

MRC

Unit
The Gambia

MRC UNIT THE GAMBIA
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Our Science

A quarterly newsletter produced by the MRC Unit The Gambia focusing on our scientific research in health and highlights our achievements in Africa.

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Our Science: Issue 4

This 4th issue of *Our Science* is our first of 2017, the 70th anniversary of the MRC Unit The Gambia, that will be celebrated with a series of events across the year. This explains the special logo on the cover page. This issue shows both our large and heterogeneous research portfolio and the excellent services and platforms supporting its implementation. Over the last few years, platforms and support services have undergone re-structuring and modifications for better efficiency. For example, we have introduced an electronic data capture system in two (Farafenni and Basse) of the three Health and Demographic Surveillance Systems we manage, which will reduce the delay between data collection and analysis, and eventually will make demographic information readily available. Similarly, we are gradually introducing an Electronic Medical Record System in the Clinical Services Department, which serves our staff, study participants enrolled in specific studies and the general public. Each year, about 50,000 patients are attended by our nurses and doctors and benefit from the available diagnostic services. Our Logistic Department is responsible for procuring the equipment and consumables for the smooth running of the research platforms, support services and research projects. They have reassessed their activities and introduced several changes for better efficiency, both financially and in terms of The Unit's CO2 footprint. All this has been achieved in support of about 60 on-going research projects; we have chosen to highlight 3 of them for this issue; two are on important public health issues in West Africa, namely the persisting high level of stunting among children, despite substantial progress made over the last decade, and the alarming prevalence of drug-resistant tuberculosis. The third project is the *RooPfs* study, which is currently ongoing in the Upper River Region and aims to determine whether improved housing reduces malaria. Finally, the profile section showcases some of our staff members, researchers and support staff involved in the activities featured in this issue.

- Professor Umberto D'Alessandro

MRC Unit The Gambia's Health and Demographic Surveillance System Platforms adopt Electronic Data Capture

Farafenni and Basse Health & Demographic Surveillance Systems Go Digital.

The Gambia, like most other sub-saharan African countries, is characterised by significantly incomplete vital registration, which make it more difficult to carry out field-based medical research, especially studies that require accurate measurement of disease incidence and mortality rates. The prospective demographic surveillance approach, despite its high resource demands, provides the best opportunity to underpin large scale epidemiological studies and field trials; as well as generate much needed quantitative and qualitative evidence from scientific investigations to formulate or influence policy change with respect to health care delivery systems vis-à-vis an evolving pattern of

disease burden in both children and adults.

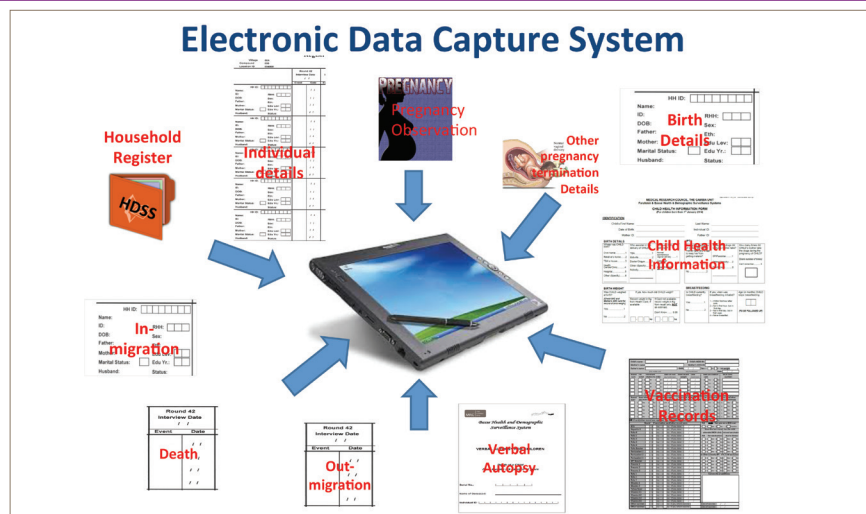
The Unit maintains three Health and Demographic Surveillance Systems (HDSS), namely Farafenni (from 1981), West Kiang (from 2005) and Basse (from 2007), to serve as platforms for a range of field studies aimed at improving understanding of public health priorities in West Africa in particular and the developing world in general. A fourth one operated from Bansang, and located in the Fulladu West district adjacent to the Basse HDSS, currently supports the Vaccine Impact on Diarrhea in Africa (VIDA) project only, with no firm arrangements to continue surveillance beyond the duration of the study.

The sites represent different geographical and environmental conditions as well as disease ecologies, and therefore collectively constitute a valuable scientific resource for The Unit to underpin its investigations relating to the Sustainable Development Goals (SDG's) across its three research themes.

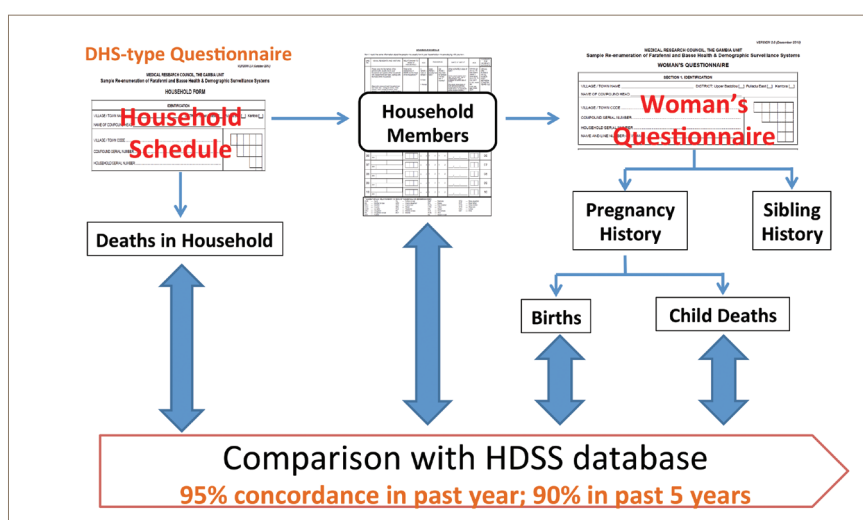
Printing, management and storage of the questionnaires have consistently been a significant challenge to Fieldworkers, Data Entry Clerks and Data Managers, with significant chances of introducing error during data entry. Resolution of errors and other queries in the field can be time consuming.



