to send samples out of the country for testing.”



Dr. Wanja working with a colleague in the laboratory. Photo reproduced courtesy of MAJ Elizabeth Wanja.

The trajectory of laboratories such as Dr. Wanja’s in Iraq is quite different from that of most civilian and donor-funded laboratories. In her experience, during a conflict, “coalition governments inject more resources and funds into health and laboratory services than they would ordinarily,” with the intention of keeping soldiers and support staff healthy. Then when troops are withdrawn, she has observed a tendency to “pull out all the staff, lock up the station and take away whatever they brought...and that’s the end of it.”

In peacetime, the USAMRU-K works in Nairobi on a variety of research and training projects. Dr. Wanja is now the director of the unit’s Malaria Diagnostic Center, and has published most recently on her work training microscopists to differentiate between species of *Plasmodium* in blood samples for more accurate diagnoses.

Volunteers Needed!

Publication Mentors:

Seeking experienced laboratory researchers, epidemiologists, and statisticians to help with research methods/analysis, scientific communication skills, manuscript preparation/submission, and peer review. Mentors will offer guidance for papers recommended for consideration for publication. Subject matter expertise not necessary. Volunteer time commitment depends on mentee needs.

Writing Workshop Mentors:

Seeking laboratory researchers, statisticians, and epidemiologists with extensive publication experience. Help with daily lectures and discussions and work with a small group of participants on manuscript development. Mentors will provide guidance on research methods, analysis, laboratory or epidemiology subject matter within their expertise, manuscript preparation, scientific interpretation, and communication skills. The time commitment is a two-week workshop.

Peer Reviewers:

Seeking objective reviewers with a high level of expertise to evaluate the quality of manuscripts. Reviewers will offer detailed comments and suggestions, and make recommendations to accept, accept with revisions, reconsider with major revisions, or reject submissions. Reviewers will be contacted before being forwarded manuscripts. A 2-3 week turnaround is expected.

For more information or to volunteer, please contact: editor@gjlonline.org.

ASLM FACILITATES LQMS TRAINING OF TRAINERS WORKSHOP IN ABUJA

From 11-22 March, 23 laboratory scientists and staff from hospitals, non-governmental organisations and government organisations in Nigeria convened in Abuja for a Laboratory Quality Management System (LQMS) Training of Trainers (ToT) workshop. The workshop, coordinated in part by ASLM, was hosted by the Institute of Human Virology Nigeria (IHVN) and aimed to educate future trainers in the components of LQMS. Four instructors taught the modules, led group exercises and provided feedback to participants to improve training skills.

LQMS sets standards for the validation and interpretation of patient test results, the requisition of laboratory tests and the management of samples. Trainers have the option to select and tailor available materials in order to custom-design workshops that fit the local training needs of target audiences. Training laboratory professionals in quality management systems provides them with the tools and expertise to organise courses for laboratory managers, administrators and bench workers. Additionally, LQMS trainings aid in the credibility and recognition of laboratories seeking accreditation.

LQMS is integral to the Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA) of the World Health Organization Regional Office for Africa. The

process is designed to allow public health laboratories to incrementally advance in ranking from 1 to 5 stars, preparing them for international accreditation. With training in LQMS, staff can address administrative and technical requirements for laboratories to function optimally, ensuring accuracy of test results and impacting the quality of patient care.

For more information on ASLM's future involvement in LQMS ToT workshops, please contact Mr. Teferi Mekonen, Senior Programme Specialist: tmekonen@aslm.org.



*Participants at the closing ceremony of the Abuja QMS ToT Workshop.
Photo courtesy of Mr. Teferi Mekonen.*

WHO AND PARTNERS LIGHTEN THE LABORATORY COMMODITIES PROCUREMENT LOAD WITH UPDATED SPECIFICATION TOOL

Over the past year, ASLM has played a key role in the development and review of a new tool for laboratory and logistics personnel. The "Tool on Specifications and Quantities for Efficient Procurement of Laboratory Equipment and Related Commodities for Diagnosis and Monitoring of HIV", developed by the World Health Organization (WHO) and partners, provides information about the procurement requirements of laboratory commodities for HIV and facilitates supply chain management.