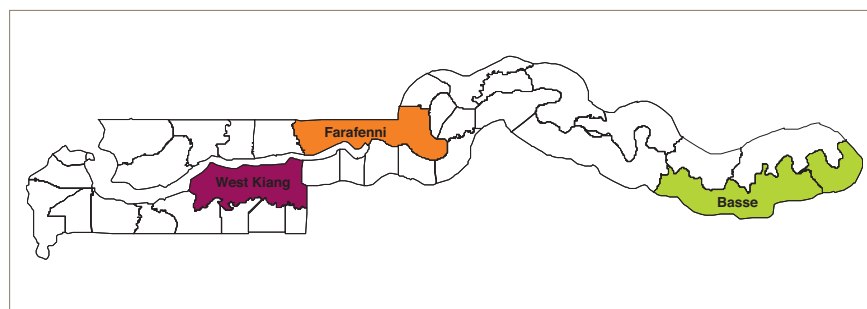
The data collection team



Electronic Data Capture System Process



HDSS Re-enumeration Methodology



Locations of the Farafenni, West Kiang and Basse demographic surveillance areas in The Gambia.

Electronic Data Capture software was developed by a private consulting firm, InSIST Global, and implemented with support from the Data Management Department. It was rolled out on 1st October 2015 in Farafenni; and 1st March 2016 in Basse.

The immediate advantages of the electronic data capture include organised sequential interview schedule; internal consistency checks, e.g. date logic. This therefore implies low error rate, shortened interview time, and potential to increase the scope of routine data collection.

Roll-out was preceded by an independent sample HDSS re-enumeration surveys in Farafenni (4,762 households) and Basse (4,235 households) conducted by a team of 31 female enumerators. The purposes of the re-enumeration were to:

- evaluate the integrity and completeness of the paper-based generated HDSS database;
- demonstrate, as an advancement in demographic methodology, the use of Demographic Health System (DHS) survey technique to independently validate HDSS data;
- estimate neonatal mortality retrospectively as part of a study comparing measurements from different data sources. This constituted part of Dr Anne Rerimoi's PhD work;
- independently estimate key benchmark indicators for maternal and reproductive health, such as stillbirth and spontaneous abortion rates.

Since the new electronic data capture system is flexible and provides potential to increase the scope of HDSS data collection, plans are being explored to:

1. Establish specific cohorts of interest, as well as sampling frames for different age groups for which necessary biological samples will be collected periodically and processed for detecting parasites, measuring glucose, micronutrients, and any other outcome of interest. This will be particularly suited for detailed prospective community-based studies relating to non-communicable diseases (NCDs), such as diabetes and hypertension.
2. Design and collect relevant health information on adolescents, adults and the elderly, thus enhancing our understanding of the health-related problems and challenges in the entire life course for residents in this part of Sahel West Africa.

Closing the malaria gap with RooPfs intervention study

RooPfs intervention study assesses whether improved housing can protect against malaria in The Gambia.



Traditional house (thatch roof, open eaves and no screening)

The recent reduction in malaria has been largely achieved by a massive scale-up of vector control, with long-lasting insecticidal nets and indoor residual spraying. The future success of these interventions, however, is threatened by the growing problem of insecticide-resistant mosquitoes, especially in West Africa and also elsewhere. There is thus an urgent

need to develop more interventions that do not rely on insecticides.

There are descriptive studies that report a decrease in malaria associated with better housing but no randomized controlled studies, which are the gold standard of medical research. During the past 30 years a revolution in house design has been taking place across Africa, and The

Gambia is no exception. Traditional thatched-roofed houses are being replaced steadily by houses with metal-roofs as the continent develops. The current project intends to ride this wave of cultural change and further improve the design of houses to make them healthier to live in, potentially improving the lives of millions of people across sub-Saharan Africa.



Intervention house (metal roof, closed eaves, screened doors and windows)

RooPfs is the code name for a randomized controlled study (RCS), measuring the impact improved housing can have on malaria. All the houses in over 100 villages in the Upper River Region (URR) were surveyed to identify traditional houses (thatch roof, open eaves and no screening). The study was supported by Joint Global Health Trial Scheme funded by MRC-DfID-Wellcome Trust, a collaboration between MRCG, Durham University, School of Architecture Design and Conservation, Denmark and the National Malaria Control Programme Banjul.

In March 2015, traditional houses were randomised to the intervention or control arm of the RCS and informed consent was sought from house owners and residents. All 800 who consented to join the

study will receive the intervention (metal roof, closed eaves, screened doors and windows), but those in the intervention arm received it at baseline and those in the control arm will receive it at the end of the study (2018). Needless to say, getting the intervention of this study in place was more difficult than for many medical interventions, but we were successful in so that the medical work could begin in June 2016.

The implementation of the intervention was a success thanks to the collaborative effort from a team of carpenters, village masons, Basse metal work and carpentry workshops, MRCG field staff, as well as the Transport and Purchasing Departments at MRCG. We are now following a cohort of children resident in the houses for malaria for the 2016 and 2017 malaria seasons.

In 2014, the study was supported by Joint Global Health Trial scheme funded by MRC-DfID-Wellcome Trust, as a collaboration between MRCG, Durham University, the School of Architecture Design and Conservation, Denmark and the Gambian National Malaria Control Programme. As a randomized controlled study (RCS), measuring the impact that improved housing can have on malaria it has the code name “*RooPfs*”. The first task was to identify traditional houses (thatch roof, open eaves and no screening), so all houses in over 100 villages in the Upper River Region (URR) were surveyed.

Stunting remains prevalent in Keneba despite 40 years of unprecedented access to healthcare and reductions in disease

Why are children not growing better and why do they remain so anemic?



Dr Helen Nabwera examining an infant in Keneba

As part of her PhD, Dr Helen Nabwera performed a detailed analysis of growth records collected over the past four decades in Keneba and our other two core study villages in West Kiang. The results were published in *Lancet Global Health* in January 2017.

Professor Sir Ian McGregor first chose Keneba as the centre of his

field research in the late 1940's where he started collecting demographic and health data in Keneba and 3 neighbouring villages (Manduar, Kantong Kunda and Jali). In 1974, Professor Roger Whitehead relocated his nutrition research from Uganda (forced to relocate due to the instability in the country). Roger's philosophy was "no survey without service" and he

progressively strengthened the clinic and health outreach services that were provided by MRCG Keneba. The village of Jali elected not to be part of this more intensive relationship between MRCG and the local communities; so there have been 3 core villages for the past 40 years. The health inputs over the years have grown in intensity to the present day, with high levels of

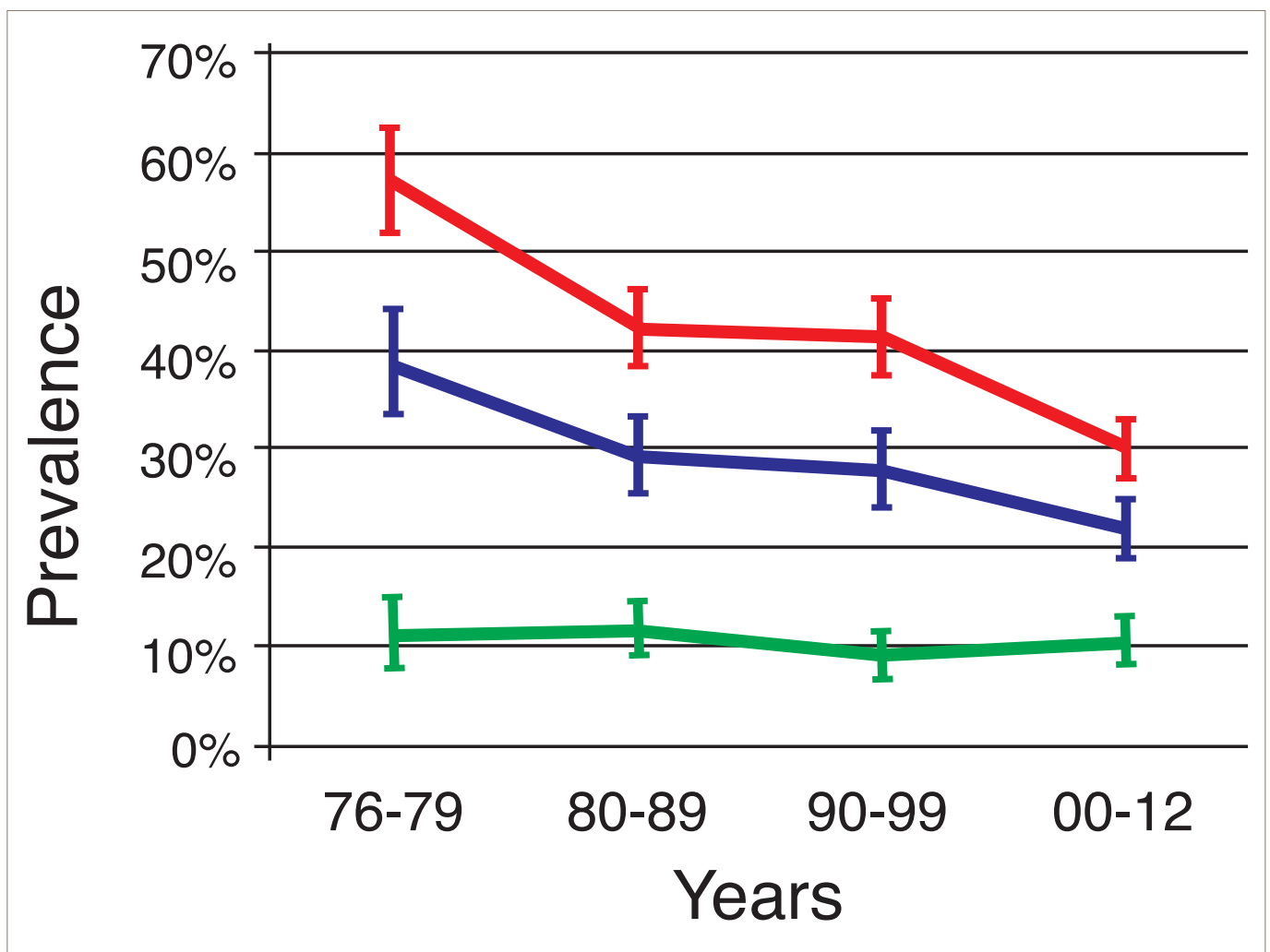
medical and health interventions. As part of this health care, all children from the core villages are reviewed at birth and called for six week, three month and then three monthly regular follow-ups at the Well Baby Clinic where they have detailed anthropometric measurements taken. Their mothers are also free to bring the children to clinic whenever they are unwell. Through this, Helen was able to access 59,371 measurements on 3659 children with a median of 16 visits each (interquartile range 13-26).