WHO and key stakeholders hosted a consensus meeting on the harmonisation of technical and operational aspects of clinical laboratory testing for HIV, TB and malaria, from 22-24 January 2008, in Maputo, Mozambique. Public health leaders emerged from the meeting determined to do more to standardise laboratory equipment and supplies in order to facilitate their procurement.

As a follow-up to the Maputo Consensus Meeting, WHO co-convened a meeting in October 2008, in

(continued on page 16)

STARTING SMALL BUT THINKING BIG

Developing A Local ASLM Chapter in Ghana

In the two years since ASLM launched, it has become a major player in the field of laboratory medicine in Africa. With growing demands for training and continuing education of laboratory professionals, and an increased need to build capacity of regional laboratories for international accreditation, the Society is expanding its presence in East Africa. Following the ASLM2012 conference, ASLM's Ambassador to Ghana, Dr. William Ampofo, Senior Research Fellow and Head of Virology at the Noguchi Memorial Institute for Medical Research, saw a need for more laboratory support and capacity building in his country and aimed to develop a chapter of ASLM in Ghana. He enlisted the help of Mr. Emmanuel Ekow Biney, Head and Deputy Chief Biomedical Scientist, Clinical Laboratory Unit of the Ghana Health Service in Korle Bu, Ghana.

Biney began his career as a medical laboratory technician, first at the Ghana Ministry of Health's School of Medical Laboratory Technology in Korle Bu, and then at the HIV/AIDS laboratory at the National Public Health and Reference Laboratory in the Korle Bu Hospital. Following his success in these laboratories, the Ghanaian government awarded Biney a scholarship to pursue a Bachelor of Science degree in Biomedical Science at the University of Bradford in the UK and, later, approved his pursuit of a Master of Science in Bacteriology/Virology and Molecular Microbiology at the University of Manchester, also in the UK. After his return to Ghana in 1994, he worked his way up the ranks at the Ghana National Public Health and Reference Laboratory, serving as an Assistant Medical Laboratory Technologist and then Biomedical Scientist. In 1999, he left Ghana to work on a pneumococcal vaccine trial at the British Medical

Research Council Laboratories in Fajara, the Gambia. When the trial ended five years later, he returned to his post at Ghana's National Public Health and Reference Laboratory, working on tu-

berculosis, cholera, HIV and disease surveillance. playing a role in this new endeavour, encouraging local laboratory scientists to join the Society and make use of the many benefits that come with membership. He also feels strongly about the strengthening of local laboratories and sees the need for an ASLM representative to sit on the task force that performs regular inspections of laboratories to ensure laboratory registration and use of standardised practices. With the success of these efforts, Biney believes ASLM's new chapter in Ghana will "become a force to reckon with."

Though still in its early phases of development, once established, the new branch will collaborate with ASLM's Secretariat in Ethiopia to make use of and disseminate available resources for Ghanaian laboratory scientists. Initially, the focus will be on building a membership base, then advocating for the role of the laboratory and the importance of healthcare in Ghana and throughout Africa. Long-term goals include ensuring all laboratories participate in some form of quality assurance and proficiency testing for all disciplines of laboratory medicine and are up to the standards required for the provision of laboratory services in the country. With the support of PEPFAR (the US President's Emergency Plan for AIDS Relief) for the development of the Ghana National Health Laboratory strategic plan and Policy Guidelines, the issue of the accreditation of laboratories remains high on the agenda. While there are many components of laboratory medicine that the new branch seeks to address and improve, Biney notes, "For this young society we don't want to put too many things on the table at once, so we will start small."

By: Jessica Fried, MPH (Editorial Team); Contributors: William Kwabena Ampofo, PhD (Noguchi Memorial Institute for Medical Research), Emmanuel Ekow Biney, MSc (Ghana Health Service)

"For this young society we don't want to put too many things on the table at once, so we will start small."

berculosis, cholera, HIV and disease surveillance.

Now a prominent figure at the Ghana Health Service (GHS), Biney has a vested interest in the development of a local chapter of ASLM since the GHS employs the most laboratory professionals in the country. Biney looks forward to



MEET THE RESEARCHER

Dr. William Ampofo, Senior Research Fellow and Head of the Virology Department at the Noguchi Memorial Institute for Medical Research in Accra, Ghana, sat down with us to talk about his scientific interests and career history, which began with botany and zoology and led to the investigation of human viruses.