The unprecedented levels of health interventions brought to these villages would be prohibitively costly for a government of a low-income country to bring in nation-wide. Despite this,

the key finding was that although stunting levels have halved, they remain unacceptably high with a prevalence of 30% in two year old children (see figure below).

Other metrics of malnutrition including head circumference have also improved, but still remain very far from acceptable compared to the World Health Organisation (WHO) reference curves. Notably, the growth faltering that occurs between 3 and 24 months is still almost universally prevalent. There has been a reduction of the seasonal variation that has been noted in this environment (children grow very poorly in the wet season), but it still remains very noticeable.

Why are children not growing better and why do they remain so anemic? This data, and evidence from a number of other studies suggest that a major cause is the inflammation caused by living in unhygienic environments. Other research teams will soon be reporting the results of the Water, Sanitation and Hygiene (WASH) Benefits studies in Kenya and Bangladesh and the Sanitation Hygiene Infant Nutrition Efficacy (SHINE) Study in Zimbabwe. Our data suggest that these may yield limited efficacy and that we need more intensive WASH interventions before children will truly be able to make the best of the nutrients available to them and grow better.



Secular trends in stunting, underweight and wasting at 2 years of age. Stunting (red); underweight (blue); wasting (green) where each is defined as proportion below -2 z-scores against WHO 2006.

MRCG and the prevalence of drug-resistant tuberculosis in West Africa

The United Nations General Assembly declared antimicrobial resistance as a global health emergency in 2016.

Antimicrobial resistance (AMR) became one of the biggest threats to global health and endangers other major priorities, such as human development according to the World Health Organisation (WHO). Between 2009 and 2013, the Vaccines and Immunity Theme at MRC Unit The Gambia completed and published a collaborative study estimating the importance of mycobacterial resistance to anti-tuberculosis (TB) drugs in eight West African countries. The countries that participated in the study are Senegal, The Gambia, Guinea-Bissau, Burkina Faso, Togo, Mali, Nigeria and Ghana.

Analysis of 974 bacterial samples were collected from patients with TB revealing that 39% were resistant to at least one first-line drug while 22% were multidrug-resistant. Pre-extensively drug-resistant TB isolates were found to be present at all study sites with Ghana showing the highest proportion, of 35% of MDR samples pre-extensively drug-resistant.

Multidrug-resistant (MDR-TB) bacteria are resistant to two or more of the first-line drugs used for the treatment of a disease. Pre-extensively drug-resistant

bacteria are on the verge of developing into extensively drug-resistant bacteria, which are resistant to the second-line drugs used if first-line treatment fails.

MDR-TB prevalence was highest among patients previously treated for TB in Bamako, Mali (59%) as well as Ibadan (39%) and Lagos (66%), Nigeria. Bacteria isolated from these retreatment patients were four times more likely to be resistant to one or more first-line drugs when compared to bacteria isolated from new patients.

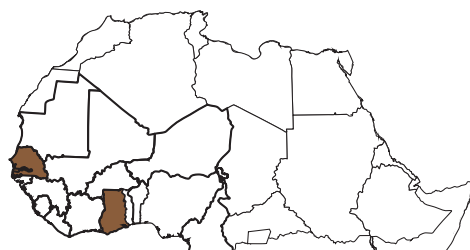
This work was carried out within the TB work package of WANETAM, an EDCTP-funded scientific network called the West African Node of Excellence for TB, AIDS and Malaria, and led by Professor Martin Antonio (The Unit Molecular Biologist & Principal Investigator) and his team. Local laboratory staff from the different sites were first trained to perform routine diagnostics, such as standardised smear microscopy and mycobacterial culture.

Over the last 8 years, WANETAM has developed into a powerful, novel platform to conduct internationally competitive West African TB research in multi-centred

studies across the sub-region as a whole. To maintain this important network, further funding has just been awarded to start the next phase of this West African collaboration, WANETAM 2 scheduled to start in 2017.

West African Node of Excellence for TB, AIDS and Malaria (WANETAM)

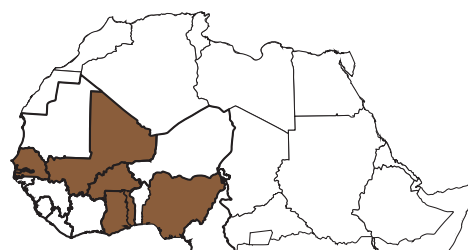
Available TB drug-resistance data



Before

WHO Global TB reports
(1995-2009)

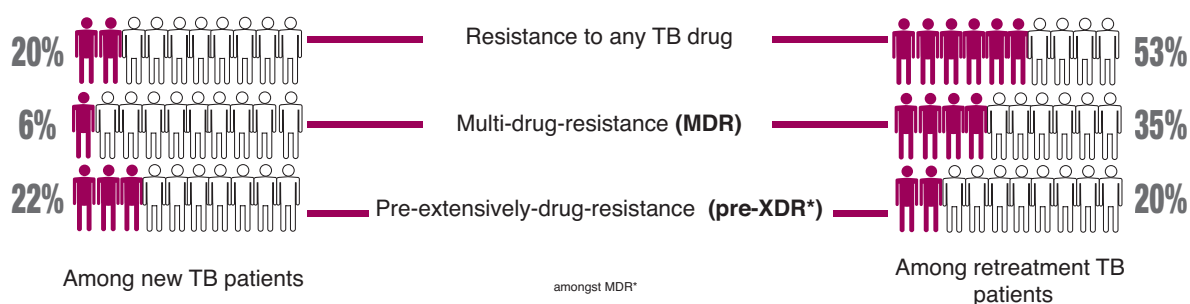
250.000.000 people living in West Africa



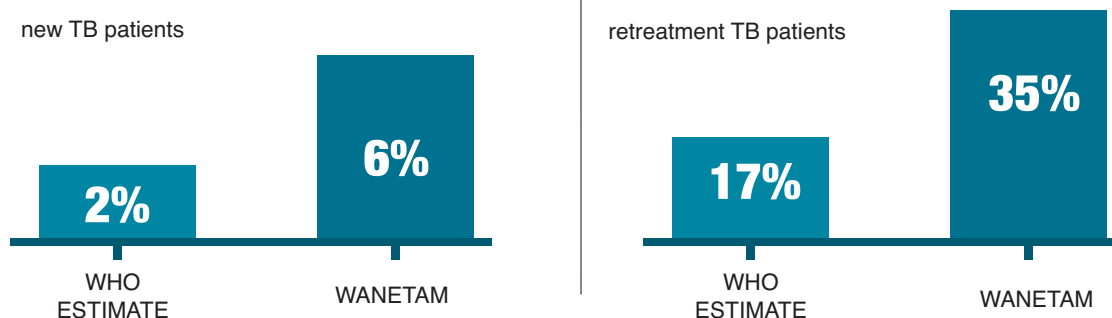
After

WANETAM
(2009-2013)

Drug-resistance across all WANETAM sites



MDR prevalence in West Africa: WHO vs. WANETAM estimates



Participating WANETAM sites

- Lead by the Medical Research Council Unit The Gambia
- Senegal, Laboratoire Bactériologie Virologie, Le Dantec, Dakar
- The Gambia, National Public Health Laboratory Services, Banjul
- Guinea-Bissau, National Institute for Public Health (INASA), Bissau
- Mali, SEREFO (HIV/TB Research and Training Center) FMOS, University of STT, Bamako
- Ghana, Korle Bu Teaching Hospital, Accra
- Togo, Laboratoire National de Référence (LNR) des Mycobactéries, Lome
- Nigeria, Nigerian Institute for Medical Research (NIMR), Lagos
- Nigeria, College of Medicine, University of Ibadan
- Burkina Faso, Centre Muraz and the National TB Program (NTP), Ouagadougou

Preventative and TB control measures urgently needed in West Africa

WANETAM was funded by EDCTP and MRC (UK)

Clinical Services Department providing excellent primary healthcare to staff, study participants and the general public

Providing in-patient care not only for clinical research patients, but also for the general public who have come to appreciate MRCG as a centre of excellence in The Gambia.



Clinical Services staff providing primary healthcare

MRC Unit The Gambia's Clinical Services Department (CSD) in Fajara is responsible for providing medical care to staff, study participants and the general public. As a result it provides the first point of contact with The Unit for most Gambians. Staff of some of The Gambia's non-governmental organisation (NGOs) and of various international agencies also rely on our clinical advice, particularly for medical emergencies.

In Fajara, up to 150 patients are seen each working day in the nurse-led Gate Clinic. Those patients who have more complex needs can be referred to the outpatient department where they are reviewed by doctors. Patients are also referred here from other health facilities in the country. The Staff Clinic at the main

site in Fajara and the field stations (Keneba and Basse) provide primary health care to MRCG staff and their immediate family (spouses and children) and runs alongside the Outpatient Department (OPD).

The 42 bed ward at Fajara provides in-patient care not only for clinical research patients, but also for the very sick who come to appreciate MRCG as a centre of excellence in The Gambia. This is made possible by the contributions of the CSD nurses under the supervision of the Principal Nursing Officer, other CSD staff and the research doctors based in Fajara.

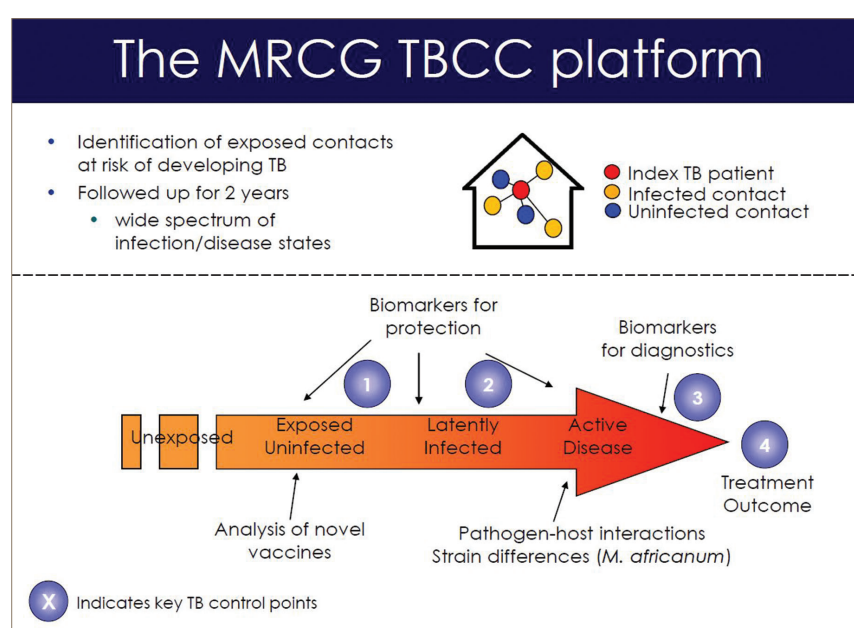
The OPD provides care for patients referred from the Gate Clinic and also supports clinical care at a number of private and health facilities; including

the Edward Francis Small Teaching Hospital (EFSTH), Alliance for Patriotic Reorientation and Construction Hospital (Farafenni), Bansang Hospital and health centres in Keneba, Basse, Sibanor and Sukuta.