Can you tell us a little about your professional background and current projects?

I am a virologist – I've been in virology ever since I left school. My interest started at the university, where I began by studying botany and zoology. For my first bachelor's [degree] project, I worked on a mosquito that is a vector for Yellow Fever. After college, I served as a research assistant at the Noguchi Memorial Institute for Medical Research [NMIMR] for one year, and then in 1985 was recruited into the Virology Department, where I began to work on HIV. We collaborated with Professor Masanori Hayami from Japan and established an assay to detect HIV antibodies. I subsequently discovered the first Ghanaian case of HIV infection in 1986. In 1987, large-scale antibody testing and blood screening was introduced by the Ghana Ministry of Health. NMIMR's ensuing work contributed to the initial knowledge about HIV-2 in West Africa. With a grant from USAID, we at NMIMR subsequently provided CD4 testing and quality assurance for HIV testing in support of the national programme.

I started working on polioviruses with the WHO [World Health Organization] Global Polio Eradication Initiative to train laboratory scientists following its 1988 launch. I also isolated the first wild type poliovirus in Ghana. In 1989, I went to Japan on a research scientist training programme supported by the Japanese International Cooperation Agency, and did a stint at the Nagasaki Institute of Tropical Medicine.

In 2007, we at NMIMR confirmed the first cases of the highly pathogenic avian influenza H5N1 virus in Ghanaian poultry and became a National Influenza Centre for Ghana. In 2011, I supervised the laboratory detection of the first ever

cases of Lassa fever virus infection in humans and rodents in Ghana.

At present, we at NMIMR are seeking accreditation for HIV drug-resistance testing for Ghana. Furthermore, I am a current member of the Advisory Group of the WHO's Global Action Plan for Influenza Vaccines.

What is your role in ASLM?

As an ASLM Ambassador, my role is to promote the goals and strategic vision of ASLM in Ghana. I tell colleagues of the importance of ASLM in advocating for laboratory medicine and in improving their careers. The Society provides various opportunities for scientists. For example, the *African Journal of Laboratory Medicine* is a key source of information for African scientists, and will be beneficial for the future of science. By contributing to the success of ASLM, we will address key issues of laboratory development and disease investigation. Laboratory systems are weak [in Africa], but through the improvement of system components, by pushing the agenda of ASLM, we will have increased access to resources. Through the Society, relevant governments and partnering organisations, we will help realise the improvement of laboratory services.

What are your hopes and expectations for ASLM in the coming years?

One thing I'm happy about is the AJLM [*African Journal of Laboratory Medicine*], because it is important to encourage the publication of previously unpublished work. I know things can be better. By building capacity in research science and getting people involved in peer review, we can guide research development in Africa. The AJLM provides an opportunity for us to represent our findings.

"By contributing to the success of ASLM, we will address key issues of laboratory development and disease investigation."

Another thing ASLM can do is not just to promote grant-writing, but also teach people how and where to look for grants as well as how to strategize to get grants, by looking not just at the big grants, but at the medium and smaller grants as well. Hospital laboratories are a gold mine for research material. If you look at bioethics research, there's a lot more we can do in Africa. For example, ASLM can promote opportunities to research how to better manage patients through the prevention of infections, and could even look at patient care. ASLM can highlight these issues.

ASLM has established relationships with industries and governments, creating a strategy for action that it can follow. Now, we all need to support ASLM to move its strategy forward and find resources to fund its activities. The role and partnership of ministers of health is key, as they can help promote ASLM and drive Society membership, which could cover the administrative costs of ASLM.

What was your role in ASLM2012?

I was a rapporteur for the conference. Our role was to cover the disease-based tracks, distil interesting issues that come up, and report on these issues. This involves being present and taking notes at presentations. Even during the opening ceremony, all of the speakers recognised the role of labs in surveillance, not just in treatment—and that role is critical. As a rapporteur, I captured details about the role of the laboratory as a key tool in generating data. Capturing key themes and details is what rapporteurs did in various tracks, analysing posters and reporting clearly and concisely on diseases and vaccines.