The clinical laboratories at MRCG Fajara provide diagnostic services, including haematology, biochemistry and microbiology, for the Gate Clinic, OPD and ward patients, as well as for patients recruited in clinical and vaccine trials. The clinical laboratories at the field stations provide a reduced service, as they work closely with government personnel at the regional health facilities. In Fajara, the X-ray department provides X-ray and ultrasonography services.

MRCG's Tuberculosis Case Contact (TBCC) platform identifies new TB cases through household contact studies

Finding these missing cases and breaking the cycle of transmission is a major priority in the global efforts to end TB.



case, including adults and children. Due to the life cycle of TB, around 10% of HIV negative contacts will progress to active TB within their lifetime. This long-term active follow-up enables a much higher rate of detection of progression to active TB amongst contacts.

The entire TBCC team includes the Head Clinician Dr Olumuyiwa Owolabi, all field workers who actively go to households at multiple times throughout the study period (in all kinds of weather/road conditions) and the laboratory team who help to diagnose. In addition, the national TB control program provides an essential role in referring both primary and secondary TB cases to MRCG.

MRCG TBCC Platform diagram

Each year, it is estimated that 10.4 million people develop active TB disease, but 4.3 million of these individuals are missed each year by health systems and do not get the TB care they need and deserve. Without proper treatment, up to two thirds of people ill with TB will die. In addition, people who are ill with TB can infect up to 10 to 15 people with whom they are in close contact in a single year. This means that each missed case can expand the current TB burden, which compounds the challenge to end TB.

The TBCC platform was able to identify 203 new cases of TB through our household contact studies since 2005, which otherwise would likely have been missed until

the disease had far progressed. Finding these missing cases and breaking the cycle of transmission is a major priority in the global efforts to end TB. This requires a strong health care system, a public health workforce that can reach those who need care, the laboratory capacity to quickly and effectively diagnose the disease, and innovative approaches to meet people where they receive care and expand access to TB diagnostic and treatment services.

The TBCC platform is a long-running study incorporating several significant biomarker projects looking at protective immunity to TB. It allows longitudinal analysis of all exposed household contacts to an index

Samples from these subjects provide key information on immunity to TB: a paper was published in Lancet in 2016 detailing a Ribonucleic acid (RNA) - signature that could identify TB patients at least 1 year prior to disease progression. The future focus is now to validate this signature, identify mechanisms and develop a test that can be used in a prospective study to identify those subjects most in need of therapeutic interventions.

The Logistic Department develops a logistics database to improve visibility

MRCG Logistic Department has been a key contributor to improve efficiency within its logistic chain.



Logistic team member at work

Freight Flights	1.41112 Kg CO2 emission
Container Ship	0.01604 Kg CO2 emission

Joan Vives Tomas, Director of Operations stated “For a complete overhaul, full integration of the final user in the logistic chain management is paramount. We can do much more if we have the full involvement from each department from the planning stages of key staff who know and understand the requirements and limitations.’

In order to improve our services, reduce unnecessary stocks and reduce our carbon dioxide (CO2) footprint, The Unit embarked on high stock rotation, small lots, combined shipments and local alternatives.

Each year, MRCG Logistics Department brings to The Gambia more than 120 tonnes of goods. In 2016 it was 128 tonnes and 145.5 tonnes in 2017. Our delivery routes cover the whole Gambia, from Fajara to Fajikunda, Farafenni, Basse, Keneba, including remote villages supporting our research studies.

In 2014, The Unit started to take a holistic approach of its logistics chain, adjusting The Unit organogram accordingly, creating a new Logistics Department and segregating Procurement from Finance. The introduction of MS Dynamics, plus the support from

MRC Head Office in London and the consolidation of our Procurement and Logistics teams have allowed The Unit to improve the level of compliance in delivering goods from point of order to a point acceptance to our research scientists.

To help improve the visibility of purchase orders, in 2017 the Logistic Department developed a logistics database which can track purchase orders through the supplier chain and provide up to date and more reliable information regarding their status. The Unit has successfully increased the frequency of goods received by 25%, reduced the airfreight orders by 12% and increased the sea freight by 50%. The introduction and opening of stores in Basse and Keneba has reduced the frequency of vehicles coming to Fajara to collect items that has resulted in 50,000 km savings.

Furthermore, stock holding value has decreased substantially between 2012 and 2017, the cost of bringing one tonne of goods to The Gambia has been reduced by 14% and stakeholder confidence in the Logistics Department’s ability to respond to their needs has also improved significantly. Reducing the airfreight orders has also contributed to reducing The Unit’s CO2 footprint. According to the UK Government greenhouse gas reporting for 2016, this means that freight flights have 88 times higher CO2 impact than sea transport, as depicted in the conversion table above.

Dr Helen Nabwera dedicated to developing interventions to reduce maternal and newborn morbidity and mortality

A key publication of her thesis was recently published in *Lancet Global Health* in February 2017.



Dr Helen Nabwera
Locum Consultant Paediatrician at the Great Ormond Street Children's Hospital in London

Dr Helen Nabwera has a passion for evaluating and implementing innovative strategies for improving the health outcomes of women and children in sub-Saharan Africa. She spent 3½ years in Keneba as an MRCG Career Development Fellow, studying for her PhD as well as being Head of Clinical Services.

For her PhD with the London School of Hygiene and Tropical Medicine, that she is due to submit imminently, she sought to understand the secular trends of growth faltering and explore the psychosocial factors that contribute to persistence despite intensive health interventions. She also sought to evaluate the physiological predictors of nutritional recovery in rural Gambian malnourished children. She is supervised by Professor Andrew Prentice.

During her time in Keneba, she helped to foster a clinical environment where health care professionals delivered consistent care based on the latest World Health Organisation (WHO) or national guidelines and valued their continuing professional development. She also helped to develop a holistic model of care for children and their carers admitted to the Nutrition Rehabilitation Unit, which the National Nutrition Agency are keen to use in other centres that care for children with severe acute malnutrition.

Helen recently left The Gambia to complete her paediatric training in the UK and is now working as a Locum Consultant Paediatrician at the Great Ormond Street Children's Hospital in London. She will soon take up a post as Senior Clinical Research Associate at the Centre for Maternal and Newborn Health at the Liverpool School of Tropical Medicine. She will be working on evaluating and developing interventions for reducing maternal and newborn morbidity and mortality, and will be advised by Professor Nynke van den Broek and Professor Matthews Mathai. She hopes to maintain close links with MRCG.

Helen has previously worked as a Wellcome Trust Visiting Fellow at the Kenya Medical Research Institute (KEMRI) Wellcome Trust research programme, where under the supervision of Professor Jay Berkley, she evaluated strategies for improving the health and nutritional outcomes of human immunodeficiency virus (HIV) in exposed and infected children.

Helen's husband, Mr Serge Soubeiga who works in the humanitarian field, has been very supportive of her throughout her career. Their two young boys Tegwende and Wendpanga who spent their early years in Keneba, thoroughly enjoyed their time there.

Dr Olumuyiwa Owolabi a star in the Tuberculosis Case Contact platform

Dr Olumuyiwa Owolabi is a Paediatrician/Research Clinician with a strong research interest in Clinical Trials of Infectious Diseases and a particular focus on Tuberculosis. Dr Owolabi has been the lead clinician on the Tuberculosis Case-Contact (TBCC) platform since June 2012.



Dr Olumuyiwa Owolabi
Paediatrician/Research Clinician

Dr Owolabi's professional background is in paediatrics and child health and in this regard he has led several major projects since joining MRCG in 2008. In particular, he was a Sub-Investigator/Research Clinician on the MVA85A (Oxford University) tuberculosis vaccine trial in infants. He was also the Principal Research clinician on another novel TB vaccine, M72/AS01E (GSK), also conducted in infants. These two clinical trials were the first to administer these novel vaccines in infants and have since led to Phase II trials in South Africa with varying degrees of success. His contribution alongside Dr. Martin Ota towards setting up the MRCG Fajikunda site for clinical trials was invaluable in late 2009. Dr Owolabi's contribution to the TBCC has been important, not only in regards to patient diagnoses but for initiation of new projects, overseeing of the entire field team and mentoring of all within his fold. He works tirelessly towards the goal of reducing the TB burden in The Gambia.

He has had four first-author publications and several presentations at major international conferences.

In his own words, "my goal is to significantly enhance the level of understanding of TB disease amongst our TBCC participants, feeding into improving self-referral of incident TB cases from the household and an improved follow up rate of cases. We hope that this will eventually result in a better understanding of TB disease in the wider community in terms of TB control and zero TB death." TB remains a stigmatised disease in many low income settings, including Gambia, hence the need for a robust understanding of the disease that address stigma. This is a major issue since stigma often prevents people from seeking health care until the disease has far progressed.

Married with children, Olumuyiwa still finds time to undertake a Master's Programme in Public Health at the London school of Hygiene and Tropical Medicine (LSHTM). During his research career, Dr Owolabi has authored and co-authored several papers. Among the scientific outputs from his research with high citation includes Elevated serum 25-hydroxy (OH) vitamin D levels are associated with risk of TB progression in Gambian adults.

Jacob Otu reshaping current concepts on drug-resistance prevalence in West Africa

Jacob is a joint first author of: The emerging threat of pre-extensively-drug-resistant tuberculosis in West Africa: preparing for large scale tuberculosis research and drug resistance surveillance.



Mr Jacob Otu
Higher Scientific Officer on the
WANETAM project

Mr Jacob Otu was the Higher Scientific Officer on the West African Node of Excellence for Tuberculosis (TB), AIDS and Malaria (WANETAM) project. Jacob's research interests are in molecular characterisation of multi-drug resistant, TB diagnostics and clinical trials. Jacob is a joint first author of: The emerging threat of pre-extensively-drug-resistant tuberculosis in West Africa: preparing for large scale tuberculosis research and drug resistance surveillance. A WANETAM paper which informs public health strategists to urgently implement drug-resistance prevalence surveillance and control interventions in West Africa.

Jacob has over 35 years of experience managing clinical mycobacteriology laboratories and in the diagnosis of tuberculosis including multidrug-resistant (MDR) and extensively drug-resistant (XDR) in low-income countries. He is currently pursuing a MSc in Medical Microbiology and a Master of Philosophy (MPhil) on the research topic prevalence of multidrug-resistant TB between new and previously treated TB patients from West Africa.

Having previously been trained in Japan, South Africa and the UK, Jacob was instrumental in leading the MRCG TB diagnosis laboratory efforts to Good Clinical Laboratory Practice (GCLP) ISO-accreditation and key to the production of high quality data in the TB diagnosis

laboratory for patient care, TB surveys and TB clinical trial. He has authored and co-authored several papers and has made several presentations at major international conferences.

His vast experience was cherished during the in-house and off-site training for the WANETAM researchers. To achieve common quality standards within the WANETAM study sites, Jacob trained over 60 West African researchers from eight countries in various laboratory techniques. This enabled these researchers to successfully recruit and collect TB isolates from patients across the West Africa region for drug-resistance testing at the MRCG category three TB laboratory.

Jacob joined MRC Unit The Gambia in 2000, he retires from MRCG in March 2017, having worked for MRCG for 17 years. Prof Martin Antonio, Unit Molecular Biologist and Principal, Investigator, Vaccines and Immunity Theme said "The Unit thanks Jacob for his dedication and continuous service to MRCG and wish him well in future endeavours."