What did you enjoy most about the ASLM2012 conference?

I liked that this first conference was a forum for knowledge and that attendees could earn CME [Continuing Medical Education] and CMLE [Continuing Medical Laboratory Education] credits for their participation. The conference was very professional—it was as good as those I've been to in the US and Europe. Networking was a great aspect of the conference, too. We were able to learn about opportunities, collaborations and resources available on the continent.

Ministers of health are critical to the success of healthcare in African countries, so having the ASLM2012 Ministerial Roundtable to discuss laboratory systems improvement was very strategic. The quality of the science was also really great. The conference also provided positive recognition for laboratory medicine. I saw people who were proud that their hard work has been appreciated. This is a good motivation for science,

Editor: Rachel Crane (Editorial Team)

ASLM to Offer Web-Based Resources for HIV Testing Technologies

ASLM is pleased to announce its plans to develop two web portals within the Society's website, one for HIV viral load testing (VLT) and another for HIV point-of-care (POC) diagnostic technologies. The HIV viral load portal will offer technical guidelines and strategies on VLT training, technologies, policies and quality management. The VLT portal will also provide access to policy documents, conference presentations, meeting reports and operational research. The HIV POC web portal will provide a timeline of the market release of POC platforms, links to relevant websites, POC evaluation information, communication forums and post-market surveillance data.

For more information, please visit: www.aslm.org.

AJLM TO OFFER SLMTA MANUSCRIPT WRITING COURSE

In preparation for an upcoming Strengthening Laboratory Management Toward Accreditation (SLMTA) Special Issue for the African Journal for Laboratory Medicine (AJLM), a manuscript writing course will be offered for first authors of laboratory medicine articles desiring assistance in preparing their manuscripts for submission to the AJLM. The course, which runs from 9-15 June at the Tlotlo Hotel in Gaborone, Botswana, aims, through a series of lectures and hands-on writing and editing sessions, to help participants improve draft manuscripts they bring to the course and, ultimately, gain the writing skills required for a successful career in laboratory medicine.

The course will focus on each section of the manuscript — abstract, introduction, literature review, methods, results and discussion — and participants will learn how to identify and express key messages and expected information in each section. The class will also discuss authorship considerations and the review and submission processes. At the conclusion of the course, participants will leave with a completed draft that is ready for co-author review and submission,

ideally to AJLM by 15 August for inclusion in its special SLMTA issue. Twenty Continuing Medical Laboratory Education credits will be awarded upon successful completion of the course.

Course participants were chosen based on the quality and completeness of the draft submitted with their application; geographic balance; and the relevance of their topic to the laboratory medicine community. Topics of interest included cost models or cost-benefit analyses; post-SLMTA strategies for sustainability or accreditation; and reports of outstanding improvement projects.

This will be the third manuscript-writing course conducted by ASLM and AJLM; the first two courses were held in Kenya and Senegal. For more information about submitting manuscripts to the SLMTA special issue of AJLM, please contact SLMTA founder and course mentor, Dr. Katy Yao, at kyao@cdc.gov. *(Please note: applications are now closed for the SLMTA manuscript-writing workshop.)*

By: Jessica Fried, MPH (Editorial Team); Contributor: Elizabeth Luman, PhD (CDC-Atlanta)

UPDATED SPECIFICATION TOOL

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Geneva, Switzerland, recommending the establishment of two technical working groups¹ aimed at improving the procurement of laboratory items. One group would focus on the standardisation of laboratory items and another on specifications for the efficient procurement of laboratory equipment and commodities. Following this meeting in Geneva, the WHO AIDS Medicines and Diagnostics Service (AMDS), with the support of the US Centers for Disease Control and Prevention (CDC) and in collaboration with the Procurement Specification Working Group, developed a tool on the specifications and quantities for the procurement of laboratory equipment and commodities for HIV diagnosis and monitoring.

At a June 2012 meeting in Geneva, Switzerland, ASLM, now a member of a technical working group and partner of AMDS, reviewed the first draft of the tool for procurement specifications of HIV diagnostics. Since then, ASLM has provided further feedback on the AMDS tool as well as technical advice for its continued development. WHO presented the tool at the ASLM international conference in December 2012 and received positive feedback from attendees.