Dr Julia Mwesigwa, determined to change policies on disease control and management in Sub-Saharan Africa

Dr Julia Mwesigwa has over ten year's research experience in Malaria and HIV research.



Dr Julia Mwesigwa
Clinical Scientist and PhD student

Dr Julia Mwesigwa is a Clinical Scientist and PhD student in epidemiology with strong interest in translational epidemiology and focused on better understanding of the transmission dynamics of malaria in Africa. Her professional background is in clinical medicine and she completed a MSc in Clinical Epidemiology at Makerere University. She also has over ten year's research experience in Malaria and HIV research in The Gambia and Uganda.

In October 2016, Julia was awarded the prestigious MRCG-funded PhD Training Fellowship. Her PhD is at the Faculty of Medicine and Health Sciences at the University of Antwerp, Belgium, supervised by Prof Umberto D'Alessandro and Prof Jean-Pierre Van geertruyden. One of the cardinal goals of her PhD research is to define the "spatial and temporal spread of malaria in a setting of high coverage of malaria control interventions" which involves epidemiology, parasitology and entomological aspects.

During her PhD, Dr Julia Mwesigwa will gain important skills and in-depth knowledge on clinical research that are key elements for an early career scientist to transition towards an independent scientist. She is passionate about research and under the guidance of her mentors, both within the MRC Unit The Gambia and outside The

Unit, she has been able to channel her motivation to learn more and excel at what she does. She hopes that her research will generate results able to positively influence policies on malaria control and management in sub-saharan Africa.

Dr Julia Mwesigwa has several peer-reviewed publications of which she is a lead author on four and has presented her research findings at major international conferences.

When asked to comment on Julia's research output, Prof Umberto D'Alessandro Unit Director and PhD Supervisor said, "Julia has gained a lot of field experience over the last few years. She now needs to develop her skills in data analysis and their interpretation on a broader context. Her PhD offers the ideal opportunity to develop such skills."

Yaya Giana shaping the Logistics Department

Yaya has effectively reduced the overall total freight costs by 3%.



Yaya Giana
Logistic Manager

Since November 2014, Yaya Giana has been initiating a lot of cost saving logistics strategies for MRC Unit The Gambia (MRCG). Following his appointment as a Logistic Manager in 2016, Yaya has provided excellent containerisation schedules coupled with the best selection of affordable transportation modes for The Unit. These initiatives have reduced the amount of cargo that was coming in by air, thereby increasing the speed and frequency of deliveries by sea.

Yaya first joined MRCG in September 2012 as an Intern within the Purchasing Department. He was then appointed as a Procurement Specialist in August 2013 and was later transferred to the Logistics Department as a Logistics Officer. From there, Yaya's hard work and determination to developing the logistics services lead to a natural progression to Logistics Manager which saw the transformation of the services offered by the Logistics Department.

Yaya is a qualified Accountant and holds a BSc in accounting from University of The Gambia as well as being a member of the Chartered Institute of Logistics and Transport (CILT), UK. From early on Yaya realised the importance of his own professional development as a means to creating a permanent capacity at MRCG. Over the years, Yaya embarked on several professional development courses which includes, the Carriage of Diagnostic & Infectious Substance by Air.

Yaya plays a key role within the Logistics Department. Under his management, the team was able to reduce the overall total freight costs, equivalent to 3%.

According to Apollo Twijukye, Head of Transport, "Yaya's performance is commended within the Logistics Department. With great enthusiasm, Yaya is now expected to consolidate this achievement by liaising with projects, in terms of planning to bring at least 90% of non-perishable items by sea in the next financial year."

Mamina Bojang shaping the clinic with his wealth of experience in both nursing and clinical research

Mamina is highly commended and respected for his hard work and commitment over the years in his contribution towards nursing care and the efficient running of the clinic.



Mamina Bojang
Deputy Matron

Mamina Bojang is the Deputy Matron at MRC Unit The Gambia. He has been a staple at the Clinical Services Department (CSD) and the embodiment of a truly dedicated nurse. He began his nursing career at Edward Francis Small Teaching Hospital (EFSTH) in 1990 as a State Enrolled Nurse and Midwife. He joined MRCG in 1997 in the capacity of a State Enrolled Nurse and Midwife.

He held the post of a Healthcare Support Worker (Orthopaedics) at Frenchay Hospital, Bristol in the years 2003 – 2008. In 2009, he continued his service at MRCG as a Staff Nurse (Clinical & Research Nurse) with management responsibilities. In 2012, he held the post of a Tumour Registration Officer for the Gambia Hepatitis Intervention Study (GHIS) and proceeded to the post of Senior Nurse in 2013 and in 2014, he successfully attained the post of Deputy Matron.

Mamina is accessible, flexible and open to change and this quality was demonstrated in the support and guidance provided to the new management of the CSD and also in his management of the team through this transition period. He is a good communicator and is highly responsible. He holds several qualifications: Diploma in Tropical Nursing, Certificate in State Enrolled Nurse (SEN), Paediatric Special Care, Midwife and Endoscopy Procedures to name a few.

In addition to this list are training received in Ebola in context, Caring for Infants & Children with Acute Malnutrition and Introduction to Good Clinical Practice. He is an exemplary for self-initiated career development and is presently undergoing his BSc in Nursing at The Gambia School of Nursing.

When asked to comment on Mamina's hard work and commitment, Dr Karen Forrest, Head Clinical Services said, "Mamina is a key member of the clinic team. He brings a wealth of experience in nursing and clinical research which he loves to share with his colleagues. His commitment to the clinic is outstanding. His knowledge of the clinic and its staff has been invaluable to me as I have taken on leadership of the team. He is easy to work with and does all he can to improve the quality of service that we provide."

Leading health research in West Africa to save lives and improve health across the world

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