By developing and disseminating this important tool for laboratory commodity procurement, WHO, CDC, ASLM and other partners are helping close an important knowledge gap in laboratory medicine. Through its provision of lists of laboratory commodities required for HIV tests, requirements for the proper procurement of commodities, and examples of reagent quantities required to perform different tests, the tool will help ensure that diagnostics are procured efficiently and in appropriate quantities, improving laboratory services and conserving resources along the way.

The fourth version of the WHO AMDS tool is currently available for field testing. ASLM encourages programme managers and laboratory personnel to use the tool and provide feedback. The tool is available for download here: <http://goo.gl/6xiev>. *By: Rachel Crane (Editorial Team); Contributors: Teferi Mekonen, MSc, MPH (ASLM); Vincent Habiambere, MPH, PhD, MD (WHO)*

¹ Members of the working group on specification for efficient procurement of HIV laboratory equipment and related consumable are as follows: African Society for Laboratory Medicine, Clinton Health Access Initiative, Crown Agents, Foundation for Innovative New Diagnostics, Global Scientific Solutions for Health, Laboratoire de Bactériologie-Virologie, CHU A Le Dantec, Médecins Sans Frontières, Stop TB Partnership, Supply Chain Management System, United Nations Development Program, United Nations International Children's Emergency Fund, United States Agency for International Development Deliver Project, United States Centers for Disease Control and Prevention, USAID/SIAPS - Management Sciences for Health, and the World Health Organization.

OVERCOMING OBSTACLES IN PAEDIATRIC CARE

An Interview with Dr. Judy Orikiiriza Tatwangire

Dr. Judy Orikiiriza Tatwangire is a Senior Paediatrician and Head of the Department of Research at the Rwanda Military Hospital in Kigali, Rwanda. She holds a bachelor's degree in medicine and surgery and a Master of Medicine in paediatrics and child health, and has over 12 years of post-qualification experience in clinical work, research and training with a laboratory-based fellowship in infectious diseases. In addition to seeing patients, Dr. Orikiiriza is also involved in clinical and laboratory research and has a particular interest in immune reconstitution inflammatory syndrome (IRIS) among HIV-infected children. Dr. Orikiiriza took the time to speak to us about her research and work with paediatric patients and the challenges she and her colleagues face in treating children with infectious diseases.

What is your role within the Rwanda Military Hospital?

I've spent over five years as a paediatrician at the Rwanda Military Hospital, and began my career as a paediatrician at Gulu University in Uganda. In addition to practicing medicine, I serve as Head of Research at the hospital and am involved in both clinical and laboratory research. I also train clinical officers at the Kigali Health Institute as well as undergraduate medical students and post-graduates in paediatrics at the National University of Rwanda. I usually emphasise clinical-laboratory interactions during these trainings so that clinicians learn to appreciate the laboratory during their early career training and understand the importance of taking good samples for accurate laboratory diagnosis. I think that this is a great opportunity for medical and laboratory professions to incorporate laboratory medicine into medical curricula, as this helps strengthen and improve laboratory services. Laboratory-clinical interactions bring health service delivery to a higher level in low-resource settings.

What are the most difficult diseases to diagnose in children and why?

The most difficult disease to diagnose is tuberculosis (TB), especially among patients with a background of malnutrition, congenital and acquired immunodeficiencies in high-endemic settings. In reference to childhood TB in particular, it is a challenge in our setting to make an early diagnosis due to physicians' limited experience and un-validated screening and diagnostic algorithms, which may delay patient access to proper healthcare. There are also many obstacles to collecting paediatric samples. Sometimes, we have difficulty obtaining the consent of parents, especially from parents whose children have undergone repeated phlebotomy attempts without success. As this can be a very stressful experience for both parent and child, it is important that healthcare workers explain the procedure well during patient preparation.



Dr. Orikiiriza Tatwangire (right) receiving the ASLM2012 Laboratory Champion Clinician Honours Recognition for her role in providing and improving laboratory services in Africa.

Another issue is that tests that are available were not created with the paediatric population in mind. For example, the primary method we use to diagnose tuberculosis is through sputum tests; however, children do not generally cough up sputum. Tests that require urine can also make disease diagnosis difficult, as it is a challenge to take urine samples from very young children. Moreover, laboratory services are rather mediocre and experience frequent reagent stock-outs, which further limits diagnosis and disrupts patient care markedly.

How do you prepare a child for something such as a blood draw?

Usually, we first seek consent from a guardian or parent. If a child is around 10 years old, we can get her permission to draw blood, but for a younger child it may be more difficult. For the more painful or invasive tests, it's difficult for every child, but there are some who are more willing and there are some who fight. Every child is different and unique.

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Does your research currently entail looking into new diagnostic options for children?

We are not looking at new diagnostics, but rather trying to map out the pathogenesis of diseases. We are trying to look at diagnostics in terms of the specificity of small paediatric samples, utilising dry spots to run a larger panel of diagnostics.

Do you know of any paediatric diagnostic tests in development or on the market that have the potential to provide greater accuracy and ease-of-use?

Most point-of-care rapid tests have been studied in adults and not children. For example, the GeneXpert TB test was declared the current gold standard for TB diagnosis by WHO [World Health Organization] after studies were carried out in adults around 2010-2011. We use the GeneXpert in children despite the fact that only a few studies have shown its accuracy in paediatric diagnoses. We also use glucometers, hemometers, rapid diagnostic tests for malaria and tests for Hepatitis B and C. All have proven effective in adult populations, but their uses have not been studied extensively in children. There is a need for more research on and approval of point-of-care rapid tests for use in the paediatric population, especially for those under two years old. In addition, I need to find out more about what is on the market and in development in regards to paediatric diagnostics.

We heard you have an interest in immune reconstitution inflammatory syndrome (IRIS) among HIV-infected children. What is IRIS? How is it diagnosed? Currently, what is the best approach to managing IRIS?

IRIS is a syndrome that may sometimes manifest after a patient has begun taking antiretroviral treatment. It's caused by the body's disproportionate response to microbial particles and presents as an overwhelming immune response. IRIS was first noted even before the era of HIV, in patients on TB treatment and syphilis treatment. In HIV, IRIS was first described in 1995, when it was noticed that some patients started to deteriorate after beginning antiretroviral treatment. Dr. Martyn French was one of the first scientists to extensively describe this syndrome in HIV patients. However, in mid-1997 and early 1998, two groups described atypical manifestations of cytomegalovirus retinitis [an inflammation of the eye's retina] and *Mycobacterium avium* complex disease with abscess formation in HIV patients within a few weeks of initiation of antiretroviral treatment (ART).

In 2006-2007, I did a study in Uganda looking at IRIS in HIV-infected children. The study was entitled, "The clinical pattern, prevalence, and factors associated with immune reconstitution inflammatory syndrome in Ugandan children," and the main objective of the study was to determine the prevalence, clinical epidemiology and risk factors associated with IRIS in HIV-infected children having newly initiated ART in Uganda. The overall prevalence of IRIS was 38% with males being the most affected and the most common manifestation of IRIS being TB. IRIS can manifest with a wide variety of clinical symptoms, depending on the target of the inflammatory response. Thus, the resulting clinical manifestation of IRIS depends on the prevailing infections in the locality.

It is difficult to make a definite diagnosis of IRIS. You need expensive and not easily accessible molecular and immunological diagnostics alongside a picture of clinical deterioration after ART initiation. As IRIS is an immune-related syndrome and not an on-going opportunistic infection, it is necessary to use both clinical criteria and laboratory tests to diagnose it. It may be mild and not necessitate any intervention; in such a case a patient should be encouraged to adhere to ART. IRIS can also be very severe, but can be well-managed in hospital settings and does not necessarily warrant patient suspension of ART. However, such an intervention may sometimes be necessary. The ability to diagnose, treat and manage IRIS depends heavily on a clinician's clinical experience and the support of well-trained laboratory technicians with access to appropriate diagnostic tools. When IRIS is suspected, the current approach is to initiate ART early, while the immunological profile is not severely affected. At-risk patients are monitored for IRIS events and continue treatment, as IRIS will improve in over 90% of patients. When a case is severe, one can use anti-inflammatory drugs or immune modulators like steroids, or both in combination depending on the severity of the IRIS event.

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